GOVERNMENT OF WESTERN AUSTRALIA

Browse LNG Precinct

Browse Liquefied Natural Gas Precinct

SAR Response to Submissions

September 2011

Appendix A

Questions and Answers

Preface

The Department of State Development (**DSD**) provides leadership to drive responsible development for Western Australia's future. Working closely with industry, communities and government agencies the Department delivers significant State initiatives and facilitates major resource, industrial and infrastructure projects. It also works to attract strategic investment to Western Australia, assist the development of export markets, and enable the development of strategic industrial land and infrastructure for the benefit of the State and its people.

The State of Western Australia, through the Minister for State Development, is proposing to develop an onshore, common-user Liquefied Natural Gas (**LNG**) precinct to process natural gas from the Browse Basin gas fields off the West Kimberley coast (the **BLNG Precinct**). In delivering the Precinct, the Western Australian Government is committed to balancing the needs of industry, the local community and the environment for the benefit of all Western Australians. The development of the Precinct would result in billions of dollars of capital investment, create thousands of jobs and provide significant opportunity for existing and future local businesses. The development will also provide the opportunity to substantially improve the education, health, social and economic wellbeing of Aboriginal people and significantly reduce disadvantage within the Kimberley community.

DSD has been working in partnership with industry, the Kimberley Land Council (**KLC**) and Traditional Owners to identify the most suitable location and to coordinate the establishment of the Precinct. This Strategic Assessment process is the culmination of four years of work to identify the most suitable site, based on technical, environmental and Indigenous heritage criteria. On 30 June 2011 the State Government, the Goolarabooloo Jabirr Jabirr (**GJJ**) Native Title Claim Group and Woodside Energy Ltd finalised agreements to secure access to the land required for the Precinct and to secure benefits worth more than $1.5 billion over a 30 year period for Traditional Owners, and the broader Kimberley Indigenous Community.

This *Response to Submissions* report has been prepared in accordance with guidelines established by the *Environmental Protection Authority*. The purpose of the public review is to enable transparency and accountability by providing the opportunity for the public to provide comment on the proposal and to enable the provision of new relevant information for consideration by regulators. DSD is committed to the public review process and subsequent modification of the Precinct concept and management arrangements as appropriate.

While the State recognises that there is some opposition within segments of the local community, it is considered that given the extensive studies, broad community consultation, and the agreement of the Traditional Owners of the land in question, this location delivers the best overall environmental and social outcome for Western Australia.

In relation to the proposal for the development, over 11,000 submissions were received during the public review period. The majority of these were 'proforma' submissions, of which there were approximately eight different versions. In total, there were 202 individual submissions (including the eight proforma versions), ranging from single page letters through to substantial reports. Of these 202 submissions, 26 were submitted by 'named' organisations which comprised a mix of Non-Government Organisations (**NGO**s), Government agencies and stakeholder groups. A comprehensive process of analysing and responding to all 202 submissions was undertaken.

This document (**Appendix A**) presents a comprehensive compendium of individual questions and answers in response to public submissions. Questions that were raised with respect to the Executive Summary (Part 1) have been reallocated to corresponding sections in Parts 2 to 7 so that particular factors or topics would be grouped together, for ease of navigation. A number of common concerns have emerged from the submissions received and a synthesis of the key themes arising and the Proponent's responses to these are presented in a separately bound **Summary Report**. Both documents together comprise the **Proponent Response to Submission**. An electronic version of both this Appendix A and the Summary Report is provided in a pouch at the back of the Summary Report.

DSD has committed to a governance structure that is appropriate for the BLNG development. To that end, a BLNG Precinct Control Group will be established to oversee and coordinate the implementation of the precinct plan. The Precinct Control Group, consisting of the Department for State Development, LandCorp, Broome Port Authority and Traditional Owners will recommend actions, plans, and strategies to Cabinet through the Minister for State Development. Traditional Owners representation ensures the active engagement and responsibility for recommendations in recognition of the Traditional Owners' status as the custodians of the land.

Nomenclature, Acronyms, Measurements and Units List Appendix A

Acronym	Definition
ABS	Australian Bureau of Statistics
ACHC	Aboriginal Cultural Heritage Committee
AGRU	Acid Gas Removal Unit
AGT	Aero Derivative Gas Turbines
AH Act	*Aboriginal Heritage Act 1972* (WA)
AHC	Australian Heritage Council
AHD	Australian Height Datum
AIMS	Australian Institute of Marine Science
AML	Acute Myeloid Leukaemia
AMOSC	Australian Marine Oil Spill Centre
AMPLA	Australian Mining and Petroleum and Law Association
AMSA	Australian Maritime Safety Authority
ANLL	Acute Non-lymphocytic Leukaemia
ANZECC	Australian and New Zealand Environment Conservation Council
API	American Petroleum Institute
AQIS	Australian Quarantine Inspection Service
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASCWA	Anglican Schools Commission of Western Australia
ASIA	Aboriginal Social Impact Assessment
ASK	Available Seat per Kilometre
ASS	Acid Sulphate Soils
ATSIHP Act	*Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
BA	Birds Australia
BAM	Beta Attenuation Monitors
Best Practice	The application of the best available mitigation measures that are practicable in the particular circumstances of a proposal to avoid or minimise environmental impact.
BHP	BHP Billiton
BLNG	Browse Liquefied Natural Gas
BLNG Precinct	Browse Liquefied Natural Gas Precinct
BoM	Bureau of Meteorology
BP	British Petroleum
BPA	Broome Port Authority
BPEMP	BLNG Precinct Environmental Management Plan

BPP	Benthic Primary Producer
BPPH	Benthic Primary Producer Habitat
BRUVS	Baited Remote Underwater Video Surveys
BTEX	benzene, toluene, ethybenzene and xylene
CALM	Department of Conservation and Land Management , now DEC
CAMBA	China-Australia Migratory Bird Agreement
CAMBA	China (Legal International Migratory Bird Agreement)
Category A	These are the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons.
Category B	These are indirect activities and actions as a result of the BLNG Precinct that are considered in the impact assessment but do not form part of the approvals process.
Category C	Related projects that are outside the scope of the Strategic Assessment but form part of the cumulative impact assessment.
CDEP	Community Development Employment Projects
CEMP	Construction Environment Management Plan
CEO	Chief Executive Officer
CH_4	Methane
CHMP	Cultural Heritage Management Plan
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2-e	Carbon Dioxide Equivalents
CPRS	Carbon Pollution Reduction Scheme
CRG(s)	Community Reference Group(s)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTM	Chemical Transport Model
CWR	Centre for Whale Research
Cwth	Commonwealth
DCCEE	Department of Climate Change and Energy Efficiency
DEC	Department of Environment and Conservation
DEEWR	Commonwealth Department of Education, Employment and Workplace Relations
DET	Department of Education and Training
DEWHA	Commonwealth Department for the Environment, Water, Heritage and the Arts, now SEWPAC
DHHS	US Department of Health and Human Services
DIA	Department of Indigenous Affairs
DLNG	Darwin Liquefied Natural Gas
DMAG	Dredging Management Advisory Group

DMP	Department of Mines and Petroleum
DMP	Department of Mines and Petroleum
DoF	Department of Fisheries
DoT	Department of Transport
DoW	Department of Water
DRF	Declared Rare Flora
DRF	Declared Rare Flora
DSD	Department of State Development
DSDMP	Dredging and Dredge Spoil Disposal Management Plan
DVT	Deciduous Vine Thicket
EAG3	Environmental Assessment Guideline 3
EIA	Environmental Impact Assessment
EIA	Environmental Impact Assessment
EMP	Environment Management Plan
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Areas
EU	European Union
EVT	Evergreen Vine Thickets
FAHCSIA	Families, Housing, Community Services and Indigenous Affairs
FEED	Front End Engineering Design
FESA	Fire and Emergency Services Authority of Western Australia
FID	Final Investment Decision
FIFO	Fly in/Fly out
FIS	Fishing Industry Impact Study
FoI	Freedom of Information
Foundation Proponent	Woodside is a potential Foundation Proponent
GCA	Gaffney Cline and Associates
GDE(s)	Groundwater Dependant Ecosystem(s)
GDP	Gross Domestic Product
GGAP	Greenhouse Gas Abatement Plan
GHG	Greenhouse Gas
GJJ	Goolarabooloo Jabirr Jabirr
GL	gigalitre

GL/yr	gigalitres per year
GROH	Government Regional Officer Housing
GSP	Gross State Product
GST	Goods and Services Tax
H_2S	Hydrogen Sulphide
ha	hectare
HIA	Heritage Impact Assessment
Hi-Vol	High-volume
HoA	Heads of Agreement
HPA	Heritage Protection Agreement
IBRA	Interim Biogeographic Regionalisation of Australia
ICNWA	Industry Capability Network Western Australia
IFPIC	Indigenous Free Prior Informed Consent
ILUA	Indigenous Land Use Agreement
IMO	International Maritime Organisation
IMS	Invasive Marine Species
IMSMP	Invasive Marine Species Management Plan
INPEX	INPEX Corporation
IUCN	International Union for Conservation of Nature
JAMBA	Japan-Australia Migratory Bird Agreement
JAMBA	Commonwealth of Australia with Japan (Legal International Migratory Bird Agreement)
JV	Browse Joint Venture
KAHPF	Kimberley Aboriginal Health Planning Forum
KALACC	Kimberley Aboriginal Law and Culture Centre
KAMSC	Kimberley Aboriginal Medical Services Council
kg	kilogram
Kimberley BIZ	Kimberley Business Capability and Services Register
KLC	Kimberley Land Council
km	kilometre
KPP	Kadar Pearson and Partners
LADS	Laser Airborne Depth Survey
LAI	Leaf-area Index
LAU	Local Assessment Unit
LGA	Local Government Area
LiDAR	Light Detection and Ranging

LIGT	Large Industrial Gas Turbines
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LPS	Local Planning Strategy
m	metre
m^3	cubic metre
MEG	Mono-ethylene glycol
mg L-1, mg/L	milligram per litre
MNES	Matters of National Environmental Significance
MOF	Materials Offloading Facility
MSDS(s)	Materials Safety Data Sheet(s)
Mt	megatonne (million tonne)
Mtpa	million tonnes per annum
MVT	Monsoon Vine Thicket
MWDMP	Marine Wastewater Discharge Management Plan
MWh (s)	megawatt hour(s)
NAGD	National Assessment Guidelines for Dredging
NDT	Northern Development Taskforce
NE	North-east
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NES	National Environmental Significance (i.e. matters of NES)
NGCC	Natural Gas Combined Cycle
NGO(s)	Non-Government Organisation(s)
nm	Nautical mile
NNTT	National Native Title Tribunal
NO_2	nitrogen dioxide
NOITT	Notice of Intention to Take
NOX	oxides of Nitrogen (NO and NO2)
NPI	National Pollutant Inventory
NSW	New South Wales
NTA	*Native Title Act 1993*
NWQMS	National Water Quality Management Strategy
OEPA	Office of Environment Protection Authority
OSR	Oil Spill Response

PAR	Photosynthetically Available Radiation
PASS	Potential Acid Sulphate Soils
PBC	Prescribed Body Corporate
PCG	Precinct Control Group
PEC(s)	Priority Ecological Community(s)
PFCEMP	Port Facilities Construction Environmental Management Plan
PM	particulate matter
PPA	Precinct Program Agreement
ppb	Parts per billion
ppm	Parts per million
Precinct	Alternative term to 'BLNG Precinct'
Precinct Plan	The formal Plan for the BLNG Precinct under Commonwealth legislation (see also Plan)
proponent	Commercial proponents will undertake projects within the Precinct.
Proponent	The Proponent for the Precinct is the Minister for State Development
PRRT	Petroleum Rent Resource Tax
PTS	Permanent Threshold Shift
RBA	Regional Benefits Agreement
RBWG	Roebuck Bay Working Group
RFDS	Royal Flying Doctor Service
RIWI Act	*Rights in Water and Irrigation Act 1914*
ROKAMBA	Republic of Korea (Legal International Migratory Bird Agreement)
RTO	Registered Training Organisation
SA	Strategic Assessment
SAP	Sediment Sampling and Analysis Plan
SAR	Strategic Assessment Report
SEWPAC	Commonwealth Department of Sustainability, Environment, Water, Population and Community
SIA	Social Impact Assessment
SMC	Social Management Committee
SO_2	sulphur dioxide
SOPEP	Shipboard Oil Pollution Emergency Plan
SRE	Short Range Endemic
SSIMP	Strategic Social Impact Management Plan
State Minister	State Minister for the Environment
t	tonne
TAFE	Technical and Further Education

TAPM	The Air Pollution Model
TCU	Thermal Combustion Units
TDS	Total Dissolved Solids
TEC	Threatened Ecological Community
TEOM	Tapered Element Oscillating Microbalance
TIA	Tourism Impact Assessment
TONC	Traditional Owner Negotiating Committee
ToR	Terms of Reference
TOTF	Traditional Owner Taskforce
TP	Total Phosphorous
tpa	tonne per annum
TSHD	Trailer Suction Hopper Dredger
TSS	Total Suspended Solids
TSSC	Threatened Species Scientific Committee
UNDRIP	United Nations Declaration of Rights of Indigenous People
UNESCO	United nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
VMP	Vessel Management Plan
VMP	Vegetation Monitoring Program
VOC(s)	Volatile Organic Compound(s)
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WALFA	West Arnhem Land Fire Abatement
WAM	Western Australian Museum
WAPC	Western Australian Planning Commission
WC Act	*Wildlife Conservation Act 1950*
WET	Whole Effluent Toxicity
WHO	World Health Organisation
Woodside	Woodside Energy Limited
WPS	Work Program Clearance
WWF	World Wildlife Fund
WWTP	Waste Water Treatment Plant

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Part 1: Executive Summary

Questions that were raised with respect to the Executive Summary (Part 1) have been reallocated to corresponding sections in Parts 2 to 7 so that particular factors or topics would be grouped together, for ease of navigation.

Part 2: General

1 Introduction

Generic Question ID: 51 Sub ID [5, 15, 16, 26, 27, 29, 30, 31, 32, 33, 42, 43, 45, 48, 53, 54, 55, 56, 58, 61, 71, 74, 78, 79, 80, 84, 85, 86, 88, 90, 92, 94, 95, 97, 98, 100, 102, 108, 109, 110, 113, 118, 119, 120, 125, 128, 130, 132, 134, 136, 139, 141, 142, 143, 144, 145, 146, 148, 153, 154, 155, 156, 158, 163, 164, 173, 182, 200, 202, 203, 205, 211, 216, 217, 218, 222, 227, 234, 236, 292, 293, 294] Raised by [S5 Q70]

Submissions identify James Price Point as an inappropriate place for an industrial development, for the following reasons:

- the Kimberley coast is recognised as one of the natural wonders of the world;
- the Kimberley is one of the last remaining untouched environments on earth;
- the Kimberley coast is in the top 4% of the world's pristine oceans;
- the Kimberley coast is fragile and important;
- the Kimberley is a unique and precious environment;
- the Kimberley is one of the last remaining great wilderness areas; and
- the Kimberley is a pristine tourist attraction.

The State recognises the significance and complexity of establishing the Precinct in the Kimberley region. Following a rigorous site selection process involving extensive technical, environmental and social studies, an area in the vicinity of James Price Point was selected as the most suitable location. The location strikes a balance as it is close enough to the Browse Basin to represent a technically and economically feasible location; it is close enough to existing communities to provide real opportunities to the local community; and importantly it is a considerable distance from the iconic Kimberley wilderness, for example being:

- 145km from Cape Leveque;
- 225km from Horizontal Falls;
- 390km from King Cascade;
- 480km from Mitchell Falls; and
- 665km from the Bungle Bungle Range.

The Browse LNG Precinct is being progressed on the basis that it can coexist with the environmental values of the region. The State has undertaken comprehensive flora, fauna and vegetation studies in the James Price Point coastal area since 2008 to assess the potential impact. The studies reveal that Precinct is highly unlikely to affect the conservation status of affected flora and fauna on a regional scale. The SAR requires plans to mitigate the potential impacts including:

- Construction Environmental Management Plan;
- Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance;
- Rehabilitation Plan; and
- Fauna Management Plan.

Further management plans will be implemented to minimise the disturbance on the surrounding habitats of threatened species and it is planned to establish terrestrial and marine conservation reserves in the surrounding areas. These measures may include avoiding clearing in sensitive areas as much as possible and undertaking pre-clearing searches for conservation of significant species. Project proponents will also need to obtain separate environmental approvals before clearing native vegetation.

Generic Question ID: 97 Sub ID [11, 15, 25, 27, 59, 86, 89, 113, 133, 153, 158, 159, 202, 203, 216] Raised by [S11 Q103]

It will harm the environment in the area.

The Browse LNG Precinct is being progressed on the basis that it can coexist with the environmental values of the region. The State has undertaken comprehensive flora, fauna and vegetation studies in the James Price Point coastal area since 2008 to assess the potential impact. The studies reveal that the Precinct is highly unlikely to affect the conservation status of affected flora and fauna on a regional scale and the State plans to

mitigate the potential impacts through:

- a Construction Environmental Management Plan;
- a Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance;
- a Rehabilitation Plan; and
- a Fauna Management Plan.

Further management plans will be implemented to minimise the disturbance on the surrounding habitats of threatened species and it is planned to establish terrestrial and marine conservation reserves in the surrounding areas. These measures may include avoiding clearing in sensitive areas as much as possible and undertaking pre-clearing searches for conservation of significant species.

Generic Question ID: 1140 Sub ID [225] Raised by [S225 Q1165]

CCI Submission: CCI strongly supports the development of the common-user Browse LNG Precinct (BLNG Precinct) at James Price Point. Construction of the Precinct would represent a considerable step towards developing the vast natural gas resources off the coast of the Kimberley, in the Browse Basin. This promises to deliver significant benefits to the State.

The Proponent notes CCI's support and agrees with the statement. The Precinct is a rare opportunity for Western Australia and the Kimberley region in particular. The Precinct is expected to attract initial investment worth more than $30 billion, generate new opportunities for existing and future businesses and create new jobs, strengthening the local economy and promote new investment in community facilities and services.

The Precinct will not only provide considerable job opportunities through its design, construction, operational and support service workforce demands but the expenditure arising from these jobs will create further wide ranging indirect benefits for the region and the state. It is expected that for every direct job created by the Precinct, up to one and a half indirect jobs could be created including: supply services; building and construction; and tourism.

Furthermore the project will strengthen and diversify the economic base of the region through, for example, new industry-focused training, education and research institutes, and specialist risk management and emergency response services. The Government is committed to ensuring that the Kimberley and the State benefit from the development of the Browse Basin gas reserves, while protecting the unique environmental, cultural and heritage values of the region. Further discussion of the Project Benefits can be found at **Section 1.2** of the Response to Submissions Summary Report.

Generic Question ID: 1141 Sub ID [225] Raised by [S225 Q2796]

CCI Submission: Failing to develop these vast gas resources would represent a significant lost opportunity for Western Australia. The development of the Ichthys Field in the Browse Basin is a case in point. As the subject of community and environmental opposition, in 2008, the project proponents chose to develop the associated $20 billion LNG facility in Darwin, rather than in WA. The BLNG development itself entails capital expenditure of $30 billion, with peak employment during construction phase of 6,000 personnel and 400 people during operation.

The Proponent notes the submission's comments, and agrees that the Browse Basin should be developed as efficiently as possible to achieve the best outcome for the State and for Australia as a whole.

Any option which involves piping gas distances greater than 500km will significantly undermine the economic viability for a number of potential project proponents, whereas Floating LNG options will risk 'stranding' significant levels of gas resource which would otherwise be developed with a more permanent facility. The State considers that the development of a multi-user LNG precinct south of James Price Point offers the greatest benefits for the State and local region whilst minimising environmental, cultural and heritage impacts.

Generic Question ID: 1147 Sub ID [225] Raised by [S225 Q2802]

CCI Submission: The EPA, Department of State Development and project proponents should be congratulated on preparing such a detailed and wide ranging strategic assessment on the BLNG proposal. The Report identifies many potential risks and impacts on the Kimberley region which need to be carefully assessed to ensure they can be managed and mitigated. CCI is supportive of the development of the BLNG precinct. Through a process of objective analysis and consideration, we are confident that Western Australia can reap the tremendous economic and social benefits attached to the development of the vast natural gas resources in the Browse Basin, while at the same time giving suitable protection to and management of the heritage and environmental issues related to the development.

The CCI's support for the process is acknowledged. The Strategic Assessment offers the benefit of allowing regulators, stakeholders and the community to assess up front the total cumulative impact of the Browse Precinct. The process will allow the Environmental Protection Authority, Commonwealth Government, stakeholders and the general public to review the proposed Precinct, the predicted environmental, social and economic effects and the proposed management framework in a single process. Importantly, the Strategic Assessment recognises that there are significant potential social and environmental impacts that may be positive or negative. The objective is to ensure that positive impacts are maximised, while ensuring that any potential negative impact is adequately avoided, mitigated, or managed to avoid any overall undesirable outcomes.

1.1 Objective and Benefits - A Balanced Approach

Generic Question ID: 850 Sub ID [209] Raised by [S209 Q1013]

'The "No Development" Option' of the SAR only addresses the negative factors associated with not developing the region. It does not address the following positive factors, which include:

1. The opportunity to protect West Australia's biodiversity treasures.
2. The opportunity for Western Australia to move away from a fossil fuel based economy.
3. The opportunity for Australia to try to meet its carbon reduction targets.
4. The opportunity for Western Australia to develop a sustainable eco-tourism industry in the area.

'The ''No Development'' Option' of the SAR should be amended to remove the illusory drawbacks and replace them with an objective assessment of the positive and negative factors.

The State Government is of the view that Browse LNG Precinct can exist in harmony with the environment. The vast majority of the Kimberley region, including the truly remote and iconic wilderness area, remains untouched by this proposal.

Several measures proposed in the SAR will strengthen the protection of the environment on the Dampier Peninsula. The "no development" option does not deliver any significant benefit beyond the delivery of the Precinct. In addressing the specific points raised, it is noted that:

- the SAR demonstrates that biodiversity will be maintained;
- the "no development" option will not move Western Australia away from a fossil fuel based economy, but will likely drive a greater reliance on more polluting fossil fuels such as coal and oil;
- it is a false economy to suggest an opportunity to reduce Australia's carbon reduction targets when the development could address a much greater carbon reduction opportunity if it were to go ahead; and
- the State also believes that the tourism industry can sustainably co-exist with the LNG sector.

The Strategic Assessment Report also proposes many additional benefits to the environment including new conservation reserves and support for their management, greater levels of weed and pest management and an improved fire management regime to reduce bushfires which is a major contributor to air pollution and also impacts significantly on biodiversity.

The State is therefore of the view that this section represents an objective assessment of positive and negative factors.

Benefits are discussed further in **Section 1.2** of the Response to Submissions Summary Report.

Generic Question ID: 126 Sub ID [16, 294] Raised by [S16 Q114]

The submitter asks the EPA to re-evaluate the many negative environmental, social and economic impacts the Precinct would have and reject this short-sighted and unsound project.

The Western Australian Government believes that there are many social, economic and environmental benefits for the region which would arise as a direct result of the Browse LNG Precinct. Furthermore, the State considers that any negative impacts can be mitigated or adequately managed.

For example, the Browse LNG Precinct will bring significant benefits through long term employment, business opportunities, economic and community development. In particular the development of the Browse LNG Precinct will provide the opportunity to substantially improve the education, health, social and economic well-being of Aboriginal people and significantly reduce disadvantage within the Kimberley community. Environmental benefits include the creation of new environmental reserves and support for their management, providing greater capacity to manage issues ranging from bushfires to feral animals and weed incursion.

The Browse LNG Precinct Strategic Assessment Report (**SAR**) considers the broad social and environmental impacts of the Precinct, as well as the means to manage those impacts to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The project will only proceed if it receives environmental approval from both State and Commonwealth environment Ministers.

Generic Question ID: 775 Sub ID [75] Raised by [S75 Q827]

The reasons given in the SAR for the "No Development" option (**Part 1**, p. ES- 20) are unconvincing. They are factually inaccurate in that they imply that economic benefits of development will only flow to the Kimberley if the resource is processed in the Kimberley. The Royalties for Regions programme, currently funding substantial developments in the Kimberley from revenue generated by the WA government from outside the region, is proof that other arrangements are possible. It is also noted that the 'de-coupling' of location and benefits has already been proposed by a joint venture partner elsewhere as Woodside recently stated that, despite opting for floating LNG for its Sunrise field in the Timor Sea instead of land based processing in East Timor, it can still guarantee that substantial economic and social benefits will flow to the people of East Timor.

It is noted that, while the State may stand to benefit from some level of royalties, the vast majority of returns are to the Commonwealth in the form of Petroleum Resource Rent Tax. The State's objectives in developing the Browse LNG Precinct are more diverse and wide ranging than simply financial returns. A particular reason for the State's development of the Precinct will be to provide long term socio-economic benefits for the region. If, however, the Browse LNG Precinct is not developed in the Kimberley region the community will not stand to benefit from a number of factors including:

- a range of economic growth opportunities arising from a foundation $30 billion project including regional, State, and national jobs, contracts for both construction and operation of the Precinct, and indirect economic stimulus for the local economy which would follow;
- new opportunities for Traditional Owners in terms of education, jobs, business development, and financial incentives valued at $1.5 billion;
- additional growth opportunities commensurate with future expansions and future users of the Precinct;
- additional protection and management of the local and regional environment, ensuring that its values are maintained;
- the protection of the vast and iconic wilderness environment of the Kimberley by limiting further LNG developments in the most sensitive and significant areas; and
- a broadening of the local economic base to provide protection and diversity from strongly seasonal industries or those that are reliant on international economic conditions (e.g. tourism).

The situation with the Sunrise Project example describes the opportunities arising from the provision of a substantial supply base in East Timor. The Strategic Assessment Report identifies that this provides a significant but different set of social impacts than the Precinct, and is a key reason why, given the nature of the Broome Community, the State is discouraging the use of Broome Port as an unconstrained supply base for construction and production purposes (while focusing upon opportunities for exploration activities). Should the Precinct not go ahead, this is likely to put a greater strain upon Broome services but without the opportunity for the aforementioned benefits.

A summary of the economic and social benefits for the region is provided in the SAR **Part 2, Section 3.4** and in the Response to Submissions Summary Report **Section 1.2**.

Generic Question ID: 793 Sub ID [211] Raised by [S211 Q2807]

The conclusion (**Part 1**, **p. ES-103**) that the development will create benefits through new opportunities for Traditional Owners is misleading. Traditional Owners should not have to sell their country to access education or funds to use for housing and health services. These should be provided to them as a right under the government's legal obligation to provide such services to its citizens.

There are two main reasons that an increase in education, training and employment should accompany the development of the Browse LNG Precinct. First, an increase in population will likely result in an increased demand for education and training, and it is the responsibility of the Proponent to address the impacts arising from the proposal. Second, the State Government is committed to delivering fundamental economic and social change to the West Kimberley through development of the Precinct near James Price Point. A common criticism of major industrial developments in the past is that local people have not been able to reap the benefits of these developments through direct and indirect employment. The State Government recognises that maximising education, training and employment opportunities is crucial to delivering benefits to the local community.

Although the State Government already provides education in the West Kimberley, maximising local employment at the Browse LNG Precinct will require additional programs to ensure local people have the skills to take advantage of direct and indirect employment opportunities. As discussed in the SAR, there are a range of barriers that currently limit the ability of local community members to secure employment, and providing the skills to overcome those barriers is a priority. This requires provision of additional education and training, as well as addressing the significant socio-economic factors preventing Indigenous people from engaging in economic and employment programs.

The strategies to increase education, training and employment of local people outlined in the SAR are meant to complement the efforts of other parties (e.g. other State government departments). For example, the Kimberley College of TAFE already offers short courses to engage Indigenous students and encourage them to move into longer training programs. In addition, the Department of Training and Workforce development has already implemented or is in the process of implementing a range of training and workforce development initiatives for the Kimberley. These initiatives are underpinned by a whole of government plan (*Skilling WA: A workforce development plan for Western Australia*) to build, attract and retain a skilled workforce in WA. DSD recognises the importance of this holistic approach and has noted in the SAR that the education, training and employment management plan will necessitate a coordinated approach involving the key government and non-government stakeholders.

Generic Question ID: 847 Sub ID [169] Raised by [S169 Q1706]

Environs Kimberley Submission: The reasoning and justification for a Precinct presented in the SAR may be considered flawed, particularly considering the SAR focuses on economic rationale, while the primary reason for this document is to review the environmental implications and certainty of environmental parameters of a Proposal (and/or any associated Proposals). The only stated environmental benefit of the Precinct appears to be the suggested reduction in ecological footprint and this is also questionable in light of the fact that design options have not been presented. The intention of a Strategic Assessment is to address the project's suitability on environmental grounds. It can be argued that minimising the footprint does not equate to consideration of environmental grounds or a "balanced approach" as suggested.

The Browse LNG Precinct is being progressed on the basis that the social and economic benefits it will generate can co-exist with the environment and the unique cultural and heritage values of the Kimberley. The balanced approach justification for the Precinct is based on the realisation of these significant social and economic benefits whilst reducing the ecological footprint compared to multiple, stand-alone LNG processing facilities. The SAR details the economic implications of the project as a means to balance the social benefits with the potential negative social impacts.

While specific design options for multiple processing facilities are not detailed in the SAR, the benefits for a single processing facility include:

- a single dredged shipping channel, thus reducing the area of seabed potentially affected;
- a single port, therefore minimising changes to coastal processes;
- potential for shared infrastructure such as workers' accommodation, bore fields and road networks which would reduce the total terrestrial footprint and reduce fragmentation and edge effects by concentrating the development at a single location;
- reduction in the potential adverse effects on cultural and heritage values through consolidation on a single site; and
- limiting the loss of visual amenity and recreational access to a single location, hence allowing for better conservation of these values in the region.

As set out in the Terms of Reference (**Appendix A-3**) of the Strategic Assessment Report, the basis for the SAR is to set out the broad social and environmental impacts of the Precinct, as well as the means to manage those impacts to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The project will only proceed if the SAR is able to demonstrate that impacts associated with the development can be appropriately managed.

Generic Question ID: 852 Sub ID [209] Raised by [S209 Q1856]

Part 1 Section 4.4: It is irrelevant for the SAR to raise the issue of commercial competitiveness on the international market. Western Australia is not so desperate for revenue that it needs to lower its environmental standards in order to attract fossil fuel investors. The cost for a fossil fuel company to process the gas outside the Kimberley ought not to be a concern of the EPA.

Development of the Browse LNG Precinct is a rare opportunity for Western Australia and the Kimberley in

particular. The Precinct will attract investment worth more than $30 billion, provide significant benefits for Traditional Owners and the wider community generate new opportunities for existing and future businesses and create new jobs, strengthen the local economy and promote new investment in community facilities and services. The SAR has rightly noted this as it is one of the key drivers behind the development of LNG reserves in Western Australia.

The commercial competitiveness of the Browse Basin on the international market is vital to ensuring these benefits are delivered to Western Australia and the Kimberley region. While commercial competitiveness is a key consideration to the State's planning activities, the Browse LNG Precinct will only proceed if it is able to demonstrate to the Western Australian Environmental Protection Authority and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities that impacts associated with the Precinct can be appropriately managed.

Generic Question ID: 1153 Sub ID [211] Raised by [S211 Q1018]

Part 1 Section 2: Royalties, GST, state taxes and duties - is this worth destroying the Kimberley for future generations? Why should we pay the heavy price? Royalties for Regions is a classic example of money that should be spent here as a normal government process, not an extra handout. The disgusting state of houses in Bidyadanga, and the long waiting lists for state housing in Broome are examples of government neglect.

The Browse LNG Precinct is being progressed on the basis that it can co-exist with the environment and the unique cultural and heritage values of the Kimberley.

More important than the revenues that the Precinct will ultimately generate for Governments, the Precinct will attract investment worth more than $30 billion, generate new opportunities for existing and future businesses and create new jobs, strengthen the local economy and promote new investment in community facilities and services.

A particular objective of Government in facilitating the development of the Browse LNG Precinct is to provide opportunities to substantially improve the education, health, social and economic well-being of Aboriginal people and to significantly reduce disadvantage within the Kimberley community. This is best achieved through easing the welfare dependency by providing alternative opportunities for empowerment through education, training, and meaningful employment.

On 6 May 2011, an agreement valued at more than $1.5 billion was reached between the State Government, Woodside Energy Ltd and the Goolarabooloo Jabirr Jabirr native title claimant group. The agreement establishes a unique and comprehensive regime of benefits for Traditional Owners of the Precinct site and Indigenous communities across the Dampier Peninsula and beyond. The package, which includes funds and land for economic development and housing initiatives, offers benefits over and above the services provided by government to the Indigenous communities.

It should also be noted that the State's current revenues are a finite resource facing a vast array of competing, and very worthy demands. The facilitation of the Browse Basin resources offers a significant opportunity to expand the State resources which are available.

Generic Question ID: 1168 Sub ID [211] Raised by [S211 Q2818]

Part 1 Section 11: Environmental protection should occur for its own sake, regardless of a BLNG Precinct.

The State Government is seeking to develop the BLNG Precinct to:

- provide long term economic prosperity for the Kimberley region and Western Australia;
- minimise the environmental footprint associated with processing gas from the Browse Basin; and
- work with industry to ensure that the potential socio-economic benefits of such a major development are realised while the potential impacts, especially at the local and regional scale, are minimised and properly managed.

Achieving long-term regional economic development with the protection of social, cultural and environmental values of the West Kimberley region of Western Australia is a key aspiration of the State Government of Western Australia. As detailed later in the SAR (see **Part 2**, **Section 3.1**), the Browse Basin contains significant volumes of natural gas. Natural gas is a valuable resource which is increasingly in demand from customers that seek energy to provide for their growing domestic needs. Natural gas is also sought by many countries as a means to reduce greenhouse gas emissions by moving away from energy sources which present more significant environmental challenges.

Generic Question ID: 1171 Sub ID [211] Raised by [S211 Q1041]

Part 1 Section 11: Why do we need to irrevocably wreck our environment for royalties? Royalties for regions works well already. Why can't we insist on royalties for gas processed off-shore, as Woodside is currently offering and proposing in their Sunrise gas field off Timor?

The Browse LNG Precinct is being progressed on the basis that the social and economic benefits it will generate can co-exist with the environment and the unique cultural and heritage values of the Kimberley. Given current project economics it is unlikely that the Woodside-operated browse LNG Development would proceed if it could not be located onshore. Significantly, the region would not benefit from 'social' opportunities arising from an off-shore option (e.g. jobs or business opportunities) that the Precinct would offer. The State also has no basis upon which to insist on royalties from companies operating in Commonwealth waters. The Site selection process is discussed in further detail in the Response to Submissions Summary Report **Section 4.2**.

1.2 Background

Generic Question ID: 33 Sub ID [4, 7, 27, 39, 228, 292, 293] Raised by [S4 Q52, S7 Q78]

The Traditional Owners are not convinced of the value of this project or whether the impact on society will be a positive one. The State Government's decision to acquire the land without their approval only adds to their disquiet. No development should take place until at least all Traditional Owners give their approval.

Other submissions raise similar points:

There has been a failure to gain Indigenous consent, as required by the Terms of Reference for the Strategic Assessment.

Development of the Browse LNG Precinct provides an opportunity for new initiatives that will substantially improve the education, health, social and economic wellbeing of Aboriginal people and significantly reduce disadvantage within the Kimberley community. These benefits were identified in a Heads of Agreement signed by the Kimberley Land Council on behalf of the Goolarabooloo Jabirr Jabirr claimants in April 2009.

While Government's preferred outcome was to negotiate an Indigenous Land Use Agreement (**ILUA**) with Traditional Owners, in the interest of progressing towards the positive outcomes committed to in the Heads of Agreement, the Western Australian Government commenced proceedings to secure land for the Precinct.

On 30 June 2011 the GJJ Native Title Claimant Group gave its consent to the BLNG Precinct and agreed to surrender their native title rights and interests in the land and waters required for the Precinct, in return for substantial benefits and continuing engagement in the management of the Precinct, including environmental, social and heritage management. The agreements are summarised in **Section 1.2.4** of the SAR and details of these agreements are attached as **Annexure 2**. The Precinct represents a small percentage of the total GJJ native title claim area which covers approximately 251,500ha of land and water.

Ongoing engagement with Traditional Owners has been a priority for the Western Australian Government. Examples of the ongoing nature of consultation and mutual engagement process with Traditional Owners include:

- In January 2008 the State and the KLC executed a Financial Assistance Agreement to support the engagement process to agree on site selection.
- Between March and July 2008 the KLC conducted a consultation program involving over 30 West Kimberley community and Traditional Owner Taskforce (**TOTF**) meetings.
- On 7 May 2008, in good faith and with mutual respect, the State and the KLC entered into a studies agreement to ensure technical studies were conducted in an appropriate manner and did not impact on heritage sites.
- In December 2008 a final site selection report was released.
- On 11 March 2009 the State and the KLC executed a Negotiation Funding Agreement for ongoing negotiation and consultation.
- On 21 April 2009, the State, the KLC and Woodside Energy Ltd executed a Heads of Agreement to establish the BLNG Precinct in the vicinity of James Price Point.
- On 14 August 2009, a full day workshop was held in Broome to further refine the James Price Point site.
- From that workshop, a series of technical, environmental and heritage questions were developed that ultimately formed the basis of the Traditional Owners' Information Package, later modified to produce a comprehensive Public Information Booklet hosted on the DSD website noted below. This information package was circulated by the KLC to assist in the process that ultimately lead to the Traditional Owners agreement of the final site location.
- On 8 October 2009, the State and the KLC entered into a Funding Agreement to fund the KLC to meet the costs of the negotiations for an ILUA of ILUAs and related agreements and other specified activities.

- On 13 November 2009 the State, the KLC and Woodside entered into a Heritage Protection Agreement (**HPA**), to ensure appropriate account was taken of the Traditional Owners' views regarding heritage sites.
- Throughout 2010 funding was provided to progress involvement in studies, negotiations, consent determination and promotion of the benefits negotiated in the HoA.
- In March 2011, DSD carried out information workshops with assistance from the Kimberley Interpretive Service, at various Indigenous communities on the Dampier Peninsula.
- In June 2011, the Traditional Owners signed the Recent land Use Agreement.

Further detail about the involvement of the KLC and the Traditional Owners can be found in the DSD Browse LNG Project, Indigenous Impacts Report and is available online from: http://www.dsd.wa.gov.au/7921.aspx#8232

Generic Question ID: 1256 Sub ID [103] Raised by [S103 Q2925]

Woodside Submission: The Woodside-operated Browse LNG Development project will deliver a comprehensive package of benefits to Indigenous people through new employment, training and business development opportunities. The package of benefits on the Heads of Agreement reached between Woodside and the Native Title Claimants is one of the most substantial ever agreed between a major development and Indigenous people.

In 2011, an agreement was reached between the Western Australian Government, Woodside Energy Limited and the Goolarabooloo Jabirr Jabirr (**GJJ**) native title claim group, that ensures significant economic and other social benefits to Traditional Owners and West Kimberley Indigenous communities. The State Government and Woodside have together committed to deliver about $1.5 billion of social and economic benefits to local Aboriginal communities in terms of education, jobs, business development and financial incentives.

For more information on Land Access and Informed Consent, refer to **Section 2.5** in the Response to Submissions Summary Report.

1.3 Why a Strategic Assessment?

1.4 Precinct Plan Overview

Generic Question ID: 8 Sub ID [1, 197, 51, 109, 110] Raised by [S1 Q9]

The BLNG Precinct will be the world's largest gas processing plant.

The Browse LNG Precinct is being developed as a multi-user precinct suitable for a minimum of two proponents to process gas and associated products from the Browse Basin to prevent ad hoc industrial development on the Dampier Peninsula. The Precinct will be designed to facilitate a maximum potential LNG production capacity of up to 50 million tonnes per annum (**Mtpa**), making it among the world's largest LNG processing plants.

However, many LNG processing plants generally accommodate only one LNG proponent. The Browse LNG Precinct will accommodate at least two LNG proponents. While it is unlikely that the Precinct would ever operate at its maximum potential production capacity, if it were to occur, full development of the Precinct would most likely be phased in subject to market demand, over many years. The strategic approach employed in the development of the Browse LNG Precinct will ensure that it is the *only* LNG processing facility on the Dampier Peninsula.

Woodside Energy Limited (**Woodside**) on behalf of the Browse LNG Development Joint Venture participants, was appointed as a potential Foundation Proponent for the Precinct under the Preliminary Development Agreement signed in October 2009. This Agreement established Woodside as a partner with the State Government in developing the project.

As a potential Foundation Proponent, Woodside is proposing to operate at the Browse LNG Precinct with an initial production capacity of 12 Mtpa. This initial production capacity of 12 Mtpa is less than that which will be processed at the Gorgon LNG facility and the Pluto LNG facility, and what is currently processed at the North-west Shelf LNG processing facility in the Pilbara.

Furthermore, the Derived Proposals process established for the Browse LNG Precinct will help to ensure that any proposed development within the Precinct itself will be required to undergo rigorous environmental evaluation by the Environmental Protection Authority. Second and/or third proponents will also be required to undertake a project specific social assessment and to prepare appropriate mitigation and management plans

The Precinct Master Plan can be accessed from: http://www.dsd.wa.gov.au/documents/000084.browselng.pm.pdf.

Generic Question ID: 17 Sub ID [2, 95] Raised by [S2 Q18]

The Strategic Assessment does not include a detailed assessment of other proponents (excluding Woodside) wishing to use the Precinct. Other potential projects might include: at least two other offshore developments in the Browse Basin; nearshore oil and gas exploration and development in state waters between Broome and Cape Leveque; onshore oil and gas in the Canning Basin including the operations of Buru Energy and Oil Basins Limited; and export facilities for minerals such as coal, uranium, zinc, bauxite, iron ore and mineral sands. Additionally, the report does not include an assessment of any downstream processing for oil, gas, condensate, bauxite, iron ore and zinc.

The Browse LNG Precinct is being progressed on the basis that it will be able to accommodate a minimum of two LNG proponents and an ultimate production capacity of 50Mtpa of LNG. Full development of the Precinct may well occur over an extended period. As such, the Precinct represents a strategic proposal, rather than a project specific proposal as all future commercial proponents for the Precinct are not yet known.

The Browse LNG Precinct Strategic Assessment Report considers the Precinct operating at its full capacity irrespective of assumptions about specific technologies or plant designs which could be expected to change over time or according to the particular requirements of individual project proponents.

The commitments and conditions imposed as part of the approval for development within the Precinct are likely to inform the detailed design of projects seeking to operate within the Precinct. The Derived Proposals process would then ensure that all such future activities adhere to the conditions established for development within the Precinct. Any potential future proponents will be required to consult with the public before submitting Derived Proposals to the Environmental Protection Authority for evaluation.

Any significant proposal or activity outside the scope of the Strategic Assessment Report would be required to submit for assessment by the Environmental Protection Authority, and any other relevant State or Commonwealth Government authority responsible for assessment processes under those circumstances.

The State has also made the specific commitment that mineral exports will not occur from the Browse LNG Precinct. Accordingly this is not part of the scope of the Strategic Assessment Report.

Generic Question ID: 228 Sub ID [64] Raised by [S64 Q653]

DEC Recommendation 21: That proposed management and mitigation measures included in the proposal that imply obligations on the part of DEC be discussed and formally agreed with DEC prior to completion of this assessment.

Discussion: A number of mitigation measures and commitments proposed in the SAR imply DEC involvement or responsibility. These include:

• (**Part 4**, **p. 2-66**), " ... fire and weed management in and around Coulomb Point Nature Reserve and any other nature reserves established in the vicinity of the Precinct in collaboration with the DEC';

• (**Part 4**, **p. 2-66**), "DEC to monitor visitor numbers to Coulomb Point Reserve camping area;"

• (**Part 4**, **p. 2-66**), "DEC to develop a management plan for the Coulomb Point Reserve".

These proposed actions, which seek to commit DEC to undertaking activities associated with the Precinct, need to be developed in consultation with DEC. The Coulomb Point Nature Reserve has no facilities for visitors (including camping grounds) and the proposal for DEC to monitor visitor numbers to the Coulomb Point Nature Reserve camping area will require resourcing and planning consideration by DEC.

The State Government recognises the need for formal consultation with stakeholders to ensure the best overall environmental outcomes are achieved, while recognising the physical constraints that may exist. At this stage there has been limited consultation with the Department of Environment and Conservation (**DEC**) in relation to the Coulomb Point Reserve and other management considerations relevant to DEC. The State is committed to further engaging with DEC on a range of actions in the near future.

Generic Question ID: 351 Sub ID [37] Raised by [S37 Q892]

Companies don't care about Australia. They just want to mine and sell the country.

The Department of State Development welcomes all comments relating to the Browse LNG Precinct draft Strategic Assessment Report. Although these comments are not relevant to the scope of the strategic assessment process they are noted and published accordingly.

Generic Question ID: 776 Sub ID [75] Raised by [S75 Q829]

The report states that several processing hubs may be created unless this proposal is approved. As each proposal would be subject to an environmental approval process, this is hardly a realistic outcome.

The concept of a Government-led LNG Precinct was first proposed in 2007 on the basis that several companies had commenced separate investigations of a variety of sites along the Kimberley coastline. Without Government taking the initiative, it is likely that at least two separate locations would now be at a similar stage of assessment at this time, at less environmentally appropriate sites closer to the iconic Kimberley wilderness areas, and without the coordination and management of impacts which is being delivered through the current approach.

Generic Question ID: 855 Sub ID [209] Raised by [S209 Q1858]

Part 1 Section 4.4: It is misleading of the SAR to rely on the legal and commercial imperatives of the Joint Venture Participants as a reason for developing the Precinct. These legal imperatives were deliberately imposed on the Joint Venture Participants by the state government as part of the lease renewals. These legal imperatives can readily be removed. The commercial imperatives of the Joint Venture Participants are not the concern of West Australians or the West Australian Government.

It is a State policy position to facilitate the Browse LNG Precinct as a planning mechanism to minimise the potential environmental footprint of development, and to deliver benefits to Western Australia and the Kimberley region in particular. This policy is based on economic requirements of the State rather than the commercial imperatives of any particular proponent; however the State is concerned to ensure that the Precinct is competitive with other options available to potential LNG project proponents.

The legal imperatives referred to in the "No Development Option' in the SAR concern the obligation of the Browse Joint Venture (**JV**) Participants under the Browse Basin Retention Lease arrangement imposed by the Commonwealth Government. The JV Participants are required to undertake preliminary assessments and studies in order to make a Final Investment Decision on the development of LNG processing facilities at the Browse LNG Precinct by mid-2012. The State is cognisant of this milestone; however it intends to plan for the Precinct irrespective of the decision of Joint Venture Participants.

Generic Question ID: 1392 Sub ID [150] Raised by [S150 Q3161]

There is uncertainty whether the project has already started or not. The question was asked at the information displays - yet nobody could give a clear answer.

The Browse LNG Precinct project will only proceed when all necessary approvals have been obtained. The Precinct is currently progressing through State and Commonwealth Government environment and heritage approvals processes. Potential foundation commercial proponents intend to make a Final Investment Decision in mid-2012.

Any activity on site is occurring to inform investigations for derived proposals and feasibility studies. The State expects that all necessary approvals will be obtained prior to construction.

2 Strategic Assessment and Approvals Process

Generic Question ID: 138 Sub ID [27, 57, 58, 62, 195, 211, 120] Raised by [S27 Q228, S58 Q506]

Can the WA government policy of industry self regulation provide long term protection for the public interest, human health and environmental protection?

As the project Proponent, can the WA government provide the regulatory oversight the proposal needs?

The whole assessment process appears to be just a formality that we are being dragged through at great tax payers' expense. Everyone knows what the outcome will be.

The SAR has been prepared in accordance with Terms of Reference established under the State and Commonwealth Governments' Strategic Assessment Agreement which provides the broad scope for the assessment of the Precinct Plan and associated future proposals, under both the *State Environmental Protection Act 1986* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

Far from self regulation, individual project proponents are required to seek approval for their derived proposals, and must seek operational licences under Part V of the Environmental Protection Act, meet a range of regulator imposed conditions and adhere to management plans which will be a commercial condition required to operate within the Precinct.

Furthermore, the creation of the Precinct is effectively a planning tool which delivers a specific land use to the preferred location in order to achieve balanced environmental, social and economic outcomes for the benefit of

the State. This is a normal and proper function of Government. There is no actual or perceived conflict for the State in demanding consistently high levels of environmental performance by commercial proponents operating within the Precinct.

Both State and Commonwealth processes have robust, transparent, and independent processes for consideration of proposals and the provision of advice to decision-makers. While the WA Government, represented by the Department of State Development, is the Proponent for the Precinct, the EPA is an independent authority, which provides robust and transparent advice to the Minister for the Environment as the appropriate decision-maker. The EPA is not subject to the direction of any Minister or Government. The project will only proceed if it receives environmental approval from both State and Commonwealth Environment Ministers.

Generic Question ID: 757 Sub ID [70, 211, 78, 152, 141, 132] Raised by [S70 Q578]

The SAR does not inspire confidence that enough research has been done. Both the baseline studies and modelling are totally inadequate and the condition of the area has not been scientifically established, with a better understanding of each aspect of the environment required.

The Proponent contends that comprehensive baseline environmental and social studies were undertaken to support the impact assessment of the proposal. Baseline information used was collected during the site selection process dating back to 2007 and this was supplemented by extensive site-specific field studies to enable the existing environmental, social and heritage values of the selected proposal area to be appropriately understood. All studies were conducted in accordance with the Scope of the Strategic Assessment (**DSD, 2010b; Appendix A-2**) as endorsed by the EPA and the then Commonwealth Department for the Environment, Water, Heritage and the Arts (**DEWHA**), now SEWPaC.

As noted in **Section 1.2** of the Response to Submissions Summary Report, the work undertaken as part of this Strategic Assessment has contributed significantly to the scientific understanding of the Kimberley environment. A summary of the studies is provided in **Part 3** (Marine), **Part 4** (Terrestrial) and **Part 5** (Social and Economic) of the SAR.

Generic Question ID: 310 Sub ID [25, 55, 44, 137, 124] Raised by [S25 Q205]

The assessments carried out by the State are insufficient: they are lacking in relevant data; they are lacking relevant sources; they present misleading and faulty information; and lack a neutral third party assessment on credibility.

The Strategic Assessment process for the Browse LNG Precinct was conducted to provide a high-level and holistic impact assessment of the impacts and potential management strategies for the Precinct. The SAR strives to present the most realistic expectations regarding the characteristics of the development concept even though there is a level of uncertainty regarding the ultimate design, operation, scale and timing of specific developments at the Precinct.

The Western Australian Government entered into an agreement with the Commonwealth Government to undertake a Strategic Assessment of the Precinct to meet the requirements of the State *Environmental Protection Act 1986* (**EP Act**) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). The Strategic Assessment Report (**SAR**) is a detailed and comprehensive assessment which considers the environmental, social, economic, heritage and strategic implications of the Precinct at its proposed production capacity. Please refer to the SAR **Part 2**, **p. 2-1** for more information about the strategic assessment and approvals process.

In terms of those responsible for assessing the SAR, it should be noted that the State's Environmental Protection Authority is strongly independent, is not subject to direction by the Minister, and its advice to Government is made public. EPA members are not public servants. The Commonwealth Department of Sustainability, Environment, Water, Population and Communities is also independent of the State, which is the designated Precinct Proponent.

Further, and more detailed, relevant information will be made available as part of the derived proposal as and when a Precinct proponent undertakes the specific project design work required to inform a project of this nature. For further information with respect to the derived proposal process see **Section 2.2** of this document.

Generic Question ID: 205 Sub ID [40, 43, 44, 91] Raised by [S40 Q384]

The management of safety due to disasters like tsunamis and cyclones needs to be reviewed in light of recent global events.

Cyclones are a frequent occurrence along the north west coast of Western Australia. The oil and gas industry has significant expertise in the design requirements for building in cyclone prone areas. The Building Code of

Australia includes requirements for cyclonic design for onshore structures and this is given legal effect by its adoption in the WA *Building Regulations 1989*.

The orientation of the broad continental shelf offshore from James Price Point minimises tsunami risks. The majority of energy contained in a tsunami would be dissipated offshore to reduce the height of any incoming wave. The Precinct site is typically greater than 10 metres above mean sea level in contrast with the majority of the areas damaged by tsunamis which are generally low lying areas (e.g. river deltas).

Generic Question ID: 473 Sub ID [222, 120, 87, 119] Raised by [S120 Q1196]

ENGO Submission: Given the pristine nature of the Kimberley marine and coastal environment and the lack of existing scientific knowledge necessary to make informed decisions on development, the SAR environmental studies do not provide the regional perspective and scientific rigor required to make informed decisions. Too many studies lack the fieldwork and time necessary to provide rigorous scientific information that considers even the basic ecological processes such as spatial and temporal variability.

The Proponent acknowledges the values of the Kimberley marine and coastal environment and this recognition is reflected in the State Government's formation of Kimberley Wilderness Parks covering more than 3.5 million hectares including four new marine parks, a new national park and a number of additional conservation reserves. These focus on providing protection for the Commonwealth recognised North Kimberley Biodiversity Hotspot (**Part 4**, **Figure 10.1**) which is more than 200km northeast of the Precinct.

Both the Site Evaluation Panel and the Independent Assessment Panel determined that James Price Point did not have significant disadvantages in regard to the environmental criteria. Given this assessment of James Price Point and the extensive scientific surveys and investigations conducted to support the strategic assessment and detailed in the appendices of the Strategic Assessment Report, the Proponent contends that there is sufficient scientific rigour and field work required to make informed decisions.

Generic Question ID: 714 Sub ID [70, 75, 203, 114] Raised by [S70 Q582]

The SAR is biased - paid for by Woodside and only short-term studies undertaken. It does not inspire confidence.

The Proponent has maintained a policy principle that users of the Precinct should pay wherever appropriate to limit the impact to taxpayers. Woodside as a potential commercial proponent of the Precinct signed a Preliminary Development Agreement in which it agreed to meet certain costs associated with its participation in the Precinct.

The development of the draft Strategic Assessment Report was undertaken by the Department of State Development and its appointed consultant AECOM without undue influence from Woodside, and it is confident that the data presented throughout the SAR is correct, comprehensive and well balanced.

Generic Question ID: 7 Sub ID [1, 133, 153] Raised by [S1 Q8]

Before making a decision the WA State Government should consider Social Impact Assessment reports, other independently commissioned environmental impact reports, and financial analyses written about this proposed development.

In delivering the Browse LNG Precinct, the Western Australian Government is committed to balancing the needs of industry, the local community, and the environment for the benefit of all Western Australians. Extensive studies over a long period have identified the proposed location for the Precinct as one at which potential impacts will best be able to be managed.

In recognising the potential for social impacts as well as the significant positive potential the project holds for the social and economic wellbeing of the Kimberley community, the State conducted or commissioned a number of studies such as the Social Impact Assessment (**SIA**), the Aboriginal Social Impact Assessment (**ASIA**) and the Strategic Assessment Report (**SAR**) (including site selection, environmental assessment and social assessment). These studies were conducted to ensure that all aspects and potential impacts of the Precinct are taken into consideration.

The Department of State Development (**DSD**) led an integrated strategic-level SIA process. This process was reported on in three volumes:

- Volume 1: Scope and Profile;
- Volume 2: Assessment of Impacts and Specialist Studies; and
- Volume 3: Strategic Social Impact Management Plan.

The three volumes are included in **Appendix D** of the SAR, and are available online from http://www.dsd.wa.gov.au/8249.aspx
The SIA process also included four separate specialist studies, including a Tourism Impact Assessment (**TIA**), a Fishing Industry Impact Study (**FIS**), an Infrastructure Assessment, and an ASIA.

Part 5, Section 2 and **Section 4** of the SAR provide a summary of all the reports with the exception of the Indigenous Impacts Reports which are condensed and discussed in **Part 5 Section 3**.

The State has also been working closely with key stakeholders and other government departments, and undertaken extensive community consultation to meet project requirements.

In addition to the comprehensive analysis of social impacts, the SAR also considers both marine and terrestrial environmental impacts associated with the Precinct. The following list outlines several of the extensive environmental surveys conducted as part of the strategic assessment process, which are included in **Appendix C** of the SAR.

- Browse LNG Development Migratory Bird Study, James Price Point **Appendix C-1**
- Woodside Browse Turtle Technical Report **Appendix C-2**
- James Price Point Intertidal Survey **Appendix C-3**
- Benthic habitat surveys **Appendix C-4**
- Nearshore Benthic habitat modelling and mapping **Appendix C-5**
- Humpback Whale Survey Report **Appendix C-8**
- Nearshore Regional Survey Dugong Report **Appendix C-9**
- Marine Megafauna Report Browse **Appendix C-10**
- Downstream Browse Underwater Noise Assessment **Appendix C-12**
- James Price Point Terrestrial Fauna Survey **Appendices C-17** to **C-20**
- Assessment of Hydrogeology for LNG Precinct at James Price Point, West Kimberley, WA **Appendix C-22**
- Browse LNG Development - Air Quality Assessment **Appendix C-25**

The proposal to develop the Browse LNG Precinct will be assessed by the State and Commonwealth Governments on the merits of all the information presented in the Strategic Assessment Report and its appendices.

Generic Question ID: 523 Sub ID [42, 170, 169] Raised by [S170 Q1405]

WWF & ACF Submission: From the outset, it is clear this SAR does not follow a conventional approach to environmental assessment. World's best practice methods for environmental assessment provide a context for all associated studies that form the overall SAR. These methods are a step-by-step process that begins by establishing robust objectives which are then informed by subsequent studies. This ultimately leads to conclusions that can be tracked back through an evidence-chain and illustrates a picture of project residual risk. Unfortunately, the SAR has not used this approach. Instead, individual reports inconsistently cross-refer, which leads not only to confusion but also raises significant questions about the rigour of the overall assessment - particularly with regard to all foreseeable risks of the proposal.

The Proponent contends that standard EIA procedures have been followed in the preparation of the SAR including: scoping; baseline studies; description and evaluation of baseline conditions; impact prediction, mitigation and monitoring proposals and prescriptions; and presentation of findings and proposals in the EIS. In addition, the Proponent acknowledges that there is considerable cross-referencing within the SAR, which reflects the complexity and thoroughness of the assessment process. This cross-referencing could not be avoided and should not bring into question the rigour of the overall assessment.

Generic Question ID: 569 Sub ID [120, 123, 223] Raised by [S120 Q1206]

ENGO Submission: A strategic assessment examining LNG processing options and impacts in relation to the Browse gas field off the Kimberley coast would have to satisfy certain fundamental requirements in order to be considered a strategic assessment. Those fundamental requirements are:

1. Thorough presentation and examination of the regional, national and global significance of the environment proposed to be impacted.
2. Thorough presentation and examination of the regional, national and global implications arising from the proposed development, modification and 'routine' pollution of that environment.
3. Thorough presentation and examination of a range of feasible options for the proposed development, with added weight given to the costs and implications of 'greenfield' development in a globally significant; remote and pristine marine and coastal environment relative to already impacted 'brownfield'

locations.

4. Thorough presentation and examination of the cumulative; long term and irreversible impacts and consequences of development on the values of a globally significant and pristine ecological region, weighed against similar consequences in other' brownfield' locations.

The SAR presented for public comment does not address these fundamental strategic considerations and is a rushed exercise in justifying the development of a pre-determined site chosen via a politicised process. The SAR fails to address the national and global significance of the Kimberley coastal and marine environment and it minimises environmental values, impacts and risks, providing unsubstantiated reassurances that any impacts and risks are 'manageable'. No credible attempt is made to explain the significance of the coastal and marine environment and weigh the costs and benefits of development there against other options.

A rigorous and consultative site selection process was undertaken which is detailed in **Part 2**, **Section 4** of the SAR.

Section 40B of the *Environmental Protection Act* provides the basis for the EPA to assess a strategic proposal, and the Administration Procedures 2010 indicate that, as strategic proposals are normally assessed by the EPA at the level of Public Environmental Review, the Proponent should undertake an environmental review in accordance with an approved Environmental Scoping Document. In the case of the BLNG Precinct, a Scope of the Strategic Assessment document and Terms of Reference document established under the State and Commonwealth Governments' Strategic Assessment Agreement, provided scope for the assessment of the Precinct Plan. The assessment has been conducted in accordance with these two documents, and the Proponent is of the belief that the SAR conforms with the requirements of the various Acts.

Generic Question ID: 20 Sub ID [2, 195] Raised by [S2 Q21]

The environmental offsets currently proposed by the WA State Government, which include the establishment of the Camden Sound Marine Park, will not compensate for the threat and potential impacts of the Precinct, the industrialisation of the Dampier Peninsula and the development of the oil and gas industry in state and federal waters adjacent to the Dampier Peninsula.

The Camden Sound Marine Park was released by Premier Colin Barnett and Environment Minister Donna Faragher on 22 October 2010. The Camden Sound Marine Park is not a part of the Browse LNG Precinct but the first of four new marine parks which form a key component of the State Government's major conservation strategy for the Kimberley region. Nonetheless, the Camden Sound Marine Park will help support the continuing recovery of the world's humpback whale population, as well as protecting a wide diversity of marine habitats and wildlife in the Kimberley.

The Browse LNG Precinct will be the only area dedicated for LNG production and export, and additional LNG processing within the region will therefore be limited. It will cover 2,500ha equal to 0.25% of the Dampier Peninsula, or just 0.006% of the Kimberley land mass. Less than two kilometres of the coastline and 1000ha of ocean will be closed to public access to allow safe operation of export shipping.

The State Government has given careful consideration to selecting the proposed location for the Browse LNG Precinct. Studies reveal that Precinct is highly unlikely to affect the conservation status of affected flora and fauna on a regional scale. Nevertheless, the Strategic Assessment Report proposes a range of mitigation and management measures to further limit and manage any potential impacts.

Management plans would be implemented to minimise disturbance to the surrounding habitats of threatened species and it is also planned to establish terrestrial and marine conservation reserves in the surrounding areas. Measures may also include avoiding clearing in sensitive areas and undertaking pre-clearing searches for conservation of significant species. Project proponents will also need to obtain separate approval of their derived proposals before projects can proceed.

The LNG Precinct will only proceed once it is demonstrated that environmental impacts can be managed in accordance with stringent standards.

Generic Question ID: 580 Sub ID [120, 211] Raised by [S120 Q1228]

ENGO Submission: It is clearly the wish and expectation of the Proponent of the James Price Point Plan, the WA Minister for State Development (Premier) Colin Barnett, that once the strategic assessment has been completed and assuming the Plan is approved, no further substantive public environmental assessments will be required for any actual development at the site.

Approval of the Browse LNG Precinct proposal does not provide approval to implement any specific future proposals identified in the strategic proposal under the *Environmental Protection Act*. Commercial proponents wishing to construct an LNG plant in the Precinct would need to refer a specific proposal to the EPA for

environmental evaluation.

The EPA may declare that the referred proposal is a "derived proposal" provided that:

- it was identified in the strategic proposal and it was decided that it could be implemented;
- environmental issues were adequately assessed in the Strategic Assessment;
- there is no significant new or additional information justifying reassessment; and
- there has been no significant change in relevant environmental factors since the strategic proposal was assessed.

The commercial proponent must provide management plans and any further requested information to the EPA to demonstrate that the proposal can achieve the environmental outcomes that have been determined as a result of this Strategic Assessment.
Compliance and performance reporting conditions will be imposed on proponents of derived proposals in any statement issued by the Minister for Environment allowing implementation of the proposal.

Further to initial assessments, the State Government will monitor implementation of proposals by individual proponents, progress on the implementation of State measures and monitor the cumulative impacts of Browse LNG Precinct activities based on monitoring programs of individual proponents. This information will be collated in an Annual BLNG Precinct Environmental Report, submitted to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities and made publicly available.

See **Section 2.2** of this Response to Submissions Summary Report for a more complete description of the process for derived proposals.

Generic Question ID: 767 Sub ID [75, 106] Raised by [S75 Q813]

At the outset of the SAR process it was envisaged that the process would be conducted in parallel with three other important government planning processes affecting the Kimberley region: the National Heritage listing process (Commonwealth); the North West Marine Bioregional planning process (Commonwealth); and the Kimberley Science and Conservation strategy (WA government). If, as is it claimed, the WA is an adherent of best practice approaches, each of these processes, together with the Browse LNG strategic assessment, should have been integrated to ensure that a range of serious long term issues, needs and opportunities confronting the region were systematically addressed and optimal solutions found.

The State Government considered the National Heritage Listing and the North-west Marine Bioregional Plan as well as the Kimberley Science and Conservation Strategy during the Strategic Assessment Report process. The State and Commonwealth Ministers will have access to the above-mentioned documents when they decide whether the Precinct will proceed, and if so then under what conditions.

Generic Question ID: 1142 Sub ID [212, 225] Raised by [S225 Q2797]

CCI Submission: CCI is concerned that the existing assessment framework - which requires considerable expert evaluation and assessment work by project proponents and the State Government to understand, minimise and manage the impacts of development - risks being overwhelmed by vocal and populist arguments against development. This jeopardises Western Australia's reputation as a desirable location for major investment.

The State Government acknowledges that some in the community oppose development of the Browse LNG Precinct, and the State respects the right of those people to voice their opposition. However the Proponent believes that the weight of scientific evidence which has been gathered supports both the proposed location of the Precinct, and also the environmental and social benefits of developing a Precinct in preference to uncoordinated development. It will be the role of the State's Environmental Protection Authority and the Commonwealth's Department of Sustainability, Environment, Water, Population, and Communities to carry out their independent assessments and to provide considered recommendations to the respective ministers with which they can make a decision. Neither the Proponent, nor those opposing development, should be in a position to apply pressure with respect to those decisions.

The State also submits that the large majority of the population supports development of balanced initiatives which are mindful of social and environmental outcomes while aiming to achieve social and economic objectives, particularly when those objectives are focused on some of the most disadvantaged communities in the country. This is brought into even greater focus when the community most directly affected, the Traditional Owners upon whose land the Precinct is to be developed, have voted by a clear majority to support the proposal.

Generic Question ID: 206 Sub ID [40] Raised by [S40 Q386]

The submission expresses concern about the process this proposed project has followed, with unnecessary haste, inadequate data gathering and both State and Federal Governments getting involved long before they should or would in other projects.

Rather than developing this proposal with unnecessary haste, it should be noted that the Browse Basin gas fields were discovered in the 1970s and since that time numerous studies and data gathering has been undertaken which has contributed to the draft SAR. Additional, more focused, studies have subsequently been undertaken through an extensive State managed site selection process commencing in mid-2007 which is outlined in **Part 2**, **Section 4**.

The early involvement of both State and Federal Governments was necessary to ensure that *ad hoc* developments at a variety of locations along the Kimberley coastline did not occur, and to ensure that there was agreement on the scope of the assessment which included aspects not normally considered in this type of assessment (such as the Aboriginal Social Impact Assessment).

Generic Question ID: 451 Sub ID [44] Raised by [S44 Q945]

Submitter recommends that development should not occur until the environmental assessment is completed.

The Strategic Assessment Agreement, entered into in 2008 by the State and Commonwealth Ministers for the Environment, provides for the assessment of impacts of the Browse LNG Precinct from the Western Australian Environmental Protection Agency and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

The Browse LNG Precinct Strategic Assessment Report (**SAR**) considers the broad social and environmental impacts of the Precinct, as well as the means to manage those impacts to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Development of the Browse LNG Precinct will only proceed if it receives environmental approval from both State and Commonwealth Environment Ministers.

Activities being undertaken at the Precinct location at the time of writing are confined to the undertaking of further site investigations to inform ongoing approvals processes. These activities are approved under a range of mechanisms.

Generic Question ID: 486 Sub ID [172] Raised by [S172 Q1401]

Department of Planning Submission: Approval Process and Current Planning in the Shire of Broome (with respect to Land Use Buffers) -

The SAR is unclear on the planning approval process. This process is instrumental in providing a legislative framework for land use and development. It is understood that the Department of State Development is considering three options: a State Agreement where various 'Heads of Power' legislation, including Planning, are effectively signed over to the Minister for State Development; an Improvement Plan under the Planning and Development Act (2005) which transfers the approval responsibility from the Shire of Broome to the Western Australian Planning Commission; and the zoning of the land as 'Strategic Industrial Area' under the Shire of Broome's Town Planning Scheme, thereby requiring approvals for the use and development of the land to be issued by the Shire.

The Shire of Broome's Local Planning Scheme provides the statutory mechanism for implementing strategies identified within the LPS. The Scheme provides the mechanism for zoning the subject land and sets out the approval process for the use and development of land. The Scheme would also facilitate the zoning of a land use 'buffer' area surrounding the Strategic Industrial Area and establish which, if any, land uses could be considered within this 'buffer'.

The SAR references the need to establish a land use 'buffer' to ensure appropriate separation distances between industrial and other land uses (and consequently minimise off-site impacts). The report states that this will be achieved through rezoning of the land under the Shire's Town Planning Scheme. However, if the intent is to use a State Agreement or Improvement Plan, land use within the 'buffer' will not be enforced through the Town Planning Scheme and further consideration will need to be given to achieving and regulating separation distances.

While the planning instrument that will be used to provide a legislative framework for the development of the Browse LNG Precinct is yet to be finalised, it is understood that the Shire of Broome presently has statutory responsibility for planning and development approvals throughout the Dampier Peninsula region. Town Planning Scheme No. 4 provides the statutory planning framework to guide the development of Broome;

however the Scheme only extends as far as Willie Creek to the north. Interim Development Order No. 4 presently applies to land between the Scheme boundary, extending out to the boundaries of the Municipality, including the area around James Price Point.

It is expected that, over time, an appropriate planning mechanism will be applied to the Precinct, in line with the State's strategic priorities, and that this would be reflected in the Dampier Peninsula Planning Strategy currently being progressed by the Department of Planning.

To ensure the appropriate separation between the core industrial area of the Precinct and other potentially incompatible land uses, it is envisaged that buffers would ultimately be established such that development will not be allowed to occur in an area up to 3km from the core industrial area of the Precinct (industrial buffer), and that development will be limited to compatible land uses in the area up to 5km from the core industrial area (sensitive land use buffer). It is noted that the land throughout the area is currently unallocated crown land. In the immediate term the State is able to exercise a level of control by limiting development in those areas where it intends buffers to apply.

Current expectations are that a State Agreement will be required with the Foundation Proponent in order to make transparent the relationship between the State and the proponent, and to articulate the State's policy requirements as a condition of tenancy within the Precinct. The State is currently investigating the appropriate statutory mechanism for the planning of the Precinct more generally in recognition of the limited resources available to the Shire to undertake development approvals for a project of this magnitude.

Generic Question ID: 592 Sub ID [57] Raised by [S57 Q494]

The Government's own website displays its predetermined decision. "The State Government is developing a Liquefied Natural Gas (LNG) Precinct in the Kimberley to enable processing of natural gas from the offshore Browse Basin. http://www.dsd.wa.gov.au/7909.aspx"

The Western Australian Government has undertaken an extensive process over four years to determine the most appropriate location for LNG development on the balance of environmental, heritage, technical and economic considerations. This included advice from the EPA in December 2008 that the impacts of a Precinct in the vicinity of James Price Point were likely to be manageable. This was the precursor to the announcement in December 2008 of James Price Point as the State's preferred option.

A critical aspect of any project development is the undertaking of the relevant approvals processes. The Browse LNG Precinct Strategic Assessment does not assume a particular outcome but expresses the Government's current development activity and objective to deliver an outcome. Development activities will not commence until all appropriate approvals are in place.

Generic Question ID: 713 Sub ID [203] Raised by [S203 Q1680]

The submitter encourages the Government of Western Australia to conduct a public or independent based report on the issue.

In undertaking a consultative process, including the recent public comment period for the Strategic Assessment Report, the identification of a suitable site for LNG processing has been a public process. **Section 3** of this Response to Public Submissions discusses the consultation process undertaken throughout considerations of the Browse LNG Precinct.

It is also noted that the Environmental Protection Authority and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities undertake their respective assessments independently of the Proponent.

Generic Question ID: 774 Sub ID [75] Raised by [S75 Q826]

The Executive Summary report (**Part 1 Section 3.4**) advises that the Dept of State Development (DSD) will be responsible for overseeing and coordinating the management arrangements and safeguards described in the Strategic Assessment Report. This is also of concern. DSD staff are required to have a vested interest in supporting the government's resource development agenda; they have little experience in ensuring environmental compliance. They have also not shown any capacity to listen to community concerns about environmental (or any other) impacts of the project.

The role of the Department of State Development (**DSD**) is to ensure that economic development occurs for the overall benefit of the State. As the representative of the Precinct Proponent, DSD has a key role in coordinating management plans and strategies described in the Strategic Assessment Report. This coordination function is a separate and discrete role to enforcement of environmental regulation, which is a role of the Department of Environment and Conservation.

With respect to concerns about environmental impacts, the Department has heard a range of concerns that have been raised within the community, and one of the purposes of the Strategic Assessment process is to address those concerns. However, the Department has formed a view that the key environmental issues can be managed, and has presented how it proposes those management arrangements would occur in the Strategic Assessment Report. The final decision in this regard rests with the regulatory authorities, based on the presentation of the facts, scientific analysis, and the public review process to identify any issues which have not been addressed.

Generic Question ID: 818 Sub ID [169] Raised by [S169 Q1700]

Environs Kimberley Submission: It is alarming that the State Government is the Proponent, author of the SAR and also the Development Assessor/Approver. There may be a Conflict of Interest (reminiscent of the days when State Government Agency CALM was both the Developer and Protector of WA forests). The SAR process may therefore be open to contestability. It is unclear why the Federal Government (rather than State Government appointed EPA) was not delegated responsibility to assess responses to the Draft SAR/Precinct Proposal in this case. It is of great concern that the SAR also proposes to streamline any future assessment and approvals processes, bypassing the need for these to be evaluated and approved at a Federal level (and despite the fact that information on impact of matters of NES and offshore developments have not been included in the SAR).

The Strategic Assessment Agreement was established under Section 146(1) of the Commonwealth *Environment Protection and Biodiversity Conservation* (**EPBC**) *Act 1999*. It provides for the assessment of impacts of actions under the Precinct Plan for a common-user LNG precinct on all matters protected by Part 3 of the EPBC Act and is intended to meet the provisions of Section 38 of the State *Environmental Protection Act 1986*. The strategic assessment process, under the EPBC Act, allows the Minister to endorse a Precinct Plan following a strategic assessment and also to approve future "classes of actions" that are undertaken in accordance with the Precinct Plan.

It is quite appropriate that the State Government act as the Proponent for what is an industrial land planning process. Both the Environmental Protection Authority (**EPA**) and the Commonwealth Department of Sustainability, Environment, Water, Population and Community (**SEWPaC**) carry out their own independent assessments. The EPA is independent, in that it is not subject to direction by the Minister, and its advice to Government is public and transparent.

The Strategic Assessment process offers the benefit of allowing regulators, stakeholders and the community to assess up front the total cumulative impact of the Browse Precinct. The process will allow the EPA, the State Government, the Commonwealth Government, stakeholders and the general public to review the proposed Precinct, the predicted environmental, social and economic effects and the proposed management framework in a single process. This process has been agreed to by the relevant stakeholders as the most transparent and comprehensive way to assess a proposal of this nature and significance.

Approval of the Browse LNG Precinct proposal does not provide approval to implement any specific future proposals. Commercial proponents wishing to construct an LNG plant in the Precinct would need to refer a specific proposal to the EPA for environmental assessment. The derived proposal process is described further in the Response to Submissions Summary Report **Section 2.2**.

Generic Question ID: 819 Sub ID [169] Raised by [S169 Q1701]

Environs Kimberley Submission: We disagree with the streamlined assessment approach to future derived proposals. State and Federal assessments of each individual project are still necessary to address localised and cumulative risks and impacts. The SAR should have addressed the collective risks and impacts of these specific associated developments, and others in the Region and wider Coastline of WA, both within and across State and Commonwealth boundaries. The SAR and any individual developments should be properly assessed by both levels of Government via Environmental Impact Assessments to ensure consistency in the application of "best practice" Environmental Conditions and, in line with the legislative aims of a Strategic Assessment, address issues facing this Region.

The Strategic Assessment provides for the assessment of impacts under the Browse Precinct Plan to meet the rigorous requirements of the State *Environmental Protection Act 1986* and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*. Approval of the Browse LNG Precinct proposal does not provide approval to implement any specific future proposals. Commercial proponents wishing to construct an LNG plant in the Precinct would need to refer specific proposals to the EPA for environmental assessment. The derived proposal process is described further in the Response to Submissions Summary Report, **Section 2.2**.

This process avoids the duplication that would arise from assessing the same baseline data on multiple occasions; nevertheless the final recommendation and timing with respect to derived proposals is at the

discretion of the independent EPA. It is expected that derived proposals will be required to demonstrate appropriate public consultation, and the EPA may always require further information should proposals lack sufficient detail. Accordingly the process will be as rigorous as any other comparable environmental assessment process.

Generic Question ID: 858 Sub ID [169] Raised by [S169 Q1711]

Environs Kimberley: The James Price Point Precinct is being subject to a Strategic Assessment, however, it is intended that individual and offshore projects not undergo the State and Federal Government Assessment and Approvals Processes (and hence, not be required to consider cumulative impacts). Of concern is the lack of, or limited, baseline biophysical data for the footprint of the Browse Basin Developments (onshore and offshore) in the context of the local, regional and state onshore and offshore environment and these may not be considered in the absence of details of studies and results and a requirement for future EIS/ERMP level of assessments.

Commercial proponents will be required to complete environmental impact assessments to demonstrate to the EPA that the impacts of their proposals fit within the accepted scope of Browse LNG Precinct, as defined by the Strategic Assessment. Proposals that meet that requirement in accordance with Section 38 of the *Environmental Protection Act* will be deemed by the EPA to be a 'derived proposal'.

In order to be declared a 'derived proposal', proponents must demonstrate that:

- The proposal is consistent with the BLNG Precinct strategic assessment.
- No new environmental factors are raised by the project.
- There is no change in the relevant environmental factors or information available that would affect the outcome of the assessment.

Therefore, a deviation in the biophysical footprint of a proposal from that assessed in the BLNG Precinct Strategic Assessment, would trigger a formal assessment.
The scope of the BLNG Precinct Strategic Assessment includes on-shore and near-shore facilities. Upstream facilities are excluded from this strategic assessment, and therefore would be subject to assessment in accordance with the provisions of the *Environmental Protection Ac*t and the *Environment Protection and Biodiversity Conservation Act.*

Generic Question ID: 891 Sub ID [169] Raised by [S169 Q1750]

Environs Kimberley: The level of information presented in a SAR should exceed that contained in an EIS for an individual development (particularly in light of the fact that it appears the SAR is intended to fast track assessment and approvals processes for proposed or future individual developments, onshore and offshore), however, this has not occurred. A comprehensive review and cross reference should be undertaken by the EPA against existing EIS for developments in high value ecological areas (e.g. Exmouth Sub Basin, Ashburton North etc). This will demonstrate the inadequacies and highlight the insufficiency of the SAR in presenting information on key issues such as cumulative impacts (and the scope of the cumulative impact studies).

The Proponent considers that there is enough information provided to quantify impacts for decision-making purposes at the strategic level for which the current assessment is aimed.

Comprehensive terrestrial and marine studies were undertaken to inform the impact assessment process and support decision-making:

- Wet and Dry Season Flora and Fauna Surveys:
    - ENV 2008a (**Appendix C-14**), ENV 2008b (**Appendix C-15**) and ENV 2008c (**Appendix C-16**);
    - Biota 2009b (**Appendix C-17**) and Biota 2009c (**Appendix C-18**); and
    - AECOM 2010a (**Appendix C-19**) and AECOM 2010b (**Appendix C-20**).
- Ethnobiological Information (Kimberley Land Council (**KLC**), Margetts and Grabasch, 2010a; **Appendix E-6**);
- Stygofauna and Groundwater Dependant Ecosystems (GDE) (Biota, 2009b);
- Remote Sensing (Terrestrial) (CSIRO, 2010; **Appendix C-21**);
- Ambient Meteorological and Air Quality Monitoring (Woodside, ongoing);
- Migratory Bird Study, James Price Point (Galaxia, 2010; **Appendix C-1**);
- Hydrogeological Review (Rockwater, 2009; **Appendix C-22**); and
- Hydrological Review (BG&E, 2010a; **Appendix C-23** and BG&E, 2010b; **Appendix C-24**).

These are described in more detail in **Parts 3 and 4** of the Strategic Assessment Report.
In an effort to overcome difficulties associated with the uncertain nature of strategic proposals, consistent definitions regarding the significance of potential impacts were adopted, and a greater level of precautionary assessment or management was applied (refer to **Part 2**, **Figure 8-1**).

Based on the conclusions of the impact assessment, appropriate environmental management and impact mitigation measures have been developed to ensure that the identified environmental, social and heritage objectives can be achieved. In response to the strategic nature of the assessment, where detailed baseline and project scope may not be available, a range of mechanisms have been proposed to provide certainty that the identified environmental, heritage and social objectives could be achieved.

These include:

- controls by other regulatory processes;
- application of outcome-based conditions;
- conduct of sensitivity analyses;
- assessment of reasonable worst case scenarios;
- conduct of impact assessments;
- application of 'best practice' management measures; and
- preparation of management plans for derived proposals.

For some factors, a range of approaches have been proposed to achieve the required level of certainty. For example, a range of air emissions scenarios have been assessed to determine whether a sensitive receptor would be unacceptably affected and an outcome-based condition has also been proposed that sets air quality limits at the boundaries of the BLNG Precinct.
Furthermore, the Browse LNG has drawn on existing EIS to ensure greater efficiency.

Certain management measures presented in **Part 3**, **4**, **5** and **6** of the Strategic Assessment Report make reference to the demonstration of the application of 'best practice'. For the purposes of the Strategic Assessment Report, the term 'best practice' is defined as the following:

'the application of the best available mitigation measures that are practicable in the particular circumstances of a proposal to avoid or minimise environmental impact'. The process of achieving best practice would include developing design and management measures against international benchmarks whilst having regard to local conditions and circumstances (including costs) and to the current state of technical knowledge'.

The philosophy of application of best practice, as outlined above, is the underlying approach for developing environmental management plans and design of proposals consistent with the management framework identified in the Strategic Assessment.

If the Precinct is approved, compliance and performance reporting conditions (e.g. air quality) will be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. Regulators will assess and review audits to check for compliance against conditions. Auditing will be undertaken by the Department of State Development and commercial proponents, in accordance with conditions of approval.

The Office of the EPA monitors compliance with the Ministerial Approval Statements issued under the *Environmental Protection Act 1986*. This is done in a coordinated and planned approach through audits. Where non-compliances are identified, appropriate enforcement action is taken to regain compliance. All non-compliances are reported to the Minister for Environment on a quarterly basis.

Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence. Section 48 of the Act details the powers that the Western Australian Minister for the Environment has in relation to non-compliance. The Minister may:

(a) after making reasonable endeavours to consult the proponent of the relevant proposal, cause to be served on that proponent an order made by the Minister and requiring that proponent forthwith to stop the implementation of that proposal for a period not exceeding 24 hours; and

(b) cause to be served on the proponent of the relevant proposal an order made by the Minister and requiring that proponent to take such steps as are specified in that order within such period as is so specified for the purpose of complying with the relevant condition or procedure or of preventing, controlling or abating any pollution or environmental harm caused by any non-compliance with that condition or procedure; and

(c) cause such steps as are necessary for the purpose of complying with the relevant condition or procedure to be taken; and

(d) cause such steps as are necessary for the purpose of preventing, controlling or abating any pollution

or environmental harm caused by any non-compliance with the relevant condition or procedure to be taken; and

(e) if he considers that the relevant condition or procedure should be changed, make a request under section 46(1) of the EP Act.

In the absence of formal social impact compliance mechanisms, DSD will have a significant role in liaising with other relevant government agencies to ensure that commitments, monitoring and reporting on social impacts (e.g. impact on local health services) and management is undertaken.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

The concerns of the West Kimberley community have been considered by the State Government throughout the Strategic Assessment process for the Browse LNG Precinct. Future community engagement will continue as part of the development process and is described in the Response to Submissions Summary Report **Section 3.2**.

Commitments are provided in the SAR and any modifications or additional commitments arising from public submissions, are tabulated in **Section 6** of the Response to Submissions Summary Report.

Generic Question ID: 893 Sub ID [217] Raised by [S217 Q1872]

Are the environmental and heritage approvals going to consider the long-term development (planned or unplanned) impacts and natural or human created disasters?

The purpose of the SAR is to take a strategic view of the impact of LNG developments at the proposed location. A key consideration in the Master Planning (**SAR Appendix B-8**) was to locate and design the Precinct appropriately to avoid a range of possible disaster scenarios. Accordingly, a site was identified which takes into account one in 100 year events, including storm surge and climate change impacts, and with appropriate internal and external buffers to limit any potential flow-on effects of such potentially serious impacts.

An objective of the Precinct is to focus development upon a single location to enable appropriate planning for long term development. The ultimate Precinct capacity of 50Mtpa represents the maximum potential development scenario. Using this as a basis the SAR then assess the potential impact from both planned and unplanned activities.

Considerations in the SAR also include a range of potential impacts such as fire management (**Part 2, Section 5.11**) and the potential for oil spills (**Part 7, Section 4**). DSD through the BLNG Precinct Control Group, with advice from relevant agencies including FESA, DEC, and the Department of Transport, will implement an overarching Emergency Response Plan that addresses:

- risk assessment of potential emergencies (including bushfires, introduction of foreign pests, flooding and spills);
- emergency response equipment and training;
- emergency response procedures;
- responsibilities during emergency response; and
- reporting, review and improvement as required.

LNG Project proponents will be required to implement a Hydrocarbon and Chemical Spill Contingency Plan for construction and operation activities to the satisfaction of the WA Minister for Environment.
Broome Port Authority will be responsible for the management of port operations within the Precinct. The role of Broome Port Authority includes management of shipping movements and emergency response in the case of oil spill events. This role is discussed further in **Part 7**, **Section 4.4.2** of the SAR, and in **Section 4.4.1** of the Response to Submissions Summary Report.

In the event of a breach by a commercial proponent of an environmental law which causes serious environmental harm, the commercial proponent must, where practicable to do so, make good that serious environmental harm to the standard prescribed by law. Where it is not practicable to make good, the commercial proponent must take other steps in consultation with the Native Title Party.

Generic Question ID: 1145 Sub ID [225] Raised by [S225 Q2800]

CCI Submission: It has been suggested that the BLNG Precinct, if approved, would be a catalyst for the approval of other heavy industry in the region, such as strip mining for bauxite. However, it should be made clear that the BLNG Precinct assessment only involves evaluating the merits and impacts surrounding the development of gas processing facilities and associated infrastructure at James Price Point. BLNG is unrelated

to the proposal to mine bauxite in the Kimberley, which is the subject of a separate plan by entirely separate proponents. There is little evidence to substantiate claims that approval of the BLNG project will necessarily 'open the door' for other mining projects in the region. Any other proposed mining or heavy industry developments would be individually subject to their own assessment process to examine their merits and impacts, unattached to the BLNG proposal.

The Browse LNG Precinct Strategic Assessment Report provides for the assessment of activities that will take place through the implementation of the Precinct Plan to establish a Browse LNG Precinct south of James Price Point. The Precinct Plan provides for LNG processing, LNG and condensate storage tanks, port facilities and supporting infrastructure. Furthermore, as part of the agreement reached with Traditional Owners, the State has committed explicitly that it would not permit:

- any activities beyond the gas processing activities described in the SAR at the Precinct; or
- LNG processing elsewhere along the Kimberley coastline.

As noted above, with these restrictions in place, it is highly unlikely that the Browse LNG Precinct would offer any particular incentive for further resource development elsewhere in the Kimberley.

Nevertheless, it is noted that mining has occurred in the Kimberley region for at least the past fifty years, and currently represents the region's largest revenue source, clearly demonstrating that the Kimberley's social and environmental values, and its attractiveness as a tourism destination, is not diminished by resource development.

Generic Question ID: 1149 Sub ID [211] Raised by [S211 Q2803]

Part 1 Section 4.4: The submitter queries the validity of the no development eventualities. Would the government bother undertaking compulsory acquisition for "multiple gas processing facilities along the Kimberley coast" when it is having so much trouble with just one? Why is the government so concerned to reduce the costs of industry at the expense of its people? Who is the Premier actually working for? This process seems reminiscent of WA Inc. Government should be separate from industry just as church and state are kept separate.

The State considers that the development of the Browse LNG Precinct provides the greatest overall benefit to both the Kimberley region and to the State as a whole, while limiting environmental impacts resulting from development.

It is noted that prior to 2007 a number of companies were each undertaking separate investigations at discrete locations along the Kimberley coast. It was on this basis that the State intervened to minimise the overall footprint of development and to avoid impacts in the truly iconic wilderness areas of the Kimberley.

Subsequently, agreement has recently been reached with Traditional Owners to provide access to the Precinct land. The Agreement with Traditional Owners explicitly limits LNG development elsewhere along the Kimberley coastline, and provides Traditional Owners with an ongoing role in the management of environmental and heritage aspects of the Precinct.

Generic Question ID: 1254 Sub ID [103] Raised by [S103 Q2924]

Woodside Submission: Substantive Commitments and Proposed Environmental Conditions-

Woodside supports the commitments and proposed environmental conditions currently specified in the SAR so far as they relate to a proponent within the Precinct. These will ensure that future development at the Browse LNG Precinct will be undertaken in accordance with measures to minimise environmental impacts and reduce risks to acceptable levels.

Woodside notes the significant State Government commitments and proposed environmental conditions to be implemented by State Government agencies, in order to minimise environmental impacts arising from the Browse LNG Precinct. The commitments and proposed conditions are considered comprehensive and are commensurate with the potential environmental risks associated with the proposal, given its location outside of areas of high conservation value.

Effective environmental management and impact mitigation measures will ensure that the identified environmental objectives can be achieved. An important goal is to minimise the environmental footprint of LNG production at the location. This is best achieved through coordinated activities and maximising the synergies between projects as far as possible. The State will rigorously apply management plans and conditions upon project proponents through its leasing and other commercial arrangements to ensure objectives are met.

For more information see **Part 1**, **Section 3.**

Generic Question ID: 1359 Sub ID [160] Raised by [S160 Q3219]

At present the Western Australian government and the mining companies involved are undertaking illegal acts of vegetation clearing, moving illegal accommodation dongas, drilling on land and in the seabed. No environmental planning has been approved nor has federal permission been given.

The activities conducted on site relate to the collection of environmental and heritage data and to facilitate engineering input information. This data is required to ensure a safe and environmentally acceptable development at the Browse LNG Precinct.

The Proponent and the potential Foundation Proponent (Woodside) has consulted with all relevant Western Australian and Commonwealth regulatory Departments and Agencies with respect to the site based works, and sought and obtained all necessary environmental and planning approvals prior to undertaking these activities.

2.1 Commonwealth Government EPBC Approvals Process

Generic Question ID: 19 Sub ID [2, 120] Raised by [S2 Q20]

Once the Strategic Assessment has been approved by the federal Minister for Environment under section 146 of the EPBC Act, there will be no opportunity to challenge the proposed development, and any future development or any further expansions under section 158A of the EPBC Act. E.g. the process allows proponents to have their projects assessed as a "derived proposal", which can be approved without any further environmental assessment.

There are comprehensive decision criteria which a proponent must satisfy to achieve "derived proposal" status for their project under the strategic assessment process. The criteria include:

- The proposal was identified in the strategic proposal that has been assessed by the EPA;
- A decision was made that the strategic proposal could be implemented;
- The environmental issues raised have been adequately addressed;
- There is no significant new or additional information that justifies reassessment of the issues raised by the proposal; and
- There has been no significant change in the relevant environmental factors since the strategic proposal was assessed.

If a referred proposal requesting derived status does not satisfy the above criteria, it will be the subject of a full assessment by the EPA.

Generic Question ID: 892 Sub ID [169] Raised by [S169 Q1754]

Environs Kimberley: Insufficient scientific research has been undertaken and no offshore (Commonwealth Waters) information has been presented to allow for due diligence and transparency in assessment by state and federal government (as required by legislation) to approve of proposed or future developments. Thus, an EIS level of assessment (at state and federal levels) should be a minimum requirement for any proposal associated with the proposed Precinct. As a specific example, the EIS for four of the offshore oil developments (and PER for the fifth) in the Exmouth Sub Basin include details on alternative development options including types of offshore infrastructure and the technical feasibility and risks versus rewards of each option. Actual financial costs and benefits in monetary terms have also presented along with other income generators for the region (e.g. tourism). This has not occurred in the SAR.

The Proponent and associated parties have conducted significant scientific research, surveys and investigations to support the strategic assessment. Information concerning offshore (Commonwealth Waters) has not been included as upstream developments are excluded from the scope of the SAR, and will be the subject of provisions of the State *Environmental Protection Act* and Commonwealth *Environment Protection and Biodiversity Conservation Act.* The SAR does not consider alternative development options, as this has already been considered as part of the detailed site selection process and is beyond the scope of the Strategic Assessment. The objective of a strategic assessment is to consider the cumulative impact footprint, rather than the footprint generated by individual facilities.

Generic Question ID: 903 Sub ID [169] Raised by [S169 Q1771]

Environs Kimberley Submission: The SAR states "Comments from government agencies and from the public will assist the EPA to prepare an assessment report in which it will make recommendations to government". This omits recommendations for offshore/commonwealth waters matters from the Federal Government or the kinds of conditions that can be placed on developments via Environment Plans, etc.

Consideration of offshore matters in Commonwealth waters is outside of the scope of this Strategic Assessment Report. As the purpose of the Precinct is to facilitate multiple LNG projects, the lease or licence areas to which recommendations would pertain are also not necessarily identified at this stage. Production operations will therefore be separately assessed according to the normal Commonwealth assessment procedures.

2.2 Western Australian EP Act Approvals Process

Generic Question ID: 48 Sub ID [4, 27, 107, 292, 293] Raised by [S4 Q66]

It is unacceptable that many details relating to the planned development such as port design, dredging and freshwater usage will not be available until 'derived proposals' are submitted by oil and gas companies subsequent to approval of the SAR (and therefore may never be scrutinised by the public).

The Browse LNG Precinct is being progressed on the basis that it will be able to accommodate a minimum of two LNG proponents and an ultimate production capacity of 50Mtpa of LNG. Full development of the Precinct may well occur over an extended period. As such, the Precinct represents a strategic proposal, rather than a project specific proposal as all future commercial proponents for the Precinct are not yet known.

The Browse LNG Precinct Strategic Assessment Report (**SAR**) considers the Precinct operating at its full capacity irrespective of assumptions about specific technologies or plant designs which could be expected to change over time or according to the particular requirements of individual project proponents.

The commitments and conditions imposed as part of the approval for development within the Precinct are likely to inform the detailed design of projects seeking to operate within the Precinct. The Derived Proposals process would then ensure that all such future activities adhere to the conditions established for development within the Precinct. Any potential future proponents will be required to consult with the public before submitting Derived Proposals to the Environmental Protection Authority for evaluation.

Generic Question ID: 367 Sub ID [161, 120] Raised by [S161 Q801]

ACE Submission: ACE is concerned about the level of regulatory oversight that can be provided for major industrial plants in remote locations. It is unclear exactly how the government agencies will be monitoring compliance of ministerial and licence conditions and conducting audits.

In accordance with the Environmental Impact Assessment Administrative Procedures (2010) one of the Principles of EIA from the EPA perspective is to "*Ensure predicted environmental impacts are monitored, the results assessed and feedback provided to improve ongoing environmental management of proposals*". Therefore, there is an obligation on the EPA to provide regulatory oversight for the proposed BLNG Precinct.

Relative to other industrial developments in WA the Browse LNG Precinct is not considered to be remote and will be readily accessible by road from Broome which is serviced by regular commercial flights. This compares with other developments which are only serviced by chartered flights or are many hours' drive from major regional centres.

Generic Question ID: 960 Sub ID [169, 80, 71] Raised by [S169 Q1767]

Environs Kimberley: The SAR does not provide sufficient surety for the Minister not to require full environmental assessment documents for activities associated with the Precinct. Inadequate research and thus limited substantiation for risk assessment and mitigation should require industry to supply best practice EIS standard documents for all proposed activities. In addition, all such applications should be subject to a rigorous consultation process to ensure that the Minister can make decisions on actions based on complete information and transparency.

The Proponent has prepared the SAR in accordance with the Commonwealth and State Governments' Terms of Reference, and believes the findings of the assessment are supported by sound science. If, following review of all the information, the EPA is of the opinion that there has been inadequate research to support the outcomes of the assessment presented in the SAR, then the EPA will inform the Minister of this outcome in its Report and Recommendations. Under Section 44 of the *Environmental Protection Act*, in preparing that report, the EPA may consider information from a number of sources, including the following:

- information in environmental assessment documents;
- issues raised in public submissions or meetings; and
- advice from Decision-making Authorities and other government agencies.

Generic Question ID: 68 Sub ID [7, 145] Raised by [S7 Q82]

Our government has the right to veto any development on the Kimberley coast and the hinterland, it is wrong for the state to indicate that this will reduce the likelihood of poor planning decisions. It will become another massive industrial hub opening up the Kimberley to any manner of exploration by companies that show lip service to sound environmental management.

The Western Australian Government must work within the legal framework which has been created to govern the activities of individuals and other entities within Western Australia. The Environmental Protection Authority (**EPA**) must consider any significant project proposal referred to it in Western Australia. Assessment focuses specifically on the environmental values of the area, the proposed project scope, and the predicted impacts, along with management and mitigation measures outlined in the proposal. If the proposed project is not considered to have an unacceptable impact under the *Environmental Protection Act 1986* and if the EPA considers that any impacts will be adequately managed, then it cannot simply reject a proposal.

The Browse LNG Precinct is being progressed on the basis that it can coexist with the environmental values of the Kimberley. The Precinct is being designed to ensure that it will be suitable to accommodate a minimum of two LNG proponents by ensuring the efficient use of critical infrastructure. This approach means that the Precinct will be a more attractive option to attract LNG projects as it will avoid the costly duplication of infrastructure and surveys that would otherwise be required. By drawing LNG projects away from more sensitive areas of the Kimberley, and by avoiding the duplication of ports, roads, and other infrastructure, the overall environmental footprint of LNG activity in the region is significantly reduced.

The State has agreed with Traditional Owners that the Precinct will only be used for the production and export of Liquefied Natural Gas. It will not provide a means to process or export other products.

Generic Question ID: 21 Sub ID [2] Raised by [S2 Q22]

The current strategic assessment should be reassessed under Section 40b, c, of the EP Act of WA and subject to Section 42 (under the guidelines of the *Royal Commission Act 1968*). The reassessment should include (but not be limited to) the "real" cumulative social, environmental and economic impacts, and a review of the level of industry and government funding paid to and utilised by the Kimberley Land Council, and the level of industry funding paid to community groups during the consultative period.

The current SAR and assessment process are in compliance with the both the *Environmental Protection Act 1986* and the *Environment Protection and Biodiversity Conservation Act 1999.* The SAR has been prepared in accordance with the Terms of Reference established under the State and Commonwealth Governments' Strategic Assessment Agreement. This Agreement provides the broad scope for the assessment of the Precinct Plan and associated future proposals, under both the *Environmental Protection Act 1986* and the *Environment Protection and Biodiversity Conservation Act 1999*.

A summary of how each of the terms of Reference has been addressed within the SAR is presented under **Section 2.3** of **Part 2** of the SAR. Through its endorsement of the Strategic Assessment Agreement, the State Government has determined that a public inquiry is not an appropriate mechanism for assessment of the environmental impacts of the Precinct Plan and associated future proposals. Furthermore, consideration of the wider economic implications of the Precinct Plan, such as government and industry funding to local community groups is beyond the scope of the *Environmental Protection Act 1986*.

Generic Question ID: 183 Sub ID [39] Raised by [S39 Q381]

There is uncertainty as to what level of obligation the State government and Precinct companies have in regard to complying with the recommendations in the document.

The Western Australian Government recognises that implementation of derived proposals under the Precinct Plan will require a coordinated interaction between government authorities and commercial proponents and will establish a State Management Framework that will apply to future proponents. This framework has been subject to a range of submissions, and a number of changes have been made as a result. The revised framework is described in **Section 2.3** of the Response to Submissions Summary Report.

The Management Framework includes the formation of a BLNG Precinct Control Group whose membership will be determined between State Environment Minister and Minister for State Development. Commercial

proponents of derived proposals under the Precinct Plan will be legally required to comply with Ministerial Conditions determined during the Strategic Assessment process. The level of obligation of the State Government and Precinct companies is clearly described in the management measures proposed for each factor.

Generic Question ID: 229 Sub ID [64] Raised by [S64 Q654]

DEC Recommendation 22: That references to the CEO of DEC in draft conditions be changed to refer to the CEO of the OEPA where appropriate.

Discussion: The wording of a number of proposed conditions in the SAR incorrectly infers that DEC will be directly responsible for clearance of conditions imposed under Part IV of the *Environmental Protection Act 1986* (e.g. (**Part 4**, **p. 2-10**) "Proponents of derived proposals shall develop a Final Closure Plan, in consultation with key stakeholders, to be submitted to the Chief Executive Officer of DEC at least five years prior to the planned date of closure. The Plan shall address:...").

It is acknowledged that the wording of a number of proposed conditions in the SAR incorrectly infers that DEC will be directly responsible for clearance of conditions imposed under Part IV of the *Environmental Protection Act 1986*. While this has no material effect on the impact assessment conclusions presented in the SAR, this is noted by the Proponent and the wording of this proposed condition will be updated as part of the SAR review process in consultation with the OEPA.

An appropriate amendment may be ...'*to be submitted to the Chief Executive Officer of the OEPA, on advice of the Department of Environment and Conservation*'.

Generic Question ID: 898 Sub ID [169] Raised by [S169 Q1762]

Environs Kimberley Submission: Any studies, modelling, management and mitigation measures and Environmental Conditions should be at a minimum based on global industry best practice and build on those adopted for, or imposed on, oil and gas Developments (e.g. Exmouth Sub Basin) and those of other similar Developments (e.g. Gorgon). A Commitments Table (such as is presented in an EIS) is required in the SAR clearly demonstrating and detailing proposed future consultation processes with regards to the details of management, monitoring and mitigation measures. Furthermore, the SAR should commit to requiring EIS assessment and furthermore, providing any related Plans (e.g. Environment Plan, Oil Spill Contingency Plan, Marine Fauna Observation Guidelines, etc) for public comment and include an undertaking for responding to any public submissions prior to the lodgement of the document to Government and commencement (and approval) of any related activity. Details of regular and ongoing studies and impacts, public reporting of results and the achievement of EIS targets and the success (or otherwise) of mitigation measures should also be provided for public comment and advice.

Certain management measures presented in **Parts 3, 4, 5 and 6** of the Strategic Assessment Report (SAR) make reference to the demonstration of the application of "best practice", which is described as: *"the application of the best available mitigation measures that are practicable in the particular circumstances of a proposal to avoid or minimise environmental impact. The purpose of achieving best practice would include developing design and management measures against international benchmarks whilst having regard to local conditions and circumstances (including costs) and to the current state of technical knowled*ge."(**Part 1, Section 3.4.1**).

The philosophy of application of best practice, as outlined above, is the underlying approach for developing environmental and social management plans and the design of proposals consistent with the management framework identified in the strategic assessment. Therefore, there is a strong commitment to the application of best practice principles in the progression of the Browse LNG Precinct.

If the Precinct is approved, compliance and performance reporting conditions (e.g. air quality) will be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. Regulators will assess and review audits to check for compliance against conditions. Auditing will be undertaken by the Department of State Development and commercial proponents, in accordance with conditions of approval.

The Office of the EPA monitors compliance with the Ministerial Approval Statements issued under the *Environmental Protection Act 1986*. This is done in a coordinated and planned approach through audits. Where non-compliances are identified, appropriate enforcement action is taken to regain compliance. All non-compliances are reported to the Minister for Environment on a quarterly basis.

Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence. Section 48 of the Act details the powers that the Western Australian Minister for the Environment has in relation to non-compliance. The Minister may:

(a) after making reasonable endeavours to consult the proponent of the relevant proposal, cause to be

served on that proponent an order made by the Minister and requiring that proponent forthwith to stop the implementation of that proposal for a period not exceeding 24 hours; and

(b) cause to be served on the proponent of the relevant proposal an order made by the Minister and requiring that proponent to take such steps as are specified in that order within such period as is so specified for the purpose of complying with the relevant condition or procedure or of preventing, controlling or abating any pollution or environmental harm caused by any non-compliance with that condition or procedure; and

(c) cause such steps as are necessary for the purpose of complying with the relevant condition or procedure to be taken; and

(d) cause such steps as are necessary for the purpose of preventing, controlling or abating any pollution or environmental harm caused by any non-compliance with the relevant condition or procedure to be taken; and

(e) if he considers that the relevant condition or procedure should be changed, make a request under section 46(1) of the EP Act.

In the absence of formal social impact compliance mechanisms, DSD will have a significant role in liaising with other relevant government agencies to ensure that commitments, monitoring and reporting on social impacts (e.g. impact on local health services) and management is undertaken.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

The concerns of the West Kimberley community have been considered by the State Government throughout the Strategic Assessment process for the Browse LNG Precinct. Future community engagement will continue as part of the development process and is described in the Response to Submissions Summary Report **Section 3.2**.

Commitments are provided in the SAR and any modifications or additional commitments arising from public submissions, are tabulated in **Section 6** of the Response to Submissions Summary Report.

Generic Question ID: 902 Sub ID [169] Raised by [S169 Q1770]

Environs Kimberley Submission: Responses to public submissions should be provided prior to evaluation of the Proposal. This would be in line with the requirements of an EIS process which includes Proponent public responses to submission prior to assessment.

According to State guidelines, the Proponent's response to the public submissions will be released at the same time as the Environmental Protection Authority's (EPA) report on the assessment of the SAR.

Generic Question ID: 1058 Sub ID [114] Raised by [S114 Q2175]

Planning approval has already been given for the Foundation Proponent to start drilling, clearing and development of the site. The proposed 'pioneer camp' is also out for public comment. These developments are going ahead before the SAR was concluded. If the Minister for Lands has allowed these developments in terms of planning for the Precinct, why hasn't the community been given advice as to the Government's plans?

The activities, facilities and other characteristics that are a part, or related to, the Browse LNG Precinct and considered within this scoping exercise have been split into three different categories:

1. Category A - LNG Precinct: These are the core elements of Browse LNG Precinct, including associated infrastructure necessary to process and export hydrocarbons. This category includes all actions within the scope of approvals under the Strategic Assessment Agreement.
2. Category B - Indirect Activities/Actions as a Result of the LNG Precinct (e.g. Broome Airport, regional roads and housing): These activities/actions are considered in the impact assessment but do not form part of the approvals process.
3. Category C - Related Projects (e.g. road to the precinct and pioneer camp): These projects are outside the scope of the Strategic Assessment, but form part of the cumulative impact assessment.

The scoping exercises and subsequent impact assessment outlined in the SAR apply only to Category A - LNG Precinct. Consistent with the Scope for the SAR (**SAR Appendix A-2**), only this category of actions is in the scope of the approvals under the Strategic Assessment Agreement. The impacts of Categories B and C (i.e. indirect activities and related projects) were considered in the Strategic Assessment to address potential cumulative impacts. However, they are not subject to permits and approvals under the BLNG Precinct. Furthermore, some approvals outside the scope of the SAR are required to access the proposed BLNG Precinct site to undertake early investigation works. These 'early activities' provide important information, for example

geotechnical conditions, required for the detailed design of proposed infrastructure within the BLNG Precinct and have also been required to adequately characterise the existing environment for the purpose of environmental and heritage impact assessments within the SAR.

This means that although works in Categories B and C are related to the Precinct, which is yet to be approved, these associated activities and projects can proceed provided they obtain the required approvals. For example:

- Main Roads is currently undertaking the planning and project management for the construction of an access road connecting the Browse LNG Precinct with the existing Broome-Cape Leveque road. Main Roads will submit separate applications for environmental and other approvals for the road as required. These will need to include consideration of the impact on any potential bilby habitat.
- Woodside has received approval from the Shire of Broome for the 'pioneer accommodation facility' ahead of the development of the permanent construction and operational workforce facilities. The proposal was assessed under the Shire's "Transient Workers Accommodation" (Local Planning Policy 8.8) (http://www.broome.wa.gov.au/council/pdf/policy/88.pdf). At its meeting on 14 April 2011, Council approved Woodside's application for a Temporary Offsite Workers Camp, consisting of 600 ensuited single occupancy rooms, a restaurant, wet mess/tavern and beer garden, an administration building, a medical, security and emergency response building, indoor and outdoor recreational facilities, a maintenance building and utilities area, on Broome Road in Roebuck. The approval was granted subject to a number of conditions. (The full resolution can be found in the Minutes of the Ordinary Council Meeting 14 April 2011, Item 9.3.4.)

The two clearing permits granted by the Department of Environment and Conservation (**DEC**) to Main Roads and Woodside apply to activities that are outside the scope of the Strategic Assessment. Approval of these permits or the pioneer construction camp does not imply that a decision has already been made on the Strategic Assessment for the Browse LNG Precinct. The Precinct proposal is still under consideration by the Environmental Protection Authority (**EPA**) and is yet to be approved.

Generic Question ID: 1163 Sub ID [211] Raised by [S211 Q1034]

Part 1 Section 8.2.1: The submitter is amazed that despite land tenure not yet being resolved, and EPA approval not yet having been granted, and both State and Federal approvals not yet being granted, Woodside is still clearing land, test drilling and altering roads in the area. This does not inspire confidence in the whole process of granting approvals. It looks just like a fait accompli.

The State understands that the activities described relate to the continuing assessment of the site, and are being undertaken in anticipation of further environmental assessment at the project level. At that level project design specific information is necessary which can only be achieved after the appropriate geotechnical assessments. The work does not pre-empt approval for project development but seeks to inform the next level of assessment. Where clearing is undertaken the State expects all parties to obtain the relevant native vegetation clearing permits as required. The derived proposal process is described in **Section 2.2** of the Response to Submissions Summary Report.

Generic Question ID: 1296 Sub ID [149] Raised by [S149 Q3141]

The approval of this proposal would be contrary to past decisions made by the EPA, relative to recent politically difficult decisions related to Gorgon, Red Hill and Margaret River coal. The EPA has the opportunity to protect a significant environmental area, important for humpback whales, cultural heritage, the marine environment and in provision of intergenerational equity.

The role of the EPA is guided by the *Environmental Protection Act 1986* and the associated Administration Procedures. The Authority considers each proposal referred to it based on guidance within the Act and Procedures. Section 44 of the *Environmental Protection Act 1986* (**EP Act**) requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject, so that the proposal can be managed to meet the EPA's environmental objectives.

Therefore, any recommendations by the EPA to the Minister for the Environment will be based on its assessment of the BLNG Precinct only.

2.3 Compliance with the Strategic Assessment Terms of Reference

Generic Question ID: 163 Sub ID [18, 202, 216] Raised by [S18 Q165]

Please as the Environmental Protection Agency, do your job and protect one of the last remaining untouched environments on earth. Anything else is a travesty. Do not allow greed into the Kimberley.

Under the Terms of Reference for the SAR, the proposal for the Browse LNG Precinct will be assessed by both the State and Commonwealth Governments. This means the proposal will be assessed under both section 146 of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (**EPBC Act**) and under s38 of the *Environmental Protection Act 1986* (WA) (**EP Act**). This approach was adopted in recognition of the significant environmental and heritage values of the region as well as the significant economic potential in relation to the extraction and processing of LNG from the Browse Basin.

Following the public comment period for the Draft SAR, a finalised SAR will be submitted for assessment to the relevant State and Commonwealth agencies (i.e. the EPA and the Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**). Neither the WA EPA nor the Commonwealth SEWPaC has the final authority to approve the development of the BLNG Precinct. Both agencies will provide written advice to their respective Ministers.

Under the WA approval process, the EPA will prepare a report to the Minister for Environment on the final SAR outlining its assessment and recommended conditions. It is the Minister who decides, in consultation with other Ministers, whether a proposal should be allowed to proceed, and if so, under what conditions.

Under the EPBC Act, once a proposal has been assessed by the SEWPaC, the department makes a recommendation to the Australian Government's environment minister about whether or not the project should be approved to proceed. The minister's primary role under the EPBC Act is to protect areas of national environmental significance in accordance with the guiding principles of the EPBC Act. The minister assesses all the information provided by the SEWPaC before making a decision about whether or not the project should proceed, and if so, whether any specific conditions need to be attached to that approval.

Generic Question ID: 325 Sub ID [28, 75] Raised by [S28 Q269]

It should be illegal for the Proponent to undertake the SAR as it is a conflict of interest.

The SAR has been prepared in accordance with the Terms of Reference established under the State and Commonwealth Governments' Strategic Assessment Agreement. This Agreement provides the broad scope for the assessment of the Precinct Plan and associated future proposal, under both the *Environmental Protection Act 1986* and the *Environment Protection and Biodiversity Conservation Act 1999*

Generic Question ID: 184 Sub ID [64] Raised by [S64 Q631]

DEC Recommendation 2: That the management plans and strategies proposed to be developed to describe, monitor and manage impact(s) of development within the BLNG precinct be made conditions of approval, with a responsible party designated (e.g. Government agency or derived proponent), with the requirement for review by relevant agencies prior to approval by the Office of the EPA.

Discussion: For several of the management plans and strategies identified for development and implementation as part of this proposal, there is unclear or potentially conflicting information about who will be responsible for their development and implementation. It is also unclear as to whether the identified body will be required to accept responsibility for the commitments contained within the various management plans and strategies. This creates uncertainty about the effectiveness of the proposed management framework for the Precinct. For example, the 'Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance' is proposed to be developed and implemented by the Department of State Development (**DSD**) through the Precinct Control Group. This strategy includes a framework in which the 'Terrestrial Fauna Management Plan' will be developed and implemented. However, the responsibility for preparation and implementation of the Terrestrial Fauna Management Plan is proposed to be with proponent(s) of derived proposals that are yet to be identified. Given such a plan is Precinct wide and not necessarily specific to proponents of derived proposals, it (and similar plans) should, initially at least, be the responsibility of the Precinct Control Group.

To manage the potential direct and indirect impacts of the proposal on important biodiversity conservation values and local ecosystem function, the Proponent has proposed a series of management plans and strategies. For some conservation values, the impact of the proposal is known or considered likely to be significant. Specific strategies should therefore be developed that include reporting and adaptive management for each phase of the development's life cycle (construction, operation, closure). To ensure timely review of these management plans and strategies, agencies required to review these documents will require adequate

resourcing.

As discussed in the SAR (**Part 1, Section 3.4**), the implementation of derived proposals under the BLNG Precinct Plan will require coordinated interaction between government authorities and commercial proponents. To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

In many circumstances, the SAR provides details of overarching strategies that will be applicable to manage impacts on a Precinct wide basis. Many of the proponent management plans that are applicable to each commercial proponent's activities link in to these broader Precinct strategies. For example, the *'Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance'* will have the following proponent management plans linking into it:

- Ecological Surface Water Requirements Management Plan;
- Terrestrial Fauna Management Plan;
- Terrestrial Weed Management Plan;
- BLNG Precinct Fire Management Plan;
- Groundwater Abstraction Management Plan; and
- Management Plan for Ethnobotanical Species.

The diagram provided in **Section 2.4** provides further clarity as to which management plans align with each Precinct wide strategy.

DSD recognises that each phase of the development of the Precinct (construction, commissioning, operation, and closure) may require focus on different aspects of environmental management. Management plans and strategies proposed in the SAR recognise these various phases of development within the BLNG Precinct, It is proposed that proponents of derived proposals develop a Construction Environmental Management Plan (**Part 4, Section 2.4, Table 2.4-9)** with additional management plans to address specific issues to be developed prior to construction and updated for operational requirements. Examples of these include the Hydrocarbon and Chemical Spill Contingency Plan, Fire Management Plan and Terrestrial Weed Management Plan (**Part 4, Section 2.4, Table 2.4-9)**. It is proposed that the closure phase be addressed by the State Government in a Closure and Decommissioning Strategy and by proponents of derived proposals in a Final Closure Plan to be developed five years prior to planned closure (**Part 4, Section 2.1, Tables 2.1-2** and **2.1-3**).

Information gained from reporting and auditing processes during implementation of the EMPs and strategies will be entered into appropriate feedback loops to inform the ongoing environmental management process and provide for its continuous improvement.

DSD recognises that government agencies required to review EMPs and strategies must adequately manage their resourcing requirements. It will endeavour to work with those agencies to provide appropriate notice and time frames for review to minimise impacts on resourcing within those agencies.

Generic Question ID: 538 Sub ID [170] Raised by [S170 Q1421]

WWF & ACF Submission: If new information comes available, normally one would expect modification of the assessment risk by integrating this into the process. Since a standard approach has not yet been followed in the SAR, it is difficult to foresee how any new information can be assimilated into the report and appropriately reviewed by the public. For this SAR to be used as part of a derived proposal, it would first need to be done in accordance with methods that are consistent with international standards of best practice so that it also meets the requirements of domestic significance testing. Significant methodological and structural changes will be required to align this document with an approach that is both practical for the public to use and to ensure all information contained within is transparent.

The SAR has been prepared in accordance with Terms of Reference established under the State and Commonwealth Governments' Strategic Assessment Agreement which provides the broad scope for the assessment of the Precinct Plan and associated future proposals, under both the *Environmental Protection Ac*t and the *Environment Protection and Biodiversity Conservation Act*. In accordance with the latest advice from the EPA, a preliminary risk assessment was conducted as part of the scoping phase of the assessment process. This preliminary assessment evolved as the project progressed and additional information became available. The impact assessment presented in the SAR represents this evolved risk assessment and hence has accommodated new information.

It is not the intent to use the SAR as part of a derived proposal. Any referred proposal requesting Derived Status will need to demonstrate that the proposal is consistent with the SAR, that no new environmental factors

are raised by their project and that there is no change in the relevant environmental factors or information that would affect the outcome of the assessment. DSD believes that the current SAR contains sufficient information to enable this comparison to be conducted.

Generic Question ID: 820 Sub ID [169] Raised by [S169 Q1702]

Environs Kimberley: ToR Description of the Plan: The conservation sector held high hopes that an SAR would result in an improved evaluation of the environmental, social and economic implications of a Precinct. However, it appears to have provided insufficient information for proper assessment of the Precinct; individual developments or cumulative impact; a potentially biased assessment/approvals process; and fast tracking of future developments which would normally be the subject of individual EIS levels of assessment (including detailed assessment of cumulative impacts based on a broad set of parameters and scope).

The Strategic Assessment has provided an unprecedented opportunity for the range of cumulative environmental and social impacts of development to be considered strategically, ahead of consideration of individual project proposals.

The SAR was prepared in accordance with the State and Commonwealth Governments' Terms of Reference as demonstrated in **Table 2-1** of **Part 2** of the SAR, and as such, assesses the cumulative impacts related to the Precinct. As a strategic assessment, its aim is not to assess individual project proposals. All project proposals will be reviewed against strict decision criteria prior to being confirmed as a derived proposal. Derived proposals will be legally bound to comply with the Ministerial Conditions set for the BLNG Precinct.

Generic Question ID: 1271 Sub ID [106] Raised by [S106 Q2244]

The Broome Port Authority and LandCorp already have a huge job managing the work that they already have they will not be able to realistically keep a rampant multinational energy company in check and hold them environmentally accountable for any mistakes made. There are not the resources to manage the actions of the companies involved and prevent any major disasters or at least minimise the impact of those disasters or hold the company responsible liable.

Both the Broome Port Authority and LandCorp have clear roles. LandCorp has the overall responsibility for managing the Precinct's core industrial land, while the Broome Port Authority is responsible for the port land and waters, including the management of port operations. These responsibilities are core business for the respective agencies, and so they are well placed, and well prepared to manage the task at hand.

With respect to the resourcing requirements, commercial arrangements will be put in place to recover the costs necessary to undertake the roles. The two agencies also have the capacity to bring in specific expertise as required, and also have the support of State Government. LandCorp is experienced in dealing with international resource companies throughout the State, while Broome Port Authority carries the weight of experience not just of its own operations, but also that of other port authorities throughout the State.

The environmental responsibilities will be delegated by way of legal contracts requiring companies to perform to an appropriate standard, and will be in addition to obligations imposed directly upon companies arising from the derived approval process described in **Section 2.2** of the Response to Submissions Summary Report. It is also noted that the Department of Environment and Conservation carries the responsibility for enforcement of environmental regulation.

3 Rationale for the Precinct Plan

Generic Question ID: 461 Sub ID [51, 153] Raised by [S51 Q1192]

A development of this scale should be designed, built, and maintained so that it will enhance the world rather than having negative environmental or social impact.

The four year site selection and Strategic Assessment process is one of the most comprehensive undertaken for this type of project. The Social Impact Assessment has received global recognition for the quality and depth of its approach.

The $1.5 billion in benefits that will be delivered to Traditional Owners as a result of the Precinct going ahead is also unprecedented, as is the level of governance applied to these funds to ensure that they deliver the broad and long-term benefits to address the disadvantages faced by communities in the area.

Furthermore the LNG product which would result from the Precinct provides long-term environmental benefit as a replacement fuel to more carbon intensive alternatives such as coal or oil.

At every step this project has been developed to enhance the regional and global environmental and social outcomes.

Generic Question ID: 321 Sub ID [29] Raised by [S29 Q281]

Indigenous Australians looked after this country for centuries before others came along. It is our duty to protect what we have and savour it for the future, for ourselves and for the creatures whose habitats are about to be destroyed.

On 6 May 2011 an historic agreement was reached between the State Government, the Goolarabooloo Jabirr Jabirr native title claimant group, and Woodside Energy Ltd as a potential Foundation Proponent. Traditional Owners agreed to relinquish their native title interests in the land and water required for the Precinct, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage management at the precinct. This is an important act of self determination which allows Traditional Owners to manage their country in a sustainable way.

The Precinct represents just 1.5 per cent of the total Goolarabooloo Jabirr Jabirr native title claim area (251,500ha of land and water).

The Western Australian Government believes that the Browse LNG Precinct project and the environment can co-exist. The Browse LNG Precinct project has given a high priority to managing any potential impacts on plants, birds and mammals on the Dampier Peninsula as well as their land and marine habitats. Many environmental studies have been conducted, ranging from sampling, surveys and mapping to sophisticated computer modelling to build a detailed picture of the marine and land environment around the proposed Browse LNG Precinct, near James Price Point. The information gathered provides the basis for plans to manage any impacts on native flora and fauna and air and seawater quality, during construction and operation of the Precinct.

Generic Question ID: 503 Sub ID [232] Raised by [S232 Q1367]

The Indigenous community members on the Dampier Peninsula want a guarantee that only gas will be produced at the Browse LNG Precinct at James Price Point? How can the assurance of 'gas only on the Browse LNG Precinct' be recorded, so that this won't be changed some time in the future?

The State Government's commitment to limiting activities at the Precinct to the processing of gas and associated products is reflected in the SAR's scope. As the SAR is a proposal specifically for the processing of gas and associated products, any approval granted would impose this commitment onto any commercial proponent wishing to locate at the Precinct.

Furthermore, the design and layout of infrastructure at the Precinct will only serve the specific needs of LNG interests, and as such would not be suitable for other forms of industry.

As stated in the Strategic Assessment Report (**SAR**), the Browse LNG Precinct is being progressed on the basis that it will be a multi-user facility suitable to accommodate a minimum of two commercial proponents for the processing of gas and associated products. The State Government recognises the potential environmental and social impacts of an unplanned, uncoordinated and ad hoc approach to LNG development in the sensitive Kimberley region. Development of the Precinct would therefore prevent the proliferation of LNG processing plants at different locations in the West Kimberley region, thereby limiting the environmental, social and cultural impacts to a single location and allowing for coordinated, consistent and comprehensive environmental management of the region's LNG processing industry.

Generic Question ID: 821 Sub ID [169] Raised by [S169 Q1703]

Environs Kimberley Submission: No complete needs rationale is included in the SAR. Rationale is limited to perceived financial benefits and the legal and commercial imperative for JVP's to commercialise the fields. For example, no detailed substantiation is provided for:

- Why gas is required if there is no domestic gas supply from the Precinct associated developments and whether WA requires additional supply considering other existing and proposed domestic gas supplies (e.g. sourced from the Pilbara);
- Why Australia should wear the burden of a significant increase in CO2 emissions for no net (other than financial) benefit;
- The 'No Development' and Alternative Scenarios (i.e. shore-based infrastructure versus offshore facilities - Floating LNG Facility, pipelines to existing facilities, etc); and
- Alternative energy technologies versus mining of a non-renewable resource.

The State Government entered into an agreement with the Commonwealth Government to undertake a Strategic Assessment of the Precinct Plan. The Terms of Reference only cover:

- an analysis of technically and economically viable gas processing options outside the Kimberley, focusing on locations that already have substantial industrial infrastructure, inclusive of floating LNG **(SAR Part 1**, **Annexure A)**.

The other questions raised in this submission are beyond the scope of the SAR.
A summary of the 'no development' option is provided in the **Part 1**, **Section 4**.

Generic Question ID: 848 Sub ID [169] Raised by [S169 Q1707]

Environs Kimberley Submission: While the SAR fails to mention that the primary consequence of not proceeding would be loss of economic benefits to the Kimberley region and to WA, the nation would still receive benefits from royalties arising from offshore developments along with taxes from wage and salary earners and company tax on profits. Benefits to the Kimberley would be largely confined to the "construction period" and these may not outweigh the costs and disadvantages to the Kimberley of sustainable economic development (e.g. tourism). An economic assessment of risk versus reward should be presented along with actual financial figures with regards to income to both the Kimberley and State (i.e. numbers to be employed, duration of employment, economic benefit over the term of the Project life etc) as contained in comparable EIS documents (e.g. Exmouth Sub Basin, Ashburton North etc).

The State is of the clear view that the development of the multi-user Browse LNG Precinct offers the greatest benefits for the State and local region whilst minimising environmental, cultural and heritage impacts.

Offshore LNG processing, of the scale required for the Browse Basin, was found to be technically unfeasible and therefore does not make sense to undergo further economic analysis. Further discussion about the feasibility of offshore LNG is presented in **Section 4.2** of the Response to Submissions Summary Report. The development of the Precinct on the Kimberley coast offers a unique opportunity for long term benefits for the Kimberley community. While accurate financial figures will depend on the specific proposals of commercial proponents at the Precinct site, it is estimated that the Precinct will initially attract more than $30 billion of investment into the Kimberley region.

The Precinct will not only provide considerable job opportunities through its design, construction, operational and support service workforce demands but the expenditure arising from these jobs will create further wide ranging indirect benefits for the region and the state. It is expected that, for every direct job created by the Precinct, up to one and a half indirect jobs could be created, including supply services, building and construction and tourism.

On 6 May 2011, an historic agreement was reached between the State Government, Woodside Energy Ltd and the Goolarabooloo Jabirr Jabirr native title claimant group that establishes a unique and comprehensive regime of benefits for Traditional Owners of the Precinct site and Indigenous communities across the Dampier Peninsula and beyond. The $1.5 billion benefit package will provide the opportunity for Indigenous communities throughout the region to substantially improve the education, health, social and economic well-being of their people. This package offers benefits over and above the services provided by government to the Indigenous communities.

The State Government acknowledges the significant contribution made by the tourism industry to the regional economy of the Kimberley. Accordingly, Tourism WA and the Department of State Development commissioned a Tourism Impact Assessment (TIA) as part of the Strategic Assessment process for the Browse LNG Precinct. The TIA concluded that tourism in the Kimberley and the Browse LNG Precinct could co-exist. It also noted that tourism and mining had co-existed in the Kimberley since the 1950s. The potential impacts on tourism are summarised in **Section 4.7** in **Part 5** of the SAR and the Tourism Impact Assessment is included in **Appendix D-5** of the SAR.

Generic Question ID: 868 Sub ID [209] Raised by [S209 Q1855]

Part 1, Section 4.4: It is not accurate for the SAR to say that if the Precinct were not developed, the gas reserves of the Browse Basin may be developed via the establishment of multiple gas processing facilities along the Kimberley coast. It is most unlikely that successful state and federal governments would repeatedly allow the Kimberley cost to remain unprotected and destroyed through multiple developments.

Under WA legislation, project proponents are normally afforded the right to apply for land tenure and to seek environmental and heritage approvals for project proposals generally. Therefore, it is inevitable, given the considerable economic potential and prospectivity of the Browse basin gas basin that, over time, multiple developers may apply for licences to build and operate facilities. Where these are assessed to be environmentally manageable, such projects may be allowed to develop on an *ad hoc* basis, without the benefit of an assessment of the cumulative environmental impacts, nor the social impacts upon the region.

By undertaking the Browse LNG Precinct, the State not only ensures that cumulative impacts can be managed in a coordinated way, minimising the environmental footprint and maximising the opportunities that may be made available, but it also has both opportunity and incentive to initiate a legal means, through the agreement with Traditional Owners, to prevent *ad hoc* LNG development from occurring elsewhere along the Kimberley coastline.

Generic Question ID: 985 Sub ID [163] Raised by [S163 Q2060]

The observation that the project must go ahead as in any case any gas developer has the right to apply for land tenure by law is an irrelevant point in a Strategic Assessment Report.

One of the key priorities of the State Government in creating the Browse LNG Precinct is to avoid development of facilities at multiple locations along the Kimberley coast which would have a much greater total impact on the region. In establishing the Precinct, and by agreement with the Traditional Owners, the State will explicitly limit LNG development elsewhere on the Kimberley coastline.

A summary of the site selection process to arrive at a single location for LNG processing is provided in SAR **Part 2, Section 4**.

Generic Question ID: 1284 Sub ID [106] Raised by [S106 Q2248]

The reasons given in the SAR for the "No Development" option (**Part 1**, **p. ES- 20**) are unconvincing because Figures vary due to the lack of clarity about the processing process that will be deployed.

The establishment of the Browse LNG Precinct at a single location will offer significant economic, social and environmental benefits over a multiple-location scenario. The submission refers to a qualitative summary of realistic possible opportunity costs resulting from the "No Development" option and makes no reference to a quantitative analysis (i.e. it is irrespective of the particular process employed).

Prior to 2007 multiple resource companies were actively investigating LNG processing options at various discrete locations along the Kimberley coast. Accordingly, it is likely that at least some of these would have continued with investigations and subsequent development had Government not intervened.

The 'No Development' option (including alternative scenarios outside of the Kimberley) would significantly reduce the economic and social benefits available to the West Kimberley community, including the $1.5 billion benefits package agreed to on 6 May 2011 by the native title claimant group.

The greenhouse benefits referred to in the 'No Development' option concern the potential for LNG from the Browse Precinct to displace higher emitting fuels such as coal in international markets.

3.1 Browse Basin Gas Reserves

Generic Question ID: 69 Sub ID [7, 25, 79, 142, 136, 150] Raised by [S7 Q83]

The following submissions raise similar points:

- We are not only destroying the natural environment of the Kimberley, we are also leaving very little in the way of energy assets for future generations. It may appear to be a win-win for our state, federal and mining companies but it is a lose-lose for future generations. It does not fulfil any criteria for intergenerational equity.
- Furthermore, there is concern that Australia is selling off its natural gas too cheap, whilst this same gas could provide the nation 20-30 years down the track, when the gas will be worth more, will be necessary for this country and probably can be sourced in a safer and more sustainable way then techniques allow at the moment.
- There are better "energy" alternatives given proper time and research in sourcing one or more. The ego, status-seeking rush and greed of a few individuals to push this process at the expense of all Australians and people outside of Australia has to be stopped. Human beings are too far developed to let such drives prevent sustainable processes and to destroy all that is at stake.

The Western Australian Government is facilitating the development of Browse Basin gas resources to maximise the benefits to the State and to the West Kimberley region in particular.

The State is of the view that the Browse LNG Precinct can co-exist with the natural environment of the Kimberley. The Browse Basin gas resources were first discovered in 1971 and the decision to facilitate development of these resources at the current time is to address the needs of both current and future generations.

It is not possible to speculate upon the future demand or value placed upon this resource; whereas an

opportunity exists at present to develop these resources in a sustainable way to address the needs of both current and future generations.

Development of these resources would reduce poverty and disadvantage through the provision of income and jobs for the current generation of Australians, as well as creating wealth that will fund education, training and community development to support the prosperity of future generations.

The Western Australian Government is supportive of the development of natural gas as a transition fuel as the world moves to a lower carbon economy. LNG is part of the global solution to climate change by reducing global greenhouse emissions through the displacement of higher emitting fuels such as coal.

With a plentiful supply of a range of energy assets, the State is well placed to meet its future energy needs and take advantage of longer term opportunities as technologies progress.

Generic Question ID: 316 Sub ID [25] Raised by [S25 Q215]

Oil and gas companies are being given permission to source gas at a depth that has not been sourced from before, let alone in a cyclone prone area. Woodside has admitted that there is no current technology covering these challenges, which means this will be a pilot/trial. This will greatly increase the risk of major disasters.

The Strategic Assessment is not seeking approval for oil or gas extraction and is limited to LNG processing facilities (incorporating hydrocarbon import pipelines from offshore, LNG processing facilities and an export port). Oil and Gas extraction (or upstream) activities are considered to be 'Category C' activities which are described as related activities (**Part 2**, **Section 6.2**) and will be subject to separate environmental approvals processes.

Generic Question ID: 439 Sub ID [44] Raised by [S44 Q413]

This project is a short sighted concept which reveals a lack of visionary thinking by the State Government.

The Precinct provides an unprecedented and paradigm-shifting response to addressing disadvantage experienced by a significant portion of the region's population by encouraging sustainable development of the Browse Basin gas field to achieve enduring economic and social benefits.

Significantly, the State Government and Woodside (as a potential Foundation Proponent) have together committed to delivering about $1.5 billion of social and economic benefits to Traditional Owners and West Kimberley Indigenous communities. Benefits will be delivered by way of long-term employment, business opportunities and economic and community development throughout the region.

Generic Question ID: 715 Sub ID [203] Raised by [S203 Q1682]

The issues related to the Precinct are of extremely high importance to our society and Australia as a whole.

The development of the Browse LNG Precinct is a rare opportunity for the Kimberley region and Western Australia to benefit from the development of gas reserves in the Browse Basin. The Western Australian Government recognises the environmental and cultural significance of the area and its importance to the broader Australian community. The Browse LNG Precinct is being progressed on the basis that the social and economic benefits it will generate can co-exist with the environment and the unique cultural and heritage values of the Kimberley.

Generic Question ID: 822 Sub ID [169] Raised by [S169 Q1704]

Environs Kimberley Submission: The reasons for establishing a Precinct may appear to be driven by the State Government's desire to secure developments (and monies) under the jurisdiction of the Federal Government (Commonwealth Waters), particularly in light of the fact that the gas is to be exported and not used locally.

The Proponent proposes to establish the Precinct as a strategic planning process to manage the private sector's proposed development of offshore gas reserves, so that LNG development is located in a single location rather than in multiple locations along the Kimberley coastline. This will reduce the environmental footprint of LNG developments, while providing the opportunity to maximise the social and economic benefits of LNG development. At the same time, through its agreement with Traditional Owners, the State will limit LNG development elsewhere on the Kimberley coastline. The Final Investment Decision is one made by commercial proponents on the balance of economic, commercial and technical considerations.

The Proponent's purpose in facilitating the Precinct is to encourage the efficient and responsible development of the broader Browse resource. Local industry participation and options for domestic gas delivery also form part of the State's broad policy framework. Implicit in this is an awareness of the range of benefits that the State and the Kimberley region in particular will gain, including opportunities for jobs, and additional economic growth.

Generic Question ID: 849 Sub ID [169] Raised by [S169 Q1708]

Environs Kimberley Submission: In light of fact that the gas is for export and of no direct benefit in terms of usage to the WA or Australian community, offshore development options should have been duly considered.

The Western Australian Government maintains a policy for LNG processing that requires proponents to set aside 15% of gas production for State domestic supply. In view of the lack of existing gas transmission infrastructure from the site, the Government will explore options for ensuring this policy is maintained. For example, the application of offsets from the North West Shelf could be an appropriate response for the Browse LNG Precinct. In any event, provision will be made for future expansions to consider the requirements for domestic gas supply.

The offshore development of LNG processing facilities has been evaluated as part of the SAR site selection process, **Part 2**, **Section 4**. Offshore processing at Scott Reef was identified as the most economically viable site however environmental constraints were determined to be extremely significant. Floating LNG facilities in this region are also restricted, through climatic conditions, safety requirements, and the economic argument that Floating LNG is generally only suitable for smaller gas fields. Further discussion about the feasibility of offshore LNG is presented in **Section 4.2** of the Response to Submissions Summary Report.

Finally, there is nothing to prevent individual proponents from considering offshore options; however the intention of the State was to establish the most suitable location to facilitate processing of up to 50Mtpa of LNG. The proposed location is the one that was considered, after consideration of a wide range of locations, to offer the optimal solution on the balance of environmental, heritage and technical considerations.

3.2 Demand for LNG Processing Facilities in the West Kimberley

Generic Question ID: 61 Sub ID [6, 77] Raised by [S6 Q100]

The government of WA should hold a referendum and ask - 1. Do you want the gas processing plant at James Price Point? 2. Do you want heavy industry development in the Kimberley?

In 2007 the State Government initiated a strategic assessment process to identify a suitable single location in the Kimberley to support the development of the Browse Basin gas. The strategic assessment process was conducted in order to prevent ad hoc industrial development along the Kimberley coast, and minimise the environmental footprint of gas processing in the region. The State Government also wanted to ensure that the significant social and economic benefits associated with the development of the Browse Basin gas would remain in the Kimberley, and provide opportunities to reduce disadvantage within the community.

The establishment of the Browse LNG Precinct would reduce the duplication of infrastructure such as ports, accommodation and roads, which would be required should individual companies build 'stand-alone' facilities. A single, common-user LNG precinct would offer economic efficiencies to proponents, while reducing the development footprint compared to multiple, stand-alone LNG processing facilities - thus limiting the potential disturbance to environmental, cultural and heritage values.

Throughout the strategic assessment process for the Browse LNG Precinct, the Western Australian Government has actively sought input from the community of the Kimberley and Western Australia. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome, and has held many more meetings with local businesses, community and Indigenous organisations and individuals. Examples include:

- **October 2007** - An issues scoping workshop is carried out and attended by the Northern Development Taskforce, environmental NGOs, the Kimberley Land Council, the tourism sector and members of the community;
- **July 2008** - A three day site evaluation workshop is hosted in Broome and attended by various stakeholders;
- **July to September 2009** - Social Impact Assessment (**SIA**) workshops are conducted. Service providers and other relevant people including community representatives (in the areas of sport and recreation, infrastructure, housing and land, health, education and heritage/sense of place) participate in the workshops hosted by DSD and Woodside;
- **September 2009** - Community members are invited to a SIA Open Day hosted by DSD in Broome, with the opportunity to receive information and provide input in the process;
- **December 2009** - DSD hosts two day SIA public consultations at the Paspaley Plaza Shopping Centre.
- **January 2010** - DSD hosts SIA public consultations at the Broome Boulevard Shopping Centre over two days.
- **February 2011** - Community Information Sessions are conducted at Lotteries House in Broome.

Representatives from DSD, LandCorp, Main Roads WA, Department of Fisheries and Woodside attend and answer questions regarding the Precinct.

Development of the Browse LNG Precinct will provide the opportunity for new initiatives to substantially improve the education, health, social and economic wellbeing of the West Kimberley community, as well as encourage significant regional investment into the State.

Part 5, Section 5 of the Strategic Assessment Report and the supporting **Annexure**: Stakeholder Engagement of the Social Impact Assessment in **Appendix D-2** outlines the Strategic Social Impact Management Plan, which will provide a framework for the further development of strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the establishment of the Browse LNG Precinct. Details of proposed strategies are available online at: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

Generic Question ID: 581 Sub ID [120] Raised by [S120 Q1231]

The Browse LNG Precinct is being progressed on the basis that the social and economic benefits it will generate can co-exist with the environment and the unique cultural and heritage values of the Kimberley.

There is a high level of industry interest in developing the considerable gas resources off the Kimberley coast. This raises the potential for multiple uncoordinated gas processing facilities to be developed along the Kimberley coast leading to significant social and environmental impacts. The proposed size and scale of the Browse Precinct will allow for a multi-user Precinct from which gas can be processed and transported, while managing any social or environmental impacts that could arise.

The Precinct, which is situated approximately 60km from Broome, will not be visible from the town or from the main road to Cape Leveque. The footprint of the Precinct will be less than 1% of the area of the Dampier Peninsula.

Section 40B of the *Environmental Protection Act* provides the basis for the EPA to assess a strategic proposal, which can be a policy, plan, program or development. Assessment of a strategic proposal provides for greater certainty to local communities and proponents over future development, improved capacity to address cumulative impacts at the landscape level and flexible timeframes commencing early in the planning process.

The desired objective of assessing a strategic proposal is to identify all potential significant environmental impacts and management as early as possible. As such, a strategic proposal considers the cumulative impact footprint; it does not consider individual projects. Therefore, the lack of specific information on project footprints, design, water use, and emissions etc is deliberate, because this information is not a specific component of a strategic assessment conducted in accordance with the *Environmental Protection Act*. It will however form an important element of any referred proposals requesting derived proposal status.

Generic Question ID: 857 Sub ID [169] Raised by [S169 Q1710]

Environs Kimberley Submission: Locating a number of facilities on one site rather than forcing the sharing of facilities does not necessarily reduce environmental impact. The co-location of a number of plants means greater and more concentrated impacts (e.g. carbon emissions, light emissions, shipping movements and frequencies, etc).

One of the key priorities of the Proponent in creating the Browse LNG Precinct is to minimise the impacts on the environment. Under Western Australian law, future LNG developers are legally afforded the right to apply to the State for land tenure and to seek subsequent environmental and heritage approvals for a gas processing facility. Thus, it is inevitable that, unless one West Kimberley onshore location of suitable area to accommodate multiple developers is identified, *ad hoc* proposals for development sites will continue to be made into the future.

In response, the Western Australian Government proposes to establish a single, commercially viable LNG processing site at a suitable location, to attract and facilitate at least two projects processing the gas resources of the offshore Browse Basin. The Browse LNG Precinct would accommodate a minimum of two proponents at one location and enable sharing of common-user facilities such as the port, roads, infrastructure corridors and workers' accommodation.

Furthermore, the establishment of the Precinct affords the opportunity to establish Precinct wide limits, thus providing an effective means to manage emissions to within acceptable levels for both Foundation and future proponents.

3.3 Carbon Footprint of Natural Gas

Generic Question ID: 458 Sub ID [51, 57, 46, 142] Raised by [S46 Q1188]

There is no consideration of renewable energy as an alternative. It is a clear play by Beyond Zero Emissions that would see Australia running on 100% renewable energy by 2020 - http://www.beyondzeroemissions.org/

The State recognised a requirement to consider a gas processing facility for Western Australia to meet increasing energy demands globally. LNG emits less greenhouse gas per unit of energy produced than coal or diesel oil and therefore is considered an integral part of a more carbon-efficient economy as a replacement for other more carbon-intensive fuels.

Generic Question ID: 127 Sub ID [17, 211, 15] Raised by [S17 Q138]

It is inappropriate for the EPA to be pushing the "greenhouse benefits" of LNG as compared to coal in energy generation when Western Australia should be pushing its superiority for solar power generation rather than another dirty (albeit marginally less dirty than coal) fossil fuel.

It should be noted that the document being commented on was prepared by the Department of State Development not the EPA.

In addition to efforts to move towards greater reliance on renewable energy, proposals such as the BLNG Precinct can play an important role in a low carbon future by reducing global greenhouse emissions through the displacement of higher emitting fuels such as coal. Where used as a transitional fuel, LNG power generation systems produce on average 1.7 times more power for the same carbon emissions as coal-fired power generation. This lower carbon emission rate makes natural gas a comparatively clean energy source, relative to other hydrocarbon fuels and therefore natural gas can be an important part of the transition to a lower carbon economy which may include renewable energies such as solar power generation.

The Precinct will be designed to meet atmospheric emissions and discharge limits which protect the health and safety of the community and protect the natural environment. In line with EPA objectives, commercial proponents seeking to locate in the BLNG Precinct will be required to submit a Greenhouse Gas (**GHG**) Abatement Plan, in consultation with the relevant regulatory agencies and to the satisfaction of the Minister for Environment. Under such plans, commercial proponents would need to demonstrate that facilities have been designed and operated to reduce greenhouse gas emissions through application of best practice measures. As part of this process, operators will be required to benchmark the greenhouse gas efficiency of their operations.

Generic Question ID: 953 Sub ID [212, 198] Raised by [S198 Q1846]

Part 4 Section 2.9.3.2: In the BLNG Strategic Assessment Report, Lifecycle Emissions, where are the comparisons in the study against green energy? With the vast land available and a plentiful supply of sunlight hours, why can we not use Solar Energy Generation research from other countries leading the way in green energy generation, to look at the alternatives such as huge solar farms?

Renewable energy presently has some considerable drawbacks, most notably in the case of the proposed comparison, its transportability to viable markets. LNG addresses a more immediate need for clean fuel sources which offer a viable transition fuel away from fuel sources such as coal. Accordingly the SAR focuses on the environmental, social, economic, heritage and strategic implications of the proposed Browse LNG Precinct should it reach its full capacity.

Generic Question ID: 562 Sub ID [49] Raised by [S49 Q451]

Development of further infrastructure to burn carbon-based fuel is not only environmentally destructive, but economically irresponsible.

The State Government is of the view that the social and economic benefits associated with development of the Precinct, which include education, training and employment strategies, will help to reduce the widespread disadvantage across the Kimberley region.

Furthermore, the development of the LNG industry in Australia has the potential to play a significant role in reducing global greenhouse emissions through displacement of higher emitting fuels such as coal. This lower carbon emission rate makes natural gas a comparatively clean energy source, relative to other hydrocarbon fuels and can form part of the global solution to climate change. Proposals such as the Browse LNG Precinct can play an important part in a low carbon future, and set a precedent for more environmentally responsible development in the natural resources and energy industries.

Generic Question ID: 563 Sub ID [49] Raised by [S49 Q453]

Innovation needs to be directed towards developing new technologies aimed at preserving the environment.

As a transition fuel towards a lower carbon economy, LNG provides the opportunity for new technologies to be developed, while addressing the current growing fuel demands of the region which would otherwise be satisfied by other, potentially less environmentally acceptable fuel sources. LNG based power generation produces approximately half the amount of GHGs as fossil fuels such as coal and oil. **Part 4 Section 2.9** of the SAR notes that the development of the Browse LNG Precinct has the potential to enable emission reductions of 312Mt of CO2-e per year if LNG displaces coal fired power generation. This saving is equivalent to a 1.26% of global emissions referenced against a 2000 baseline year.

Generic Question ID: 597 Sub ID [57] Raised by [S57 Q501]

Gas supply in the region is already unreliable - Karratha has to use bottled gas imported from Perth. The government needs to provide more LPG and encourage conversion from unleaded fuel to gas, and power generation from coal to gas.

The purpose of the SAR is to address the possible impacts on population and existing services arising from the construction of a LNG processing facility (**Part 5**, **Section 2.5**).

While it is beyond the remit of the SAR to effect changes in fuel consumption patterns at the local level, the establishment of the BLNG Precinct does encourage the consumption of gas in preference to coal in the global energy market and may provide for the greater availability of a range of fuels within the region.

Generic Question ID: 854 Sub ID [209] Raised by [S209 Q1857]

Part 1 Section 4.4: It is not accurate for the SAR to allege that if the gas reserves are not developed at all then the greenhouse benefits of displacing coal will be lost. Whilst the use of coal as a power source must be urgently stopped, the use of LNG is not the answer. LNG is not a clean power.

Section 4.4 correctly states that if the Precinct were not to be developed then the gas reserves may not be developed at all. If this were the case then there would be no opportunity to deliver greenhouse benefits utilising Browse Basin gas to displace coal in power generation.

Natural gas has been labelled as the cleanest of all the fossil fuels. The SAR (**Part 4, Section 2.9**) notes that were used as a transitional fuel, LNG power generation systems produce on average 1.7 times more power for the same carbon emissions as coal fired generation.

3.4 Environmental Advantages

Generic Question ID: 102 Sub ID [14, 30, 50, 200, 163, 159, 74, 142] Raised by [S14 Q105]

Vital ecological processes throughout the Kimberley coastline will be destroyed.

In delivering the Browse LNG Precinct, the Western Australian Government is committed to balancing the needs of industry, the local community, and the environment for the benefit of all Western Australians. Extensive studies over a long period have identified the proposed location for the Precinct as one at which potential impacts are manageable.

Through a Strategic Assessment Agreement entered into by State and Commonwealth Governments on 6 February 2008, both Governments required that the Browse LNG Precinct undergo a rigorous and transparent consideration of potential environmental impacts and strategies for managing them. The Terms of Reference for the strategic assessment process were publicly reviewed in 2008, and are provided in **Appendix A-3** of the Strategic Assessment Report.

To better understand potential impacts from the proposed Browse LNG Precinct, a wide range of studies have been completed over recent years, including:

- terrestrial vegetation, flora and fauna;
- marine habitat and fauna;
- palaeontology;
- air quality; and
- greenhouse gases.

The studies reveal that Precinct is highly unlikely to affect the conservation status of affected flora and fauna on a regional scale. Nevertheless, the Strategic Assessment Report proposes a range of mitigation and

management measures to further limit and manage any potential impacts.

Management plans would be implemented to minimise disturbance to the surrounding habitats of threatened species and it is also planned to establish terrestrial and marine conservation reserves in the surrounding areas. Measures may also include avoiding clearing in sensitive areas and undertaking pre-clearing searches for conservation of significant species. Project proponents will also need to obtain separate approval of their derived proposals before projects can proceed.

The LNG Precinct will only proceed once it is demonstrated that environmental impacts can be managed in accordance with stringent standards.

Generic Question ID: 791 Sub ID [75] Raised by [S75 Q877]

The conclusion (**Part 1**, **p. ES-103**) that the development will provide additional protection of the local environment is misleading. If the environment requires protection, it should be provided because it is necessary and not be linked to a resource development proposal.

The State is constrained in its ability to closely and actively manage the entirety of the approximately 2.5 million square kilometres of land mass within Western Australia's borders. Proper management of the fire regime, weeds, and feral animals among other issues can only occur with active intervention, which must be properly resourced. The establishment of well managed commercial operations typically provides the opportunity and incentive for environmental stewardship to occur within the immediate area.

In developing the Browse LNG Precinct, the State has committed to the expansion of nature reserves, the employment and training of Traditional Owners as rangers, the rehabilitation of the site at the end of project life, and the protection of the rest of the Kimberley coastline through legislation preventing LNG development to occur elsewhere.

3.5 Economic and Social Benefits

Generic Question ID: 136 Sub ID [21, 25, 28, 48, 69, 44, 170, 227, 222] Raised by [S21 Q150]

A number of submissions raised similar points:

- The predicted benefits to Aboriginal people are asserted but not tested. Nowhere in the world have Indigenous people's lives improved as a result of mega-developments on their land. The Pilbara is a typical example of the failure of promised benefits. What is never understood is that money alone does not solve social problems. On the contrary, mega-developments exacerbate them.
- There is concern that the already traumatised local Aboriginal population will suffer from more dislocation, less connection with country, culture and family and that the psychological trauma will further devastate these people. Aboriginal people need to recover and regain a healthy balance - a process that will take time and support. Industry and division over some monetary pay off will only increase the internal damage of their kinship systems and of sense of well being in too many aspects to be able to mention here.

The State Government acknowledges the challenges associated with developing a large industrial project in an area with a significant Aboriginal population, but on balance believes the potential benefits in terms of employment, training and social development. It also remains committed to delivering social and economic benefits to the Aboriginal people of the West Kimberley through the BLNG Precinct, as well as implementing management measures to remove or minimise the potential for any negative effects. This is why consultation with Traditional Owners has taken a central role in the site selection and Strategic Assessment processes. Since December 2008, the State Government and Woodside have been negotiating with th1e Native Title claimants to reach an agreement over access the selected site. Negotiations have been successful in forming the Heads of Agreement (April 2009), which outlines the commitments and benefits Traditional Owners are to receive upon signing an ILUA or other form of native title agreement.

In addition, the State Government commissioned the Kimberley Land Council (**KLC**) to conduct an Aboriginal Social Impact Assessment (**ASIA**) (SAR **Appendix E-3**). The approach taken by the KLC was to assess the socio-economic impacts with the objective of maximising the positive impacts and minimising the negative impacts of the Precinct. It viewed the ASIA as a vehicle to incorporate Aboriginal people's perspectives into the statutory approval process and was intended to assist in developing benefit sharing mechanisms. A key goal of the ASIA was for the affected native title groups and other affected Aboriginal people to play a central role in the process.

The ASIA methodology included a literature review of previous international and Australian experiences of large-scale resource development and the impacts on Indigenous people (including in the Pilbara) and an analysis of the baseline social and economic conditions in Broome and the Dampier Peninsula. The ASIA

identified a number of potential impacts from the BLNG Precinct on the Indigenous communities of Broome and the Dampier Peninsula and made recommendations to minimise those impacts.

The ASIA notes the importance of addressing some of the broader social and economic conditions in which the project will be developed, as well as the barriers to Aboriginal people gaining access to the employment opportunities offered by the Precinct. These recommendations are expected to inform negotiations for leasing arrangements with commercial proponents to enhance opportunities and minimise impacts for the Indigenous communities of the West Kimberley. These actions go beyond providing monetary support and are across a range of broad policy areas, which is essential if social impacts are to be effectively managed, mitigated and compensated for, and economic and social opportunities are to be realised.

Impacts outlined in the ASIA are cross-referenced with the related management measures in **Part 5** of the SAR, **Section 3**.

Generic Question ID: 743 Sub ID [70, 75] Raised by [S70 Q629]

The BLNG Precinct appears to be pushed solely for "significant benefits in terms of royalty and tax revenue to the State and Federal governments" rather than for the benefit of the Kimberley.

Resource developments have the capacity to drive a range of social, environmental and other economic benefits. A key objective of the Browse LNG Precinct is to maximise these benefits for the community. Such benefits include:

- a range of economic growth opportunities arising from a major project including regional, State, and national jobs, contracts for both construction and operation of the Precinct, and indirect economic stimulus for the local economy;
- opportunities for Traditional Owners in terms of education, jobs, business development, and financial incentives valued at more than $1.5 billion as well as Indigenous empowerment through an active role in the management of the Precinct;
- expanded public and private investment in health and education services, housing and infrastructure;
- additional growth opportunities commensurate with future expansions and future users of the Precinct;
- additional protection and management of the local and regional environment, ensuring that its values are maintained;
- protection of the vast and iconic wilderness environment of the Kimberley by avoiding further development in the most sensitive and significant areas (in addition to the recent announcement of the Kimberley Conservation Parks); and
- broadening of the local economic base to provide greater resilience to the economy.

A comprehensive summary of the economic and social benefits is provided in the Response to Submissions Summary Report **Section 1.2**.

Generic Question ID: 158 Sub ID [23] Raised by [S23 Q186]

UWA Submission (Point 13): The SAR Conclusions (**p. 338-339**) include the view that a commercial development such as the proposed gas hub will bring with it a range of 'opportunities', such as to 'relieve [the region] of its [socio-economic] burdens … **p. 339**). Whilst the concluding comments also refer to some of the more obvious problems that are likely to arise, the most alarming message in the Report is the intention to proceed with the project despite the wealth of social, ecological and economic analysis that strongly advises otherwise.

The social and economic analyses undertaken for the proposed BLNG Precinct indicate that the project has the potential to generate positive outcomes for the local communities. However, they also conclude that significant impact management measures must be established in a timely fashion if these potential opportunities are to be realised and negative impacts avoided or minimised. This is why the strategic assessment places great emphasis on the importance of the State Government and commercial proponents designing and implementing, in consultation with the community, a range of socio-economic impact management plans.

The SAR is part of the approvals process and it is clear from the reports that the assessment is of the proposed establishment of the BLNG Precinct. The BLNG Strategic Social Impact Assessment Management Plan will apply if the Precinct is approved.

Generic Question ID: 448 Sub ID [44] Raised by [S44 Q417]

There are viable options which would allow the people of Broome to accept development in this region.

A key finding of the SAR is that the development of the Precinct would bring an overall benefit to the Kimberley region, creating a range of direct and indirect economic development and employment opportunities and securing a level of economic resilience well into the future.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Critically, the governance structure, as it is now proposed, provides for a social management committee which would be responsible for ensuring the ongoing performance of proponents' social obligations arising from the Precinct. A process of adaptive management would be employed to address issues, and optimise beneficial outcomes, as opportunities are identified.

Generic Question ID: 491 Sub ID [232] Raised by [S232 Q1355]

The Indigenous people on the Dampier Peninsula asked about the good and bad aspects of the proposed LNG Precinct at James Price Point.

The State Government is of the view that development of the Browse LNG Precinct will provide the opportunity for new initiatives to substantially improve the education, health, social and economic well-being of Indigenous people, and considerably reduce disadvantage within the broader Kimberley community.

The purpose of the Strategic Assessment process conducted for the Browse LNG Precinct was to identify and assess both the potential positive and negative impacts associated with the development of the Precinct. The environmental, social and Indigenous impacts identified in the process are documented in the Strategic Assessment Report (**SAR**). The SAR documents the baseline conditions, and predicts the potential positive and negative impacts on the local communities and the natural environment of the West Kimberley. The predicted environmental impacts are summarised in **Part 3** and **Part 4** of the SAR. Predicted social impacts are outlined in **Part 5, Section 2** of the SAR, with specific impacts to Indigenous people summarised in **Part 5, Section 3**.

In addition to predicting the potential positive and negative impacts of the development, comprehensive management and mitigation measures were also identified. The purpose of these measures is to minimise the negative impacts and maximise the opportunities associated with development of the Precinct.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, outlines a number of management mechanisms to ensure that the population of the West Kimberley is equipped to take optimal advantage of the benefits presented by the development of the Precinct. Engagement with Traditional Owners will continue during the detailed development of these management mechanisms.

The central conclusion of the SAR is that the development of the Precinct will provide a considerable net benefit to the population of the West Kimberley, provided the appropriate management measures are put in place.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 606 Sub ID [58] Raised by [S58 Q1506]

Profit will be made by the Kimberley Land Council, Broome Shire Council, State Government and Woodside, as a result of the Precinct.

The State Government seeks to encourage the facilitation of the LNG Precinct in order to deliver the substantial economic and social benefits associated with this type of development.

The production of LNG attracts Federal Petroleum Resource Rent Tax which would ensure that there is a positive net impact on Australia's gross domestic product, as well as State royalties in some cases, depending upon the resource's physical location. More significantly, benefits arise from business and employment opportunities, and procurement of goods and services, resulting in broad economic growth throughout the community.

In particular, there will be significant economic and social benefits for Traditional Owners as the State works to address widespread disadvantage in this region. On 6 May 2011 the Goolarabooloo Jabirr Jabirr Native Title Claimants authorised an agreement which would give Indigenous people a higher level of economic independence by establishing a comprehensive regime of benefits both for Traditional Owners of the Precinct site, and also to communities across the Dampier Peninsula and wider Kimberley region. Benefits are valued at more than $1.5billion and include a range of funding for the education, training, housing, and business

development.

Generic Question ID: 924 Sub ID [227] Raised by [S227 Q1169]

Social Impact Assessment: This proposal is a social economic disaster waiting to happen and is going to be on the conscience of the State Government, Woodside, the Joint Venture Partners and KLC workers and family members into the future.

The State is of the view that the Precinct will bring many tangible benefits both to the region and the State, and that any impacts can be adequately managed.

There are many social and economic benefits for the Kimberley region associated with the Browse LNG Precinct project. A major new investment project will provide impetus for expanded public and private investment in health and education services and infrastructure that the rapidly growing Kimberley population needs. It will also bring significant benefits in terms of long term employment, business opportunities and community development for the Kimberley region.

The benefits are discussed in more detail in the Response to Submissions Summary Report, **Section 1.2**.

Generic Question ID: 1061 Sub ID [114] Raised by [S114 Q2169]

A senior representative of DSD told a community forum that the Government has no published business case for this Precinct. How can this be from such a major and large development?

The Proponent considers that a business case is unnecessary given the clear inherent benefits arising from the Precinct. These benefits are environmental, social and economic in nature. An economic analysis alone would undervalue benefits arising. The State also expects cost recovery from commercial proponents for all ongoing costs associated with the Precinct. Accordingly, a business case would necessarily demonstrate a positive outcome, lessening the need to undertake a comprehensive analysis to demonstrate this would be the case. The Strategic Assessment Report effectively demonstrates the social and environmental aspects of a business case.

Generic Question ID: 1394 Sub ID [150] Raised by [S150 Q3164]

What is the estimated money generated for the gas companies involved?

Individual LNG companies must make their investment decision based upon full consideration of the costs and likely returns, as well as the investment profile of the company concerned. Given that the foundation project has an estimated capital expenditure of $30billion, the returns would need to be commensurate with the return on investment required to service such a cost. It is the responsibility of individual companies to divulge investment data to the market, and as such the Proponent does not concern itself with company specific financial arrangements.

Generic Question ID: 1395 Sub ID [150] Raised by [S150 Q3165]

What is the annual minimum revenue the local government, state government and federal government will be receiving from the proponents?

It is estimated that in the case of a recent 15Mtpa development (similar in magnitude to a potential foundation project for the Precinct), Australia would benefit from a positive impact on the gross domestic product (**GDP**) of the order of $64 billion. The revenues to local, State, and Commonwealth Governments depend upon a range of factors which rely themselves upon the particular project being discussed. Revenue streams may include:

- Resource Rent Tax applied to resources extracted in Commonwealth waters;
- royalties paid for resources extracted from State waters;
- other taxes charged by the different jurisdictions (e.g. GST charged by the Commonwealth; Payroll tax charged by the State; Rates paid to Local Government); and
- indirect benefits from the increased levels of economic activity (which may be both national, State, or local).

For all these reasons it is difficult to identify precise returns to any one jurisdiction at this time.

Generic Question ID: 1397 Sub ID [150] Raised by [S150 Q3170]

What is the government's ongoing annual total expenditure in relation of this project?

The State has committed $251 million to Traditional Owners over the life of the foundation project (nominally 30 years) as per the Heads of Agreement dated April 2009. Compliance and other operational costs will be met by Precinct tenants through leasing arrangements.

Generic Question ID: 1407 Sub ID [106] Raised by [S106 Q2257]

The SAR Conclusion (**Part 1, p. ES-103**) suggests that a number of benefits will be obtained by development of the Precinct. The statement that the state will receive significant benefits in terms of royalty and tax revenue to the State and Federal governments is misleading.

It is correct that the economic benefits in the form of royalty payments will not be significant at the State level. As stated in the Strategic Assessment Report (**SAR**), under current arrangements, all Petroleum Rent Resource Tax (**PRRT**) revenue receipts accrue to the Commonwealth Government. From a State perspective, the payroll tax receipts that would accrue from the development of the Precinct are considerable. While the State Government would receive some royalty receipts from the Precinct's development and operation, these would be relatively small when compared with those earned by the Commonwealth Government.

4 Site Selection Process Development Options

Generic Question ID: 1302 Sub ID [195] Raised by [S195 Q959]

Part 1 Section 5.1 Executive Summary:

The submitter has provided extracts from a series of media articles from various sources, dating back to mid-2009. Concerns are raised about the level of political interference.

In all industrial developments, decisions are made at the political level based on a range of factors. Like any member of the community, the Premier is entitled to form an opinion on these developments. Whether or not the project will proceed depends on the outcome of the approvals process, in which the proposal to establish the Browse LNG Precinct will be carefully considered by the State and Commonwealth Governments. The Department of State Development (**DSD**), as the Precinct Proponent, has undertaken a comprehensive strategic assessment that includes an evaluation of the non-Indigenous and Indigenous social impacts. The outcomes of these assessments have been documented in the strategic-level Social Impact Assessment (**SIA**) (**Appendix D**) and Aboriginal Social Impact Assessment (**ASIA**) (**Appendix E-3**) and summarised in the Strategic Assessment Report (**SAR**). Based on the information provided by DSD and the public through the public review, the Environmental Protection Authority and the Department of Sustainability, Environment, Water, Population and Communities will consider the proposal under the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and provide independent advice to their ministers.

As noted in the SAR, the State Government established a policy of seeking the informed consent of Kimberley Traditional Owners in the establishment of the Precinct. The SAR describes the range of good faith negotiations, consultation, engagement and other mechanisms undertaken by State Government to achieve the informed consent of the Traditional Owners throughout the West Kimberley more broadly, and that of the Goolarabooloo Jabirr Jabirr Native Title claimants in establishing the Precinct subject to statutory approvals. Matters relating to these negotiations, as well as the roles played by Government (including Premiers), are documented in **Part 5** of the SAR and in the Indigenous Impacts Report (**Appendix E** of **SAR**). All of this information has been provided to the State and Commonwealth Governments for careful consideration in the approvals process.

Generic Question ID: 1342 Sub ID [195] Raised by [S195 Q3209]

Part 6 Section 3.4: Karratha and Port Hedland are closer than Darwin, yet Inpex still see Darwin as a viable option. The Premier short circuited the whole process to try and get them to the Kimberley, but Inpex and Total have said they will never use it. Woodside and the state have said economics are why it can't go south yet the joint venture partners want to go south, once again political interference in the process appears again. Woodside's preferred James Price Point option is being studied after the federal and West Australian governments used a retention licence renewal to force reluctant minority partners to drop the option of saving the Browse gas for later use at the North West Shelf plant. Senator Brown said Resources Minister Martin Ferguson had effectively directed Woodside to build the gas processing facility at James Price Point as a condition on the company's retention lease. Economics don't come into it; it is all political interference pushing one thing and one thing only.

While individual projects must consider their own commercial and economic modelling, the State's analysis has determined that the proposed location to the south of James Price Point represents the most efficient overall development of the Browse Basin gas reserves. The site was selected following an extensive process to identify a suitable location that would accommodate at least two LNG project proponents. The site selection process included consideration of a range of economic, heritage, technical and environmental criteria. A total of 43 potential Kimberley sites were considered in addition to locations in the Pilbara and the Northern Territory, and offshore options such as floating LNG.

Further detailed evaluation was subsequently completed on 11 sites and a shortlist of four identified before the area in the vicinity of James Price Point was chosen. Critically, this site is located away from the remote wilderness areas of the Kimberley whilst still being in relatively close proximity to the Browse Basin gas reserves and existing infrastructure.

The requirement for expenditure tied to retention leases is normal practice, and while Browse Joint Venture participants have been required to investigate the proposed LNG Precinct site in this case, this does not compel them to make a Final Investment Decision in favour of the Precinct if they can demonstrate a more expedient means to develop the gas.

Further discussion with respect to alternative development scenarios is captured in **Section 4.2** of the Response to Submissions Summary Report.

4.1 Overview of Western Australian Government Process for Site Selection

Generic Question ID: 30 Sub ID [28, 36, 39, 57, 65, 67, 70, 71, 78, 86, 91, 96, 106, 120, 130, 141, 205, 212, 215, 218, 223, 226, 229] Raised by [S39 Q347]

What consideration and study has been given to major disasters that could impact the Precinct and cause environmental or heritage impacts (i.e. tsunamis, earthquakes, oil spills), and what management strategies will be put in place to protect the Kimberley should these occur?

The issue of potential natural disasters (i.e. low probability but high consequence events) was addressed at several points in the strategic assessment process, including during site selection, as a factor in facility design, and in emergency response planning.

The site selection process applied a number of factors that reflect disaster-related considerations, including:

- eliminating sites more prone to cyclone risks than other sites (e.g. Gourdon Bay);
- a preference for sites with high evacuation potential;
- coastal geomorphological stability/vulnerability;
- site elevation above 10-20m Australian Height Datum (**AHD**) to protect Precinct from surge tides and extreme weather events; and
- avoidance of sites with elevated risk/hazard for the marine biophysical environment (e.g. accidents, spills, quarantine breaches).

With respect to Precinct planning, the design of structures such as jetties would need to account for any cyclone or other extreme event based on at least a 1-in-100 year return period for cyclonic conditions.

As described in the **Part 7** (Supplemental Information), **Section 4** of the Strategic Assessment Report (**SAR**), hydrocarbon spill modelling was undertaken for the project. This examined a range of hydrocarbon spill scenarios, predicted the combined probability of spills from all scenarios impacting on critical environmental assets, and estimated the scale of response times required to address spills of different sizes.

As described in the SAR, the State Government, with advice from FESA, will prepare and implement an overarching Emergency Response Plan for the Precinct. This plan will include spill contingency procedures and

address the coordination of proponents in the event of an emergency.

Commercial proponents will also be required to prepare and implement a Hydrocarbon and Chemical Spill Contingency Plan, to the satisfaction of the Western Australian Minister for Environment, which addresses the following:

- effective and timely management of spills;
- roles and responsibilities of response personnel;
- procedures for incident response;
- objectives, targets and associated monitoring; and
- alignment and compliance with the State Government Precinct Emergency Response Plan.

As a result, the establishment of the Precinct will result in specialist risk management and emergency response resources currently not available in the Kimberley region.

Generic Question ID: 777 Sub ID [66, 75, 228, 118, 223] Raised by [S75 Q831]

Of significant concern is the role of the Federal Resources Minister Martin Ferguson in creating the "legal and commercial imperatives" which led to the agreement of the Joint Venture Participants to develop the project at James Price Point. It is understood that Minister Ferguson applied a condition to the renewal of the Woodside joint venture partners Browse leases requiring that they agree to a preferred development site to process Browse gas in the Kimberley within four months and spend $1.25 billion at James Price Point over 2.5 years from 2009 - actions which biased the Joint Venture Partners' choice of the site where Browse Gas should be developed, rendering the other location options irrelevant.

It is standard practice for Governments to seek substantial works programs in relation to retention leases. It is also usual to apply policies which encourage development in preference to 'banking' of resources over long periods and to the detriment of others more willing to develop at an earlier opportunity.

Accordingly, the Commonwealth applied a transparent set of conditions requiring that retention leaseholders progress the commercialisation of resources. It required leaseholders to select a development option to progress investigations. The Government nominated the Precinct; however provided opportunity for leaseholders to present alternative commercialisation options to achieve the 'early development' objective. After three and a half years the leaseholder must then have undertaken sufficient work to apply for the necessary approvals and to be in a position to make a final investment decision.

The Proponent does not consider this a bias, but rather a means of drawing out companies' true objectives with respect to resources under retention lease, and to seek an outcome which is in the best interests of Australians.

Generic Question ID: 128 Sub ID [17, 211, 118, 182] Raised by [S17 Q140]

The report is quite up front about the fact that the site was chosen according to technical and economic considerations above environmental and heritage impacts (**'Executive Summary'**, **p. 23**); this is unacceptable.

Note: The page reference in this submission is not consistent with that of the published SAR.

Consistent with best practice, the site selection methodology applied a screening approach to the initial long list of potential locations for the BLNG Precinct. Each alternative precinct site was considered against the following high level considerations:

- potential environment and heritage constraints and impacts;
- technical constraints at the alternative locations;
- potential social constraints and impacts; and
- economic viability of the alternative locations.

Applying these considerations, those sites with no prospect of being feasible were eliminated from further investigation. The remaining sites were carried forward for more detailed study.

It should also be noted that the Environmental Protection Authority assessed four short listed sites and found James Price Point to be the least constrained of the Dampier Peninsula sites evaluated and concluded that environmental risks and impacts were likely to be manageable.

Generic Question ID: 295 Sub ID [165, 120, 77, 106] Raised by [S165 Q718]

There is a failure of 'Due Process' in considering locations for the precinct other than James Price Point. Firstly, a JP Morgan study in December 2009 found that the WA and Federal governments had "biased" the decision in favour of James Price Point which in fact only one of the five joint venture partners (Woodside) preferred. ("Woodside petroleum: Govt flexes muscle, pushes James Price Point as option for Browse" JP Morgan, in Australia Equity Research, 3rd Dec 2009). Secondly, the Federal Resources Minister pre-empted the statutory assessment by requiring the 5 JV partners to spend $1.25 billion at James Price Point over 2.5 years from 2009 as a condition of renewal of their Browse leases (DoE, obtained under FOI 8 Jan 2010). Finally on September 2010 Premier Barnett said of his commitment to establishing an LNG hub at James Price Point that "this Government has pledged its future on getting this project up and going".

This proposal has been developed in accordance with the legislative requirements and the Strategic Assessment Agreement signed in February 2008. A comprehensive site selection process was undertaken which culminated in James Price Point being identified as the preferred location for a Precinct. It is on this basis that the Proponent now considers that James Price Point to be the most suitable option for the Precinct. The Federal Resources Minister has exercised a legitimate power in requiring leaseholders to consider the preferred development option which was identified. This was done independently of and without interference by regulators.

The site selection process is discussed in **Section 4.2** of the Response to Submissions Summary Report.

Generic Question ID: 161 Sub ID [17, 198, 212] Raised by [S17 Q328]

No evidence is provided that options such as a floating platform or processing at existing facilities such as Port Hedland have been properly explored by an independent authority, rather than just relying on one or two companies' preferences.

The State Government's site selection process for the BLNG Precinct included inputs by the Western Australian Government, the Commonwealth Government, Traditional Owners, and industry (primarily Woodside and Inpex). Extensive consultation with Traditional Owners during the site selection process was managed by the KLC as the representative body for the many Aboriginal groups in the region.

The site selection process investigated an initial long list of development options that included:

- Floating LNG processing facilities;
- 43 potential locations in the Kimberley region (including offshore at Scott Reef, the Maret Islands or at Wilson Point in the Camden Sound);
- a range of sites in the Pilbara region to the south of the Kimberley (Onslow, Burrup Peninsula, Cape Lambert or Port Hedland); and
- locations to the northeast of the Kimberley in the Northern Territory (Middle Arm, Glyde Point or Bynoe Harbour).

The development options were tested to assess whether they were significantly constrained with respect to a range of technical, economic, marine and terrestrial environment, natural and Indigenous heritage, and other Indigenous and socio-economic considerations. Options were dropped from further consideration if constraints prevented them from being a feasible option for the LNG development. The remaining options were carried forward for more detailed investigation. The investigations included comprehensive stakeholder consultation involving over 100 people with professional expertise in areas such as oil and gas, the environment, heritage, fishing, pearling, planning, tourism and Aboriginal culture.
The consulting firm GHD was retained to prepare a comparative analysis of the feasibility of various locations for the development of a common-user LNG precinct outside of the Kimberley region. Based on the analysis of constraints, the non-Kimberley options were not recommended for further investigation for a number of reasons as follows.

Offshore floating LNG facilities offer some potential for processing close to the gas field. The Federal Government has approved the development of the world's first Floating LNG for Shell's Prelude proposal in Commonwealth waters off the coast of Western Australia, however:

- it remains an unproven technology; and
- at this stage would not be suitable for large gas resources such as those Browse Basin gas fields currently identified for development at the Precinct – Industry generally considers floating facilities as more suitable for small, stranded or remote reserves such as Shell's Prelude 3.6 Mtpa Floating LNG proposal.

Piping the gas to existing plants away from the Kimberley was not recommended because of distance. The gas fields are between 250km – 500km to James Price Point. In comparison, the distance to the Pilbara and Darwin is in excess of 800km and 1000km respectively. The greater distances are regarded as prohibitive because:

- the additional length of the subsea pipeline is estimated to cost $4million per kilometre;
- gas which is transported offshore by pipeline, over distances of 400km or more, requires compression stations which are estimated to cost up to $1billion;
- the additional compression to pipe gas to the Pilbara compared to the Kimberley is estimated to lead to an increase in carbon emissions in the order of 7-8 per cent; and
- significant additional environmental impact and risk attached to an extra 400km of subsea pipelines.

Use of existing ports/facilities may constrain the development of Browse; for example:

- space restrictions within lease boundaries;
- shipping channel restrictions;
- LNG berth availability; and
- pipeline constraints.

The Stateremains committed to maximise the benefits to the West Kimberley from the large Browse Basin resource – leading to increased investment, business and employment.
The State does not support the processing of gas through existing facilities on the Burrup Peninsula because:

- distance from the Browse Basin (over 800km);
- it would delay the development of Browse by 10 to 15 years while the resources of the Carnarvon field were exhausted;
- it would deter the efficient development of North West Shelf resources; and
- it would restrict the development of Browse – as it would be constrained to the capacity of the pipeline and the cost of transporting the gas.

The Government remains committed to delivering fundamental economic and social change to Indigenous communities in the Kimberley through development of the Precinct at James Price Point. The disused BHP Boodarie site in Port Hedland was not selected due to:

- distance from the Browse Basin (over 800km);
- existing port constraints. Specifically the industrial area is too far from the port to make the (very expensive) cryogenic pipelines viable;
- it would restrict the development of Browse – as it would be constrained to the capacity of the pipeline and the cost of transporting the gas;
- BHP proposes that much of the Mining Act tenure will be required for its future expansion associated with the Outer Harbour development;
- it is not envisioned that a major LNG facility would be appropriate for this site; and

The Government remains committed to delivering fundamental economic and social change to indigenous communities in the Kimberley through development of the Precinct at James Price Point.

Generic Question ID: 1223 Sub ID [222, 120] Raised by [S222 Q1154]

Regardless of the views of conservation groups, Federal documents obtained under Freedom of Information (**FOI**) make it clear that the study of sites outside the Kimberley that the WA government is obliged to undertake has not occurred. (Ref: Cwth DEWAHA documents by FOI, 2008-2010).

This failure to comply with the terms of the SAR Agreement is further confirmed in the Federal Environment Minister's answers to questions in Parliament, November 2010: "The agreement for the strategic assessment requires the WA government to prepare an assessment report that [includes] an analysis of technically and economically viable gas processing options outside the Kimberley…A site selection process was conducted by the WA Government…The process involved consideration of more than 40 sites in the Kimberley…The Minister will make his decision on whether or not to approve development of an LNG precinct at James Price Point only if satisfied that the requirements [of the EPBC Act and SAR Agreement] have been met…This suite of information must include an assessment of possible sites outside the Kimberley."(Ref: Hansard, Nov. 2010; see

full Ministerial statement in appendix).

In December 2009, international investment bankers JP Morgan conducted their own assessment of the Browse LNG process and project and concluded that the governments had 'biased' decisions to favour a location that only one of the five joint venture partners, Woodside, preferred: "JV partner alignment is one of the primary reasons why we have been quite negative regarding the prospects for a timely Browse development…[The WA and Federal Governments] appear to have biased the decision towards the James Price Point option…We understand that other Browse Joint Venture partners [not Woodside] believe gas production at the North West Shelf [Karratha] will decline around 2019-2020, creating shortages at the [existing] LNG plant, and the Browse gas is proposed to fill this shortage…Other risks that remain including the potential for a lengthy environmental approvals process given the sensitive nature of the project - drilling through a reef and developing on the pristine Kimberley coast…There is not currently a technical solution for CO2 in the Browse project…we do not underestimate the technical challenges associated with CO2 in the project." (Ref: "Woodside Petroleum: Govt flexes muscle, pushes James Price Point as option for Browse," JP Morgan, in Australia Equity Research, 3rd Dec 2009).

Upon becoming Premier in late 2008, Colin Barnett pre-empted any meaningful assessment of sites outside the Kimberley by announcing that the LNG precinct would be located in the Kimberley, no matter what. He has firmly tied his leadership to the construction of an LNG hub on the Kimberley coast – even if that means compulsory acquisition of land and forcing companies to locate there against their commercial interest. Having pre-determined that the LNG site would be in the Kimberley, the Premier then engaged in a curious exercise of personally identifying the exact location, only to change his mind when certain issues were brought to his attention.

- October 15, 2008 – Premier prefers North Head location (100km north of James Price Point)
- December 19, 2008 – EPA says North Head is important as a Humpback Whale breeding ground
- December 23, 2008 – Premier changes his mind and says James Price Point is to be the location.

This political interference was followed up by Federal Resources Minister Martin Ferguson who in late 2009 placed conditions on the gas leases of the Browse LNG Joint Venture partners – Woodside, Chevron, BP, Shell and BHP – that effectively forces them to start developing the James Price Point location well before the State and Federal environmental impact assessment process is completed. There have been five reports that refer to options for Browse LNG processing sites:

- Gaffney, Cline and Associates (2008);
- Worley Parsons Ltd (2008);
- GHD Ltd (2008) – commissioned by the Commonwealth Department of Environment;
- Northern Development Taskforce (NDT; 2008) – headed by the WA Department for State Development;
- The WA Environment Protection Authority (EPA; 2008).

All of these reports either deliberately ignore feasible sites outside the Kimberley, or superficially dismiss sites outside the Kimberley on the basis of impediments that are equally or more applicable to the 'preferred site' at James Price Point, such as height above sea level, distance to deep water and depth of seabed. There is no evidence to suggest that sites outside the Kimberley have been seriously considered, despite several options in the Pilbara being available.

The State has made the site selection decision for a proposed 50Mtpa LNG Precinct based on a detailed and comprehensive site selection process. Technical, economic, environmental and Indigenous heritage constraints were the primary considerations in short listing a suitable site. Unless LNG development is feasible at a location, there is no value in undertaking further, more detailed analysis of a site. While it may be viable for some individual proponents to locate outside of the Kimberley region, this does not fulfil the requirement for the efficient development of neither the Browse Basin, nor the Carnarvon Basin gas fields.

Based on the extensive analysis undertaken, the State considers that the development of a multi-user LNG Precinct south of James Price Point offers the greatest benefits for the State and local region whilst minimising environmental, cultural and heritage impacts.

The site selection process is discussed further in the Response to Submissions Summary Report, **Section 4.2**.

Generic Question ID: 1252 Sub ID [103] Raised by [S103 Q2155]

Woodside Submission: Application of Environmental Assessment Guidance 3 - The site selection process considered technical, heritage, social and environmental attributes of a number of locations. This process resulted in the selection of a location to the south of James Price Point which reduced dredge volumes, and avoided areas supporting significant benthic primary producer habitat (**BPPH**).

Given that the site selection process considered BPPH values and the Strategic Assessment Agreement was entered into with an objective to concentrate development at James Price Point (as opposed to multiple developments throughout the Kimberley), Woodside considers the direct application of benthic habitat loss thresholds from Environmental Assessment Guideline 3 (**EAG3**) to be inappropriate for the strategic assessment of an LNG precinct.

Since a key principle of EAG3 is to minimise impacts to BPPH, Woodside believes that greater consideration of the site selection process should be given by EPA in its assessment of the proposal, as opposed to the cumulative loss calculations of BPPH within a defined Local Assessment Unit (**LAU**). Additionally, Woodside supports the strategic nature of the proposed Browse LNG Precinct to prevent the potential proliferation of development along the WA Kimberley coastline, further minimising the likelihood of regional impacts to BPPH.

Woodside considers the use of EAG3 in the determination of offsets to be inconsistent with the proposal to develop a multi-user LNG precinct for the reasons outlined above. Furthermore, Woodside considers that a better environmental outcome is achieved by future proponents who are required to locate their development at the Precinct.

While it is acknowledged that the site selection process assisted in avoiding many areas of considerably more important benthic habitat, exceedance of the CLGs is intended to prompt a closer examination of the potential ecological significance of the impact to ensure that the development will not pose an unacceptable risk to ecological integrity. As per Environmental Assessment Guideline 3 (EPA, 2009), it is noted that the acceptability of any permanent loss of BPPH will remain the judgement of the EPA, based primarily on the overall risk to ecological integrity within the local assessment unit.

Generic Question ID: 1412 Sub ID [107] Raised by [S107 Q2290]

In relation to determining the suitability of James Price Point as a location for the proposed gas Precinct, the submitter believes that there has been an over reliance on desktop studies and not enough on ground studies.

A significant range of desk top and field studies were undertaken in order to inform the impact assessment presented in the SAR. The majority of environmental studies were field based rather than desk based (18 out of 25) and are reported in **Appendix C** of the SAR. These field based studies included marine studies to understand benthic primary producers, marine mammals, marine reptiles, fish and intertidal habitats. Terrestrial field based studies included a range of flora and fauna studies. In addition, modelling studies were informed by a range of additional ongoing field based data collected from the James Price Point coastal area, such as water quality, metocean data etc.

The requirement for a desk-based or a field based study was informed by various factors such as the suitability of survey methods at the site, the ability to access the site given seasonal constraints and Traditional Owner agreements, the likelihood of a species being present, the effectiveness of using other desk based literature to draw conclusions on the site and the suitability of other techniques such as modelling (informed by other field based collected inputs) to determine the baseline setting. In circumstances where field based baseline data still needs to be collected, then commercial proponents will be expected to undertake these investigations to further augment existing information in their derived proposal referral.

4.2 Site Options outside the Kimberley Region

Generic Question ID: 3 Sub ID [1, 2, 4, 5, 7, 15, 17, 21, 24, 26, 27, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 48, 49, 50, 51, 53, 54, 56, 57, 58, 61, 62, 67, 69, 70, 73, 74, 75, 76, 77, 79, 81, 85, 87, 89, 90, 91, 93, 94, 95, 96, 97, 98, 99, 105, 106, 108, 109, 110, 111, 113, 116, 118, 119, 120, 123, 124, 125, 126, 128, 132, 134, 135, 136, 137, 138, 139, 141, 142, 143, 144, 148, 149, 151, 152, 153, 158, 159, 160, 162, 163, 164, 170, 173, 195, 198, 205, 207, 212, 215, 216, 217, 223, 227, 228, 232, 234, 236, 292, 293] Raised by [S1 Q635]

The SAR fails to adequately investigate both technically and economically viable alternatives outside the Kimberley region, including the use of existing brownfield sites in the Pilbara (e.g. Port Hedland, Karratha) or a floating site. The assessment of all feasible alternatives was required by the terms of reference of the agreement between the State and Commonwealth and this was not sufficiently undertaken nor were the results of which disclosed to the public.

The Western Australian Government proposes to develop the Browse LNG Precinct near James Price Point, in order to ensure that the population of the Kimberley region benefits from the development of natural gas

resources in the offshore Browse Basin.

A rigorous two year site selection process was undertaken by the State Government considering 43 sites within the Kimberley. In addition, this process also considered options for a floating LNG facility, as well as sites in the Pilbara and Darwin.

Issues taken into account during the site selection process included:

- The suitability of locations in terms of environmental and Indigenous heritage constraints;
- Proximity to the Browse Basin gas fields;
- Suitability for heavy industry and shipping; and
- Impacts on existing communities and on community and industry uses.

Following extensive technical, environmental and social studies, James Price Point was selected as the most suitable location. This selection was based on advice from the EPA identifying James Price Point as the site at which potential environmental and social impacts would best be managed (http://epa.wa.gov.au/EPADocLib/2831_Rep1306KimbLNG_191208.pdf).

The Browse LNG Strategic Assessment Report (**SAR**) for the Precinct considers the broader social and environmental impacts, as well as the means to manage those impacts in order to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. In addition, the SAR identifies the mechanisms through which the many opportunities presented by the Precinct can be maximised for the local population of the West Kimberley.

An outline of the site selection process is available online from: http://www.dsd.wa.gov.au/browseLNG/.

Generic Question ID: 162 Sub ID [17, 92, 74, 236, 15] Raised by [S17 Q329]

The main starting point for site selection should be that the Kimberley is an inappropriate area for industrialisation and so other options need to be considered.

The Kimberley region possesses many important environmental values that must be protected. It is also a diverse area that supports a range of industries that provide the economic base of the region, including agriculture, tourism, mining, oil and gas, and others. Eliminating the Kimberley from consideration from the outset of the site selection process would not have avoided the issue of significant environmental values. Much of the Pilbara and the Northern Territory contain similar environments and values that also must be carefully managed.

An extensive and consultative site selection process was undertaken to determine the most appropriate location to develop the LNG precinct. Consideration was given to environmental, social, heritage, technical and economic factors. The area south of James Price Point was selected because it is remote from the iconic wilderness tourist destinations of the Kimberley, yet it is relatively close to existing infrastructure. The State also received EPA advice in 2008 that environmental impacts and risks are likely to be manageable at the James Price Point site.

In recognition of the significant environmental values of the region, the State recently announced the intention to establish Kimberley Wilderness Parks covering more than 3.5 million hectares (half the size of Tasmania) including four new marine parks, a new national park and a number of additional conservation reserves.

Generic Question ID: 350 Sub ID [37, 66, 195, 211] Raised by [S37 Q337]

The development of James Price Point would open up the Kimberley to additional mining and ancillary industry, and will do to the Dampier Peninsula what the development of King Bay did to the Burrup Peninsula. It's called "the thin edge of the wedge".

One of the primary objectives in developing the Browse LNG Precinct is to provide a single location for the processing LNG resources, thereby avoiding ad hoc development at multiple locations on the Kimberley coast. Only LNG processing and related activities will be permitted in the proposed Browse LNG Precinct. Further, LNG processing will not be permitted elsewhere on the Kimberley coast.

Generic Question ID: 72 Sub ID [7, 216, 223] Raised by [S7 Q86]

The government is urged to err on the side of precaution because the threats to the Kimberley from this project are too great. Neither this project nor any other industrial project should be situated on the Kimberley coastline.

In delivering the Browse LNG Precinct, the Western Australian Government is committed to balancing the needs of industry, the local community, and the environment for the benefit of all Western Australians. Extensive studies over a long period have identified the proposed location for the Precinct as one at which potential

impacts are manageable.

Through a Strategic Assessment Agreement entered into by State and Commonwealth Governments on 6 February 2008, both Governments required that the Browse LNG Precinct undergo a rigorous and transparent consideration of potential environmental impacts and strategies for managing them. The Terms of Reference for the strategic assessment process were publicly reviewed in 2008, and are provided in **Appendix A-3** of the Strategic Assessment Report.

To better understand potential impacts from the proposed Browse LNG Precinct, a wide range of studies have been completed over recent years, including:

- terrestrial vegetation, flora and fauna;
- marine habitat and fauna;
- palaeontology;
- air quality; and
- greenhouse gases.

The studies reveal that the Precinct is highly unlikely to affect the conservation status of affected flora and fauna on a regional scale. Nevertheless, the Strategic Assessment Report proposes a range of mitigation and management measures to further limit and manage any potential impacts.

Strict limits to clearing and management plans would be implemented to minimise disturbance to the surrounding habitats of threatened species and it is also planned to establish terrestrial and marine conservation reserves in the surrounding areas. Measures may also include avoiding clearing in sensitive areas and undertaking pre-clearing searches for conservation of significant species. Project proponents will also need to obtain separate approval of their derived proposals before projects can proceed.

The LNG Precinct will only proceed once it is demonstrated that environmental impacts can be managed in accordance with stringent standards.

Generic Question ID: 328 Sub ID [28, 142, 149] Raised by [S28 Q279]

Why cannot the gas be piped down to existing infrastructure in the Pilbara? Is the reason because the air in the Pilbara is already polluted with benzene and other toxic gases?

The site selection process is discussed in **Section 4.2** of the Response to Submissions Summary Report.

There are a number of factors for not selecting the option to pipe the gas to the Pilbara. Primary among these is that the piping of gas to the Pilbara would fail to realise the full potential of Browse Basin gas by bypassing the social and economic opportunities for the people of the West Kimberley. Mechanisms to facilitate these social and economic benefits for the West Kimberley population are identified in the Strategic Social Impact Management Plan, outlined in **Part 5**, **Section 5** of the SAR.

Part 4, **Section 2.8** of the Strategic Assessment Report (**SAR**) outlines the comprehensive air quality modelling conducted as part of the strategic assessment process. This modelling concluded that, on a local and regional scale, the contribution from the Precinct to the predicted concentrations of all other pollutants emitted from existing sources will be low. Nevertheless, emissions associated with the Precinct will be managed, monitored and responded to through an Air Quality Management Plan.

Generic Question ID: 71 Sub ID [7, 119] Raised by [S7 Q85]

We don't know the benefits that are currently locked up in the natural environment of the Kimberley or the cultural knowledge of Aborigines in relation to this landscape. Yet we are so arrogant we are prepared to destroy this for short term gain provided by gas production and resource mining that can be found elsewhere. There is nothing unique about the resources found in the Kimberley, however there is something unique about the natural environment and the diversity of species found there - they are found nowhere else in the world!

The Precinct has been progressed on the basis that it can coexist with the natural environment of the Kimberley region, while delivering significant opportunities and benefits to some of the most disadvantaged communities in Australia. The Precinct will occupy 0.02 percent of the Kimberley's land mass.

The State Government has given careful consideration over two years to selecting the proposed location for the Browse LNG Precinct. Studies confirm that, compared to other locations, potential environmental impacts from the Browse LNG Precinct can best be minimised, and where they do occur impacts can be managed, in the vicinity of James Price Point.

Specialist consultants working for the State have conducted dozens of environmental studies, ranging from sampling, surveys and mapping to sophisticated computer modelling to build a detailed picture of the terrestrial

and marine environment around the proposed Browse LNG Precinct. The information gathered provides the basis for plans for managing the impacts on native land- and sea-based flora and fauna and air and seawater quality, during construction and operation of LNG processing and shipping facilities at the Precinct.

There are some significant environmental benefits for the Dampier Peninsula which would result from the Precinct. For example, the State Government has proposed the creation of new conservation reserves and support for their ongoing management as part of the package being developed with Traditional Owners to secure access to the land. Another significant opportunity lies in the introduction of an improved fire management regime around the Precinct, which would reduce the major contribution to air pollution on the Peninsula that bushfires provide as well as improving the condition of the natural vegetation.

The development of Cultural Heritage Management Plans is also being discussed with Traditional Owners to ensure that the culture and heritage of the local Indigenous population is protected and enhanced as part of the Precinct proposal.

Generic Question ID: 285 Sub ID [39, 169] Raised by [S39 Q762]

When Woodside is determined to pursue a floating platform in East Timor, why can't they pursue a floating platform here in Australia?

The State Government has given careful consideration to selecting the area near James Price Point as the proposed location for the Browse LNG Precinct. The site was selected following an extensive two year process, whereby studies confirmed that compared to other locations, James Price Point minimised the potential environmental impacts of a project of the scale of the Browse LNG Precinct.

The site selection process analysed a range of considerations including technical, economic, marine and terrestrial environment, natural and Indigenous heritage, and other Indigenous and socio-economic constraints. A range of development options were considered to determine the suitability of the State's proposal as well as to define the preferred location for the State's proposed development. Development options considered including offshore processing. For more information on the site selection development options particularly offshore options refer to SAR **Part 2**, **p. 4-13**.

It is noted that the proposed Precinct is envisaged as a means to facilitate the development of larger natural gas reserves that are most logically developed on shore. Floating LNG technology is currently unproven and itself carries a significant risk, and while floating LNG facilities may have potential for the development of smaller, remote fields, currently envisaged technologies constrain floating LNG production to around 4Mtpa. In contrast the Precinct would have capacity for the production of up to 50Mtpa of LNG.

Generic Question ID: 340 Sub ID [30, 195] Raised by [S30 Q284]

The Kimberley has far greater value as a magnificent wilderness with respect to its marine environment, the Ramsar wetlands, monsoon vine thickets, bird migration destination, etc.

The Western Australian Government believes that the Browse LNG Precinct project can proceed with minimal or no impact on the broad range of environmental values in the Kimberley. The Browse LNG Precinct project has given a high priority to managing any potential impacts on plants, birds and mammals on the Dampier Peninsula as well as their land and marine habitats. Detailed environmental studies have been conducted, ranging from sampling, surveys and mapping to sophisticated computer modelling to build a detailed picture of the marine and land environment around the proposed Browse LNG Precinct, near James Price Point. The information gathered provides the basis for plans to manage any impacts on native flora and fauna and air and seawater quality, during construction and operation of the Precinct.

The Browse LNG Precinct is not located close to the iconic and rugged Kimberley wilderness, and any potential impacts would not be felt in those areas. For example, the Browse LNG Precinct is situated well over 400km from the Prince Regent Nature Reserve and 370km from King Leopold Ranges.

Generic Question ID: 516 Sub ID [232, 153] Raised by [S232 Q1381]

The Aboriginal community members on the Dampier Peninsula wonder whether the State is making the correct decision in placing the LNG Precinct in the Kimberley. The consequences of 'getting this wrong' are huge for all of Western Australia.

The State Government recognised the importance of getting it right with respect to the selection of a site for the Browse LNG Precinct and undertook a lengthy and robust site selection process.

The site selection process included inputs by the State Government, the Commonwealth Government, Traditional Owners, and industry. Extensive consultation with Traditional Owners during the site selection process was managed by the Kimberley Land Council (**KLC**) as the representative body for the many

Indigenous groups in the region.

The site selection process investigated a long list of development options that included:

- floating LNG processing facilities;
- 43 potential locations in the Kimberley region;
- a range of sites in the Pilbara region to the south of the Kimberley; and
- locations to the north east of the Kimberley in the Northern Territory.

The Commonwealth Government also commissioned a report by GHD to investigate the economic feasibility of alternative sites for the processing of Browse Basin gas reserves. The report found that economics dictate that any proposed site greater than 500 kilometres from the Browse Basin gas fields is prohibitively expensive to develop from a green field situation. The use of existing brown field facilities in the Pilbara would fail to realise the full potential of Browse Basin gas reserves, and deny the social and economic benefits presented by its development to the people of the West Kimberley and Western Australia as a whole.

Following further study, a short list of four sites was identified. A full assessment of the four shortlisted sites was conducted after undertaking geo-technical assessments, completing environmental studies, receiving Environmental Protection Authority (**EPA**) advice pursuant to s16(e) under the *Environmental Protection Act 1986* and engaging in further stakeholder consultations. The EPA advised that the environmental impacts and risks of locating a precinct in the James Price Point coastal area were likely to be manageable.

Following the release of the EPA advice, the State Government issued a report recommending James Price Point as the preferred location. James Price Point was determined to be the only site where all identified constraints were considered manageable and had several advantages over other sites on environmental, Indigenous, socio-economic, community, tourism and technical grounds.

The Strategic Assessment Report (**SAR**) for the Precinct considers the broader social and environmental impacts, as well as the means to manage those impacts in order to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. In addition, the SAR identifies the mechanisms through which the many opportunities presented by the Precinct can be maximised for the local population of the West Kimberley.

Generic Question ID: 717 Sub ID [70] Raised by [S70 Q586]

Gail McGowan of DSD informed us at a March community information session that Pilbara sites were not an option because pollution limits there would be exceeded. This gives even more cause for alarm about pollution in the Kimberley. Where are the detailed studies?

The impacts referred to on the Burrup Peninsula are related to the cumulative air quality impacts which would arise if the Browse LNG Precinct were to be co-located with the North West Shelf and Pluto projects. A detailed summary of the atmospheric environment, including studies and surveys is provided in the SAR, **Part 4, Section 1.5** and **2.9.**

Generic Question ID: 861 Sub ID [169] Raised by [S169 Q1718]

Environs Kimberley: No independent or comprehensive third party verification has been supplied to support the various statements made about technical or engineering constraints against offshore Floating LNG facilities or pipelines to existing facilities. No peer review documentation has been made publicly available (e.g. dredging).

The site selection process, including the consideration of development options, is discussed further in **Section 4.2** of the Response to Submissions Summary Report. This includes additional independent analysis of the current status of technology in relation to floating LNG or long distance piping options.

A peer review of the dredging assessment (**Appendix C-13**) was specifically commissioned by SEWPaC (then DEWHA) to support their regulatory assessment. Any issues identified in the document by peer reviewers are required to be addressed to the satisfaction of SEWPaC, and any subsequent agreed recommendations by peer reviewers will be considered as part of any future dredge modelling process by proponents of derived proposals.

Generic Question ID: 866 Sub ID [120] Raised by [S120 Q1210]

ENGO Submission: In what is presenting as the 'analysis' of location options outside the Kimberley as required by the bilateral agreement, the SAR first points to the Commonwealth's GHD Consultant's Senate Hansard, November 2010 report' (GHD, 2009). Numerous documents obtained under FOI show that the Commonwealth has repeatedly stated - and told the Proponent (DSD) - that the GHD study was "preliminary", only a "desktop

study" and "did not meet the Proponent's obligation to carry out an analysis of non-Kimberley options".

While views have been expressed that it may be viable for individual proponents to locate outside of the Kimberley Region, the purpose of the site selection process was to identify the State's preferred location for the development of a multi-user LNG Precinct to develop Browse Basin gas resources more broadly.

The State has made its site selection decision based on the information available to it through a detailed and comprehensive site selection process. Technical and economic constraints were the primary consideration in short listing a suitable site. Unless LNG development is feasible at a location, there is no value in undertaking further, more detailed, analysis.

The identification of the Precinct, through the agreement reached with Traditional Owners, prevents the development of LNG at other sites in the Kimberley region; however does not in itself prevent proponents from considering other options away from the Kimberley coastline. Individual project proponents must therefore undertake their own commercial and economic analyses to determine their preferred development option. This will be the true test of the suitability of the Precinct at the chosen location.

Further discussion about site selection is presented in **Section 4.2** of the Response to Submissions Summary Report.

Generic Question ID: 1143 Sub ID [225] Raised by [S225 Q2798]

CCI Submission: There is no disputing the unique environmental and heritage qualities of the Kimberley, and CCI recognises the associated sensitivities of major industrial development in this region. However, CCI believes that industrial development and environmental conservation can successfully co-exist. On this point, it is important to recognise that site selection for the BLNG project has been far from an uninformed decision. A significant amount of work has already gone into selecting James Price Point as the preferred development site, with impacts carefully assessed and evaluated. However, opponents of the BLNG Precinct continue to press for the Precinct to be located elsewhere, particularly at Port Hedland or at an offshore floating LNG facility to minimise impacts on the Kimberley. This view ignores the fact that the site assessment process to date has already examined several sites outside the Kimberley (including Port Hedland), as well as offshore options such as floating LNG platforms and gravity based structures. Expert assessment has still determined James Price Point to be the most viable location taking account of technical, environmental, heritage and socio-economic considerations. (See **Section 4.2**, **Part 2** of the SAR).

The State Government concurs with the above statement that the proposed site is the most suitable location for the Browse LNG Precinct. A summary of the site selection process and development options is provided in the **Part 2, Section 4**. Additional points are also made in the Response to Submissions Summary Report **Section 4.2**.

4.3 Initial Filtering of Kimberley Sites

Generic Question ID: 570 Sub ID [120] Raised by [S120 Q1212]

ENGO Submission: Contrary to the Strategic Assessment Agreement (SM) Term of Reference (4) requirement for a "comprehensive description", the almost 8,000 page SAR document devotes just 2 pages (**Part 2 p. 4-12**; **4-13**) to a discussion of processing options outside the Kimberley. This constitutes 0.025% of the SAR.

The site to the south of James Price Point was selected following an extensive process to identify a suitable location that would accommodate at least two LNG project proponents. This process, which included consideration of a range of heritage, technical and environmental criteria, represents one of the most comprehensive site selection assessments undertaken in Australia.

As noted, **Part 2**, **Section 4** of the SAR provides a summary of the comprehensive site selection process undertaken. A more detailed analysis of this process, including methodology, evaluation criteria and technician reports, is contained in **Appendices B-1** to **B-8** of the SAR. This includes an analysis of over fifty possible locations in Western Australia, three in the Northern Territory and three options for offshore structures.

Many options, including those in the Pilbara, Northern Territory, and off-shore were found to be economically or technically unfeasible, while offering no environmental advantage. Further detailed evaluation was subsequently completed on 11 sites, and a short list of four identified before the area in the vicinity of James Price Point was chosen. Critically, this site is located away from the remote rocky wilderness areas of the Kimberley whilst still being in relatively close proximity to the Browse Basin and existing infrastructure.

In selecting the site south of James Price Point the Western Australian Government is ensuring the efficient development of the offshore Browse Basin and maximising the benefits to Western Australia and the West Kimberley in particular whilst minimising the environmental, social and heritage impacts of the Precinct.

Further discussion about the site selection process is contained in the Response to Submissions Summary Report **Section 4.2**.

4.5 Determination of a Preferred Site

Generic Question ID: 6 Sub ID [39, 27, 205, 212, 215, 218, 198] Raised by [S39 Q345]

The distance of 60km from the Precinct to Broome is not representative – there is only a 44km separation distance between the southern edge of the proposed Precinct and the Cable Beach Resort.

Any estimate of the distance between the proposed Browse LNG Precinct and the town of Broome, will depend heavily on the locations within the Precinct and the urban extent of Broome that are used in the calculation. The approximate distance of 60km has been used to describe the distance between the town centre of Broome, and James Price Point.

Although the distance from the edge of the Precinct buffer zone to the northern urban fringe of Broome may be less than 60km, the precise distance will depend on a number of variables, including the final design of the Precinct, and any future urban expansion in the town. In any case, the locations used to measure the Precinct's distance from Broome do not affect the study areas used in the Strategic Assessment Report (**SAR**).

The comprehensive Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**) consider any potential impacts of the Precinct on the Shire of Broome. Other study areas, such as the 37km viewshed, are based on technical assessments unrelated to the Precinct's exact distance from the town of Broome.

The SIA and the ASIA are included in **Appendices D1 to D6** (SIA) and **E1 to E7** (ASIA) of the Strategic Assessment Report, and are available online from http://www.dsd.wa.gov.au/8249.aspx

Generic Question ID: 12 Sub ID [2, 37, 211] Raised by [S2 Q13]

The Premier's decision and the EPA's recommendations that endorsed the selection of the James Price Point site were premature and politically motivated.

The Environmental Protection Authority (**EPA**) is an independent statutory environmental body. The EPA's functions include environmental impact assessment of significant development proposals, and the provision of impartial environmental advice to the Minister for Environment. Its operations are governed by the *Environmental Protection Act 1986* which stipulates that the objective of the EPA is to use its best endeavours to protect the environment, and to prevent, control and abate pollution and environmental harm.

The provision of advice under section 16 (e) of the *Environmental Protection Act 1986* by the EPA on 19 December 2008, and the Premier's subsequent announcement of a site for the Browse LNG Precinct in the vicinity of James Price Point, followed a detailed, 12 month site selection and assessment process. This process was endorsed by a Strategic Assessment Agreement entered into by both the State and Commonwealth Governments on 6 February 2008, under the *Environment Protection and Biodiversity Conservation Act 1999*.

This agreement provided for the strategic assessment of environmental and social impacts associated with development of the proposed Browse LNG Precinct. The Terms of Reference for the strategic assessment process were publicly reviewed in 2008, and are provided in **Appendix A-3** of the Strategic Assessment Report.

A 'Joint Position Statement on Kimberley Liquefied Natural Gas Development', signed on 7 December 2007 by the Kimberley Land Council, Environs Kimberley, Australian Conservation Foundation, WWF - Australia, Conservation Council of WA and the Wilderness Society, also relates to the strategic approach employed in the development process of the Precinct. This statement required that if development of Browse Basin gas reserves should occur, a strategic approach should be employed in order to limit the environmental footprint of any processing facilities and maximise empowerment for Traditional Owners.

The Browse LNG Strategic Assessment Report (**SAR**) considers the broad social and environmental impacts of the Precinct, as well as the means to mitigate and manage those impacts in order to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Act 1999*. In addition, the SAR outlines several strategies aimed at providing opportunities for new initiatives to increase the socio-economic well-being of Indigenous people, and reduce disadvantage across the Kimberley community.

The section 16 (e) advice provided to State Government by the EPA is available online from: http://epa.wa.gov.au/EPADocLib/2831_Rep1306KimbLNG_191208.pdf

Generic Question ID: 846 Sub ID [169, 149] Raised by [S169 Q1705]

Environs Kimberley Submission: The SAR states "There are specific legal and commercial imperatives for the Browse LNG Development Joint Venture Participants (Woodside, Chevron, Shell, BP and BHP Billiton Petroleum) in agreeing to develop a foundation project in the vicinity of James Price Point. These arise from the retention lease renewals approved in December 2009 which included conditions to drive the earliest commercialisation of resources. Other Retention Lease Conditions require the Joint Venture Partners to commence Front End Engineering Design (**FEED**) in 2011 in order to reach a Final Investment Decision (**FID**) by June 2012 with respect to the LNG Development". It may appear therefore that, in addition to securing monies from the development, the fast tracking, streamlining of environmental approvals, etc is also based around assisting the JV Participants in meeting their lease requirements rather than conducting sound environmental research to enable proper selection of the best processes for mining the gas and achieving best practice environmental practice and operations in the area. This may also appear to be the reason why the SAR was released for public comment prior to being complete, the subsequent reduction in time to review "Additional Information" released after this time which is critical to the SAR and all documentation being made available for only a 12 week period which is inadequate (particularly for individuals and groups with low capacity or resources or those requiring third party assistance to prepare their submissions) considering the potential size and obvious environmental impacts (including, significantly, on matters of NES) of the development. Also, the above statement in the SAR is incorrect. The retention lease conditions do not require an FID by June 2012; they require that the JVs be in a position to be able to reach a FID.

The submission's assertion that there has been a 'fast tracking' of approvals is incorrect. The process has been particularly rigorous given both the environmental values of the region, and the public interest in the Precinct development. The Proponent is of the view that best practice has been followed both in terms of the environmental research undertaken and the site selection process.

While the site identification process commenced in 2007, this was subsequent to site investigations by commercial proponents, who assessed a number of locations in the Kimberley. As described in **Section 4.2** of the Response to Submissions Summary Report, in taking responsibility for coordinating a single multi-user LNG Precinct the State has facilitated one of the most comprehensive social and environmental assessment exercises ever undertaken in Australia including: a transparent site selection process; extensive (particularly Indigenous) consultation; rigorous environmental surveying and modelling; and with numerous opportunities for public input and feedback throughout that time. This process has generated a significant amount of environmental understanding of the whole Kimberley region which will contribute to ongoing conservation efforts.

The Draft SAR was released for public comment for a 12 week period, set by the independent Environmental Protection Authority, and later extended to 15 weeks to allow opportunity for the public to comment on supplementary information which was requested. This public comment period is considerable, and substantially greater than might ordinarily be required. The volume and depth of submissions received would suggest that the period was entirely adequate to allow for a comprehensive public review. The staggered release of the main document ahead of some subsequent modelling reflected that the main body adequately captured the level of information required, while the EPA nevertheless required some additional detail with which to carry out its assessment.

With respect to the imposition of a time line, while Governments at both State and Commonwealth level clearly require a rigorous assessment of potential impacts, Governments at both levels also require that resources are efficiently commercialised. Consistent with the above quote from the SAR, realistic time lines are set as an appropriate management tool, after which Retention Leases may be reconsidered if lease holders do not reach an investment decision with respect to the underlying resources.

5 Description of Activities and Facilities under the Precinct Plan (Category A)

Generic Question ID: 134 Sub ID [21, 28, 30, 31, 39, 53, 58, 69, 70, 75, 139, 145, 211, 212, 217, 236] Raised by [S21 Q147, S211 Q2806]

Again, how many gas developments are we implying here? "the development of a number of gas processing facilities at a single location offers significant economic, social and environmental benefits". Future expansion is hinted at and seems likely, without any attempt to be specific about limits. I thought there was only one industry proposed. Why additional? Barnett says this is not the industrialization of the Kimberley, but I am highly sceptical.

Similiar points are raised in the following submissions:

The downstream effects of such developments are not discussed in the report (i.e. the further industrialisation of the Kimberley).

The State has made the specific commitment that mineral processing or exports will not occur from the Browse LNG Precinct. Accordingly this is not part of the scope of the Strategic Assessment Report.

The Browse LNG Precinct is being progressed on the basis that it will be able to accommodate a minimum of two LNG proponents and an ultimate production capacity of 50Mtpa of LNG. Full development of the Precinct may well occur over an extended period. As such, the Precinct represents a strategic proposal, rather than a project specific proposal as all future commercial proponents for the Precinct are not yet known.

The Browse LNG Precinct Strategic Assessment Report considers the Precinct operating at its full capacity irrespective of assumptions about specific technologies or plant designs which could be expected to change over time or according to the particular requirements of individual project proponents.

The commitments and conditions imposed as part of the approval for development within the Precinct are likely to inform the detailed design of projects seeking to operate within the Precinct. The Derived Proposals process would then ensure that all such future activities adhere to the conditions established for development within the Precinct. Any potential future proponents will be required to consult with the public before submitting Derived Proposals to the Environmental Protection Authority for evaluation.

Any significant proposal or activity outside the scope of the Strategic Assessment Report would be required to submit for assessment by the Environmental Protection Authority, and any other relevant State or Commonwealth Government authority responsible for assessment processes under those circumstances.

The reader is also referred to the answer to Generic Question 17.

Generic Question ID: 35 Sub ID [4, 27, 75, 228, 106, 292, 293] Raised by [S4 Q53]

The Strategic Assessment report fails to provide details necessary to assess environmental impacts (e.g. port design), and will not be available to the public for comment at a later stage.

It is inherent in the nature of a strategic assessment that precise details of future proposals may not be known. That said, the Strategic Assessment Report does contain a full project description (refer **Part 2**, **Section 5**) regarding likely project characteristics, used to inform the impact assessment and environmental safeguards, to provide confidence in the impact assessment conclusions and predicted environmental outcomes.

At the time of submission some studies were well advanced (e.g. metocean studies, hydrodynamic and sediment transport modelling and benthic habitat mapping), whereas others were only at a preliminary stage (e.g. geotechnical surveys, port layout, facilities engineering design and dredge alternative assessments). Key areas of uncertainty are addressed with conservative assumptions (listed in **Table 3-1**, **Appendix C-13**).

Aspects related to project specific details will be addressed through derived proposals (see **Section 2.2** of this document). Project proponents will be required as part of the process to consult broadly prior to submission of derived proposals.

Generic Question ID: 533 Sub ID [170, 120, 217, 123] Raised by [S170 Q1417]

WWF & ACF Submission Section 10: There is a lack of information and detail on the size and extent of the proposal available for public scrutiny, without which stakeholders and communities cannot reach a full and informed view. For example, lack of information about the length of the jetty and breakwater severely limit stakeholder ability to provide comment on the adequacy of the draft report or the significance of the impacts of the proposal.

The Strategic Assessment process offers the benefit of allowing the regulators, stakeholders and the community to assess up front the total cumulative impact of the BLNG Precinct at its maximum capacity. A strategic assessment does not require complete details of individual proponent's proposed developments, as it focuses on the maximum impact envelope. Although a number of conceptual layouts of port infrastructure were provided to indicate possible jetty and breakwater configuration and lengths (**Part 2**, **Figures 5-4** to **5-7**), detail concerning the length of the jetty or breakwater is relevant to the individual proponent's proposal and therefore, the derived proposal process, but not necessary for the strategic assessment.

Generic Question ID: 561 Sub ID [120, 58] Raised by [S120 Q1198]

ENGO Submission: The SAR fails to adequately define the scale, design and operation of the proposed gas processing precinct at James Price Point, including its cumulative and downstream extent and impacts.

The Proponent considers that the SAR does define the scale, design and operation of the BLNG Precinct.

The SAR **Part 2**, **Section 5** provides a detailed description of the activities and facilities under the Precinct plan for Category A activities.

The SAR **Part 2**, **Section 6** provides a description of indirect activities (Categories B and C) and related

projects, and **Section 8** provides impact assessment methodology including cumulative environmental impact assessment methodology.

The cumulative impacts are described throughout **Parts 3**, **4** and **5** of the SAR. Further analyses of cumulative impacts are provided in **Section 5** of the Response to Submissions Summary Report.

Generic Question ID: 49 Sub ID [4, 27] Raised by [S4 Q67]

The SAR is very evasive on the issue of the length, location and design of the breakwater and associated shipping channel dredging: "The construction of the breakwater would most likely involve dredging works... If required, the length and orientation would be governed by the site location and port facility layout… A range of options would be considered for establishment of the breakwater... Details of the dredging campaign are yet to be finalised..." (SAR **Part 3**, **p. 2-19**; **Part 2**, **p. 5-24**).

The SAR provides a clear indication of the potential port footprint in which a breakwater and other associated port infrastructure would occur.

At the time of submission, detailed geotechnical, engineering and metocean data were not available to inform the detailed engineering design. Accordingly, the final Marine Port Facilities layout including the requirement for a breakwater had not been determined. To inform the SAR, various configurations and port concepts were considered, based on the provision of a single shipping channel for vessel entry and exit into the port, product loading berths and inclusion of breakwater, as agreed with the OEPA.

As the key areas of uncertainty related largely to the geotechnical characteristics of the site and their potential impact on the port design and dredge program, conservative scenarios supported by sensitivity tests were adopted for the impact assessment. This approach allowed the overarching Strategic Assessment to take into consideration a range of potential port infrastructure concepts, dredging and dumping scenarios, while assessing/demonstrating the implications of altering key variables to represent both less and more conservative circumstances.

A conservative approach to modelling the environmental impacts of these scenarios was also taken.

Generic Question ID: 83 Sub ID [2, 160] Raised by [S2 Q39]

The Strategic Assessment report lacks information and analysis regards dredging:

- No estimates have been provided for future port expansions or maintenance dredging.

- No details have been provided for the disposal of dredge spoils, either offshore or onshore.

- No details have been provided on the extent or duration of blasting activities.

- No details have been provided on sediment transport and resuspension during dredging or as a result of tidal processes, wave action or cyclonic events.

To inform the Strategic Assessment Report, the Proponent has provided comprehensive detail and discussed the impacts associated with the proposed dredging activities, commensurate with the engineering definition appropriate for a Strategic Assessment. The Proponent's response to each of the specific comments raised is outlined below.

1. The assessed dredging and nearshore construction activities represent all main components of the marine facilities infrastructure required to support the proposed BLNG Precinct. Although detailed geotechnical and engineering data was not available to inform the exact layout of Marine Port Facilities at the time of submission, various configurations that were under consideration were presented in the SAR (**Part 2, Section 5.5**). All configurations presented in the SAR are based on the provision of a single shipping channel for vessel entry and exit into the port, product loading berths and inclusion of breakwater(s).
2. As stated in **Part 2, Section 5.8.3**, maintenance dredging may be required to maintain safe water depths for the shipping channel and turning basin. The frequency and volume of dredging would depend on coastal sediment processes, and in particular would be influenced by the frequency and severity of cyclones in the region. Taking into account the results of coastal processes modelling (**Part 7, Section 5**, and Technical **Appendix G-4**), the combined sedimentation from ambient and cyclonic infill has been estimated to an annual average of 150,000 to 250,000 m3 per year requiring maintenance dredging every 2-5 years (depending on cyclone frequency, severity and location of infill with respect to required dredge depths). Thus maintenance dredging requirements represent less than 5% of the initial capital dredging volume and are considered to pose negligible environmental impact.
3. For the purposes of the Strategic Assessment, a notional spoil disposal site 7km west, and 1km north of the proposed turning basin was selected for the base case modelling (refer **Appendix C-13**). It was noted, however, that the location for the spoil ground (or grounds) was not yet fixed, and is subject to

detailed engineering studies currently underway. The implications of alternative spoil ground locations were assessed using sensitivity tests (refer **Appendix C-13, Section 5.6**) to ensure the environmental impacts associated with different spoil ground locations were considered. The ultimate location of the spoil ground will be assessed under the Commonwealth Sea Dumping Permit process. If deemed suitable for use, dredged spoil may be stockpiled and used as onshore fill material during construction.

4. As stated in **Part 2, Section 5.8.3** some blasting and drilling works may be necessary if any isolated pockets of hard rock (e.g. cap rock) are encountered in the dredge area. Less than 20% of the dredge spoil is anticipated to be hard composite material requiring potential removal by drilling and blasting techniques, however the extent of hard rock is yet to be determined.

Section 5 of **Appendix C-13** provides a detailed analysis of the modelling approach undertaken for the Strategic Assessment, including the modelling framework, hydrodynamic conditions and metocean data used to validate the model. Tidal regimes, wave action and cyclonic events were incorporated in the modelling framework and have therefore been considered in the impact assessment.

Generic Question ID: 527 Sub ID [170] Raised by [S170 Q1409]

WWF & ACF Section 5: The SAR places project characteristics into two categories (Factors and Aspects). These are not standard terminology. Consequently, it is not clear how the two levels of information fit into a standard assessment approach. It is relatively clear what ecological 'factors' are but the SAR does not include a comprehensive guide (tables, lists, concept diagram) that a reviewer can use to identify the principle components of structure, function and composition of the environment (that is, its biodiversity). In contrast, the term 'Aspects' is confusing. It seems to mean components of the process that have potential to give rise to impacts but it is not made clear how these were prioritised, other than in an initial risk assessment workshop (which is an important preliminary step but, by no means, a comprehensive way of identifying impacts).

Use of the terms 'environmental factors' and 'environmental aspects' is standard environmental impact terminology which has been in use is Western Australia for several years.

The respondent is correct in their understanding of these terms. Environmental aspects are activities or elements of a proposal that interact with the environment or have the potential to impact the environment. These are identified as the first step of the impact assessment process. In determining the aspects relevant to the Browse Precinct, the total life cycle of the proposal was considered (i.e. construction, commissioning, operation, de-commissioning and rehabilitation). Examples include: emissions; physical presence of a building or facility; and earthworks. Environmental factors are environmental components or values supported by an environmental component. Examples include: flora; fauna; visual amenity; and groundwater dependent ecosystems.

The *EPA Position Statement No 7 Principles of Environmental Protection* identifies the conservation of biological diversity and ecological integrity as a basic principle of environmental protection, natural resource management and sustainability and needs to be considered in terms of genetic, species and ecosystem diversity. Within the SAR, the term "ecosystem integrity" is used to describe the principle of conserving the natural function and attributes of biological diversity. The potential threats and associated impacts that may reduce or cause loss of ecosystem integrity are described in **Part 3**, **Section 2.8** and **Part 4**, **Section 2.7**, for the marine and terrestrial environments, respectively.

Generic Question ID: 1389 Sub ID [150] Raised by [S150 Q3153]

Will it be possible to get all the project information shown on one map instead of multiple maps? For example, the map should include State and National waters, the Dampier Peninsula and Broome, all the off-shore platforms, hubs, pipelines, coral reefs, whale migratory routes, breeding grounds, marine parks, marine sanctuaries, land precinct, aquifers, small towns etc. This would provide a better perspective of the overall project.

A single figure including all the relevant downstream project infrastructure and corresponding marine, terrestrial and social data would unfortunately be too detailed to be legible. The figures in the SAR have been intentionally kept simple to view and interpret, with only activities and infrastructure relevant to the particular factor being discussed (e.g. whales) presented.

Generic Question ID: 1393 Sub ID [150] Raised by [S150 Q3162]

The project area is impacted by cyclones and earthquakes. The proposed drilling depth is also very deep. These issues are of concern when there is a lack of knowledge and operational techniques to conduct such an operation.

Construction of LNG facilities is a well understood activity with over 40 years of commercial LNG production and over 20 operating plants around the world. Within Australia there are two operating LNG plants including the North West Shelf Karratha Gas Plant, which has been operating for over 20 years in a cyclonic area providing a wealth of technical and operational knowledge in LNG facilities. The design criteria for LNG plants will account for both cyclones and earthquakes.

The proposed development within the SAR does not include any drilling for hydrocarbons.

Generic Question ID: 1403 Sub ID [150] Raised by [S150 Q3397]

How many platforms will be developed to feed the precinct? Is it safe?

The scope of the SAR is focused on the 'downstream' processing and export of LNG and associated hydrocarbons at the proposed Precinct location near James Price Point.

Therefore, the environmental impacts of 'upstream' (beyond 3 nautical miles offshore) infrastructure of commercial proponents operating within the Browse LNG Precinct (including offshore production infrastructure) is outside the scope of the Strategic Assessment.

However, such development will be subject to a stringent Commonwealth and State regulatory approvals process to ensure they are designed, constructed and operated to meet relevant safety and environmental standards.

5.1 Generic Layout of BLNG Precinct

Generic Question ID: 289 Sub ID [39, 212, 120, 205, 215] Raised by [S39 Q767]

There would be indirect impact of restricting public access at BLNG's James Price Point for fishing, camping and other recreational activities on Environmental Heritage. This may lead to displacement elsewhere on Dampier Peninsula but could also provide the beneficial outcome of ensuring the environmental heritage and conservation areas are designated and managed. Does the State realize that by restricting access to James Price Point, no one can be sure what is happening to conserve these environmental areas? Wouldn't camping and fishing, cause less impact than an LNG precinct, if it was just left alone?

The public will be excluded from less than 2km of coastline where a fenced area will define the boundaries of the Precinct's port area. In total the Precinct's port and core industrial area will be restricted to 2,090ha of land. Shipping will be excluded from an area of water of about 3km in length and 3km from the coastline totalling around 1,000ha of port waters. These restrictions are necessary to enable the safe operation of the Precinct including the port and loading facilities.

James Price Point itself will remain accessible to the public. A 3km wide buffer zone around the land based facility will be neither fenced nor cleared (with the exception of fire breaks) and will remain accessible to the public. The purpose of the buffer zone is to prevent any permanent activity, which may affect public amenity. Outside these areas, the Precinct will not impose any additional restrictions.

The SAR does not recommend any restriction to conservation areas created as a result of the Precinct.

Generic Question ID: 216 Sub ID [39, 217] Raised by [S39 Q726]

The proposed exclusion zone will stretch from Coulomb Point to Barred Creek with an estimated 6,000-8,000 square hectares, not 1,000-3,000 hectares as has been told.

The public will be excluded from less than 2km of coastline where a fenced area will define the boundaries of the Precinct's port area. In total the Precinct's port and core industrial area will be restricted to 2,090ha of land. Shipping will be excluded from an area of water of about 3km in length and 3km from the coastline totalling around 1,000ha of port waters. These restrictions are necessary to enable the safe operation of the Precinct including the port and loading facilities.

James Price Point itself will remain accessible to the public. A 3km wide buffer zone around the land based facility will be neither fenced nor cleared (with the exception of fire breaks) and will remain accessible to the public. The purpose of the buffer zone is to prevent any permanent activity, which may affect public amenity. Outside these areas, the Precinct will not impose any additional restrictions.

Generic Question ID: 842 Sub ID [201, 150] Raised by [S201 Q999]

Submitter has visited the Burrup Developments and is concerned regarding the size and scope of the proposed James Price Point development. The project is too big for the area.

The Browse LNG Precinct is being progressed on the basis that the social and economic benefits it will generate can co-exist with the environment and the unique cultural and heritage values of the Kimberley.

There is a high level of industry interest in developing the considerable gas resources off the Kimberley coast. This raises the potential for multiple uncoordinated gas processing facilities to be developed along the Kimberley coast leading to significant social and environmental impacts. The proposed size and scale of the Browse Precinct will allow for a multi-user Precinct from which gas can be processed and transported, while managing any social or environmental impacts that could arise.

The Precinct, which is situated approximately 60km from Broome, will not be visible from the town or from the main road to Cape Leveque. The footprint of the Precinct will be less than 1% of the area of the Dampier Peninsula.

Generic Question ID: 18 Sub ID [2] Raised by [S2 Q19]

The Precinct boundaries will almost certainly have to be extended and port infrastructure expanded to cope with additional shipping requirements.

The Browse LNG Precinct is being progressed on the basis that it will be a multi-user facility, and suitable to accommodate a minimum of two LNG proponents with a combined maximum production capacity of 50Mtpa. This approach means that the Precinct will be able to accommodate any potential LNG projects into the foreseeable future, while also significantly reducing the overall environmental footprint of LNG activity in the region. The establishment of the Precinct would also reduce the duplication of infrastructure such as ports, accommodation and roads.

Expansion of Port or Precinct boundaries would require further environmental assessment, as it would be outside of the scope of the Browse LNG Precinct Strategic Assessment Report (**SAR**). Any such expansion would also require further negotiation with Traditional Owners.

The **Browse LNG Precinct Master Plan** contains the maximum footprint of the Precinct, including the physical boundaries to which it must adhere.

The **Master Plan** is included in **Appendix B-8** of the **Browse LNG Precinct Strategic Assessment Repor**t, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Appendix_B-8.pdf

Generic Question ID: 521 Sub ID [232] Raised by [S232 Q1387]

The Aboriginal community members on the Dampier Peninsula believe that, in preparation for the LNG Precinct development, the State should be looking after the people first. Has there been planning to restrict access to the Peninsula?

The State Government agrees that managing impacts to the Indigenous communities on the Dampier Peninsula is a priority planning area. During the strategic assessment process, it was clear that stakeholders were concerned about the potential impacts that could arise from increasing access to the Peninsula. There are a number of potential positive and negative impacts of increasing access (i.e. by sealing the Broome – Cape Leveque Road) and these will need to be considered in the next stage of planning. For example, sealing the road could improve access to medical and other social services, and significantly improve the sustainability of Indigenous tourism businesses. Whilst this is a positive impact, sealing the road could also bring an unsustainable influx of visitors to the Peninsula, potentially impacting on the local environment and local communities.

The Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) will consider the way the Dampier Peninsula is accessed generally, and promote the conservation of environmental and heritage values of the area. The State Government will consult with the Traditional Owners in the further development of this Strategy which, together with other mechanisms such as the Cultural Heritage Management Plan, will provide appropriate mechanisms to address possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.

At the Precinct level, internal and external access to the construction camp will be managed to limit the interaction between the construction workforce and the Broome and Dampier Peninsula communities when they are not at work. An access management plan will be the key mechanism for managing worker access to the Broome and Dampier Peninsula. Management of access to recreational fishing and tourism activities in the region will also be part of this planning. Any recreation activities undertaken on rest days will be actively

managed (i.e. guided tours with Indigenous tour operators and/or fishing tour operators). These management mechanisms are proposed under the Strategic Social Impact Management Plan as conditions of locating at the Precinct.

To ensure delivery of the necessary social management measures, the Strategic Assessment Report (**SAR**) proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

As with all management measures, the involvement of the communities of Broome and the Dampier Peninsula in decisions about what is working and what is not will be important in determining if changes should be made to the mitigation and management measures in order to achieve better social outcomes.

5.3 Operational Activities (LNG Facilities)

Generic Question ID: 326 Sub ID [28] Raised by [S28 Q273]

The SAR does not cover what measures would be taken should an LNG train explode.

The SAR does not directly address the preventative measures for an LNG train explosion. However, maintenance and integrity of LNG facilities and associated infrastructure is paramount to the longevity and sustainability of the Australian LNG industry. As such, stringent regulatory requirements and industry standards are applied to LNG proponents to ensure their activities are undertaken to minimise the likelihood of an LNG train explosion to as low as reasonably practicable.

Western Australian Government agencies such as the Department of Environment and Conservation and the Department of Mines and Petroleum conduct regular inspections and audits of LNG facilities to ensure statutory requirements are met by the operator and to identify improvements that can be made to achieve a better environmental and safety outcome. Whilst the scope of these inspections differs according to the legislative framework under which these agencies work, the outcome is to ensure that LNG facilities are designed, operated and maintained appropriately to minimise risks to the environment and to improve the safety of personnel.

A summary of preventative measures is provided in the SAR **Part 7**, **Section 4**.

Generic Question ID: 1042 Sub ID [111] Raised by [S111 Q2142]

The submitter has requested information from Woodside with respect to the amount of water a LNG train would use when working to capacity for a full day (i.e. 24 hours period). As yet the submitter has not been provided with that information.

It is anticipated that a supply of up to 8GL/yr (0.02 GL per day) of fresh water may be required for a capacity of 50Mtpa of LNG (up to 14 trains).

A summary of water supply is provided in **Part 2, Section 5.7.4.**

5.4 Offshore Feed and Onshore Pipelines

Generic Question ID: 505 Sub ID [232, 224] Raised by [S232 Q1369]

The Aboriginal people on the Dampier Peninsula want to know how the pipeline between the Browse Basin and the LNG Precinct will be laid.

A number of pipeline installation methods may be deployed depending upon the particular challenges faced. It should be noted that the Browse LNG Precinct Strategic Assessment is undertaken by the State in order to facilitate a minimum of two LNG projects and does not presume any particular methodology for the transport of gas. The majority of the pipelines of concern lie beyond the 3Nm limit of State waters and are beyond the scope of the Strategic Assessment.

It may be expected that installation of pipelines would require some combination of a floating pipeline vessel or the deployment of underwater remotely operated vehicles to undertake sea floor trenching and pipeline placement into the designated pipeline corridor. Pipeline stabilisation is likely to require a combination of dredging, trenching, rock dumping, and potentially using pre-cast concrete gravity anchors to protect the feed gas pipelines from scour and vessel anchors.

There are also a range of construction methods for installation of pipelines in the near shore and shore crossing environments currently being investigated. These include:

- conventional excavation (trenching);
- horizontal directional drilling; and

- tunnelling.

Each method has advantages and disadvantages and will only be determined by individual project proponents following detailed site investigation to determine the feasibility of each methodology based on geotechnical analysis, project economics, environment and various other factors. Further information is provided in the SAR as follows:

- SAR **Part 2**, **Section 5.4**, **p. 5-10** discusses Offshore Feed and Onshore Pipelines.

SAR **Part 2**, **p. 5-27** and **5-28** addresses pipeline construction within the 3Nm limit to the LNG facilities.

Generic Question ID: 372 Sub ID [27] Raised by [S27 Q241]

Up to 14 pipelines (between James Price Point and the offshore platforms) will cause destruction of sea environment.

One of the primary objectives of the BLNG Precinct is to centralise LNG processing to a single location on the Kimberley coast. This will reduce the number of areas impacted by LNG development. As a consequence the Precinct will include multiple pipelines to import the gas to be liquefied to make LNG.

The SAR is seeking approval for these pipelines within the State waters (i.e. to the 3 nautical mile limit) and these impacts are addressed in the SAR (see **Part 3**, **Section 2**). Pipelines outside the 3 nautical mile limit (and any associated activities) are considered as Category C activities as defined in the SAR. As such these will be subject to separate environmental approvals processes.

5.5 Port Facility

Generic Question ID: 227 Sub ID [64] Raised by [S64 Q652]

DEC Recommendation 20: That the potential direct and indirect impacts of quarrying activities associated with excavation, fill, stabilisation and armouring requirements of marine and terrestrial structures within the Precinct are addressed at a preliminary level by the proponent(s) as a minimum.

Discussion: There is currently a lack of impact assessment and discussion on the potential impacts from activities required to dispose of excavated material from the construction of the Precinct or quarrying activities to source fill, stabilisation and armouring activities associated with marine and terrestrial structures. Additionally, there is no indication of approximate volumes required or where the material may be sourced to satisfy the Precinct's requirements.

The SAR (**Part 4**, **p. 2-5**) indicates that there is the potential for the dredge material to be used as fill for the Precinct. As the initial reports indicate that the bulk of the dredge material will be fine sediment and soft friable rock, the suitability for this material as fill is questioned (the bulk will have to be dumped offshore at spoil grounds) and a substantial amount of fill may need to be sourced from yet to be identified location(s) with unknown impact(s).

Addressing the quarrying requirements is important given the limited known available material on the Dampier Peninsula. Further, there are potentially significant issues with the limited sources available, particularly if outlying geological formations that are uncommon in the Dampier Peninsula and west Kimberley are targeted for raw material extraction.

A preliminary options analysis is required as part of the Precinct assessment to inform the assessment of options and management of impacts to ensure the residual impact of these activities minimises the impact on conservation values.

A wide variety of materials may be used in the construction of the Precinct by multiple projects over time. It is not possible to identify all options which might be considered in future, and it will therefore be a requirement of commercial proponents to obtain the necessary approvals once options are more certain.

All waste will be required to be disposed of in a manner consistent with legal obligations. The establishment of additional waste disposal sites or quarries was outside the scope of the Strategic Assessment. These types of activities were termed Category C activities in the SAR.

Category C activities were considered independent of the BLNG Precinct in environmental approval terms but could have similar temporal and spatial impacts (**Part 1, Section 5, Table 5-1** and **Part 2, Section 6.2**). Any commercial proponent requiring new waste disposal or quarrying facilities will be required to obtain all required environmental approvals and permits for the source facility, as appropriate under required legislation, particularly the EP Act. Alternatively, material will be sourced or disposed of in a facility owned or operated by a

third party that has all required approvals in place.

Commercial proponents will be undertaking engineering investigations into the suitability of dredge material for onshore disposal. Further work will be required to characterise dredge material and to identify its suitability for various uses, including as onshore fill. All spoil disposals offshore will be subject to the requirements of the *Environment Protection (Sea Dumping) Act 1981.*

Generic Question ID: 1294 Sub ID [143] Raised by [S143 Q3205]

The location of the Precinct cannot be based on science. The site is not geographically suitable as a port, there is no suitable 'land backed' port nearby that can be used as a supply base, and the nearby towns are not set up for facilitating this sort of industry.

The Proponent contends that, on the balance of technical, economic, environmental, and Indigenous heritage considerations, the proposed site is the most suitable site in the region for a port. The technical aspects for the port design were considered in detail for the State by engineering consultancy Worley Parsons through the Browse LNG Precinct Master Plan (See **Appendix B-8** of the SAR). A summary of the port facility is provided in **Part 2, Section 5.5.** The site selection process is summarised in **Section 4.2** of the Response to Submissions Summary Report.

5.6 Shipping Movements

5.7 Plant Utilities and Associated Infrastructure

Generic Question ID: 212 Sub ID [28, 40, 85, 144, 96] Raised by [S85 Q2402]

There is concern about the amount of water needed to service this plant and port and whether sufficient water resources are available. Broome is currently reaching the water capacity limits and are implementing water saving measures. How can there be enough water for the Precinct?

There are several potential sources anticipated to meet demand including surface aquifers, desalinisation of the confined Wallal/Grant aquifer (brackish) and desalination of seawater (refer **Part 2, Section 5.7.4**). Infrastructure for the provision of water may potentially include a groundwater abstraction system (i.e. borefield(s), desalination system (such as reverse osmosis units for brackish water, or biofouling agents, filtration and distillation as with seawater) and/or seawater intakes.

The SAR (**Part 2, Section 5.7.4**) notes that preliminary freshwater demand is estimated to be up to 8GL/yr for the BLNG Precinct development. During initial works, and subject to discussions with the Water Corporation and the Department of Water (**DoW**)) with respect to availability, it is anticipated that a supply of freshwater from a suitable local source could be trucked to site for use during pioneering works and at the pioneer camp (**Part 2, Section 5.7.4**).

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with the Department of Water (**DoW**). As part of the RIWI Act licensing process, an operating strategy containing a water conservation and efficiency plan, will be prepared by the proponents of derived proposals and submitted as part of the groundwater licence applications to DoW. The DoW will assess the application to take and use water under the *Rights in Water and Irrigation Act* 1914, including considering whether the taking and use of groundwater is in the public interest, ecologically sustainable, environmentally acceptable or may prejudice other current or future needs for water (**Part 4, Section 2.3.3.4**). The proponent also acknowledges that, as part of this forward process, water supply options analysis of all potential water supplies is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations. This process will also incorporate a hydrogeological investigation which will include assessment and identification of necessary mitigation and management measures associated with potential impacts to other groundwater users (**Part 4, Table 2.3-4**).

Generic Question ID: 444 Sub ID [104] Raised by [S104 Q938]

The following DoH submissions raise similar points:

- DoH Submission: While centralised wastewater treatment and ocean outfall is one of the options discussed, the report also makes reference to 'stand alone' infrastructure provided by individual proponents. This is of concern due to the potential for camps with high occupancy, relying on onsite wastewater treatment and effluent disposal for long periods of time. The spray irrigation of treated effluent may not be an effective means of disposal given the saturation of the local soils during 'the wet' and the report also notes groundwater sheeting during periods of heavy rain. Attention needs to be

given to encouraging the early development of a comprehensive reticulated sewerage system for the accommodation precinct. The suggestion of the storage and trucking off-site of sewage from camps is not a preferred option. Consideration needs to be given as to how the sludge generated by wastewater treatment plants will be disposed of.

- DoH Submission: The diversion of grey water was raised as a means of increasing the capacity of the Broome wastewater treatment plant and also proposed for the Browse site. However the document did not appear to recognise the additional treatment infrastructure that this separated stream would require. The Proponent needs to be aware of the operation, treatment processes and ongoing monitoring obligations associated with a recycled water scheme, which includes grey water streams. Treatment infrastructure is significantly more substantial than just 'grey water pipework'. Further consideration also needs to be given as to where the volumes, required to be diverted to increase the Broome WWTP capacity, would be treated and then recycled. While 'industry' was suggested for recycling it is not clear that Broome industry could absorb these flows. Industrial use can also necessitate the quite high treatment of wastewater to ensure that it is 'fit for purpose'. The Proponent should refer to the (Draft) Alternative Water Supply Guidelines - Stormwater and Rainwater and the Guidelines for the Use of Recycled Water in Western Australia.

The information presented in the SAR is relevant to a strategic proposal of the BLNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development. The Proponent acknowledges that, subsequent to the environmental approvals process under Part IV of the EP Act, there remains a requirement for subsequent approvals and licences. This is a future process and proponents of derived proposals will be expected to engage with the Department of Health as final details on water supply sources and other related health details are finalised. This would include reference to the (Draft) Alternative Water Supply Guidelines - Stormwater and Rainwater and the Guidelines for the Use of Recycled Water in Western Australia (if required).

Any increased water demand for Broome as a consequence of the development of the Browse LNG Precinct would be met via growth in the existing infrastructure managed by the Water Corporation. The reuse of grey water was included as one of the options that could meet this increased demand. The most likely way in which this additional demand would be met is via an expansion of the Broome borefield as the Broome aquifer is known to support the ability for further water allocation for town water supply.

It should be noted that Broome is already rapidly growing and will need expanded water infrastructure with and without the Precinct. The development of Broome North is an example of this.

Wastewater treatment plant for the construction camps will be designed to meet the camp capacities and aspects such as the increased rainfall during the west season. It is the Proponent's strong preference for infrastructure to be integrated and shared as far as possible. However, in acknowledgement of the different timing of individual projects and possible differing characteristics of wastewater streams, the Proponent has used the term 'stand alone' facilities to indicate the more conservative assumption that commercial proponents within the Precinct may build dedicated systems (e.g. with separate outfalls, etc).

The workers accommodation will have reticulated sewage serviced by a sewage treatment plant. The accommodation will be a relatively high density camp facility rather than a township. Sludges will be managed in accordance with WA waste management regulations.

Generic Question ID: 213 Sub ID [40] Raised by [S40 Q398]

The reliability of power supply to the town already a problem - there is concern about demand should preparations for developing the BLNG Precinct go ahead.

The Browse LNG Precinct, and its associated works, will use power generated on site. As a result, the existing power network within Broome will not be affected.

An Infrastructure Assessment for the Browse LNG Precinct was conducted as part of the strategic assessment process, and is included as **Appendix D-6** of the Strategic Assessment Report (**SAR**). The Infrastructure Assessment provides an overview of the baseline context with regards to power generation in the West Kimberley, and assesses the implications associated with the development and operation of the Precinct under five different growth scenarios.

An investment of $180 million in capital works was made in the Kimberley in 2006 which commissioned a new power station for Broome. The recently commissioned power station became operational in 2008, and has since replaced the old diesel-fired power stations. The Infrastructure Assessment also highlighted that Broome will require further power generation capacity in order to cater for population growth expected over the next 30 years, even without the development of the Precinct. This could be in the form of either a new station or an expansion to the existing one. A further investment of $400 million in power generating capacity is therefore expected to be made over the next 30 years.

Over the long-term, there may be an opportunity to utilise domestic gas in order to meet future power needs in the West Kimberley.

Generic Question ID: 253 Sub ID [64] Raised by [S64 Q674]

DEC Recommendation 37 (6): That the Proponent provides further details of all ancillary prescribed activities that may produce emissions.

Discussion:

Part 1, **Table 5-1** provides a brief list of activities but not enough information to determine if works approvals will be required under the Environmental Protection Regulations 1987.

Insufficient detail is provided in: ,

- **Section 5.7.1** which outlines possible power generation options for the Precinct.
- **Section 5.7.3** which outlines fuel and chemical storage that will have permeable bunding, storage and meet applicable standards for the Precinct.
- **Section 5.7.5** which outlines wastewater management but indicates treatment methodologies have yet to be selected. Stormwater management is brief but dependant on infrastructure yet to be designed and constructed. Solid waste management will be handled onsite and it is noted that **Section 5.7.7** indicates no landfill would be constructed within the Precinct.
- **Section 5.7.8** which indicates crushing and screening with varying machinery to be used.
- **Section 5.7.9** which indicates concrete batching will occur on site.
- **Section 5.7.13** which indicates the workers' accommodation will require wastewater and water management.
- **Section 5.7.14** which indicates many associated light industrial companies will be taking up residence at the Precinct.

All of these activities may require statutory approvals under the *Environmental Protection Act 1986*.

At present, the level of engineering design of potential Commercial Proponents that will locate in the Precinct has either not commenced or is in its formative stages. In recognition of this, **Part 2, Section 6** of the SAR put forward a range of options or indicative details pertaining to many of the issues outlined in the submission. This option was however, taken into account in an impact assessment context in the SAR. For example, conservative modelling was undertaken (e.g. wastewater and air quality) based on emissions characteristics of differing levels of production.

As the level of engineering design of commercial proponents' developments within the BLNG Precinct matures, so will their level of certainty for many of the issues raised in the submission. DSD expects more detailed engineering design, focussed modelling and impact assessment to be conducted by commercial proponents as part of the derived proposal process under s39 B of the *Environmental Protection Act 1986* (**EP Act**). **Section 2.2** describes the derived proposal process in further detail. In addition, commercial proponents will also be required to commence works approval applications and obtain operating licences consistent with Part V of the EP Act. DSD is confident that these subsequent approvals processes will provide the level of detail requested by DEC in their submission.

Generic Question ID: 366 Sub ID [161] Raised by [S161 Q799]

ACE Submission: There is no designation between "light", "heavy", or "noxious" industry zonings in the Planning regulations, which would suggest that the use of the term "light" is misleading. There are a number of associated industries that a large LNG plant will attract which in themselves will be a source of toxic and criteria air pollutants.

The zoning designation ‘industry - light' is defined in the *Town Planning Regulations 1967* and is a designated zoning within the existing Shire of Broome Planning Scheme No. 4.

As described in **Part 2, Section 5.7.14** the Light Industrial Area (**LIA**) is proposed for various third party contractors that require separate facilities to conduct supporting activities, so as not to interfere with the LNG facilities. The types of companies that may use this facility include scaffolding yards, crane and equipment hire, warehouses, welding yards, fabrication yards, sand blasting facilities, or transport companies.

As with other activities within the Precinct, when a proposal is referred, the EPA may declare it as a derived proposal if:

- the proposal was identified in the strategic proposal that has been assessed by the EPA; and

- a decision was made that the strategic proposal could be implemented.

If a specific LIA proposal is not considered to be a derived proposal then it will require separate approval through the State and Commonwealth Environmental Approvals Process. The derived proposal process is described in **Section 2.2** of this Response to Submissions Summary Report. It should also be noted that any industries establishing themselves within the Light Industrial Area will be subject to licensing provision under Part V of the *Environmental Protection Act*.

Generic Question ID: 420 Sub ID [104] Raised by [S104 Q924]

DoH Submission: DoH notes the operation of waste water ponds is often compromised during the wet season. Consideration should be given to a better design to ensure that effluent does not leak into the surrounding country and wetlands.

At present, the level of engineering design of potential commercial proponents that will locate in the Precinct has either not commenced or is in its formative stages. This includes the design of waste water ponds. Commercial proponents wishing to operate in the Precinct will be required to produce a Marine Waste Water Discharge Management Plan (**Part 3 Section 2.3** – Water Quality) which, at implementation stage, will include details of the means by which waste water will be processed, stored and discharged. In addition, Commercial proponents will also produce Hydrocarbon and Chemical Spill Response Management Plans (**Part 3 Section 2.3** – Water Quality) which will be focused on ensuring that non-routine discharges such as those associated with accidental releases from storage facilities are avoided where possible.

Commercial proponents will also be required to comply with various conditions associated with routine discharges from the waste water treatment plant (**WWTP**) (**Part 3, Section 2.3** – Water Quality).

In the absence of specific design standards, DSD expects and will advise Commercial proponents of the need to design their waste water ponds with capacity for a 1 in 10 year flood event, with contingency for 1 in 100 year event.

Generic Question ID: 443 Sub ID [104] Raised by [S104 Q937]

DoH Submission: Private water supplies have not been well addressed within the proposal. It is noted that potable water may be carted for early development such as 'pioneer camps'. Proposals will need to address the Australian Drinking Water Guidelines 2004, development of Drinking Water Quality Management Plans and establishment of a water quality reporting procedure with the WA Health. The suggested use of rainwater tank collection to temporarily supplement the water supply in Broome if scheme water supplies are insufficient is not a reliable option for the town site.

The information presented in the SAR is relevant to a strategic proposal of the BLNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development. The Proponent acknowledges that, subsequent to the environmental approvals process under Part IV of the EP Act, there remains a requirement for subsequent approvals and licences. This is a future process and proponents of derived proposals will be expected to engage with the Department of Health as final details on water supply sources and other related health details are finalised.

Any water supplies for the Browse LNG Precinct and its associated workforce accommodation (located within the Precinct) will need to meet the requirements of the Departments of Water and Health. The options under consideration to meet this demand are supply from the Broome aquifer (in the vicinity of the Browse LNG Precinct), desalination of the Wallal aquifer, and/or desalination of sea water.

Any increased water demand for Broome as a consequence of the development of the Browse LNG Precinct would be met via growth in the existing infrastructure managed by the Water Corporation (i.e. most likely an expansion of the borefield). It should be noted that Broome is already rapidly growing and will need expanded water infrastructure with and without the Precinct. The development of Broome North is an example of this.

Generic Question ID: 933 Sub ID [227] Raised by [S227 Q2003]

The SAR states that the Precinct will not affect Broome's water supply, but what about the TOWA and its affect that it will have on the town's water, sewage and landfill services. This will add to the already shortage of services. Broome is not coping with its current infrastructure - the extra strain will be too much.

While the establishment of a temporary workers camp to house Foundation Proponent staff during the pre-construction phase is outside the scope of the Strategic Assessment, it is nevertheless included as a potential cumulative impact as a category C activity in the SAR (see **Part 2, Section 6.2.2.2**). It is noted that the Foundation Proponent will be required to seek separate approvals in this regard.

With respect to potential impacts on local services including power and water infrastructure the commercial proponent may be expected to negotiate with the relevant infrastructure providers (e.g. Horizon Power, Water Corporation) to satisfy project requirements. The service provider would need to pay access charges which would support the incremental development of any additional infrastructure required.

Generic Question ID: 1109 Sub ID [107] Raised by [S107 Q2278]

In relation to water abstraction for the proposed Precinct, there is no real indication as to where the borefields will be located to source the water.

The exact location of borefields is yet to be determined, as is the extent of any such requirements. However it can be expected that any borefields required may be found within the immediate vicinity and to the east of the Precinct. There are several potential sources anticipated to meet demand including surface aquifers, desalinisation of the confined Wallal/Grant aquifer (brackish) and desalination of seawater (refer **Part 2, Section 5.7.4**). Infrastructure for the provision of water may potentially include a groundwater abstraction system (i.e. borefield(s)), desalination system (such as reverse osmosis units for brackish water, or biofouling agents, filtration and distillation as with seawater) and/or seawater intakes.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with the Department of Water (**DoW**). As part of the RIWI Act licensing process, an operating strategy containing a water conservation and efficiency plan, will be prepared by the proponents of derived proposals and submitted as part of the groundwater licence applications to DoW. The DoW will assess the application to take and use water under the *Rights in Water and Irrigation Act* 1914, including considering whether the taking and use of groundwater is in the public interest, ecologically sustainable, environmentally acceptable or may prejudice other current or future needs for water (**Part 4, Section 2.3.3.4**). The Proponent also acknowledges that, as part of this forward process, water supply options analysis of all potential water supplies is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations.

This process will incorporate a hydrogeological investigation which will include assessment and identification of necessary mitigation and management measures associated with potential impacts to other groundwater users (**Part 4, Table 2.3-4**).

5.8 Construction Activities Associated with Precinct Development

Generic Question ID: 38 Sub ID [4, 27, 120, 116, 84, 228, 292, 293] Raised by [S4 Q56]

The Precinct will initially require 21 million cubic metres of dredging of sea bed and large areas of marine habitat, and will be repeated over the 30-50 year life of the Precinct (i.e. through maintenance dredging).

A summary of the requirements for dredging is provided in **Part 2, Section 5.8.3**, and formed the basis of the impact conclusions presented in the SAR. Dredging will be required in order to establish a shipping channel, turning basin and berth pockets for LNG carriers and condensate tankers entering and departing the Precinct port. Dredging will also be required for establishment of the Materials Offloading Facility and along designated sections of the pipeline route for installation of the gas pipelines. Whilst exact dredging volumes generated are dependent on the location and layout of the port facilities, preliminary estimates indicate that the initial dredging volume is likely to be approximately 15.5 million cubic metres over approximately 18 months, with an additional 5.5 million cubic metres for potential future developments.

Maintenance dredging may be required to maintain integrity of appropriate water depths for the shipping channel and turning basin. The frequency and volume of dredging would depend on coastal sediment processes, and in particular would be influenced by the frequency and severity of cyclones in the region. Preliminary estimates indicate that infill rates are estimated at 150,000 to 250,000 m3 per year requiring maintenance dredging every 2-5 years (depending on cyclone frequency, severity and location of infill with respect to required dredge depths) (refer **Part 7, Section 5.4**). Thus maintenance dredging requirements represent less than 5% of the initial capital dredging volume. Consequently it is considered unlikely that maintenance dredging activities will have a significant cumulative impact on the benthic communities surrounding the currently predicted zone of high (permanent) impact. Maintenance dredging campaigns are likely to be separated by periods of several years. Management measures, including preparation and implementation of a comprehensive Dredge and Dredge Spoil Disposal Management Plan by future proponents, are commitments set out in the SAR.

Generic Question ID: 1159 Sub ID [211] Raised by [S211 Q1030]

Part 1 Section 5.2: The submitter is concerned about "Material Sourcing". If contractors in Broome wish to supply gravel, stone etc, they have to travel 150km round trip to bring in these supplies. Are there to be closer leases for extraction of materials? Where will materials come from? Local businesses are currently unable to source these locally or nearby up the Peninsula. Will Woodside get preferential treatment in granting of mining rights for stone that locals have been unable to gain?

The SAR **Part 2**, **Section 5.8** outlines the construction activities associated with Precinct development.

The SAR states that rock and aggregate obtained from onsite and offsite would be required for various applications during construction, however the sources of these materials is subject to forward planning and approval processes for the construction of individual projects within the Precinct. Any proposal to quarry rock and aggregate on the Dampier Peninsula or around Broome will be subject to relevant government approvals processes and should be discussed with the Department of Minerals and Petroleum (**DMP**) in the first instance.

Generic Question ID: 255 Sub ID [64] Raised by [S64 Q675]

DEC Recommendation 38 (7) **Part 2 Section 5.8**: The proponent contacts DEC at the appropriate stage of the process to initiate the scoping process for a works approval (and licence) under the *Environmental Protection Act* and provides further details and information of all prescribed activities that may produce emissions which are discharged to the environment, for assessment and determination of applicable prescribed premises categories under the Environmental Protection Regulations 1987. Discussion: **Section 5.8** outlines construction activities associated with precinct developments with an overview contained in **Table 5-6**. Brief overview of construction activities. Any construction activities within the precinct will need to comply with section 52 of the Act and can only occur in accordance with a works approval. Works approvals are generally issued for three years. Applications for works approvals must be consistent with section 54 of the Act. Any amendment to a works approval must be consistent with section 59 of the Act. **Section 55** of the Act provides statutory advice on contravention of conditions of works approvals. Damian Thomas Ph: 9168 4218

DSD expects that all commercial proponents will commence works approval applications and obtain licences as appropriate to their activities, consistent with their legal obligations as per the advice from DEC. DSD acknowledges this advice from DEC and will provide relevant details to this effect to commercial proponents interested in operating in the BLNG Precinct.

Generic Question ID: 556 Sub ID [170] Raised by [S170 Q1447]

WWF & ACF Submission: Given the residual uncertainty associated with blasting impacts, are permits being sought for incidentally killing or injuring protected marine mammals and other species? If such permits are to be given, what level or mortality is likely to be acceptable?

The Proponent is not proposing that any level of marine animal mortality should be considered acceptable. Management measures have been proposed in the SAR to be implemented by future proponents within the Precinct to minimise the risk of adverse impacts on marine animals. There are no plans to apply for permits to kill or injure protected species. At this current stage of the geological investigations and engineering design it is not confirmed whether blasting of the seabed will be necessary during construction of the port infrastructure.

The Strategic Assessment Report (**SAR**) outlines proposed management measures that will be adopted to minimise the risk from blasting on marine fauna (**Part 3, Sections 2.4, 2.5** and **2.6**), should it be required.

Such measures include the implementation of specific management plans which apply to nearshore construction activities (i.e. Port Facilities Construction Environmental Management Plan and Dredging and Dredge Spoil Disposal Management Plan). The Port Facilities Construction Environmental Management Plan will contain procedures to manage the effects of blasting activities. Specific procedures may include: limiting blasting to daylight hours to allow for effective monitoring of marine fauna; using smaller warning charges to deter marine fauna from the blasting area; and using smaller and more frequent blasting as opposed to louder less frequent blasts. Residual impacts to protected marine mammals, marine turtles and fish are concluded to be low following the implementation of these plans and procedures.

Generic Question ID: 1402 Sub ID [150] Raised by [S150 Q3183]

What are the associated pollutants with drilling operations and how will these affect marine life?

It is inferred that this submission is referring to drilling operations associated with the extraction of hydrocarbons from the offshore reservoirs within the Browse Basin, as no significant drilling operations, apart from those associated with piling activities and geotechnical studies, will be undertaken as part of the Precinct construction. The potential impacts associated with the extraction of hydrocarbons within the 'upstream' (offshore) developments will be investigated and assessed as part of a separate federal environmental approval process

and is outside the scope of the Strategic Assessment Report. Similarly, geotechnical drilling undertaken as part of the Precinct engineering studies have been referred and assessed by the State regulatory authorities as part of a separate approval process, separate from the Strategic Assessment Report.

5.9 Commissioning

Generic Question ID: 1400 Sub ID [150] Raised by [S150 Q3175]

Accidents inevitably accompany offshore development. They can be the source of environmental pollution at all stages of oil and gas production. What is being done to prevent these potential accidents? From previous experience, what are the likely monthly average accidents and impacts when the Precinct and offshore platforms come online? What is the average number of technical accidents and what are their implications? What is an example of the "best" and “worst” offshore platform operational history?

Maintenance and integrity of LNG facilities and associated infrastructure is paramount to the longevity and sustainability of the Australian LNG industry. As such, stringent regulatory requirements and industry standards are applied to LNG proponents to ensure their activities are undertaken to minimise the likelihood of hydrocarbon spills to as low as reasonably practicable.

Preventative measures for loss of hydrocarbon containment are introduced at the earliest stages of facility design and engineering to ensure facilities are built to accommodate a range of both environmental and anthropogenic events that may be encountered such as: cyclonic activity; lightning strikes; tsunamis and ocean level rise; vessel anchoring in shallow waters; and trawling vessels. Design measures to prevent the release of hydrocarbons to the environment as a result of the failure of pipelines or vessels include: secondary containment (e.g. bunding) of hydrocarbon storage areas; rock armouring of pipelines; and strict material specifications to ensure the technical integrity of a facility is maintained.

Western Australian Government agencies such as the Department of Environment and Conservation and the Department of Mines and Petroleum conduct regular inspections and audits of LNG facilities to ensure statutory requirements are met by the operator and to identify improvements that can be made to achieve a better environmental and safety outcome. Whilst the scope of these inspections differs according to the legislative framework under which these agencies work, the outcome is to ensure that LNG facilities are designed, operated and maintained appropriately to minimise risks to the environment and to improve the safety of personnel.

As part of the Strategic Assessment of the Browse LNG Precinct, hydrocarbon spill modelling has been undertaken to determine the predicted impacts and corresponding management measures. This modelling used datasets reflecting the actual occurrences of spill events based on industry experience for all LNG developments world wide. Thus **Table 4-1** from **Part 7** of the SAR shows event frequencies for a number of different size and type of hydrocarbon spill events. These ranged from one in every 60 years for a small (1 to 100m3) event to one in 17,000 years for a large (1001 to 10,000m3) spill event.

Based on the modelling the implications of such spill events show that coastal impacts from hydrocarbon spills are likely to be limited to the James Price Point coastal area during calm periods and onshore winds, moving offshore with prevailing south-easterly winds. The likelihood of any hydrocarbon spill impacting on regionally significant environmental receptors is low, ranging from 1 in every 2,000 years for the Lacepede Islands to less than 1 in every 10,000 years for Roebuck Bay.

For more information on preventative measures see **Part 7, Section 4.4.2.1.**

5.10 Maintenance

Generic Question ID: 896 Sub ID [169] Raised by [S169 Q1761]

Environs Kimberley Submission: Representation on the various management committees being formed under the auspices of the Port Authority (e.g. dredging; environmental management and monitoring; emergency management; etc) should be expanded to include paid representation for WA eNGOs and the wider community. Funding for this representation should be sourced from Precinct leases paid by industry and the representation should be selected and nominated by the sector being represented.

It is not proposed that management committees be formed for each individual management plan as suggested in the submission.

The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. As with all management measures, the involvement of the communities of Broome and the Dampier Peninsula in decisions about what is working and what is not will be important in determining whether changes should be made to the mitigation and management measures in order to achieve better environmental and social outcomes.

5.11 Fire Management

Generic Question ID: 723 Sub ID [70] Raised by [S70 Q591]

Fire risks and fire fighting equipment are not discussed in sufficient detail.

Fire is well documented on the Dampier Peninsula and although fire is a natural ecological process and an essential part of the Kimberley environment, recent decades have seen a dramatic change in the Kimberley fire regimes, with greater frequencies and intensities of fires occurring in the mid-late dry season. The bushland condition survey undertaken by AECOM (2010a; **Appendix C-19**) found that fire was the main factor influencing bushland condition at the Precinct.

A Fire Management Plan would be in place for construction and operations of the BLNG Precinct. The Plan would consist of a combination of measures and management protocols to reduce the risk of bushfires to the facilities and associated infrastructure. The strategy is likely to involve a combination of fuel load management through clearing and prescribed/mosaic burning. The strategy would also require the construction of fire breaks on the perimeter of facilities and access tracks to facilitate fire management activities such as fire fighting and prescribed burning.

The strategy would be developed with appropriate expertise and would likely comprise the following typical elements:

- haul/access road(s) around LNG equipment providing a firebreak;
- within Precinct thinning or clearing of vegetation (i.e. spear grass mowed/removed, pindan trees thinned);
- security / access road either side of fence as firebreak (nominal 60m);
- thinned vegetation; and/or
- mosaic burning.

For more information on fire and the Kimberley see **Part 4**, **Section 1.4.11.5** and **Part 2**, **Section 5.11.**

5.12 Decommissioning

Generic Question ID: 542 Sub ID [170, 224] Raised by [S170 Q1424]

WWF & ACF Submission: Have decommissioning costs been built into the project? If so, what environmental objectives are built into decommissioning (i.e. long term 'no net loss')?

As this is a Strategic Assessment, there is no project for the decommissioning costs to be built into. The requirements for final closure and rehabilitation are incorporated in the proposed Environmental Conditions for the Precinct which require proponents of a derived proposal to develop a Final Closure Plan at least five years prior to the planned date of closure. Furthermore there is a requirement for proponents to prepare a Rehabilitation Plan. Both Plans will require approval by the regulators. The objectives of both plans will be consistent with Government polices and guidelines in force at the time.

Generic Question ID: 865 Sub ID [218] Raised by [S218 Q1868]

Whilst the proponents advise there will be more employment opportunities for local, Indigenous and non-Indigenous people the project has a finite life. Does Woodside have evidence that this has been the case in other projects in Western Australia? Should the stated opportunities be provided, will the BLNG provide for these people after the life of the project has ceased and the environment has been desecrated?

The State Government and Precinct's Foundation Proponent, Woodside, are committed to generating direct and indirect employment for local Indigenous and non-Indigenous people. The Strategic Assessment Report (**SAR**) acknowledges that there are significant socio-economic barriers that need to be addressed in order for local people to realise the employment benefits of the Browse LNG Precinct and includes a number of strategies to assist in achieving this outcome, such as the following:

- An Education, Training and Employment Strategy: to maximise education, training and employment opportunities for the local community and ensure that a coordinated approach to the range of education, training and employment strategies is implemented to support the development of the LNG Precinct.
- An Indigenous Workforce Development Strategy: to ensure a coordinated approach to the range of Indigenous education, training and employment strategies; develop and implement a strategy to increase the number of Indigenous workers on the project; develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment; provide opportunities for Indigenous people to work on cultural and environmental values relevant to Precinct operation; and, develop appropriate workforce arrangements and that includes support for Indigenous workers.

- Local purchasing strategies: to maximise economic benefits for the communities of Broome and the region by encouraging Precinct expenditure within local businesses and industry.

These strategies will include relevant targets and performance indicators that will be monitored to ensure delivery on the commitments made in the SAR. There are many examples of programs that have sought to increase Indigenous and non-Indigenous employment in the resource development sector. Although these programs have had mixed results, there are also a number of success stories in Australia and around the world. For example, Woodside has had solid success with the Pluto LNG project in the Pilbara, with 130 local Indigenous people employed during construction, and 30 trainees about to start their careers in operations once the plant is commissioned. The legacy of projects such as Pluto and Browse when they are finalised, is in the skills and experience people acquire which can be applied in other industries, and in the wealth and infrastructure generated for the community. A review of such examples can assist in the development of effective programs to increase local employment and in the establishment of realistic employment targets.
Although the largest increases in employment will be during the construction phase, benefits provided directly and indirectly will extend beyond the Precinct and the LNG sector. For example, one of the key long-term flow-on benefits of employing local businesses in the development of the Precinct would include both an increase in business income and in the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area, leading to expansions in business and workforce capacity well beyond LNG contracting. In addition, education, training and employment opportunities will help create a more skilled workforce, thus helping to address the recognised scarcity of skilled workers in Broome.

It is also notable that under the land access agreement, the land will be returned, fully remediated, to the Traditional Owners at the end of the Precinct's life. More details on closure and decommissioning will be included in the Closure and Decommissioning Strategy for the Browse LNG Precinct, which will be developed five years prior to the decommissioning of the Precinct.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

5.13 Workforce

Generic Question ID: 441 Sub ID [104, 120] Raised by [S104 Q936]

DoH Submission: The report refers to peak construction numbers of 5,500 to 8,000 workers. However, several scenarios evaluating the capacity of water supply and wastewater disposal infrastructure in Broome used a maximum of only 6,000 workers (see **Appendix D-6 'Infrastructure Assessment Strategy'**, **Table 4.1**). This substantial difference could affect scenario outcomes.

The Browse LNG Precinct project has committed that all wastewater will be treated on site and that discharges will be managed to ensure disposal occurs at approved locations, at controlled rates, and according to National Water Quality Guidelines (or other appropriate standard) to minimise the environmental impact regardless of workforce numbers.

The water supply will be provided by individual commercial proponents or alternatively shared within the BLNG Precinct. Accordingly, it will not be interconnected with, or affect, water supply and wastewater disposal infrastructure in Broome. All Precinct water supplies will be required to meet prescribed national standards.

A summary of discharges and wastes is provided in **Part 2**, **Section 5.15** and water supply is discussed in **Part 2**, **Section 5.7.4.**

5.14 Transport

Generic Question ID: 496 Sub ID [232] Raised by [S232 Q1360]

The Indigenous community on the Dampier Peninsula expressed strong concern about their children's safety on the roads and other possible impacts from more people visiting, when the road north of James Price is sealed. How is the additional traffic, including boats and caravans, to be managed?

Initial road works associated with the development of the Browse LNG Precinct will involve the construction by Main Roads WA of a 19km access road to the Precinct, along with the upgrade and seal of 25km of the Broome-Cape Leveque Road. Work on this section of the Broome-Cape Leveque Road will complement Main Roads WA's proposed future plans to upgrade and seal the remaining 90km of the road, which is likely to occur over a two year program beginning mid-2012.

While the proposed upgrade of the entire Broome - Cape Leveque Road is outside the scope of the Precinct development, the Strategic Assessment Report (**SAR**) outlines a number of mechanisms to manage the

potential impacts of increased accessibility to the Dampier Peninsula.

During both the Social Impact Assessment (**SIA**) and the Aboriginal Social Impact Assessment (**ASIA**), it was clear that community stakeholders were very interested in the potential impacts associated with an increase in public accessibility to the Dampier Peninsula. While sealing the road will likely result in increased access to social and medical services and improved sustainability of Indigenous tourism businesses, this activity also brings with it potential issues such as an unsustainable influx of visitors. If not managed, this could lead to impacts on the local environment and local communities.

Nevertheless, it is expected that sealing the road will produce a significant net benefit to the local population. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR proposes a number of strategies aimed at maximising the opportunities presented by the development of the Precinct. Among these is Broome Social Services Strategy, which will be a whole of Government initiative to address social services deficits in Broome, including accessibility to those services for Indigenous communities on the Dampier Peninsula.

The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

As a condition of locating at the Precinct, commercial proponents will also be required to operate a managed-access construction workforce camp. This will control the movements of the construction workforce, and will ensure that its residents do not have the ability to travel independently through the Dampier Peninsula.

Furthermore, the Dampier Peninsula Planning Strategy will consider the way in which the Dampier Peninsula is accessed more generally, and will promote the conservation of environmental and heritage values in the area. It will also provide the mechanism for land reform and land transfers to Traditional Owners that will provide them with more control over access and use of land. The State Government will consult with the Traditional Owners in the further development of this Strategy which, together with other requirements such as the Cultural Heritage Management Plan, will provide appropriate mechanisms to address possible impacts of visitors accessing the area on local communities, cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.

5.15 Emissions, Discharges and Wastes

Generic Question ID: 202 Sub ID [24, 27, 28, 34, 36, 38, 45, 62, 76, 77, 78, 84, 85, 91, 94, 96, 97, 98, 105, 118, 125, 134, 141, 216, 226, 227, 229, 235] Raised by [S34 Q322]

What is going to be the impact of wastewater discharge - 30 billion litres of effluent from LNG processing, contaminated water from process areas, surface runoff sewage and grey-water - that will need to be pumped into the sea near James Price Point? A detailed technical study should be undertaken into the impacts this would have on the environment.

No studies have been carried out into the effects of wastewater discharge on sea life.

The Strategic Assessment Report (**SAR**) has assessed the potential impacts to the marine environment from routine wastewater discharges from the onshore Precinct facilities. Modelling of wastewater discharges (**Part 7, Section 2**) was undertaken to inform the impact assessment process.

It was acknowledged within the SAR that routine discharges have the potential to produce a localised zone of reduced marine water quality within the Precinct Port Area. Results of the modelling study indicate that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point).

Additionally, the SAR commits future precinct proponents to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area, with biannual ecotoxicity testing to identify discharge parameters to be improved to achieve a target of 99% species protection.

Included in the assessment for each of these factors is an evaluation of the potential effect of marine discharges (i.e. effluent) taking into account proposed design and management measures. It is concluded that impacts to these components would be successfully mitigated through the design and operation of the marine outfall. To this end, hydrodynamic modelling would be conducted to assess the size of the mixing zone at the end of this outfall, and this, in conjunction with knowledge gained through mapping of benthic habitats (**Appendices C-3** to **C-4**), would inform the positioning of the outfall to minimise impact to the benthos.

Impacts to 'sea life' would also be managed by adhering to ANZECC/ARMCANZ 2000 water quality guidelines designed to ensure a high level of species protection. Routine monitoring of water quality at the marine outfall,

to ensure compliance to these guidelines, would be conducted throughout the operation of the outfall. In addition to measurements of water quality, ecotoxicity testing of marine organisms would be conducted to determine the Whole Effluent Toxicity (**WET**) of the discharge water and routine ecotoxicity sampling would be conducted within the BLNG Port Area during outfall operation to determine if contaminant levels in marine organisms remain within acceptable limits with reference to the ANZECC/ARMCANZ 2000 guidelines. Refer to **Part 3, Section 2.3** (**Table 2.3-4**) for a complete summary of commitments to be addressed through implementation of a Marine Wastewater Discharge Management Plan, to the satisfaction of the WA Minister for Environment.

Generic Question ID: 80 Sub ID [2, 40, 47, 55, 203, 100, 133, 144, 160, 182] Raised by [S2 Q36]

The proposal to discharge industrial wastewater into the marine environment within the LNG Precinct Port Area will pose a significant risk to the marine environment. Bioaccumulation of toxic substances discharged into the wastewater is inevitable. Heavy metals will attach to fine sediments that will be continually mobilized on the Spring tides. Toxic metals and chemicals will concentrate in the sediment trap created by initial dredging for the port development. Continual maintenance dredging will distribute these toxins when the dredge spoils are dumped offshore.

The Strategic Assessment Report (**Part 3, Section 2.3.4**) noted the potential impacts from routine wastewater discharge into the marine environment. It was acknowledged that the primary impact associated with wastewater discharges during construction and operations is the potential to produce a localised zone of reduced water quality within the BLNG Precinct port area (i.e. Low Ecological Protection Area 'mixing zone').

Wastewater discharge modelling presented in **Part 7, Section 2** demonstrated that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point). Additionally, the SAR commits future proponents of derived proposals to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area.

While the wastewater will be treated prior to discharge, it is acknowledged that heavy metals may be present in low concentrations in the final discharged effluent as dissolved mineral salts. Metals oxidise at the seabed surface and will form insoluble precipitates. The amount of precipitate is very low, and these precipitates will be spread widely under the local tidal regimes. While it is possible that routine discharges may result in a localised impact on marine sediment quality, the SAR concludes that acceptable environmental outcomes are achievable as potential impacts would be localised and the quality of discharged water would be managed and monitored to ensure compliance with the ANZECC/ARMCANZ 2000 guidelines.

As described in **Part 3, Section 2.2.1.1,** dumping of dredge spoil as part of the capital or maintenance dredging activities will be subject to assessment under the *Environment Protection (Sea Dumping) Act 1981*. Any application for sea dumping will be prepared in conjunction with the National Assessment Guidelines for Dredging (NAGD) (DEWHA, 2009e). The NAGD specify stringent criteria for assessing dredged material including, testing for contaminants, testing for bioavailability of contaminants and testing for toxicity and bioaccumulation of contaminants.

Generic Question ID: 210 Sub ID [38, 40, 62, 73, 182] Raised by [S40 Q394]

The impact of benzene and other air pollutants have not been adequately addressed in the SAR.

The SAR describes potential air quality impacts resulting from the proposed BLNG Precinct activities in **Section 2.8** of **Part 4**. The results for benzene are presented in **Figure 2.8-17** which shows that the Australian NEPM investigation level for benzene is 3 ppb or approximately 9.6 µg/m3, which is achieved within the sensitive land use buffer. However, the new European Union Standard for benzene of 5 µg/m3 is just exceeded at the southern edge of the sensitive land use buffer, but is achieved at all existing and proposed sensitive receptors. Both of these standards have been developed based on scientific research on the health effects of benzene.

As the SAR has identified a risk that emissions of benzene, as representative of air toxic substances, may lead to increased ambient concentrations, especially during condensate ship-loading, proponents of derived proposals will be required to incorporate specific measures to monitor, manage and minimise emissions of benzene to the appropriate health standards.

Generic Question ID: 677 Sub ID [70, 211, 154, 86, 236] Raised by [S70 Q577]

Recent events (Montara and Gulf of Mexico oil spills, tsunami causing Japanese nuclear power plant failure and risk to life) demonstrate the huge risks to environment of putting dollars ahead of environmental safety, adequate contingency plans and strong, government based independent regulation.

The State Government has developed appropriate environmental management and impact mitigation measures to ensure that the identified environmental, social and heritage objectives can be achieved. These include:

- controls by other regulatory processes;
- conduct of sensitivity analyses;
- assessment of reasonable worst case scenarios;
- conduct of impact assessments;
- application of 'best practice' management measures; and
- preparation of management plans for derived proposals.

Furthermore, a regular review of the implementation of the mitigation measures and safeguards will be conducted every five years by the Department of State Development in consultation with Environmental Protection Authority and the Department of Sustainability, Energy, Water, Population and Communities. The purpose of the review will be to ensure continuous improvement with management strategies and safeguards amended to adopt best practice measures. For further information see **Part 1, Section 3.4.1.**

Generic Question ID: 256 Sub ID [64, 96] Raised by [S64 Q676]

DEC Recommendation 39 (8) SAR **Part 2 Section 5.15**: That approval conditions for this strategic proposal require that proponents of derived proposals provide detailed emission and discharge studies.

Discussion: The SAR **Part 2 Section 5.15** outlines emissions, discharges and wastes associated with Precinct developments with an overview contained in **Table 5-8**. As stated in the section they are described in broad terms based on the current proposal. Any atmospheric emissions described in **Section 5.15.1** will more than likely be assessed by Air Quality Management Branch in the works approval process and may be subject to National Pollution Inventory (**NPI**) requirements. **Section 5.15.2** indicates that noise will be generated during construction and operation phases of the Precinct with **Table 5-13** providing an overview. Noise emissions will be assessed during the approval process under the works approval and licence application and noise emissions will likely be assessed by DEC Noise Branch. **Section 5.15.3** indicates varied effluent discharges with **Table 5-14** to **5-17** providing an overview of each Precinct scenario. **Section 5.15.4** provides an overview of terrestrial waste and hazardous wastes expected during construction and operation. It is noted in **Section 5.7.7** that no landfill will be constructed at the Precinct so waste will be transferred off-site. **Section 5.15.5** provides an overview of marine discharges that are likely to be disposed of to the offshore or nearshore marine environments, however, disposal methods and locations are not determined presently.

The information presented in the SAR is relevant to a strategic proposal of the LNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development. The Proponent acknowledges that, subsequent to the environmental approvals process under Part IV of the EP Act, there remains a requirement for works approvals and environmental licences under Part V of the Act. This is a future process that proponents of derived proposals will be expected to engage with DEC as final details on emissions, discharges and wastes are characterised appropriate at that stage of project development.

Several management plans have been committed to that cover these aspects including:

- Air Quality Management Plan (**Table 2.8-12, Part 4**);
- Noise management will be address in a Fauna Management Plan (**Table 2.6-7, Part 4**);
- Marine Waste Water Discharge Management Plan (**Table 2.3-4, Part 3**); and
- Waste management will be address in a Fauna Management Plan (**Table 2.6-7, Part 4**).

Further discussion on Management Plans is provided in Section 2.4 of the Proponent's Response to Submissions Summary Report. The information presented in the SAR is relevant to a strategic proposal of the LNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development. The Proponent acknowledges that, subsequent to the environmental approvals process under Part IV of the EP Act, there remains a requirement for works approvals and environmental licences under Part V of the Act. This is a future process that proponents of derived proposals will be expected to engage with DEC as final details on emissions, discharges and wastes are characterised appropriate at that stage of project development.

Several management plans have been committed to that cover these aspects including:

- Air Quality Management Plan (**Table 2.8-12, Part 4**);
- Noise management will be address in a Fauna Management Plan (**Table 2.6-7, Part 4**);
- Marine Waste Water Discharge Management Plan (**Table 2.3-4, Part 3**); and
- Waste management will be address in a Fauna Management Plan (**Table 2.6-7, Part 4**).

Further discussion on Management Plans is provided in Section 2.4 of the Proponent's Response to Submissions Summary Report.

Generic Question ID: 935 Sub ID [227, 121] Raised by [S227 Q2006]

The inherent dangers of the possibility of a disaster are high as Woodside has recently employed a company at the forefront of responsibility of the Montara oil spill.

The Strategic Assessment does not seek approval for drilling and production activities as these are relevant to offshore developments which are addressed as Category C activities in the SAR. Such activities are subject to separate approvals processes under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999,* and must be by individual commercial proponents.

It is assumed that the submission refers to permit WA307-P. As the operator of permit WA307-P, Woodside manages the exploration drilling at the Omar prospect. PTTEP Australasia, operator of the Montara development, has a financial interest in this permit.

Generic Question ID: 1119 Sub ID [39, 74] Raised by [S74 Q2569]

No matter the safeguards or the management plan, no single company or government can guarantee 100 per cent that environmental accidents will not occur.

Uncertainty is an inherent and unavoidable aspect of any environmental impact assessment and arises from a variety of sources, including the available data and in the decision-making process itself. Uncertainty has been accommodated with the SAR through:

- use of environmental risk assessment;
- application of the precautionary principle;
- building in conservatism into the assessment to provide a sufficient margin of safety;
- employment of outcome statements; and
- use of an adaptive management approach.

Therefore, while there is no guarantee against environmental accidents, the assessment approach has considered the risk of these occurring and applied appropriate measures to manage potential impacts.

Generic Question ID: 476 Sub ID [166] Raised by [S166 Q1391]

Shire of Broome Submission (1c): The completion of a waste management assessment and provision for the development of a new resource recovery eco-industrial park, a matter raised in Council's resolution of 7 November 2008, has not been adequately addressed in the SAR **Part 5**.

The SAR **Part 5**, **Section 2.5**, **p. 2.27** notes that the existing waste management facility has a limited life and future options are being considered. Preparation and implementation of a comprehensive waste management plan for the Precinct site including transport and treatment options is proposed as a requirement prior to the commencement of any relevant activity by a commercial proponent within the Precinct site. See SAR **Part 5**, **Section 4.7.5**.

Generic Question ID: 1023 Sub ID [224] Raised by [S224 Q1951]

KLC Submission: **Part 3**, **Section 2.2.3.3** Non Routine Marine Discharges, and **Table 2.2.5**, **Section 2.3.4.2** Non Routine - Proponents of the Precinct should be required to prepare oil spill sensitivity maps as part of the Oil Spill Response, and these maps should be supported by field surveys to ground-truth sensitive habitats prior to construction. Traditional Owners should be given the opportunity for review and approval of key Oil Spill Contingency Plans prior to these being approved by State and Commonwealth agencies.

As outlined in **Section 4.4.1** of the Response to Submissions Summary Report, the State Government has developed a draft Browse LNG Precinct Emergency Response Strategy which requires the Precinct Control Group to coordinate development and implementation of commercial proponent's oil spill contingency plans. It is

typical that such oil spill contingency plans consider particular environmental, social and heritage values that may be impacted in the case of an oil spill. However, the SAR already contains a number of sensitivity maps throughout the document, particularly in **Part 3** and **Part 4**, which can be used to inform responses in the case of an oil spill. In many cases these maps do have substantial field based data (e.g. coral reef distribution datasets).

It should also be noted that the Traditional Owners will continue to be engaged in the environmental management of the Browse LNG Precinct with these requirements formally enshrined via the BLNG Project Agreement.

Generic Question ID: 1083 Sub ID [131] Raised by [S131 Q2491]

Who will claim responsibility if any environmental incidents were to occur. If there were to be industrial accidents similar to the Varanus Island gas explosion, or any other incident impacting on the surrounding area, who (if anyone) will be held responsible to reinstating the area or repairing any damage?

The Native Title Agreement that was signed between the State Government, Woodside and the Goolarabooloo Jabirr Jabirr claim group on 30 June 2011 contains an environmental assurance clause regarding Serious Environmental Harm which states:

"In the event of a breach by a Proponent of an Environmental Law, which breach causes Serious Environmental Harm and a direct impact on the health and safety of members of the Native Title Party and/or Indigenous people of the Dampier Peninsula, the Proponent must, where practicable to do so, make good that Serious Environmental Harm to the standard prescribed by Law. Where it is not practicable to make good, the Proponent must take other steps in consultation with the Native Title Party".

Generic Question ID: 1132 Sub ID [89] Raised by [S89 Q2633]

The report recognises that there will be environmental impacts, but suggests these impacts can be adequately mitigated. Examples of mitigation measures generally use vaguely worded and ill-defined statements such as "Derived proponents to demonstrate application of best practice management and mitigation measures..."(**Executive Summary Table 7-3**).

As with any major industrial development, there is the potential for environmental impacts. However, historical evidence indicates that with the use of industry best practice, the risk of these potential impacts can be significantly reduced and the residual impact lessened. Best practice are techniques or methodologies that, through experience and research, have proven to reliably lead to a desired result. A commitment to using best practice in any field is a commitment to using all the knowledge and technology at one's disposal to ensure success.

6 Indirect Activities and Related Projects

6.1 Category B Activities

Generic Question ID: 245 Sub ID [39, 215] Raised by [S39 Q733]

Due to the unanticipated delay in land access arrangements, the Foundation Proponent may need to establish a temporary off-site workforce accommodation camp for around 600 workers on the outskirts of Broome. How can land for a work camp be accessed when the land required for the Precinct has not been acquired yet?

A temporary workers accommodation camp is not a project contemplated by the State and so does not fall within the scope of the SAR. Any land required for a temporary workers camp would be subject to distinct and separate land access approvals independent of this Precinct proposal.

Generic Question ID: 257 Sub ID [64] Raised by [S64 Q677]

DEC Recommendation 40 (9): That the Proponent contacts the Broome Shire and initiates discussion on the viability of acceptance of waste streams from the Precinct given that the Class II unlined Broome Landfill is very near capacity and that the Shire is seeking a new dedicated landfill facility.

Discussion: The SAR **Section 6.1.3** indicates the solid waste facility in Broome is near capacity and that the Precinct will not have a dedicated landfill - this is the only waste disposal site close to the Precinct.

As outlined in the SAR, the Proponent is aware that the Broome solid waste facility is near capacity and has already initiated discussions.

Generic Question ID: 1173 Sub ID [122] Raised by [S122 Q2315]

In relation to impacts associated with Category B infrastructure developments the submitter offers the following suggestion: (a) Actively manage the Category B developments to minimise impact on Roebuck Bay and Eighty Mile Beach, (b) Access increased support for the Roebuck Bay Working Group to enable implementation of best practice management of Roebuck Bay (c) Commit to increased monitoring of Roebuck Bay and Eighty Mile Beach in order to detect and respond to negative impacts of Category B developments.

Category B activities are taken into account in the cumulative environmental impact assessment of the SAR. The management measures that have been identified to avoid, minimise, manage and mitigate the potential impacts of each factor are outlined in the SAR **Part 3**, **Section 2** for Marine Factors and in **Part 4, Section 2** and **3** for Terrestrial Factors.

In October 2010 the Western Australian Government announced the formation of the Kimberley Wilderness Parks as a key component of the Kimberley Science and Conservation Strategy. Four new Kimberley marine parks were proposed at Camden Sound, North Kimberley, Roebuck Bay, and Eighty Mile Beach. On 30 June 2011 the Government announced the release of the final Kimberley Science and Conservation Strategy together with $63 million over five years to deliver conservation outcomes. Two of the objectives of the Strategy are to ensure effective management of conservation reserves and to improve knowledge to inform adaptive management of the region. The funding included significant allocations to manage the marine reserves and to undertake a major marine research program to improve protection of ecosystems.

Indicative management plans will be prepared for each marine park and released for public comment (SAR **Part 3, Section 1.5.3**).

Generic Question ID: 1278 Sub ID [123] Raised by [S123 Q2343]

Impacts of both Category A and Category B proposed activities outside the Precinct area are not adequately addressed. For example, oceanographic models do not adequately address the serious lack of long term oceanographic studies to scientifically assess for sediment flows and possible impacts on areas outside of JPP.

The purpose of the SAR is to seek approval for an LNG processing Precinct north of Broome. The activities for which approval is sought have been defined as 'Category A' activities within the SAR. The cumulative impacts of Category A, B and C activities are addressed in each of the factor based chapters, in a section titled 'Cumulative Impacts of the Proposal and Associated Activities'.

With respect to oceanographic models they were developed utilising approximately 12 months of data from numerous metocean and meteorological instrument deployments which are outlined in **Section 4.2** in **Appendix C-13**. These measurements were used to calibrate models that have been used globally and are accepted as industry standard models (DHI's MIKE suite of models) which have been demonstrated to accurately reflect actual conditions.

Generic Question ID: 1396 Sub ID [150] Raised by [S150 Q3167]

How much money has the local, State and Federal Government already spent on this project (forums, travel, studies, engagement, etc) and how much more money will our government have to spend on this project before it is constructed and completed (roads, infrastructure, etc) and ready for operation?

The engagement of consultants by Shire of Broome and the Federal Government is a matter for those parties. It is also not possible to detail likely State costs into the future although these will be made public through normal budgetary processes.

However, in terms of the costs of development of the Strategic Assessment Report the consultancy AECOM Australia Pty Ltd was engaged by the Department of State Development to coordinate production of this report, which as of 24 June 2011, a total of $3.897 million (including GST) had been paid.

Additionally, the Browse LNG Precinct Regional Benefits Agreement between the State Government, Woodside Energy Ltd and the Kimberley Land Council fulfils the commitment to provide benefits to Indigenous people of the Dampier Peninsula and broader Kimberley region.

Upon securing a Foundation Proponent the State has committed, under the Regional Benefits Agreement, to provide to Traditional Owners:

- $20 million for a regional Traditional Owner representative body ($2 million annually for 10 years);
- $20 million for a regional Economic Development Fund;
- $30 million for a regional Indigenous Housing Fund;
- $20 million for a regional Education Fund ($1 million annually for 20 years);
- $8 million for a Cultural Preservation Fund ($500, 000 annually for 16 years);

- $108 million for a Kimberley Enhancement Scheme; and
- $15 million to create and jointly manage conservation reserves on the Dampier Peninsula with the Department of Environment and Conservation ($1.5 million annually for 10 years).

However, these costs to the State must be balanced against the considerable economic benefits that are expected to flow from the development, to both the State and the nation.

6.2 Category C Activities

7 Land and Asset Tenure

Generic Question ID: 22 Sub ID [2, 70, 31, 44, 211, 229, 203, 227, 234, 142, 124, 236] Raised by [S2 Q23]

The Precinct will seriously undermine the cultural heritage of the Goolarabooloo Jabirr Jabirr people, and goes against the wishes of traditional law bosses for the area. Compulsory acquisition of this land may seriously undermine Australia's international human rights reputation under the Universal Declaration of Human Rights and the Racial Discrimination Convention. The extinguishment of Native Title by compulsory acquisition may be contrary to the Racial Discrimination convention because the effect is to exclude the rightful traditional owners from a role in the management and development of native title land. (Amended Native Title Act S.24MD(2))

The land involved in this process is unallocated Crown land over which no Native Title has yet been determined. While the State's preferred position remains to negotiate an Indigenous Land Use Agreement (**ILUA**) with the Traditional Owners, in the interests of progressing towards the positive outcomes within a reasonable time frame, the Government commenced proceedings to secure land for the Precinct.

Since December 2008, the State Government and Woodside Energy Ltd, as potential Foundation Proponent for the Browse LNG Precinct, have been negotiating with the Kimberley Land Council (**KLC**), as the authorised representative of the native title claimants, to reach an Indigenous Land Use Agreement.

In April 2009, the State Government, Woodside and the KLC signed a Heads of Agreement that outlined substantial benefits for Traditional Owners and the wider Indigenous community and commitments to improve community facilities and services.

At this time, a deadline for completing negotiations by September 2009 was agreed to by the parties. After two extensions, the State Government set 30 June 2010 as the final deadline.

In November 2009, a Heritage Protection Agreement was also signed between the State Government and the KLC (on behalf of the Native Title claimants), which provides the guiding principles for conduct of heritage surveys and the minimisation of impacts on heritage sites.

In June 2010, the KLC formally advised that the division within the claimant group meant claimants were unable to conclude and authorise an ILUA with the State Government and Woodside by 30 June 2010.

In September 2010, the State Government commenced a compulsory acquisition process under the Commonwealth *Native Title Act 1993* and State *Land Administration Act 1997* for the land required for the development.

The Commonwealth *Native Title Act 1993* and State *Land Administration Act 1997* provide for a transparent and clearly defined land acquisition process which involves negotiating in good faith with registered Native Title claimants over a six month period.

If an agreement cannot be reached then the State will refer the matter to the National Native Title Tribunal for arbitration and determination. However, the State's preferred position remains to negotiate an Indigenous Land Use Agreement with the Traditional Owners.

Whether access to the land required for development of the Precinct is achieved by negotiation or arbitration, the State Government is committed to delivering the benefits included in the Heads of Agreement.

Part 5, Section 3 of the Strategic Assessment Report outlines Indigenous Agreement and funding commitments associated with the development of the Browse LNG Precinct, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

Generic Question ID: 104 Sub ID [14, 36, 87, 118] Raised by [S14 Q107]

Compulsory acquisition of native title land is illegal; the government does not care about the Traditional Owners.

The land required for the Browse LNG Precinct is comprised entirely of unallocated Crown land, over which no Native Title claim has yet been determined. It is located on part of the land and adjacent waters subject to a registered claim under the *Commonwealth Native Title Act 1993* (**NTA**) by the Goolarabooloo Jabirr Jabirr Native Title claimant group. Development of the Browse LNG Precinct cannot proceed without appropriate land

tenure being granted under the *State Land Administration Act 1997* (**LA Act**), with the granting of such tenure being subject to native title rights and interests over the area of land.

The State Government's preference has always been to secure the land tenure arrangements via an Indigenous Land Use Agreement (**ILUA**) under the NTA, which would ultimately register the consent of the registered claimant group to the establishment and operation of the Precinct. Since January 2008, the State Government has been negotiating with the Kimberley Land Council (**KLC**), which represents the claimant group, to secure access to the areas of land required for the Precinct.

Despite three extensions of the agreed deadline for completing the formal negotiations, in July 2010 the Kimberley Land Council advised the State that agreement could not be reached due to divisions within the native title claimant group. In September 2010, the State commenced a formal land acquisition process in accordance with the LAA and the NTA. This action was taken to:

- provide certainty of process;
- ensure the timing of key milestones to allow land for the Precinct to be secured; and
- ensure that the State was negotiating with all of the legitimate parties.

This process does not remove the rights of affected people, and the relevant laws include the right to negotiate, objection periods and the right to compensation. Under the LAA, compulsory acquisition can only occur if it is consistent with the requirements of the NTA. In addition, the State must issue a Notice of Intention to Take (**NOITT**), to which affected persons have a 60 day objection period. Another objection period of 60 days would follow if a final taking order (which can only be issued in accordance with the NTA) is issued by the Minister for Lands. Affected people have a right to seek compensation under this process.

The State must negotiate in good faith with registered native title claimants for a six-month period. If agreement cannot be reached, the State will refer the matter to the National Native Title Tribunal (**NNTT**) for arbitration for up to a further six months, after which the Tribunal determines if the development may be done, and if so, under what conditions. The National Native Title Tribunal, in making its decision, will consider the significance of the site as well as the economic benefits to the State/Nation.

8 Impact Assessment Methodology

Generic Question ID: 43 Sub ID [4, 30, 32, 49, 227, 67, 159, 158, 234, 228, 292, 293] Raised by [S234 Q2545]

The studies done for this project did not provide solid baseline data, with studies conducted over short periods of time despite the area been subject to seasonal change. To adequately address the values of the area and the impacts (e.g. annual and seasonal variation must be addressed in impacted species and processes), long-term studies need to be undertaken.

The Northern Development Taskforce undertook a number of surveys to support the site selection process for the proposed LNG Precinct. As part of the scoping phase for the Precinct Strategic Assessment process, a range of additional studies were identified to support the environmental assessment. These key studies are listed in **Section 1.2** of **Part 3** and **Section 1.2** of **Part 4** of the SAR.

Therefore, in most cases there is a high level of certainty regarding environmental values. Where little baseline environmental information is available a precautionary approach to assessment and management has been taken to reach the required level of certainty regarding environmental outcomes.

Generic Question ID: 180 Sub ID [64, 120, 170, 169, 100, 132] Raised by [S64 Q630]

DEC Recommendation 1: That it be noted that there is generally insufficient detail provided (particularly with regard to flora, vegetation, fauna, hydrology and design of the development) to adequately assess impacts of the proposal on conservation values and mitigation of these.

Discussion: The proposed Browse LNG (**BLNG**) Precinct is located within an area that has substantial conservation values and was subject to a recommendation for reservation as part of the proposed 'Dampierland National Park' (Burbidge et al., 1991). The locality supports a number of threatened, restricted and endemic flora and fauna species and communities, potentially warranting additional protection or specific design or management provisions within the Precinct or nearby.

Limitations in the level of information provided on the: investigations conducted (spatially and temporally); results of these investigations (including deficient quantitative impact assessments); and the extent of outstanding investigations; and a lack of detailed site planning in the Strategic Assessment Report (**SAR**) have increased the level of uncertainty on the risks of the proposal to conservation values. The majority of these

issues were raised by DEC in comments on the draft SAR. While it is recognised that not all of the investigations for derived project design need to be undertaken for this assessment, it is of concern that there is insufficient information in key areas relating to biodiversity conservation assets to assess the overall extent of impacts.

The Proponent notes DEC's comment. While the comment is generic and accordingly somewhat difficult to respond to, the Proponent considers that there is enough information provided to quantify impacts for decision-making purposes at the strategic level for which the current assessment is aimed.

The following terrestrial studies were undertaken to inform the impact assessment process and support decision-making:

- Wet and Dry Season Flora and Fauna Surveys:
  - ENV 2008a (**Appendix C-14**), ENV 2008b (**Appendix C-15**) and ENV 2008c (**Appendix C-16**);
  - Biota 2009b (**Appendix C-17**) and Biota 2009c (**Appendix C-18**); and
  - AECOM 2010a (**Appendix C-19**) and AECOM 2010b (**Appendix C-20**).
- Ethnobiological Information (Kimberley Land Council (**KLC**), Margetts and Grabasch, 2010a; **Appendix E-6**);
- Stygofauna and Groundwater Dependant Ecosystems (GDE) (Biota, 2009b);
- Remote Sensing (Terrestrial) (CSIRO, 2010; **Appendix C-21**);
- Ambient Meteorological and Air Quality Monitoring (Woodside, ongoing);
- Migratory Bird Study, James Price Point (Galaxia, 2010; **Appendix C-1**);
- Hydrogeological Review (Rockwater, 2009; **Appendix C-22**); and
- Hydrological Review (BG&E, 2010a; **Appendix C-23** and BG&E, 2010b; **Appendix C-24**).

These are described in more detail in **Part 4** of the Strategic Assessment Report.
In an effort to overcome difficulties associated with the uncertain nature of strategic proposals, consistent definitions regarding the significance of potential impacts were adopted, and a greater level of precautionary assessment or management was applied (refer to **Part 2**, **Figure 8-1**).

A key outcome of the Strategic Assessment process will be to establish the State Management Framework that will apply to future proponents within the BLNG Precinct. In this regard, a number of controls exist, or will be in place, to ensure appropriate environmental outcomes are achieved. Key arrangements will include:

- environmental conditions imposed by the State Minister for Environment to derived proposals;
- conditions imposed by the Commonwealth Minister for Sustainability, Environment, Water, Population and Community to approved actions or classes of actions;
- conditions of works approvals and environmental licences under Part V of the EP Act;
- requirements under Part V of the EP Act related to general environmental harm and pollution;
- future planning controls under Regional or Town Planning Schemes;
- conditions to be applied to leases in the BLNG Precinct; and
- other State and Commonwealth statutes.

Based on the conclusions of the impact assessment, appropriate environmental management and impact mitigation measures have been developed to ensure that the identified environmental, social and heritage objectives can be achieved. In response to the strategic nature of the assessment, where detailed baseline and project scope may not be available, a range of mechanisms have been proposed to provide certainty that the identified environmental, heritage and social objectives could be achieved.

These include:

- controls by other regulatory processes;
- application of outcome-based conditions;
- conduct of sensitivity analyses;
- assessment of reasonable worst case scenarios;
- conduct of impact assessments;
- application of 'best practice' management measures; and
- preparation of management plans for derived proposals.

For some factors, a range of approaches have been proposed to achieve the required level of certainty. For example, a range of air emissions scenarios have been assessed to determine whether a sensitive receptor

would be unacceptably affected and an outcome-based condition has also been proposed that sets air quality limits at the boundaries of the BLNG Precinct.

Certain management measures presented in **Part 3**, **4**, **5** and **6** of the Strategic Assessment Report make reference to the demonstration of the application of 'best practice'. For the purposes of the Strategic Assessment Report, the term 'best practice' is defined as the following:

'the application of the best available mitigation measures that are practicable in the particular circumstances of a proposal to avoid or minimise environmental impact'. The process of achieving best practice would include developing design and management measures against international benchmarks whilst having regard to local conditions and circumstances (including costs) and to the current state of technical knowledge'.

The philosophy of application of best practice, as outlined above, is the underlying approach for developing environmental management plans and design of proposals consistent with the management framework identified in the Strategic Assessment.

Generic Question ID: 582 Sub ID [120, 169, 107, 94] Raised by [S120 Q1233]

ENGO Submission: The SAR science is inadequate and unreliable as the basis for decisions on the gas hub precinct. The general lack of scientific knowledge about the Kimberley and Dampier Peninsula requires excellent science to determine the impacts of any development and justify of any site selection.

The Proponent believes that the SAR science is adequate and reliable. Both the site selection process and the Strategic Assessment were based on extensive investigations and field surveys as evidenced in **Section 4.4** of **Part 2** of the SAR and the marine and terrestrial environmental overviews provided in **Section 1** of **Part 3** and **Part 4**, respectively. These sections refer to the 25 technical environmental appendices which each constitute a major scientific study in their own right. These studies have made a substantial contribution to the available knowledge of the ecology of the West Kimberley, and form a sound basis for the decisions around site selection and management plans for the Precinct.

Generic Question ID: 1018 Sub ID [195, 224, 205, 215] Raised by [S224 Q1941]

KLC Submission: The SAR indicates that in some instances the studies and field surveys are incomplete. The incomplete status of these key pieces of work needs to be reflected in the predicted environmental impacts presented in the SAR. Any changes to the environmental impacts as a result of the completion of these activities need to be available for review.

Part 6 Section 2.4.2: Reading this part of the SAR shows just how damaging this project would be. It's clear nobody knows how it will impact threatened species. The word "may" appears numerous times indicating no one really knows. This should be enough to stop the project.

The SAR was developed in accordance with guidelines issued by the State and Commonwealth regulatory authorities. The Proponent acknowledges that in some instances further studies and field surveys are required to inform appropriate management strategies. This is the nature of a strategic assessment where there needs to be flexibility with respect to future technologies and designs employed.

As discussed in **Section 8.2** of **Part 2** of the SAR, uncertainty surrounding the design and environmental information has been addressed through the application of the precautionary principle. This approach to assessment and management has been taken to reach the required level of certainty regarding environmental outcomes, without the level of detail usually included in project impact assessment. In these cases, a range of mechanisms have been employed and outlined in each factor impact assessment section. For example, where key environmental values have been identified but there are less detailed baseline data available on which an assessment can be made, outcome based conditions that set environmental limits have been developed to provide certainty of the environmental outcome. Future proponents must demonstrate that their proposal can meet the conditions set by regulatory authorities in order to be implemented.

Generic Question ID: 13 Sub ID [2, 120] Raised by [S2 Q14]

No detailed environmental studies have been conducted in Commonwealth waters within and adjacent to the proposed area. The Federal Government does not have enough information to assess the environmental impacts in Federal waters.

A broad range of environmental studies have been conducted within Commonwealth waters to support the Strategic Assessment. For example, comprehensive marine megafauna surveys spanned both State and Commonwealth waters, surveying the Dampier Peninsula coastline with a focus on the migration corridor centred offshore from James Price Point (see **Part 3, Section 1.4.4.4** and **Figure 1-53**) and extending offshore to Scott Reef. Additional studies, for example including benthic habitat (**Appendix C-4**), fish diversity (**Appendix**

C-6) and baseline metocean monitoring, were also undertaken within both State and Commonwealth waters to inform the Strategic Assessment Report.

Generic Question ID: 604 Sub ID [58, 106] Raised by [S58 Q1505]

Consultants used to make detailed studies that have been included in SAR have not been truly independent. Consultants who work for organisations that are funded by Woodside are going to be very careful about what they report in fear of losing their funding.

Professional integrity requires that consultants provide frank and fearless advice. Critical data has been independently peer reviewed to ensure the veracity of results and conclusions. Furthermore, any such review must be undertaken to the satisfaction of independent regulatory bodies with a clear objective under their respective legislative instruments to protect the environment.

Generic Question ID: 93 Sub ID [4] Raised by [S4 Q68]

Several vital studies are not included in the SAR because they are "not yet complete" including: marine waste discharge; oil spill modelling; marine benthic primary producer habitat; and coastal processes (Ref: EPA covering letter, 9/12/2010).

The studies on Wastewater Discharges, Benthic Primary Producer Habitats (**BPPH**), Hydrocarbon Spills and Coastal Processes have now been completed and were released for public review on 14 February 2011. Please refer to the Strategic Assessment Report, **Part 7**.

Generic Question ID: 490 Sub ID [232] Raised by [S232 Q1354]

The Aboriginal community members on the Dampier Peninsula are concerned about the social and environmental impacts that the Precinct will create. How can the State assist in lowering the impacts?

The purpose of conducting impact assessments is to evaluate what impacts a proposed development could have on the affected natural environments and local communities.

Environmental impact assessment (**EIA**) is a formal process under the State *Environmental Protection Act 1986.* Under this Act, development proponents are required to submit a Public Environmental Review, for assessment by the Environmental Protection Authority (as the State's independent environmental agency). Although not a legislative or regulatory requirement, the Department of State Development (**DSD**), as Proponent for the Browse LNG Precinct, chose to also conduct a social impact assessment (**SIA**). This included the provision of funding to the Kimberley Land Council (**KLC**) to commission an Aboriginal Social Impact Assessment (**ASIA**), the terms of reference for which were developed in consultation with the Traditional Owners and the Indigenous community.

Impact assessment is a two part process. One part is the identification of potential impacts. The other is to identify appropriate management measures in order to enhance potential positive impacts arising from the proposal and remove or minimise potential negative impacts.

Accordingly, the Strategic Assessment Report (**SAR**) sets forth a range of commitments to put in place management plans to ensure that the benefits for local communities associated with the development of the Precinct are optimised, with any potential negative social and environmental impacts minimised to the extent feasible. The next phase of work by DSD and Woodside will be at the project level and will focus on the development and implementation of these management plans. Stakeholders in the Indigenous community will continue to be engaged during the process of developing and implementing these plans.

In addition, a commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group and through this mechanism, the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

Generic Question ID: 528 Sub ID [170] Raised by [S170 Q1410]

WWF & ACF Submission Section 5: There needs to be a revision of the SAR head report. This includes a concise and comprehensive inventory describing the environmental characteristics of the project. As it presently stands, there is some information in the SAR but it is not complete or assembled in a manner that can be readily understood by decision-makers or reviewers. This would normally feature in the opening sections of an assessment, so reviewers can understand the scope of works and visualise the project.

Based on the reference to the SAR head report, it is assumed that the respondent is referring to the Executive Summary of SAR (**Part 1**). The objective of the Executive Summary is to present the main points of the in-depth SAR. It has been written for non-technical people and contains sufficient information for the reader to become familiar with what is discussed in the full report, without having to read it. Therefore, **Section 5** of the Executive Summary presents an overview of the proposed BLNG Precinct. **Section 5** of **Part 2** of the SAR provides a

comprehensive description of the BLNG Precinct activities and facilities, including descriptions of the development scenarios, major BLNG Precinct components, and activities relating to the construction, commissioning, operation and decommissioning of facilities that may occur under the Precinct Plan. A key characteristics Table of the Facilities under the Precinct Plan is also included.

It is noted that in **Section 4** of this Response to Public Submissions, the Key Characteristics table has been updated to better reflect the environmental characteristics of the project.

Generic Question ID: 529 Sub ID [170] Raised by [S170 Q1411]

WWF & ACF Submission Section 6: The lack of quantification of effects is a serious deficiency in the report. The best way to begin this analysis would be to compare the proposals to any number of other LNG developments in similar situations in Australia.

The Proponent contends that the SAR has been developed in accordance with the Terms of Reference and Scoping Document and therefore believes there is sufficient quantification of impacts. Furthermore the SAR has not been developed in isolation. LNG developments in similar situations in Australia have been used as a basis for the description of activities and facilities under the Precinct Plan presented in **Section 5** of **Part 2**.

Generic Question ID: 540 Sub ID [170] Raised by [S170 Q1422]

WWF & ACF Query: What lessons have been learnt from the Gorgon Project and other LNG projects and coastal port projects that could be applied to prevent the likely socio-economic and environmental issues from this proposal?

It is difficult to directly compare the Browse LNG Precinct proposal with other LNG and coastal port projects. The current assessment is being undertaken at a strategic level for a 50Mtpa development concept to incorporate multiple projects, and includes consideration of social impacts. This is unlike any other assessment of an industrial development proposal in Australia's history. The Gorgon Project is in its infancy such that it could be argued that there are no apparent socio-economic and environmental issues.

There is a wealth of information distilled through the environmental assessment and monitoring processes of major projects in Western Australia that is captured in the legislation, regulations and conditions imposed on major projects.

From an environmental perspective, other LNG and port projects provide validation of models used in the impact assessment to predict the significance of impacts. Furthermore, these projects allow the confirmation, or otherwise, of the ability of the proposed mitigation measures to manage potential impacts.

Generic Question ID: 544 Sub ID [170] Raised by [S170 Q1426]

WWF & ACF Submission: The project summary does not include a clear list of activities likely to affect biodiversity (Activities likely to affect biodiversity are described as part of **Appendix A-2**. This was done as 'scoping' in the early stage of the project.)

Although extensive, the role of the Executive Summary (**SAR Part 1**) is to summarise the information provided in the subsequent Parts of the SAR, so that the reader can achieve an understanding of the key findings of the assessment, and if they require more information, refer to the appropriate section of the SAR. Activities likely to affect biodiversity are described in **Sections 2.8.2.2** and **2.7.2.3** of **Part 3** and **Part 4**, respectively.

The *EPA Position Statement No 7 Principles of Environmental Protection* identifies the conservation of biological diversity and ecological integrity as a basic principle of environmental protection, natural resource management and sustainability and needs to be considered in terms of genetic, species and ecosystem diversity. Within the SAR, the term "ecosystem integrity" is used to describe the principle of conserving the natural function and attributes of biological diversity. The assessment of threats and associated impacts on ecosystem integrity arising from the BLNG Precinct was undertaken as part of the development of the SAR. The potential threats and associated impacts that may reduce or cause loss of ecosystem integrity are described in **Part 3 Section 2.8** and **Part 4 Section 2.7**, for the marine and terrestrial environments, respectively. Both sections discuss current threats to ecosystem integrity and sources of potential impact associated with the BLNG Precinct.

Generic Question ID: 547 Sub ID [170] Raised by [S170 Q1429]

WWF & ACF Query: What is the project's policy on avoiding biodiversity loss? Are any unacceptable and irreversible losses expected to occur? What positive biodiversity enhancement opportunities are there? How has the project measured biodiversity value in order to establish levels of loss (or gain)?

The Proponent's approach to avoiding biodiversity loss is consistent with the Government's policies and guidelines. James Price Point was assessed as not having any significant disadvantages in regard to the environmental criteria, both by the Site Evaluation Panel and the Independent Assessment Panel. As such, the likelihood of unacceptable and irreversible losses occurring is remote. There are several positive biodiversity opportunities. Restricting entry will assist in the prevention of the introduction and spread of weeds and feral animals. It will also minimise the impact from recreational activities occurring in unapproved areas. In parallel with this project, the State has recently announced the formation of Kimberley Wilderness Parks covering more than 3.5 million hectares including four new marine parks, a new national park and a number of additional conservation reserves.

Generic Question ID: 564 Sub ID [49] Raised by [S49 Q1458]

Comprehensive long term impact studies would destroy the credibility of the proponent/project.

The SAR is informed by a range of comprehensive long term impact studies undertaken in accordance with Terms of Reference established under the State and Commonwealth Governments' Strategic Assessment Agreement.

Generic Question ID: 768 Sub ID [75] Raised by [S75 Q816]

The submitter considers the process which refers to associated developments as cumulative impact assessments (Executive Summary **Section 3.3.4**; p. ES-8) rather than considering them as part of this application process misleading and confusing. Rather, a holistic application should have been made where all indirect activities and actions as a result of the BLNG Precinct proposal formed part of one single approval process which covered the Precinct and all associated developments. Instead this report largely confines its scope to a very limited area around the proposed site. It contains no commentary as to whether the proposed LNG precinct can proceed without associated developments, such as an expansion of the Broome Port. Almost certainly, it cannot, as the current port does not have sufficient capacity to service the large number of ships that will be loading/offloading materials for the construction phase. In this regard, the consideration is not "whether the impacts arising from core elements of the BLNG Precinct would be altered by indirect activities or related projects (p. E5-8). The consideration should be: Can this BLNG Precinct go ahead without the expansion of Broome Port, Broome Airport and a new sealed road from Cape Leveque Highway? If the answer is no (which it undoubtedly is) the approvals for these projects must be considered at the same time.

The Strategic Assessment addresses a number of activities that will take place through the implementation of the Precinct Plan to establish the BLNG Precinct. These activities may define "future proposals" and "actions" that require approval under the *Environmental Protection Act* and the *Environmental Protection and Biodiversity Conservation Act* and are referred to in the SAR as Category A activities. The SAR also addresses activities that may be indirectly related to the BLNG Precinct (Category B activities) and other significant related projects in the region (Category C activities) to allow consideration of cumulative impacts during assessment. Category B and C activities are not future proposals, actions or classes of actions under this strategic proposal or Precinct Plan and, if these activities eventuate, they may be subject to the assessment provisions of the *Environmental Protection Act* and *Environment Protection and Biodiversity Conservation Act*. The inclusion of Category B and C activities in the SAR provides the regulators, stakeholders and the community the opportunity to assess up front the total cumulative impact of the BLNG Precinct and associated indirect and related activities, while still requiring these activities to undergo formal approval processes in accordance with State and Commonwealth legislation.

Generic Question ID: 869 Sub ID [169] Raised by [S169 Q1726]

Environs Kimberley Submission: Site specific field research has been conducted over a short period of time and is not representative of what may be present or occur across various seasons, weather patterns, near shore and offshore etc. It is highly concerning that conclusions are made based on these limited field observations.

The SAR represents a synthesis of available information on marine life to inform sensible decision making relevant to the development, drawing on surveys, literature and ongoing monitoring of marine environmental values in the region. A significant effort has been made to characterise the existing baseline conditions of the relevant marine receptors as part of the Strategic Assessment process. The Strategic Assessment Report presents the outcomes from several marine studies (summarised in **Part 3**, and presented in **Appendix C**) undertaken by recognised experts, covering a range of potential marine receptors within the James Price Point

area, and builds on the state-of-knowledge from a range of marine studies and reviews that have been undertaken as part of the Northern Development Taskforce site selection process. In many cases (e.g. marine megafauna surveys), these studies have been replicated over time to take into consideration any relevant temporal variability in marine life (e.g. monthly, seasonal or inter-annual variability). Incorporating this natural variability has increased the rigour of conclusions regarding potential impacts to the marine environment. In addition to the numerous technical studies conducted, exhaustive literature searches and desktop studies have been undertaken to complement data acquired from the field studies. These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 870 Sub ID [169] Raised by [S169 Q1727]

Environs Kimberley Submission: It is not clear where relevant experts have been directly consulted (other than referenced) to substantiate the veracity of the statements made (e.g. No whale sharks in the area based on one year's discrete survey). A range of surveying techniques should be employed (e.g. boat based, aerial, tagging, seasonal, floating buoys, etc) across the possible range of species, weather conditions, etc for a minimum time frame determined in consultation with independent experts, scientists and specialists.

The Strategic Assessment Report presents the outcomes from several marine studies (summarised in **Part 3**, and presented in **Appendix C**) undertaken by recognised experts and institutions (including CSIRO, AIMS, Murdoch University and the Centre for Whale Research) covering a range of potential marine receptors within the James Price Point area. These studies build on the information from the independent surveys and reviews undertaken to inform the Northern Development Taskforce site selection process, undertaken prior to the Strategic Assessment Process.

For each study, the appropriate methodologies and techniques were employed to achieve the desired objectives. In many cases, these studies were replicated over time to take into consideration any relevant temporal variability (e.g. monthly, seasonal or inter-annual variability).

Generic Question ID: 956 Sub ID [224] Raised by [S224 Q1920]

KLC Submission: The KLC wishes to place on the record that in the 12 months prior to the release of the SAR the KLC repeatedly drew the attention of DSD to what the KLC saw as major problems with DSD's approach to the SAR, both in formal written submissions on draft documents provided for comment by the DSD; in other written communication to DSD; and in dialogue with DSD officials, including in meetings also attended by Australian government officials.

The Proponent considers that the Strategic Assessment has been developed in accordance with the Strategic Assessment Agreement between the State and Commonwealth Governments (**SAR Appendix A-3**). The SAR process is extremely complex and involves ongoing consultation with a range of stakeholders interested in and affected by the proposed development. Where appropriate and agreed, the Proponent has taken on board matters raised by the KLC, while reserving its right to an alternative perspective in other cases.

DSD acknowledges the importance of ongoing consultations with and input from the KLC.

Generic Question ID: 1131 Sub ID [89] Raised by [S89 Q2632]

The Strategic Assessment process and SAR are flawed. The SAR contains numerous omissions and inaccuracies, as well as being founded on many speculative and highly subjective assumptions. (See, for example, **Part 1**, **p. ES-3**: "The establishment of the BLNG Precinct is *expected* to provide....").

The Proponent disagrees with the submitter's view that the Strategic Assessment process and the SAR are flawed. The SAR is one stage of the three-staged Strategic Assessment process. As described in **Figure 3-1** of the Executive Summary, Stage 1 consisted of the site evaluation review undertaken by the Northern Development Taskforce, and the advice from the EPA that environmental impacts near James Price Point are likely to be manageable. Stage 2 involves the Precinct Proponent preparing a Precinct Plan and Draft SAR. The environmental and social impact assessment of the strategic proposal involved the development of a nominal project description, the completion of baseline studies, assessments of potential impacts and the development of management measures. The final stage is the submission and evaluation of a Derived Proposal application.

With respect to the comment concerning "numerous omissions and inaccuracies" it is difficult to respond without specific examples. However, the Proponent does stress that the SAR was developed in accordance with guidelines issued by the State and Commonwealth regulatory authorities.

With respect to the comment "many speculative and highly subjective assumptions", the Proponent contends

that these assumptions are based on historical evidence from previous developments in the north of Western Australia.

Generic Question ID: 1138 Sub ID [90] Raised by [S90 Q2646]

There is concern about the local fauna and flora that has already been damaged and refused protection because "It is only for exploration".

The Proponent is not aware of any instances of illegal damage to flora or fauna occurring in relation to Precinct development activities. However it strongly advocates the reporting of any illegal activities to the Department of Environment and Conservation (**DEC**) by e-mail to nvp@dec.wa.gov.au or by phoning the nearest DEC office. DEC also has a range of relevant hot lines which may be contacted in case of emergency:

- Emergency Pollution Response: 1300 784 782
- Marine Emergencies: 9483 6462
- Fire Calls: 9219 8000
- Wildlife Watch: 1800 449 453

Some authorised clearing has occurred to facilitate studies to inform the Strategic Assessment and the assessment of potential future projects within the Precinct. In those cases native vegetation clearing permits have been obtained as required.

Gas exploration activities are beyond the scope of the SAR and the resources that would be developed as a result of the Precinct occur a considerable distance offshore in the Browse Basin.

A range of management measures would be applied to mitigate potential impacts on terrestrial flora and fauna during construction and operation of the Precinct. These are summarised in the **SAR Part 1, Sections 8.2.4** and **8.2.6.**

Generic Question ID: 1259 Sub ID [103] Raised by [S103 Q2928]

Woodside Submission: Woodside has a demonstrated commitment to understanding and managing the impacts the proposed LNG project may have on the surrounding environment and related marine and terrestrial areas. Through a process underpinned by local community engagement and scientific research, Woodside will continue to produce first class environmental baseline research and best practice management of the impacts resulting from the project.

One of the key priorities of the State in creating the Browse LNG Precinct is to minimise the impacts to the environment. To better understand what potential impacts the proposed Browse LNG Precinct may have on the environment, the State has an expectation that project proponents gain an adequate understanding of the social and scientific baseline information required to manage impacts arising from their projects. The State acknowledges the considerable work undertaken by Woodside in achieving the necessary depth of high quality environmental data.

A detailed summary of the studies and surveys are provided in **Part 3** (Marine) and **Part 4** (Terrestrial).

Generic Question ID: 1298 Sub ID [149] Raised by [S149 Q3129]

Surveys of threatened species were poorly designed and insufficient, including surveys of the bilby, Gouldian Finch, snubfin dolphins, Indopacific humpback dolphins and turtles.

All surveys conducted were conducted by appropriately qualified personnel in accordance with accepted survey methods to satisfy the requirements of strategic environmental impact assessment.

Commitments have been made for further surveying where required. For instance, DSD has made a commitment to conduct further surveys at Quondong Point to establish presence/absence of a Greater Bilby population and to determine the size and range of the population if found. Should surveys identify a viable established population of Greater Bilbies, the performance measure will be to:

- ensure the maintenance and protection of a viable bilby population at or better than pre-development baseline population at Quondong Point, unless attributable to factors outside of the control of the State; and
- implement a management plan for the species which addresses management of access, feral animal control and monitoring of populations.

The Plans will be prepared in accordance with relevant Threat Abatement Plans and the National Recovery

Plan for the Greater Bilby.

A range of comprehensive fauna studies, inclusive of survey effort for bird species, have been undertaken in the James Price Point coastal area and are listed in **Part 4**, **Section 1.2** of the SAR. The studies undertaken include desktop, ground-truthing and aerial helicopter searches, with the reports noting species recorded and potentially occurring. The potential occurrence of bird species was based on the presence of suitable habitats within the James Price Point coastal area. On review of all available information, Galaxia (2010) concluded that it is very unlikely that the Gouldian Finch occurs in the James Price Point area, as records of this species on the Dampier Peninsula are restricted to the extreme north of the Peninsula, south to Lombadina. While the species is known from the northern Dampier Peninsula it is unlikely that the James Price Point would represent an important area of habitat owing to the absence of breeding habitat and permanent freshwater for much of the dry season (AECOM, 2010b).

A survey for small cetaceans was undertaken by RPS (RPS, 2010d; **Appendix C-10**). The snubfin dolphin was observed in Roebuck Bay from vessels on several occasions. This species may transit between sheltered areas, and therefore it is possible that individuals may occur within the coastal waters adjacent to James Price Point while not being resident (RPS, 2010d).

Seven Indo-Pacific humpback dolphins were recorded during two sightings during the survey undertaken by RPS (2010d). There were too few sightings of this species to establish any trends over time from the data; however, they are likely to be present in low numbers in nearshore waters (around the 20m isobath) and may also have been part of the unidentified dolphin records (RPS, 2010d).

Six species of marine turtle are known to occur in the North West Marine Region, all of which are listed as threatened species under the EPBC Act. Turtle surveying was undertaken by RPS (2010a and 2010b), Biota (2009a) and SKM (2009c), with reference to a number of papers, proceedings of workshops (among others) on the habitat, behaviour and populations of turtles in the area and in Australia. Turtles are known to nest along the Dampier Peninsula, however, in relation to James Price Point, both Biota (2009b) and DEWHA (2009a) concluded that the site is unlikely to be heavily utilised by nesting turtles, due to many of the beaches being unsuitable, primarily due to regular inundation during high tide.

Matters of National Environmental Significance have been discussed in **Part 6**, **Section 2** of the SAR and the Management Arrangements for these are described in **Part 6**, **Section 3** of the SAR.

In addition, the State Government is currently preparing a Kimberley Science and Conservation Strategy which will aim to protect the region's natural and cultural heritage while allowing the region to fulfil its economic potential. This strategy would identify high value cultural and natural areas as priorities for protection and develop and implement marine, coastal and terrestrial conservation strategies.

8.1 Assessment Approach

Generic Question ID: 42 Sub ID [4, 24, 27, 35, 36, 45, 66, 71, 77, 81, 91, 94, 95, 96, 97, 98, 99, 105, 118, 132, 134, 148, 160, 223, 228, 292, 293] Raised by [S4 Q60]

The Strategic Assessment has major scientific knowledge gaps in almost every aspect of the local environment, including: whales, turtles, dugong, snubfin dolphins, diverse seagrasses, corals, golden bandicoots, bilbies, white-bellied sea eagles, and masked owls. It makes it impossible for the EPA and Ministers to make an "informed decision" about the proposal.

Several extensive environmental studies were undertaken in order to characterise the James Price Point coastal area and the wider regional environment to support the site selection process and Strategic Assessment Report. In many instances, these studies have been carried out by independent specialist governmental agencies such as CSIRO, AIMS, WA Department of Environment and Conservation, and the Museum of Western Australia. These studies have contributed significantly to the characterisation of the marine and terrestrial environment within the James Price Point coastal area and wider Canning Bioregion and Dampierland Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment

The Strategic Assessment Report (**SAR**) undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine and terrestrial environment. Whilst it was noted that impacts to marine and terrestrial environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable. The studies found that the Precinct would not threaten the population viability of specific species or the broader ecosystem integrity of the area, with the recommended appropriate management measures and controls in place.

Management measures have been proposed in the SAR, to monitor and manage potential impacts on fauna species. These are detailed in SAR **Part 4, Section 2.6.4** (Management Measures) and SAR **Part 3**, **Sections 2.1-2.8**.

A summary of each of the specific species noted in the submission in relation to knowledge gaps are detailed below:

Whales, turtles and dugongs

A range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009, to characterise the spatial and temporal distribution and abundance of marine megafauna off the Dampier Peninsula, and in particular the James Price Point coastal area (refer SAR **Part 3, Section 1.4.4.4** for details and **Appendices C-8, C-9, C10** and **C11** for relevant technical reports).

Seagrass and corals

Various studies have been undertaken to characterise the coverage of benthic primary producer habitat (including corals and seagrass) in intertidal and subtidal areas of James Price Point coastal area. These studies have involved a significant number of towed video transects, sampling, intertidal field inspections and habitat modelling. An overview of these studies is provided in **Part 3, Section 2.4** and in **Appendices C-3, C4** and **C-5** of the SAR.

Golden bandicoots and bilbies

Extensive wet and dry season fauna studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR.

No EPBC Act listed threatened fauna species have been directly recorded in the James Price Point coastal area (including golden bandicoot), however there is indirect evidence (possible foraging holes) of possible greater bilby (*Macrotis lagotis*) (Endangered – EPBC Act (Commonwealth), Schedule 1 *Wildlife Conservation* (**WC**) *Act)* activity in the vicinity of the project area and south towards Quondong Point (**Part 4, Section 2.6.1.2**). The number of foraging holes recorded suggests they may belong to a small number of transient individuals present in the area, rather than a resident colony (**Part 4, Section 2.6.3.1**). Other EPBC Act listed threatened species that may occur in the area are outlined in detail in the SAR (**Part 4, Section 2.6.1.2**). The majority of conservation significant fauna species under consideration have broad habitat requirements and are expected to occur elsewhere on the Dampier Peninsula. Therefore, the BLNG Precinct is not predicted to result in significant impacts on populations of rare or endangered fauna.

Masked owl and white bellied sea eagle

Part 4, Section 2.6 provides a detailed assessment of the potential impacts on birds and associated habitat, and the proposed management response. The assessment drew on a range of studies and investigations undertaken at a local and regional level to characterise the known and likely occurrence of bird species (refer SAR **Part 4, Section 1.4.5** Fauna Habitats for detail). The James Price Point area comprises a suite of species that are widespread and well-represented on the Dampier Peninsula (Galaxia, 2011, **Appendix C-1**), and the area is not regarded as primary habitat in comparison to other coastal areas and offshore islands. The SAR considers the potential impacts relevant to the BLNG Precinct development, with particular reference to managing direct and indirect disturbance on habitat for conservation significant fauna that have potential to occur in the area.

Generic Question ID: 322 Sub ID [29] Raised by [S29 Q282]

Certain species may not be considered as important, but they are important to themselves, and their worth might not be realised until it's too late.

A high priority has been given to managing any potential impacts on plants, birds and mammals on the Dampier Peninsula as well as their land and marine habitats. Many environmental studies have been conducted, ranging from sampling, surveys and mapping to sophisticated computer modelling to build a detailed picture of the marine and land environment around the proposed Browse LNG Precinct, near James Price Point. The information gathered provides the basis for plans to manage any impacts on native flora and fauna and air and seawater quality, during construction and operation of the Precinct.

The Western Australian Government has given careful consideration into selecting a location in the vicinity of James Price Point as the proposed site for the Browse LNG Precinct and is of the view that the Precinct and the environment can co-exist. Studies confirm that, compared to other areas on the Peninsula and elsewhere in the Kimberley, the potential environmental impacts of the project can best be managed at the proposed location.

Generic Question ID: 545 Sub ID [170] Raised by [S170 Q1427]

WWF & ACF Submission: The sections on Environment - Impacts and Mitigation Measures (**Section 7.2** and **8.2**) don't describe the nature of any predicted change. They jump to explaining how measures may be managed (preparation of plans in many cases has not been done yet) and conclude with a tabulated "significance of impact". The basis of conclusion, in most cases, is either related to the short-term or localised nature of the effect of "based on industry experience". In all cases, the EIA lacks an explanation as to how the significance measure was reached.

Reference by the respondents to **Sections 7.2** and **8.2** of the SAR indicates that they are commenting on the **Executive Summar**y (**Part 1**). The Executive Summary, although extensive, is meant to summarise the impact assessment process, and thus does not provide significant information of the various assessment components. **Part 3** and **Part 4** of the SAR present the marine and terrestrial assessments, respectively, and provide detailed information on the nature of the predicted change, the significance of that change and how the significance measure was determined.

Generic Question ID: 546 Sub ID [170] Raised by [S170 Q1428]

WWF & ACF Submission: Assessment of significance needs to be done consistent with processes such as the EPBC Act guidelines (DEWHA 2005) and best practice, as detailed in EIANZ (2010). For instance, it is not enough to know how 'localised' or 'short-term' an effect is because the significance is defined by this and the context (e.g. the value of the biodiversity asset that is affected). This process is set out in law under the Commonwealth legislation. Similarly, it isn't sufficient to state conclusions based on 'industry experience' as this does not rule out potential risk. Biodiversity evaluation is a critical component of EIA and has to be done upfront. Somewhere in the document a clearly defined list of environmental assets and then how much change is likely to be acceptable is expected - this is collected based on scientific and public consultation. The EIA should then work out the risk of breaching these thresholds - rather like the water quality guidelines do. The process is set out in best international and Australian industry best practice guidelines (EIANZ 2010; Treweek 1999).

Two important aspects of impact prediction are the assessment of magnitude and significance. Impact magnitude (or severity) is relatively easy to predict for direct impacts that can be quantified. Impact significance is a function of impact magnitude and the conservation value, sensitivity and resilience of ecological receptors, and can be difficult to predict. The SAR has determined the ecological impact significance by:

- describing the characteristic ecological features;
- assessing the overall biodiversity/nature conservation values of sites; and
- assessing the magnitude of potential impacts, based on consequence definitions.

The Proponent acknowledges that there are alternative processes, however, the preparation of the SAR was undertaken in accordance with the guidelines established by both the Commonwealth and State Regulatory authorities.

Generic Question ID: 550 Sub ID [170] Raised by [S170 Q1436]

WWF & ACF Query: Wherever impacts are shown, it is necessary to revisit the sections and describe in detail what the consequences of any predicted change might be as this is a fundamental part of significance testing. Note, it is the consequence to the environment, not the fact that an effect occurs, that determines whether it is acceptable or not. To do this, it is necessary to first establish biodiversity value for affected assets.

The SAR addresses the issue of significance through consideration of the relevant Government policies and guidelines, by describing the sensitivity and resilience of the environmental receptor, and the extent of potential impacts (duration, areal extent etc.). Mitigation and management measures have been identified to address any potentially significant impacts. It is the role of the EPA to assess whether the residual impacts from the construction and operation of the Browse LNG Precinct are significant.

Any future proposal referred to the EPA seeking derived status will be required to revisit aspects, environmental factors and potential impacts to demonstrate that these have not changed significantly from those described in the SAR. This is one of the decision criteria governing the derived proposal determination.

Generic Question ID: 558 Sub ID [170] Raised by [S170 Q1449]

WWF & ACF Query: To what extent is it predicted that the local environment will change due to cumulative impacts of all effects extended over the life of the project? How might the environment change? What would the area look like in 30 years based on knowledge of other similar port developments elsewhere?

An obvious example of how the environment might change as a result of the Browse LNG Precinct is the North

West Shelf Project on the Burrup Peninsula. Beyond the area of influence of the plant, very little has changed. The direct footprint of the plant is restricted to a small percentage of the peninsula. Extensive monitoring has demonstrated that no significant environmental impacts have occurred beyond the project boundaries. There is no indication of a loss of biodiversity resulting from the construction and operation of the plant. The town of Karratha has been established and has grown into a viable community.

Generic Question ID: 978 Sub ID [224] Raised by [S224 Q1940]

KLC Submission: The SAR states that 'a detailed and comprehensive assessment' has been undertaken in regards to the environmental impact assessment and management. This is not the case, as the SAR defers much of the details of the assessment to later plans.

In terms of the requirements of a Strategic Assessment, the Proponent considers that a detailed and comprehensive assessment has been undertaken. The outcome-based conditions will be used to drive the environmental management measures to ensure plans are appropriate. This process does not equate to deferring the assessment to the later plans.

Generic Question ID: 1019 Sub ID [224] Raised by [S224 Q1943]

KLC Submission: The environmental management framework presented in the SAR is very broad and high level and lacks specific commitments on environmental management measures. A key component that is missing from the SAR involves clear details around the level of environmental performance standards subsequent users of the SAR and finalised report / endorsed Plan will have to meet during the design, construction and operational phases of the BLNG Precinct. Furthermore, Traditional Owners are not provided a place on the Precinct Control Group and so would not be in a position to assist in managing environmental impacts.

The Proponent contends that there are clear details around the level of environmental performance standards that commercial proponents will have to meet during the design, construction and operational phases on the BLNG Precinct. Outcome based performance standards have deliberately been specified to set environmental limits to provide certainty of the final environmental outcome. Future commercial proponents will have to demonstrate that their proposal can meet these conditions in order to be implemented.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. This includes the addition of Traditional Owner representation on the Precinct Control Group.

Generic Question ID: 1273 Sub ID [153] Raised by [S153 Q2984]

The studies contained within the draft environmental report fail to recognise that any of the social, cultural or environmental 'impacts' are not acceptable. The report claims that all of the impacts are 'manageable'. This is biased towards the support of this project as the reports were not independently written.

Impact assessments in Western Australia are paid for by the project proponent, and this project was consistent with that approach. Although the proponent pays, there are a number of mechanisms to ensure an objective impact assessment process, such as the following:

- Impact assessments are conducted by independent practitioners (e.g. consultants). Impact assessment practitioners are guided by ethical principles and often belong to professional associations (e.g. the International Association for Impact Assessment) with codes of ethics.
- Impact assessments are conducted in a manner that is consistent with applicable statutory requirements, policies and guidance. Environmental Impact Assessments (**SAR Parts 3** and **4**) are conducted as part of a formal process under the State *Environmental Protection Act 1986*. The key statutory requirements, policies and guidance used in the Strategic Assessment are outlined in each volume of the SAR.
- The Strategic Assessment was conducted under the Terms of Reference agreed upon by the State and Commonwealth Governments in February 2008 (**Appendix A**). The Terms of Reference were written to ensure the SAR could be assessed under the *Environmental Protection Act 1986* and the *Environment Protection and Biodiversity Conservation Act 1999.*
- In this case, the Proponent (DSD) also chose to conduct both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) for the Browse LNG Precinct proposal, although this is not a regulatory requirement in WA (**SAR Part 5**). Although neither the SIA, nor the ASIA are regulated in WA, there are a number of applicable regulations that are relevant in the assessment of social impact

factors (refer to **Section 4, Part 5**). The SIA was also guided by international best practice principles.

Several of the studies conducted for the Strategic Assessment were peer reviewed. For instance, the SIA was peer reviewed by an internationally recognised SIA expert to ensure that it met best practice standards. Dr Nick Taylor of New Zealand was asked by the Department of State Development (**DSD**) to undertake a peer review of the Browse LNG Precinct Strategic SIA. Dr Taylor determined that "the SIA process used was sound and the approach well founded". Dr Taylor's peer review of the SIA is available online at: http://www.dsd.wa.gov.au/7901.aspx. In addition, the KLC completed an Indigenous Impact Report, funded by the State, which included an Aboriginal SIA. Prof Richie Howitt peer reviewed the Draft Aboriginal SIA.

Generic Question ID: 1321 Sub ID [153] Raised by [S153 Q2980]

There has not been any value given to the preservation of ecosystems. This is a natural asset just as gas is, and should be valued. This goes for all the land, sea and air that will be impacted by this project.

Impacts on marine and terrestrial ecosystems are discussed in **Part 3**, **Section 2.8** and **Part 4**, **Section 2.7** of the SAR, respectively. Both sections acknowledge the value of the ecosystems. This acknowledgement is reflected in the State's recent announcement of the formation of Kimberley Wilderness Parks covering more than 3.5 million hectares including four new marine parks, a new national park and a number of additional conservation reserves. These parks will provide protection to the ecosystem values which currently do not exist.

Generic Question ID: 1336 Sub ID [223] Raised by [S223 Q3257]

Developing the West Kimberley's resources: main report (Department of Industry and Resources 2005) outlined large scale resource projects, which would be dependent on a source of energy near Broome or Derby. In addition to environmental impact assessment of the Precinct, there is a need to consider the wider environmental and social implications for the region, which will be serious and irreversible. This has not been considered in the report.

Under the Terms of Reference the Strategic Assessment Report must "provide a detailed description of the environment likely to be affected by the Precinct Plan, the actions or classes of actions taken under the Precinct Plan including any associated infrastructure and construction and operational activities. This description must identify the environmental assets and characteristics, including biophysical processes associated with the site(s) selected in the Precinct Plan and the terrestrial and marine environments likely to be directly or indirectly impacted".

The Report has successfully fulfilled the terms of reference, and a detailed description of the environment potentially affected is provided in each of the impact assessment documents: **Part 3** (Marine); **Part 4** (Terrestrial); and **Part 5** (Social and Indigenous)

It is noted that the agreement with Traditional Owners included a commitment by the State to limit LNG development to the one location, and also that the Precinct would be limited in its use to matters relating to the production of LNG and related purposes.

8.2 Managing Uncertainties of Precinct Development

Generic Question ID: 144 Sub ID [22, 75, 169, 122] Raised by [S22 Q154]

Additional development associated with the construction and operation of an LNG Processing Plant at James Price Point is inadequately addressed in the SAR. Construction and operation of the proposed LNG Processing Plant depends on a range of additional new infrastructure developments which are designated Category B in the SAR. These include expansion of Broome Port, possible expansion and/or relocation of Broome Airport and housing developments. They are defined in the SAR as: 'indirect activities and actions as a result of the BLNG Precinct that are considered in the impact assessment but do not form part of the approvals process' ('**Executive Summary'; Table 5.1, p. 29**).

Part 6, 'Commonwealth Matters'; 2.4.1, p. 26 of the SAR notes that: 'Potential impacts from Category B (indirect) activities are primarily that associated with pressures from a population increase in Broome and associated development, arising from increased workforce and associated service industries, such as:

- Increased recreation use of Roebuck Bay Eighty Mile Beach;
- Storm water runoff from new industrial land into Roebuck Bay;
- Disturbance to the hinterland of Roebuck Bay through new developments in Broome;
- Increased vessel movements at Broome Port;

• Disturbance to birds from aircraft (including helicopters) flying low over the Ramsar site, deviating from agreed flight plans for the purposes of sightseeing; and

• Increased urban runoff and waste water (effluent) disposal, increasing the risk of blue-green algae and a resulting reduction in benthic invertebrates which are a food source for birds.

The cumulative effect of such impacts for the Ramsar sites of Roebuck Bay and Eighty Mile Beach and the migratory shorebirds that use them is potentially very serious and of great concern. Disturbance of high tide roosts in Roebuck Bay is already increasing and may be reaching the point where birds are being lost from the northern beaches. Human activity and aircraft are both significant contributors to the level of disturbance. Increases in disturbance levels increase energetic costs substantially, and can easily reach the point where they limit access to feeding areas and hence shorebird population sizes.

Another potential cause of concern is eutrophication of groundwater discharged from Broome as it grows; this has been linked to the spread of the toxic cyanobacterium Lyngbya majuscula which could impact on the health of the benthic community and influence the availability of shorebird prey. We note that the WA Government is instituting formal protection of marine and intertidal parts of Roebuck Bay and Eighty Mile Beach, but proclamation of a Marine Reserve does not protect against the majority of these threats. We regret that these issues are not part of the present approval process, and submit that actions to safeguard waders and their habitats should be built into this development proposal along with any appropriate offsets to negate impacts.

The submission suggests:

(a) Actively manage the Category B developments to minimise impact on Roebuck Bay and Eighty Mile Beach.

(b) Access increased support for the Roebuck Bay Working Group to enable implementation of best practice management of Roebuck Bay.

(c) Commit to increase monitoring of Roebuck Bay and Eighty Mile Beach in order to detect and respond to negative impacts of Category B developments.

The Strategic Assessment Report (**SAR**) considers the potential direct and indirect environmental impacts of the Browse LNG Precinct operating at its maximum production capacity of 50Mtpa, along with management measures in order to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The Scope of the Strategic Assessment provides guidance with respect to the Category B and C activities to be included in the cumulative impact assessment. Category B and C activities which affect matters of National Environmental Significance (**NES**) have been identified and their impacts have been assessed both individually and cumulatively with Category A impacts.

Category B and Category C activities which are identified as environmentally significant may also be required to undergo separate environmental assessment under the State *Environmental Protection Act 1986.* Those that affect matters of National Environmental Significance will also be required to undergo assessment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Increased recreation use of Roebuck Bay and Eighty Mile Beach - Increased recreation use of Roebuck Bay and Eighty Mile Beach would likely result in an increase in vessel movements and shoreline/beach utilisation in these areas. Increased vessel use might increase recreational fishing pressure which might have a cumulative impact on certain species; however the majority of recreational fish stocks are outside the James Price Point area and are associated with habitats throughout the Canning Bioregion. Fishing activities would be managed through existing recreational fishing regulations.

Stormwater runoff from new industrial land into Roebuck Bay - The scale of any new industrial estates associated with the development of the BLNG Precinct is as yet unknown. Any industrial estates could be provided for in land zoned for industry in Broome such as a new industrial estate planned for Broome North. Any stormwater associated with the development of industrial estates is likely to be handled though existing outfalls and therefore impacts are likely to be localised to areas of existing impact. Water quality impacts are not expected to add cumulatively to water quality impacts associated with the Precinct development.

Increased vessel movements at Broome Port - Impacts associated with increased vessel movements at Broome Port will largely be consistent with the impacts associated with increased recreational use of Roebuck Bay. In addition, construction vessels associated with pioneering works on the Precinct will add to vessel movements at Broome Port, but for only a short period of time. These impacts may potentially include a reduction in water quality around the Broome Port. Major potential water quality impacts (i.e. hydrocarbon spills) would be managed through the Broome Port Authority's Oil Spill Contingency Plan and Environmental Management Plan. It is unlikely that an expansion of the port will be needed to accommodate vessels associated with the construction of the BLNG Precinct and therefore there will not likely be significant impacts on water quality and the benthos from construction of new port infrastructure. Potential impacts, if any, on benthos from construction vessels anchoring/mooring in Roebuck Bay would be managed through Broome Port Authority management

measures, such as their Environmental Management Plan, and would not likely contribute to any regionally significant impacts on the benthos.

Increased vessel movements may also result in potentially increased interactions with marine mammals such as dugongs. This impact would likely be small and localised to the Broome area but education campaigns to educate boaters of the presence of marine mammals and appropriate actions to take to minimise impacts will be implemented.

Water quality reduction may result from spills in hydrocarbons from vessels particularly around Broome boat ramps and the Broome Port area but would unlikely add to any impacts in the James Price Point area. Effect on benthos may result from increased boat activities such as vessel groundings, propeller wash and anchoring/mooring, as well as potential impacts from reduced water quality around high use areas such as boat ramps. This effect is likely to be localised and impacts to the benthos in the James Price Point area are not expected to be significant on a regional scale.

With regards to disturbance to birds from aircraft, the SAR **Part 4**, **Section 2.6.3.5** acknowledges that fauna at most risk from noise effects generally include birds. Irregular loud noise may alarm fauna and cause them to temporarily vacate the immediate area, but it is usually the case that fauna will return to the area when noise levels return to normal. Furthermore, many fauna species show a decreased responsiveness after repeated exposure to noise has been frequently observed and is usually attributed to habituation. Examples of fauna, including birds, returning to an area following infrequent loud noise and habituation are presented in **Part 4**, **Section 2.6.3.5**.

Increased urban runoff and wastewater (effluent) disposal, increasing the risk of blue-green algae and a resulting reduction in benthic invertebrates which are a food source for birds - Impacts from stormwater discharge (including to benthic invertebrates and birds) associated with industrial development in Broome will be managed under the relevant Broome shire planning and state environmental regulatory approvals process. In terms of effluent discharges, no additional wastewater treatment discharges are anticipated from municipal infrastructure, given current capacity planned in the existing treatment system. Nevertheless potential impacts would be very localised to the immediate area surrounding an outfall and will not have a broader effect on the Roebuck Bay ecosystem.

Generic Question ID: 15 Sub ID [2, 93, 124] Raised by [S2 Q16]

There was little or no consideration given to the cumulative impacts of the development. Impacts including: industrial emissions to air and water; the effects of the port development on the marine environment between the Lacepede Islands and Broome; the effects of the nearshore oil and gas development in state and federal waters between Broome and Cape Leveque; and the effects on threatened species such as humpback whales, dolphins, dugong and turtles currently protected under international, national and state laws.

Cumulative impacts of the Precinct development marine activities have been addressed in the relevant marine factor sections in **Part 3** of the Strategic Assessment Report (**SAR**) as Category B and C activities. Upstream activities for the Browse LNG Development are subject of a separate regulatory approval, through an Environmental Impact Statement (**EIS**) under the EPBC Act. Therefore the scope of the SAR was the assessment of Precinct activities and aspects (Category A), but with consideration of the cumulative indirect or related activities that may be predicted to occur (Categories B and C).

A similar approach was adopted for the cumulative assessment of atmospheric emissions (**Part 4**, **Section 2.8**). The air quality assessment took into consideration both existing and proposed emissions (refer to **Part 4**, **Section 2.8.2.2** for a summary of other regional sources that were taken into account in the cumulative emissions inventory).

The SAR undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment, including humpback whales. Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine megafauna or the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

Generic Question ID: 873 Sub ID [169, 224] Raised by [S169 Q1729]

Environs Kimberley Submission: Drilling and completion of production wells, installation of sub-sea well connections to gas pipelines, installation of umbilicals and wet gas pipelines, and the impacts associated with those activities, will occur in state and Commonwealth waters (i.e. the latter outside the area of responsibility of the WA EPA) but these activities and their management should be presented in the SAR for completeness. The marine environment is interconnected and not biophysically separated based on State and Commonwealth boundaries and hence, the Project should be considered in this light.

Furthermore, offshore activities and their cumulative impacts should be clearly detailed and made available for public comment to ensure that the WA and wider community are well informed of the implications of the Precinct for that site, the collective proposed developments and each individual development. This assessment would assist the WA EPA and community in determining the suitability of the site for its proposed industrial use and zoning. Cumulative impact assessment should address, at a minimum, the parameters and scope contained in comparable EIS documents (e.g. Exmouth Sub Basin, Ashburton North).

The Terms of Reference for the Strategic Assessment Report were clearly set out in the Scope of Strategic Assessment (DSD 2009 http://www.dsd.wa.gov.au/documents/Final_Scoping_Document(1).pdf). The Scope of Strategic Assessment (further discussed in **Part 2, Section 5** and **6** of the SAR) includes the definition of three different categories, as quoted below:

- *Category A. LNG Precinct: The core elements of LNG development, including associated infrastructure necessary to process and export hydrocarbons and LNG (all actions within the scope of the approvals under the Strategic Assessment Agreement);*
- *Category B. Indirect Activities/Actions as a Result of the LNG Precinct (indirect actions that are considered in the impact assessment but not part of the approvals); and*
- *Category C. Related Projects (outside the scope of the Strategic Assessment, but relevant for the consideration of cumulative effects)* (DSD, 2009).

The types of activities noted in this submission fall within the description of Category C activities and could also be described as upstream oil and gas activities. These Category C descriptions provide an overview of the likely offshore activities related to the oil and gas industry. A purpose of the Precinct is to facilitate the development of Browse Basin gas, however at this strategic stage of assessment, the extent of offshore activities related to the Precinct is not known.
In accordance with the Scope of Strategic Assessment, each impact chapter in **Part 3** and **Part 4** of the SAR has a summary assessment in the context of Category C activities (where relevant), but this assessment process will not be the means by which the Commonwealth and State Government make their decisions.

Many of these offshore Category C activities are likely to be considered as 'Controlled Actions' under the *Environmental Protection and Biodiversity Conservation Act 1999* (**EPBC**) if they are likely to have impacts on Matters of National Environmental Significance. This will necessitate an environmental impact assessment (EIAs) of any relevant construction and operation of these offshore activities. Comprehensive details of the proposed developments will also be made available on the public domain in relevant documentation associated with the developments e.g. the Environmental Impact Statements. These EIAs will also be required to address cumulative impacts of their operations.

Section 5 of the SAR Response to Submission Document provides a cumulative impact assessment associated with Category A activities on key factors.

The Scope of Strategic Assessment agreed between the Proponent, Commonwealth and State Governments articulated the scope of the impact assessment for the SAR as follows:

- *The distinction between the different categories has been adopted to ensure that it is clear that this scoping exercise and subsequent impact assessment applies to the Category A: LNG Precinct only, and as such which activities may subsequently be undertaken in association with approvals under the EPBC and EP Acts, while giving consideration of the assessment of related projects and other activities within the Strategic Assessment (DSD, 2009).*

It is also worth noting that many of the Category C significant activities associated with upstream oil and gas operations are likely to occur a substantial geographic distance from the Precinct with the exception of pipeline corridors. The majority of gas extraction infrastructure (e.g. production wells, umbilicals, drilling, subsea well connections) are sited in close proximity to the gas fields, in this case, the Browse basin. Currently identified gas reserves are over 100km from the James Price Point coastal area. Whilst the interconnectedness of the marine environment is recognised, the likelihood of impact from relevant aspects reduces substantially with distance from the source. In view of this, it is unlikely that cumulative impacts from the upstream gas extraction components of developments will impact cumulatively on the BLNG Precinct. Cumulative impacts are likely to only become apparent in relation to pipeline construction activities and in the unlikely event of non-routine discharges.

Generic Question ID: 1364 Sub ID [116, 149, 182] Raised by [S116 Q2299]

The report does not consider the cumulative effects of other oil and gas projects under development or proposed in the Kimberley and other regions of Western Australia. For example, Chevron's Gorgon and Wheatstone Projects and the Jupiter LNG project in the Pilbara, and proposed new offshore drilling near Ningaloo Reef and in the Southwest. Combined, these fossil fuel projects will forever transform the coastline and ocean waters of Western Australia and harm the fisheries, marine life, ecosystems, and economies of communities reliant on healthy coastal resources.

It should be noted that the scope of the detailed assessment reported in the Strategic Assessment Report is focused on Category A related activities (i.e. the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons in State waters), with commentary provided on Category B and Category C activities in the context of cumulative impacts.

The consideration of broad potential cumulative impacts associated with State-wide development and industrial activity is not within the scope of the SAR. That said, one of the key objectives of the BLNG Precinct is to minimise '*ad hoc*' LNG developments along the Kimberley coast and provide for a single co-located area to minimise the environmental footprint.

Generic Question ID: 129 Sub ID [17, 123] Raised by [S17 Q141]

The exclusion of key infrastructure plans such as Broome port expansion, housing developments and road construction to service the site is also a flaw in the assessment. For example, the road to the site is not part of the Strategic Assessment, yet it cuts through known bilby habitat.

The activities, facilities and other characteristics that are a part, or related to, the Browse LNG Precinct and considered within this scoping exercise have been split into three different categories:

Category A - LNG Precinct: These are the core elements of BLNG Precinct, including associated infrastructure necessary to process and export hydrocarbons. This category includes all actions within the scope of approvals under the Strategic Assessment Agreement.

Category B - Indirect Activities/Actions as a Result of the LNG Precinct (e.g. Broome Airport, regional roads and housing): These activities/actions are considered in the impact assessment but do not form part of the approvals process.

Category C - Related Projects (e.g. road to the precinct and pioneer camp): These projects are outside the scope of the Strategic Assessment, but form part of the cumulative impact assessment.

The scoping exercises and subsequent impact assessment outlined in the SAR apply only to Category A - LNG Precinct. Consistent with the Scope for the SAR (SAR **Appendix A-2**), only this category of actions is in the scope of the approvals under the Strategic Assessment Agreement. The impacts of Categories B and C (i.e. indirect activities and related projects) were considered in the Strategic Assessment to address potential cumulative impacts. However, they are not subject to permits and approvals under the BLNG Precinct.

The proponents of these associated activities and projects will need to obtain any required approvals before these activities can proceed. For example:

Main Roads is currently undertaking the planning and project management for the construction of an access road connecting the Browse LNG Precinct with the existing Broome-Cape Leveque road. Main Roads will submit separate applications for environmental and other approvals for the road as required. These will need to include consideration of the impact on any potential bilby habitat.

Woodside is considering a 600-person pioneer accommodation facility ahead of the development of the permanent construction and operational workforce facilities which are part of the BLNG Precinct. Woodside will seek separate approvals for this facility as required.

Generic Question ID: 583 Sub ID [50, 106] Raised by [S50 Q459]

Every year scientific expeditions to the Kimberley discover new species. Until an intensive survey of the Dampier Peninsula is done to discover its species and ecology and to establish an environmental baseline, it is vandalism to build a huge industrial plant with unknown environmental impacts. The EPA's "uncertainty principle" needs to be applied, and until that uncertainty is removed the project is in violation of that principle.

An extensive site selection process was undertaken over four years to determine the preferred site for the Browse LNG Precinct. Extensive field surveys were undertaken to consider environmental, heritage, technical and socio-economic constraints across 43 sites throughout the Kimberley in addition to sites in the Pilbara and Northern Territory. The preferred location at James Price Point is a considerable distance from the truly iconic wilderness of the remote Kimberley region and the site selection process demonstrated that there is nothing unique about the James Price Point which indicates that undiscovered new species should be restricted to that

area.

Baseline surveys are on-going; however where little baseline environmental information is available, a precautionary approach to assessment and management has been taken to reach the required level of certainty regarding environmental outcomes. In these cases, a range of mechanisms have been employed and outlined in the impact assessment of each environmental factor.

The Proponent acknowledges that the Kimberley is a vast wilderness with many important environmental values which must be protected. In recognition of this, the State has recently announced the formation of Kimberley Wilderness Parks covering more than 3.5 million hectares including four new marine parks, a new national park and a number of additional conservation reserves.

Generic Question ID: 173 Sub ID [39] Raised by [S39 Q371]

If so many factors are so unpredictable and unknown, how can the community rely on this document for a clear picture of the future if this project goes ahead?

Under the Strategic Assessment Agreement, the Proponent must determine the potential impacts of the proposed Precinct. To meet this requirement, all aspects of the development have been thoroughly investigated through studies covering environmental, technical and heritage, Indigenous and social issues.

The methodology used for BLNG Precinct assessment is consistent with standard management processes and practice as outlined in the Australian risk management standards (AS/NZS 4360). Where aspects of the project are not yet sufficiently defined to provide highly predictable modelling outcomes, conservative assumptions have been made according to the risk management methodology. The information gathered provides the basis for plans for managing any impacts during construction and operation of LNG processing and shipping facilities at the Precinct. For more information on the impact assessment methodology, refer to SAR **Part 2**, **p. 8-1**.

Derived proposals will provide more detailed information on factors that may not have been known at the time of the Strategic Assessment. The Strategic Assessment process would ultimately provide performance or management parameters that derived proposals must meet to be deemed acceptable. See **Section 2.2** of this document for further information on the derived proposals process.

Generic Question ID: 530 Sub ID [170] Raised by [S170 Q1412]

WWF & ACF Submission: **Section 7**: An upfront evaluation of biodiversity is a critical step in the environmental assessment methodology and is missing from this SAR. The SAR environmental assessment does not define limits of change and values in advance, the resulting assessments of 'risk', or the 'consequence' of any change, is not quantified. Limits of acceptable change are based on what is important and are often measured in terms of ecosystem services. For example, the role of benthic primary producers in ecosystem integrity is acknowledged by the WA EPA and there are strict thresholds for habitat loss. Amongst other things, this says: "Proposals which, in the judgement of the EPA, pose a substantial risk to ecosystem integrity within a management unit will be presumed to be unacceptable." Will the SAR exceed these thresholds and how has this been determined? Another example: A disturbance to a small, localised area can have significant far-reaching effects on the environment. For example, where the SAR states 1,300 vessel movements are not significant for strike-risk to humpback Whales because this is a small addition to the WA coast, this is inconsistent with significance assessment. The strike intensity depends on where it happens and how frequently, which can vary seasonally and by location, especially since the movements are happening close to major breeding grounds. The final step is missing, where one asks whether the number of local collisions exceeds a threshold that would be considered unacceptable.

The Proponent acknowledges that not all ecological changes conform to a simple proportional relationship between cause and effect, usually because a threshold is exceeded. Within the SAR this uncertainty has been addressed through consideration of the sensitivity and resilience of the various environmental factors. In addition, the requirement for future proponents to satisfy outcome based criteria, addresses the uncertainty around impact thresholds.

Generic Question ID: 531 Sub ID [170] Raised by [S170 Q1413]

WWF & ACF Submission Section 7: The SAR occasionally reports on the level of risk without evidence, and in lieu of "preparation of plans" or "based on industry experience". In most cases, the SAR does not explain what that experience is or why the risk is manageable. In these instances, further work should be done, to qualify whether these plans or 'experience' are adequate for the specific project.

The respondents reference to **Section 7**, suggests that their comments are based on the information presented in the Executive Summary of the SAR (**Part 1**) and not **Parts 3**, **4** and **5** which provide details of the Marine, Terrestrial and Social assessments respectively. These Parts of the SAR also include considerable information

of the objective and content of the various management plans, and standard industry practice. The adequacy of the various plans to manage potential impacts to an acceptable level, will be assessed by the EPA.

Generic Question ID: 871 Sub ID [169] Raised by [S169 Q1728]

Environs Kimberley Submission: There is no detailed description of the whole environment likely to be affected by the Plan. The Precinct would not be required if not for the offshore activities and developments and thus the two cannot be separated and should be considered holistically. This description does not extend across the full range of species and communities present and migratory, critical habitats, migratory paths and breeding grounds for matters of NES, feed stocks, water depths, bathymetries (including possible canyons and krill upwelling), seasonal and annual variations, and other environmental receptors for the full area of influence (i.e. including all likely development and infrastructure associated with the Precinct).

A range of facilities, infrastructure and operational activities would be required to enable and support the processing, production, storage and transport of the hydrocarbon products. In addition, there are a variety of indirect activities (Category B) and related projects (Category C) that may to some extent be associated with the establishment of the Precinct. These are dealt with in this assessment in the manner outlined in **Part 2,Table 5-1**. The assessment process reported in the Strategic Assessment Report has been focused on Category A related activities, however, commentary is provided on Category B and Category C activities.

Table 5-1 Categories of Facilities and Activities.

Category Description Detail Examples

A BLNG Precinct These are the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons:

• LNG, condensate and other hydrocarbon processing facilities;

• Port Facilities;

• Light Industrial Area;

• Workers Accommodation; and

• Infrastructure within and immediately adjacent to the Precinct.

B Indirect Activities These are indirect activities and actions as a result of the BLNG Precinct that are considered in the impact assessment but do not form part of the approvals process:

• Broome Airport;

• Broome Port;

• Regional roads;

• Housing;

• Waste Management; and

• Material Sourcing.

C Related Projects Related projects that are outside the scope of the Strategic Assessment but form part of the cumulative impact assessment:

• Petroleum exploration activities;

• Browse field development;

• Pipelines and infrastructure in Commonwealth waters;

• Road to the Precinct; and

• Pioneer Camp.

The environmental assessment was undertaken as a two stage process to ensure that all relevant issues were addressed:

1. **Category A factor impact assessment.** The factor impact assessment is based on an assessment of the impacts from each Category A activity affecting that factor, and includes mitigation and environmental or social outcomes assessed against relevant policy and legislation. Matters of NES pursuant to the EPBC Act have been assessed using the same methodology and are addressed under each factor as appropriate, but are also consolidated in a separate impact assessment section.
2. **Cumulative impact assessment of Category A, B and C activities.** Category B and C activities are not part of the Strategic Proposal or actions to be implemented under the Plan, but are addressed to ensure that direct and indirect impacts of the Plan are considered. An assessment is made as to whether the environmental impacts arising from Category A activities are altered by Category B and C

activities both locally and regionally and over short and long timeframes.

Category C activities (related projects) are being addressed independent of the BLNG Precinct, in separate environmental approvals processes, but where they have similar impacts in times and/or space they have been considered when addressing cumulative impacts from implementation of the Plan in the strategic assessment. Upstream development is considered Category C activity and includes infrastructure required to remove the gas from the gas fields and transport it to the BLNG Precinct. The pipeline connecting the field to the BLNG Precinct is included as Category C activities up to 3Nm from the Western Australian coast (within 3Nm it is Category A). The types of activities included in Category C for upstream developments may include:

- subsea wells, manifolds and flow lines to collect the hydrocarbons from the gas fields;
- infield floating facilities, one for each of the gas condensate reservoirs;
- central processing facilities;
- pipelines connecting the gas fields to the BLNG Precinct; and
- supply base development to service and supply the upstream developments.

The significance of cumulative impacts (in general) has been assessed at the local and regional scale and against the relevant environmental policy and legislation. Due to the lower level of detail being available on the environmental aspects of Category B and C activities and the environments they affect, a range of impact assessment methods and information sources were utilised to assess cumulative effects including:

- best professional judgement regarding sensitivity of the factor/species to the cumulative impacts identified;
- spatial habitat assessment, such as proportion of habitats affected, location of pressures in relation to migratory routes, key habitats or proportion of habitats protected;
- identification of potential protection measures to mitigate environmental impact resulting from these activities that are not already addressed by management arrangements for Category A activities; and
- other environmental assessments being undertaken for Category B and C activities (for example LandCorp Broome North project and upstream development activities proposed for the offshore Browse basin).

The cumulative impact assessment culminates in an assessment of likely environmental outcome of the cumulative impacts of Category A, B and C activities. Where relevant, the SAR considers the identification of regional knowledge gaps and environmental constraints that may be addressed by the Government in west Kimberley planning and priorities for future conservation management, monitoring and research in the west Kimberley, linked with the proposed management arrangements and State Government measures outlined in The Precinct Plan.

Generic Question ID: 887 Sub ID [169] Raised by [S169 Q1747]

Environs Kimberley: Cumulative impact has been assessed against individual indicators throughout the SAR. An additional Part should be prepared for the SAR containing a compilation of all cumulative impacts presented elsewhere in the documents and addressing them in their entirety. The impacts should include those associated with all aspects of the Precinct and associated activities to the development.

The BLNG Precinct Strategic Assessment as presented in **Parts 3**, **4**, and **5** of the SAR addresses cumulative scenarios of up to 50 Mtpa of LNG production and also includes consideration of indirect activities in the region that may either be indirectly related to the BLNG Precinct or other significant related projects in the region to allow consideration of cumulative impacts. Therefore, impacts associated with all aspects of the Precinct and associated activities have been considered. The Proponent has undertaken the assessment in terms of environmental factors. This is consistent with the EPA approach, whereby it reports to the Minister for the Environment on key environmental factors.

In recognising the theme comments raised in the Response to Submissions phase, the Proponent has undertaken a synthesis of cumulative impacts for key environmental factors, as relevant to Category A activities subject to assessment in the SAR. Refer to **Section 4.5** and **Section 4.6** of the Response to Submissions Summary Report for Marine and Terrestrial Factors. Cumulative environmental impacts are discussed further in **Section 5** of Response to Submissions Summary Report.

Generic Question ID: 890 Sub ID [169] Raised by [S169 Q1748]

Environs Kimberley Submission: No detailed description is possible due to the lack of scientific certainty about any new/unnamed species resulting from inadequate research. No ROV surveys have been conducted of the ocean bed in the vicinity of proposed near shore and offshore facilities and infrastructure. There is a lack of data (over seasons) and modelling of critical habitats and food sources (e.g. seagrasses vary over seasons, weather conditions, global weather influences etc). Modelling has not been employed, although available, for impacts of smothering, light conditions, etc. This is below industry best practice level set by (and expected of) Proponents in other regions (e.g. Exmouth Sub Basin).

The objective of the Strategic Assessment Report (**SAR**), from the perspective of a marine impact assessment, was to determine and document the existing environmental values in a local and regional context, and to predict the potential impacts associated with the construction and operations of the Precinct in order to inform a management framework appropriate for this strategic proposal. As part of this process, the SAR represents a synthesis of all available information on marine species to inform sensible decision-making relevant to the development, drawing on surveys, literature and ongoing monitoring of environmental values in the region. The Proponent encourages knowledge sharing of new species across industry, Government and academic institutions to help inform the state-of-knowledge for managing the environmental assets of the North West Marine Region.

Remote Operated Vehicle (**ROV**) surveys are typically employed in deeper water where accessibility is problematic, where specific tasks need to be operated at depth or if specific footage is required of a particular feature. For the purposes of SAR investigations, the focus of underwater film-based investigations was on understanding the distribution and extent of benthic primary producer habitat (**BPPH**) (including seagrass). A range of techniques were utilised to understand and map these habitats better, as summarised in SAR **Appendix C13** and in full in **Appendices C3-C5**. These included towed video transects (more useful for habitat mapping than ROVs) in combination with Laser Airborne Depth Survey (**LADS**) to create a habitat model and BPPH map of the James Price Point coastal area and sampling. In addition, Baited Underwater Remote Vehicles were used to understand fish assemblages associated with marine habitat. This survey is summarised in **Appendix C6**.

Water quality and sediment dispersion modelling results are presented in **Appendix C13**. This modelling, and the broader dredging impact assessment discussed in this appendix, investigated the likely impacts of dredging activities on smothering and benthic light availability alongside other potential impacts. The modelling process, whilst strategic and conservative in its development (in order to recognise the strategic nature of the assessment process), was developed in consultation with the OEPA – Marine Branch in order to meet their expectations and to adhere to best practice approaches employed in WA.

Generic Question ID: 1253 Sub ID [103] Raised by [S103 Q2923]

Woodside Submission: Implications of Conservatism in Impact Predictions Presented in the SAR -

The predictions for a range of impacts presented in the SAR, such as dredge modelling, are inherently conservative as a result of the strategic nature of the assessment and the need to consider a range of potential engineering designs for future proposals not yet conceived in detail. While this conservative approach can provide decision-makers with impact conclusions that can be used as a basis for assessing potential environmental impacts of the Browse LNG Precinct, Woodside notes that a range of unintended outcomes may arise as a result of conservative modelling, which may include:

- undue stakeholder concern for impacts that are unlikely to eventuate;
- management measures being specified which are not commensurate with the actual scale of impact likely to be observed; and
- offsets being specified in proportion to conservative impact predictions and not the actual environmental outcomes.

Woodside recommends that decision-making processes recognise the need for flexibility in the application of environmental management expectations. These should enable conditions to be set based on assessments of impacts associated with future proposals/actions and the actual impacts subsequently realised.

The Proponent notes the submission's recommendation to decision-making authorities.

Generic Question ID: 1275 Sub ID [123] Raised by [S123 Q2337]

The Proponent should provide a quantitative assessment of the biodiversity risks and increased susceptibility to IMS. Risk assessments in the SAR are subjective and where threats are identified, are countered by hypothetical risk mitigation actions that are not elaborated in the SAR. Therefore the argument as used in the SAR is flawed - general conclusions about adaption and resilience assume health and biodiversity. The SAR does not present a balanced assessment of these features in the text, and potential risk mitigation measures (e.g. 7km sediment disposal offshore etc.) are hypothetical and not able to be scientifically assessed in the context of the argument heavily biased in favour of the Proponent. In conclusion, the section needs greater scientific rigour applied based on real-time data and not hypothesises that are unrelated to the massive disruption from the proposed LNG Precinct.

A quantitative assessment would require the development of a quantitative risk matrix, including consequence and likelihood definitions, as only qualitative risk assessments are normally conducted. Such definitions would be difficult to develop and significant hypotheses would be required. Therefore, a quantitative risk assessment would not necessarily generate a more accurate risk profile. The most effective way to decrease the risk of IMS to biodiversity is to prevent the introduction of marine species in the first place, and this is the process the commercial proponents would follow.

Generic Question ID: 1288 Sub ID [124] Raised by [S124 Q3097]

Consultants at the Woodside community meetings admitted that their data was inadequate due to the 'constantly changing nature of the project', that 'adequate data was not available' and that the 'project just kept getting bigger'.

The State Government has taken a strategic approach to assessments, in recognition of the importance of the environmental and heritage values of the Kimberley. The assessments have been appropriate for a proposal of this nature and significance. The details of the assessments have been consistent and transparent, and provide a level of certainty for the future. The strategic assessment process uses conservative estimates to ensure that the potential impacts of the Precinct have been identified and properly managed, regardless of the changing nature of the project.

8.4 Presentation of Findings

Generic Question ID: 853 Sub ID [169] Raised by [S169 Q1709]

Environs Kimberley: The SAR does not set minimum (best practice) parameters for infrastructure or technologies to be permitted in and associated with the Precinct and it also fails to mention that some industry proponents (may) utilise forms of processing that may be less modernized (e.g. than Floating LNG facilities) and result in greater environmental impact and actual damage (e.g. associated pipelines, processing plants, dredging, spoil placement, disruption and impact on matters of NES etc).

Part 2 Section 8.4 of the SAR discusses the application of Best Practice Management Measures, and describes this term as:

"the application of the best available mitigation measures that are practicable in the particular circumstances of a proposal to avoid or minimise environmental impact. The process of achieving best practice would include developing design and management measures against international benchmarks whilst having regard to local conditions and circumstances (including costs) and to the current state of technical knowledge."

The philosophy of application of best practice, as outlined above, is the underlying approach for developing environmental management plans and design or proposals consistent with the management framework identified in the Strategic Assessment.

Therefore, the SAR does set minimum (best practice) parameters for infrastructure and technologies.

9 Consultation Undertaken

Generic Question ID: 1015 Sub ID [152, 114, 118, 124, 150, 160] Raised by [S152 Q2101]

The community consultation process has also been unacceptable. To expect people to read nearly 8000 pages of documentation over the Christmas/New Year holiday period does not increase community trust that their input is being sought in a genuine way.

Once the Strategic Assessment Report (**SAR**) was completed, it was submitted by the Department of State Development to the Western Australian Office of the Environmental Protection Authority (**EPA**) which determined it was suitable for release for public comment. The public comment period set by the EPA for assessments of this type ranges from 4 – 12 weeks. For the SAR (**Parts 1** to **6**), the EPA announced a public

review period of 12 weeks (13 December 2010 to 8 March 2011), in part to address the issue of seasonal holidays. Supplementary information (**Part 7**) was released on 14 February for a six week period of concurrent review.

The SAR was open for 15 weeks overall, with the Public Comment period closing on 28 March 2011.

Generic Question ID: 208 Sub ID [40, 195, 121, 228, 150] Raised by [S40 Q389]

There is concern at the way the Indigenous population has been treated, starting with the initial coercive nature of the proposal, requiring a decision in a specific time frame in order to qualify for a financial benefits programme which should already be available regardless of the proposed development going ahead.

Development of the Browse LNG Precinct provides an opportunity for new initiatives that will substantially improve the education, health, social and economic wellbeing of Aboriginal people and significantly reduce disadvantage within the Kimberley community. These benefits were identified in a Heads of Agreement signed by the Kimberley Land Council (**KLC**) on behalf of the Goolarabooloo Jabirr Jabirr claimants in April 2009. Also recognised is that, apart from financial benefits, the Precinct will create meaningful jobs and businesses opportunities that would otherwise not be provided.

Engagement with Traditional Owners has been a priority for the Western Australian Government. In the early stages of the project, the Northern Development Taskforce led a site selection process which placed a strong emphasis on the inclusion and engagement of Traditional Owners. The State Government also ensured that Traditional Owners had considerable input into the Precinct Master Plan, particularly with regards to identification of culturally significant sites.

Examples of the ongoing consultation and engagement process with Traditional Owners include:

- In January 2008 the State Government and the KLC executed a Financial Assistance Agreement to support the engagement process to agree on site selection.
- Between March and July 2008 the KLC conducted a consultation program which included over 30 West Kimberley community and Traditional Owner Taskforce meetings.
- On 7 May 2008, in good faith and with mutual respect, the State and the KLC entered into a studies agreement to ensure that technical studies were conducted in an appropriate manner and did not impact on significant heritage sites.
- On 11 March 2009 the State and the KLC executed a Negotiation Funding Agreement for ongoing negotiation and consultation.
- On 21 April 2009 the State, the KLC and Woodside Energy Ltd executed a Heads of Agreement to establish the Browse LNG Precinct near James Price Point, along with a significant benefits package including new education and training initiatives for Indigenous people.
- Following a comprehensive workshop with Traditional Owners on 14 August 2009, a series of technical, environmental and heritage questions were developed that ultimately formed the basis of the Traditional Owners' Information Package, later modified to produce a comprehensive Public Information Booklet, hosted on the Department of State Development's (**DSD**) website.
- On 8 October 2009, the State and the KLC entered into a Funding Agreement to fund the KLC to meet the costs of negotiations for an ILUA or related agreement and other specified activities.
- On 13 November 2009 the State, the KLC and Woodside entered into a Heritage Protection Agreement to ensure appropriate account was taken of the Traditional Owners' views regarding heritage sites.
- Throughout 2010 funding was provided to progress involvement in studies, negotiations, consent determination and promotion of benefits negotiated in the Heads of Agreement.
- In March 2011, DSD conducted information workshops at various Indigenous communities on the Dampier Peninsula.

Under the Heads of Agreement, a deadline for completing formal negotiations was agreed by all parties as 30 September 2009. This deadline was extended on three occasions. However in July 2010 the KLC advised the State that agreement could not be reached due to divisions within the Native Title claimant groups. The State subsequently reached an agreement with the Native Title claimants in May 2011 to which the State remains committed to delivering the benefits outlined in the agreement.

Under the Strategic Assessment process, the KLC was commissioned to lead an Aboriginal Social Impact Assessment (**ASIA**). The ASIA identified a number of potential impacts (positive and negative) on the Indigenous communities of Broome and the Dampier Peninsula and made recommendations to manage those impacts. These recommendations are expected to inform negotiations for leasing arrangements with commercial proponents to enhance opportunities and minimise impacts for the Indigenous communities of the

West Kimberley.

The ASIA is included as Appendix E of the Strategic Assessment Report, and is available online at: http://www.dsd.wa.gov.au/8249.aspx

Generic Question ID: 455 Sub ID [195, 211, 44, 114, 148] Raised by [S148 Q2968]

A number of submissions raised similar points regarding the consultation process:

- The Broome Community has not been consulted and involved in the process properly. The submitter is on a list (EBC) to be consulted regarding issues in relation to the Social Impact Assessment but after an initial phone call in December they have not been contacted since.
- A social impact study should be completed which involves all residents.
- The stakeholder engagement for the Strategic Assessment was not adequate. Workshops have been held in Broome over the last couple of years but these have mostly been by invitation only. The forum held recently in Broome by the Department of State Development did not provide an opportunity for debate or questions and answers on various issues about the Precinct. Another public forum held in 2009 did not allow any questions, only statements by those presenting.
- **Part 5 Section 2.2.3**: A couple of forums, some newspaper ads and fact sheets is not adequate 'stakeholder engagement'. From the submitters personal experience they went to the Paspaley information session at about 9.30-10.00 am only to find that nobody was there except for notes asking people to leave their comments. Also, the submitter expresses their concern regarding the incident of a woman being spoken to harshly by a DSD employee, which invoked an apology from the deputy director general and Mr Barnet over the matter. The open day at the expo was not allowing any questions from the public and only an audio visual display was presented, clearly not enough. They have left out their very first forum held at Woody's Arcade where the submitter witnessed a DSD employee abusing tax payers who were not happy with his answers or lack of. The whole process is flawed and should not be accepted as adequate stakeholder engagement.

The purpose of a Social Impact Assessment (**SIA**) is to develop a social profile of impacted communities, predict potential social impacts of the development and develop management and mitigation measures to address those impacts. Community engagement is one component of an SIA, but it is not the sole source of data or sole consideration in the assessment. In addition, it is important to bear in mind that, although community consultation is a fundamental part of best-practice social impact assessment, an SIA is not a public referendum on a project.

Both a SIA and an Aboriginal Social Impact Assessment (**ASIA**) were conducted as part of the Strategic Assessment process for the Browse LNG Precinct. Although the State Government welcomed all members of the community to participate in the consultations held for the SIA, the involvement of all individuals in the community is not required in order to conduct a best practice impact assessment. A critique of the SIA, including the community consultation process, is included in the peer review conducted by Dr. Nick Taylor. This review can be found at: http://www.dsd.wa.gov.au/7901.aspx.

Community consultation for the Strategic Assessment began during the site selection process and is ongoing. The SIA and ASIA included community consultation with the general community, native title groups and other affected Aboriginal people in Broome, Derby and the Dampier Peninsula. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome and has held many more meetings with local businesses, community and Indigenous organisations and individuals. In addition, each of the specialist studies for the SIA (Indigenous impacts, tourism, fishing, pearling and aquaculture) included their own consultation activities.

Indigenous consultation began in 2008 with the establishment of the Traditional Owners Taskforce to assist in the site selection process. This Taskforce also facilitated consultation with all coastal Aboriginal communities (including native title holders and claimants) and participated in technical, environmental and heritage studies. Site selection also included several dozen community and Traditional Owner meetings facilitated by the native title representative body, the Kimberley Land Council (**KLC**). Consultation with Traditional Owners resulted in a signed Heads of Agreement in 2009, which outlines substantial benefits and commitments to be provided to the Indigenous communities of the West Kimberley region. Indigenous people were also consulted in preparation of the Indigenous Impacts Report undertaken by the KLC (**Appendix E**). Consultation with Traditional Owners is ongoing and will continue throughout the life of the Precinct.

A number of community sessions were held where the broader community were provided an opportunity to make an input into the SIA. These included:

- the North West Expo (2009 and 2010);

- DSD SIA Open Day;
- the two-day Shire LNG Forum;
- shopping centre information sessions (Paspaley Plaza on 4 and 5 December 2009; and Boulevard Shopping Centre on 29 and 30 January 2010); and
- Broome Community Information Sessions (Lotteries House on 24th, 25th and 26th February 2011).

In keeping with best practice, community engagement will be an ongoing process throughout not only the planning for the Precinct but throughout its life. The forms of community engagement to occur post-project approval will be determined once the Precinct governance arrangements have been established. The Precinct governance arrangements are presented in detail in **Section 2.3** of the Response to Submissions Summary Report. Under the management measures outlined in the SAR, an Engagement Plan or similar document will be developed should the project be approved. This will address non-Indigenous and Indigenous engagement and be developed in accordance with appropriate State documents.

Finally, it is also important to note that the scope and intensity of community consultation should vary with the stage that project planning is at. The SAR provides a high-level impact assessment at the Precinct level, rather than a detailed project-level impact assessment. There was no detailed project plan to assess for the site during this phase of work. At the project level, commercial proponents will undertake consultation to develop management plans and impact assessments, as required. Currently, a project level SIA is being prepared by Woodside and involves a number of community engagement activities including meetings with a Community Advisory Committee, Stakeholder and Interest Group consultations and a Resident and Business survey.

Generic Question ID: 57 Sub ID [6, 75, 96] Raised by [S6 Q96]

The government should cease railroading the Broome community (and all other interested parties) with reference to the proposed gas processing plant.

The proposed Browse LNG Precinct will remain as a proposal until such time as it satisfies the criteria to gain approvals under relevant State and Commonwealth legislation.

Effective community engagement has been a priority for State Government throughout the Strategic Assessment process for the Browse LNG Precinct. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome, and has held many more meetings with local businesses, community and Indigenous organisations and individuals. Examples include:

- **October 2007** - An issues scoping workshop is carried out and attended by the Northern Development Taskforce, environmental NGOs, the Kimberley Land Council, the tourism sector and members of the community;
- **July 2008** - A three day site evaluation workshop is hosted in Broome and attended by various stakeholders;
- **July to September 2009** - Social Impact Assessment (SIA) workshops are conducted. Service providers and other relevant people including community representatives (in the areas of sport and recreation, infrastructure, housing and land, health, education and heritage/sense of place) participate in the workshops hosted by DSD and Woodside;
- **September 2009** - Community members are invited to a SIA Open Day hosted by DSD in Broome, with the opportunity to receive information and provide input in the process;
- **December 2009** - DSD hosts SIA public consultations at the Paspaley Plaza Shopping Centre over two days.
- **January 2010** - DSD hosts SIA public consultations at the Broome Boulevard Shopping Centre over two days.
- **February 2011** - Community Information Sessions are conducted at Lotteries House in Broome. Representatives from DSD, LandCorp, Main Roads WA, Department of Fisheries and Woodside attend and answer questions regarding the Precinct.

Part 2, Section 9 of the Strategic Assessment Report and the supporting **Annexure**: Stakeholder Engagement of the Social Impact Assessment in **Appendix D-2** contains further information on the extensive community engagement carried out as part of the Strategic Assessment for the Browse LNG Precinct, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR__Part2_Strategic_Assessment_Process.pdf

Generic Question ID: 58 Sub ID [6, 32, 143] Raised by [S6 Q97]

In alignment with the wishes of the majority of Broome residents, people of the Kimberley and visitors the government should cease the intended construction of a gas treatment plant in the Kimberley.

With considerable gas resources off the Kimberley coast and a high level of industry interest in developing these resources there is the potential for multiple and uncoordinated gas processing facilities to be developed along the Kimberley coast leading to unnecessary and significant social and environmental impacts. In order to avoid such an outcome, the Government identified the need for a single multi-user LNG precinct from which gas can be processed and transported. A comprehensive site selection process, including consultation with Kimberley communities, preceded the selection of a site near James Price Point as the preferred location for an LNG Precinct.

The Tourism Impact Assessment (Executive Summary) at: http://www.dsd.wa.gov.au/documents/2Kimberley_LNG_Tourism_Impact.pdf indicated that the surveyed Broome resident population was divided on the proposed LNG Precinct with around 40% of Broome's population supporting the development and approximately an equal percentage against. Around 80% of visitor population surveyed indicated that the LNG Precinct would make no difference to their plans to return to Broome.

Generic Question ID: 312 Sub ID [25, 150, 124] Raised by [S25 Q207]

The State has not informed the community properly: there is a lot unsaid; and what is said is based on either data that is questioned for credibility or plainly lied about.

How are the government able to make a decision when they cannot answer questions asked at public forums in Broome? There seems to be a great lack of knowledge with regards to the project. How can we be asked what we think when we have not been provided with a clear, full scope of information?

The Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**) included community consultation with the general community, native title groups and other affected Indigenous and non-Indigenous people in Broome, Derby and the Dampier Peninsula. This consultation began during the site selection process and is ongoing.

Indigenous consultation began in 2008 with the establishment of the Traditional Owners Taskforce to assist in the site selection process. This Taskforce also facilitated consultation with all coastal Indigenous communities (including native title holders and claimants) and participated in technical, environmental and heritage studies. Site selection also included several dozen community and Traditional Owner meetings facilitated by the native title representative body, the Kimberley Land Council (**KLC**).

A Traditional Owners workshop was held in 2009 to address Traditional Owners' technical, environmental and heritage questions. In response, the State produced a Traditional Owners' Information Booklet, which assisted the process of ultimately reaching Traditional Owners' agreement to the final site location.

Consultation with Traditional Owners resulted in a signed Heads of Agreement in 2009, which outlines substantial benefits and commitments to be provided to the Indigenous communities of the West Kimberley region. Aboriginal people were also consulted through the Aboriginal Social Impact Assessment process undertaken by the KLC. Consultation with Traditional Owners is ongoing and will continue throughout the life of the Precinct.

For the non-Indigenous community, the first phase of consultation (January – May 2009) for the SIA provided information on the assessment process and focussed on profiling and assessing the 'before change' project area to a range of stakeholders (e.g. Shire of Broome council and officers, Broome-based State Government departments and agencies, Broome-based service providers, and the local Chamber of Commerce).

The second phase of consultation (June 2009–January 2010) included **s**ix workshops in Broome, mainly with service providers, to inform them of the proposed development of the Precinct and the potential development scenarios, and to provide an opportunity for input into the identification of issues. Each workshop focussed on a different theme (i.e. sport and recreation, sense of place, land and housing, health, and education and training).

A number of community sessions were held where the broader community were provided an opportunity to make an input into the SIA. These included:

- the North West Expo (2009 and 2010);
- DSD SIA Open Day;
- Shire LNG Forum; and
- shopping centre information sessions (Paspaley Plaza on 4 and 5 December 2009; and Boulevard

Shopping Centre on 29 and 30 January 2010).

In addition, each of the specialist studies for the SIA (Indigenous impacts, tourism, fishing, pearling and aquaculture) included their own consultation activities.

Throughout the Strategic Assessment process, engagement with the community was a priority for the State Government. The SIA was conducted with the best information available at the time. As with all impact assessments, new information can arise following community consultation. However, community engagement (Indigenous and non-Indigenous) on the BNLG Precinct does not end with the public review of the SAR. The SAR provides a high-level impact assessment at the Precinct level, rather than a detailed project-level impact assessment. Commercial proponents will undertake project-level consultation as required to develop management plans and impact assessments, as required. A project level SIA is being prepared by Woodside and includes a number of community engagement activities including meetings with a Community Advisory Committee, Stakeholder and Interest Group consultations and a Resident and Business survey. This will be conducted with the best available information at the time of consultation.

In keeping with best practice, community engagement will be an ongoing process throughout not only the planning for the Precinct but throughout its life. The forms of community engagement to occur post-project approval will be determined once the Precinct governance arrangements have been established. Under the management measures outlined in the SAR, an Engagement Plan or similar document will be developed should the project be approved. This will address non-Indigenous and Indigenous engagement and be developed in accordance appropriate State documents.

Generic Question ID: 60 Sub ID [6, 227] Raised by [S6 Q99]

It is not easy for the public have a chance to 'have a say' (through the public exhibition/submission process) via the website.

In addition to the website (the uEngage process), the public was able put forward manual submissions by post, hand delivery or email. Hard copies of the Strategic Assessment Report were made available upon request for people who were unable to access the internet. These copies were available from: the Department of State Development offices in Perth and Broome; Department of Environment and Conservation offices in Broome and Kununurra; Environmental Protection Authority; Battye Library; Broome Public Library; Broome Community Resource Centre; Shire of Broome; Kimberley TAFE Library; Electorate offices of Carol Martin MLA; and Shire of Derby/West Kimberley.

In addition, the Department of State Development hosted a three day public exhibition in Broome in February. The exhibition was well advertised and members of the public were invited to meet with a range of technical specialists and senior administrators to discuss the Precinct and the Strategic Assessment. The intent was to provide adequate information to ensure the public had the level information they needed to enable them to respond to the reports. At that exhibition the public were provided with access to a training session on the uEngage portal.

Generic Question ID: 497 Sub ID [232, 113] Raised by [S232 Q1361]

The Government needs to listen and talk more with the Indigenous community on the Dampier Peninsula. The Aboriginal community asked could the Government show respect to them and, within reason, do as they are asking?

The State Government recognises the strong cultural connection to country felt by Kimberley Indigenous people. This recognition is central to the approach the State has taken from the early days of the site identification process to the current phase of the Strategic Assessment, and will continue into the future.

With that in mind, effective engagement with Traditional Owners has been an ongoing priority throughout the Strategic Assessment process for the Browse LNG Precinct. This was reflected in the State Government's decision to provide funding to the Kimberley Land Council to commission an Aboriginal Social Impact Assessment (**ASIA**), the terms of reference for which were developed in consultation with the Indigenous community**.** The Terms of Reference for the ASIA required that the assessment ensure that affected native title groups and other affected Indigenous people play a central role in the impact assessment.

The ASIA team conducted a range of consultation activities with Indigenous communities on the Dampier Peninsula. These consultation activities included community meetings in Beagle Bay, One Arm Point, Lombadina, Djarindjin, Derby and Broome. Small group meetings were held with a range of community stakeholders on the Dampier Peninsula including youth and ranger groups, women's groups, Indigenous enterprises, and community councils. Extensive consultations were also undertaken with Indigenous organisations, and with organisations providing services to Indigenous people, in Broome, Derby and the Dampier Peninsula communities. The community inputs provided critical information to the ASIA's identification

of impacts and appropriate impact management arrangements.

The process of consulting with the Indigenous communities on the Dampier Peninsula continues**.** The next phase of work in the assessment process is the development of the impact management plans described and outlined in the Strategic Assessment Report (**SAR**). Stakeholders in the Indigenous community will continue to be consulted and engaged during the process of developing and implementing management plans designed to minimise the potential for negative impacts and enhance the potential benefits to communities on the Dampier Peninsula.

Generic Question ID: 872 Sub ID [229, 114] Raised by [S114 Q2174]

A number of submissions raised points regarding access to information:

- Public access to the SAR and its appendices was insufficient. Too few hard copies were provided, and Internet access is limited in remote communities.
- Only 1% of the Indigenous population has access to the internet in remote communities. How do the people gain an understanding or access accurate information about the proposed development?

A number of opportunities that do not require the Internet have been available to the community to learn about the project and provide comment. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome and has held many more meetings with local businesses, community and Indigenous organisations and individuals. In addition, each of the specialist studies for the SIA (Indigenous impacts, tourism, fishing, pearling and aquaculture) included their own consultation activities. People in remote communities were engaged specifically in the Indigenous impacts studies, which included meetings with affected native title claim groups and Indigenous communities, contact with more than 100 Indigenous and other organisations, and numerous other less formal engagements with Indigenous people. Additionally, in March 2011, the Department of State Development conducted visits to several remote communities on the Dampier Peninsula in order to compile community comments, questions and concerns. These compiled comments were formally submitted through the EPA, and have been responded to in this document.

Engagement with Indigenous people does not end with the publication of the SAR. Development of the social and environmental management plans will offer a number of opportunities for engagement. Remote communities are likely to be particularly interested in further development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan), which will address possible impacts of visitors accessing the Peninsula. This will include further consultation with the Indigenous communities of the Dampier Peninsula.

Outside of community consultation activities, providing information to remote communities has been a significant challenge. Although over half of households (55.7%) in the Shire of Broome have access to the Internet, most of that access is in urban Broome households. Although Internet access points are available in some of the remote communities at a central location, this is not the case for all communities. Whilst ideally the SAR would have been delivered to people in remote communities, the size of the document made this difficult. In addition to online access, copies of the SAR were made available offline in Perth, Broome, Derby, Fitzroy Crossing and Kununurra. This included at the Department of State Development's Broome Office, at the Department of Environment and Conservation's offices in Broome and Kununurra, at the Shire of Broome and Derby/West Kimberley offices, and at the Broome, Derby/West Kimberley and Battye Public Libraries. Written submissions during the public review of the SAR were accepted.

Generic Question ID: 901 Sub ID [169, 105] Raised by [S169 Q1766]

Environs Kimberley: Public Consultation Period: Insufficient time was provided for public comment on the supplementary information provided. It could be argued that the entire process (including 12 week review period) should not have started until all information was available for public comment. The original documentation has needed to be revisited/reassessed (cross referenced) in the context of the additional information. There have been no resources provided by government or industry to eNGOs/other stakeholders/public to allow for independent peer review and verification by experts/consultants/panels of specialists of processes, literature, modelling and data associated with the strategic assessment. In any case, a wide representation of eNGOs should have been involved in the selection of experts/consultants/peers/Panels. The peer reviews produced for the strategic assessment should be made publicly available in their entirety with sufficient time for their review. This has not occurred. The Draft Strategic Assessment Report states the first six parts of the SAP were released for public review on 13 December 2010, with the proviso that supplementary Information would be available for public review in early 2011 for a minimum of 6 weeks". Contrary to this, the outcomes of the peer reviews (e.g. dredging) associated with the Supplementary Information (and mentioned in

the text there-in) have not been made publicly available as anticipated and requested by stakeholders and only a 6 week period has been provided hence, this necessitates eNGOs to engage consultants to undertake their own peer reviews. The additional information addresses critical matters of environmental eNGO concern such as dredging, spill and coastal monitoring and marine BPPH calculations (i.e. this is information critical to the overall strategic assessment and thus, information eNGOs were keenly interested in, and now only 6 weeks has been provided for its review). It was anticipated that this documentation would have been made publicly available and was also not contained in the initial information released and hence, this process did not commence within the initial 12 week period. If the additional information had been released at the outset of the 12 weeks period, this process would have been achievable. It takes longer than 6 weeks for an eNGO to source the funding and engage a consultant to undertake this process. eNGOs do not have the resources readily at hand for such work. eNGOs could not anticipate the content/detail of the Supplementary information (nor the lack of public provision of the peer reviews) nor the exact period that would be set for review of this for forward planning. The 12 week period commenced on 13 December 2010. This timing was far from ideal considering it coincided with the holiday period, a time (December-January) when eNGOs have less resources available to them (internally and externally). eNGOs have previously voiced their concerns over the past decade to both state and federal government regarding this timing for the public release of environmental assessment documentation for several significant oil and gas projects in WA (and evidence of this can be provided on request). In the past where this timing has occurred, Proponents have granted additional time to eNGOs for consideration of EIS documentation to account for this. The Minister for the Environment must consider anything relevant to matters of national environmental significance (as defined in Part 3 of the Act), and economic and social matters, and take into account the principles of ecologically sustainable development as part of a Strategic Assessment. Without sufficient time being granted to eNGOs for consideration of the Strategic Assessment in its entirety (including impacts on matters of NES), the Minister may not be given surety that all matters have been duly (and truly independently) considered.

Effective community engagement has been a priority for State Government throughout the Strategic Assessment process for the Browse LNG Precinct. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome, and has held many more meetings with local businesses, community, environmental and Indigenous organisations and individuals. Examples include:

- **October 2007 -** An issues scoping workshop is carried out and attended by the Northern Development Taskforce, environmental NGOs, the Kimberley Land Council (**KLC**), representatives from the tourism sector, and members of the community in Broome;
- **July 2008 -** A three day site evaluation workshop is hosted in Broome and attended by various community stakeholders;
- **July to September 2009 -** Social Impact Assessment (**SIA**) workshops are conducted in Broome. Service providers and other relevant people including community representatives (in the areas of sport and recreation, infrastructure, housing and land, health, education and heritage/sense of place) participate in the workshops hosted by the Department of State Development (**DSD**) and Woodside;
- **September 2009 -** Community members are invited to the SIA Open Day hosted by DSD in Broome, with the opportunity to receive information and provide input into the process;
- **December 2009 -** DSD hosts two SIA public consultation days at the Paspaley Plaza Shopping Centre;
- **January 2010 -** DSD hosts SIA public consultations at the Broome Boulevard Shopping Centre over two days;
- **February 2011 -** Community Information Sessions are conducted at Lotteries House in Broome. Representatives from DSD, LandCorp, Main Roads WA, Department of Fisheries and Woodside attend and answer questions regarding the Precinct; and
- **March 2011 -** DSD conducts several information sessions and workshops at Indigenous communities on the Dampier Peninsula and south of Broome.

Throughout all of these processes opportunities were provided to ask questions and in most instances answers were provided at the time or subsequently.

The Strategic Assessment Report (**SAR**) for the Browse LNG Precinct was submitted to the Environmental Protection Authority (**EPA**) and Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**), who approved the document for public release. Following this approval, the SAR was subject to a public review period as determined by the EPA. The State Government agreed to release the SAR for a minimum eight week public review period. Although the minimum comment period under the *Environmental Protection and Biodiversity Conservation Act 1999* is 28 days, the State Government has agreed to at least an eight week public review period in recognition of the complexity and public interest in the proposal. Recognising

that the release of the SAR over the holiday period was not ideal, this eight week public comment period was subsequently extended to 12 weeks.

The Supplementary Information was released for public comment on Monday 14 February 2011. The State Government met the requirement of the EPA of releasing this volume (**Part 7**) for a minimum of six weeks. In total, the SAR (parts 1 to 6) was open for public comment for 15 weeks.

While some proponents may choose to provide resources to environmental non-governmental organisations (**eNGO**s), this is not at present a legislative requirement in Western Australia. Rather than provide resources to the eNGOs, the State Government commissioned independent peer reviews for a number of the studies to ensure the Strategic Assessment reflected best practice. In addition, several eNGOs were granted minor additions to the deadline to complete their submissions by the Environmental Protection Authority.

Generic Question ID: 306 Sub ID [167] Raised by [S167 Q723]

Consultation processes should be expanded. Broome is now basically the main hub for tourists for the whole of the Kimberley Region, with tourists wanting to see the pristine Kimberley, not only Broome; so that what people in Broome think is no more important than what the whole of the Kimberley and associated interests think.

The State Government recognises that tourism is one of the key industries in Broome and the Kimberley region. As a result of concerns about the potential impact of the Precinct on Broome's tourism industry, Tourism WA and the Department of State Development commissioned a Tourism Impact Assessment (**TIA**) as part of the Strategic Assessment process. The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation the means to maximise the potential benefits, and mitigate and manage potential negative impacts. The TIA described the current state of the tourism industry in Broome and the broader Kimberley region, and the potential implications should the Precinct proceed. The TIA concluded that tourism in the Kimberley and the Browse LNG Precinct could coexist. It also noted that tourism and resources development had coexisted in the Kimberley since the 1950s. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily coexist. As a result, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a Tourism Management Plan, with Tourism WA as lead agency, to meet this recommendation.

It is the State Government's view that the Precinct can coexist with the tourism industry in Broome and in the Kimberley, due to the vast distances between the Precinct site and iconic destinations such as the Horizontal Waterfalls (225km), Mitchell Plateau (495km), and the Bungle Bungles (665km). The pristine nature of such destinations will remain, and their value will not be diminished. A project-level SIA being conducted by Woodside as a potential Foundation Proponent of the Precinct will include further investigations of the potential impacts of its project on the tourism sector within the Shire of Broome.

Over the longer term, it is expected that the tourism industry in Broome and the Kimberley will continue to grow and expand. This will be aided by an expansion of the range of services available in the region, associated with the development of the Precinct, and by Broome's natural population growth. The Tourism Impact Assessment is included in **Appendix D-5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/8249.

Generic Question ID: 311 Sub ID [25] Raised by [S25 Q206]

The State has not consulted the community properly; any questions that the submitter has asked, left on available forms or emailed have remained unanswered.

Effective community engagement has been a priority for State Government throughout the Strategic Assessment process for the Browse LNG Precinct. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome, and has held many more meetings with local businesses, community and Indigenous organisations and individuals. Examples include:

- October 2007 - An issues scoping workshop is carried out and attended by the Northern Development Taskforce, environmental NGOs, the Kimberley Land Council (**KLC**), representatives from the tourism sector, and members of the community in Broome;
- July 2008 - A three day site evaluation workshop is hosted in Broome and attended by various community stakeholders;
- July to September 2009 - Social Impact Assessment (**SIA**) workshops are conducted in Broome. Service providers and other relevant people including community representatives (in the areas of sport and recreation, infrastructure, housing and land, health, education and heritage/sense of place) participate in the workshops hosted by the Department of State Development (**DSD**) and Woodside;
- September 2009 - Community members are invited to the SIA Open Day hosted by DSD in Broome,

with the opportunity to receive information and provide input into the process;

- December 2009 - DSD hosts two SIA public consultation days at the Paspaley Plaza Shopping Centre;
- January 2010 - DSD hosts SIA public consultations at the Broome Boulevard Shopping Centre over two days;
- February 2011 - Community Information Sessions are conducted at Lotteries House in Broome. Representatives from DSD, LandCorp, Main Roads WA, Department of Fisheries and Woodside attend and answer questions regarding the Precinct; and
- March 2011 - DSD conducts several information sessions and workshops at Indigenous communities on the Dampier Peninsula and south of Broome.

Throughout all of these processes opportunities were provided to ask questions and in most instances answers were provided at the time or subsequently. It should also be noted that the SAR public comment period is an important part of the public consultation process and it is a requirement that all issues raised in public submissions are responded to.

Part 2, **Section 9** of the Strategic Assessment Report and the supporting **Annexure**: Stakeholder Engagement of the Social Impact Assessment in **Appendix D-2**, contains further information on the extensive community engagement carried out as part of the Strategic Assessment for the Browse LNG Precinct, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part2_Strategic_Asssessment_Process.pdf

Generic Question ID: 342 Sub ID [31] Raised by [S31 Q296]

The Indigenous liaison process has been botched by the Premier's heavy-handedness.

The proposal to establish the Browse LNG Precinct will be carefully considered by the State and Commonwealth Governments throughout the development approvals process. The Department of State Development, as the Precinct Proponent, has undertaken a comprehensive strategic assessment that includes an evaluation of the non-Indigenous and Indigenous social impacts. The outcomes of these assessments have been documented in the strategic-level Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**) and summarised in the Strategic Assessment Report (**SAR**). The State and Commonwealth Governments will review the information in the SAR, which includes a summary of the Indigenous consultation process, to enable the proposal to be considered under the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

As noted in the SAR, the State Government established a policy of seeking the informed consent of Kimberley Traditional Owners in the establishment of the Precinct. The SAR describes the range of good faith negotiations, consultation, engagement and other mechanisms undertaken by State Government to achieve the informed consent of the Traditional Owners throughout the West Kimberley more broadly, and that of the Goolarabooloo Jabirr Jabirr Native Title claimants in establishing the Precinct subject to statutory approvals. Matters relating to these negotiations, as well as the roles played by Government (including Premiers), are documented in **Part 5** of the SAR and in the Indigenous Impacts Report (**Appendix E** of SAR). All of this information has been provided to the State and Commonwealth Governments for careful consideration in the approvals process.

The State Government has undertaken the assessment, including the Indigenous consultation, in a matter that is consistent with the Terms of Reference for the SAR. The SIA and ASIA have been peer reviewed to ensure they meet best practice standards for impact assessment. The SIA was peer reviewed by an internationally recognised SIA expert, Dr Nick Taylor of New Zealand. His review is available online at: http://www.dsd.wa.gov.au/7901.aspx. In addition, the Kimberley Land Council completed an Indigenous Impact Report, funded by the State, which included an ASIA. Professor Richard Howitt peer reviewed the draft ASIA.

As noted in the Indigenous Impacts report, the outcome of the Strategic Assessment process, and in particular the nature of any management arrangements incorporated into the Plan for the Precinct, will be an important measure of the efficacy of consultations with affected Indigenous people. This highlights the importance of the next stages of planning and management of the Browse LNG Precinct. If the project is approved, the State and Commonwealth Ministers will establish conditions under which the Precinct can proceed. In addition, the SAR sets forth a range of commitments to put in place management plans to minimise potential negative impacts and maximise the benefits of the Precinct. The process of liaising with Indigenous people will continue during the process of developing and implementing these plans.

Generic Question ID: 495 Sub ID [232] Raised by [S232 Q1359]

Dampier Peninsula Aboriginal community members consider that the Browse LNG Precinct Strategic Assessment Report has been developed within a tight timeframe and more consultation is required. Can they have more consultation?

Development of the Browse LNG Precinct will provide an opportunity for new initiatives to substantially improve the education, health, social and economic well-being of Indigenous people, and significantly reduce disadvantage within the broader Kimberley community.

Accordingly, engagement with Traditional Owners has been a priority for the Western Australian Government throughout the strategic assessment process. In the project's early stages, the Northern Development Taskforce led a site selection process that placed a strong emphasis on the inclusion and engagement of Traditional Owners across the broader Kimberley.

Examples of the ongoing nature of consultation and mutual engagement process with Traditional Owners include:

- In January 2008 the State and the Kimberley Land Council (**KLC**) executed a Financial Assistance Agreement, to support the engagement process during site selection.
- Between March and July 2008 the KLC conducted a consultation program involving over 30 West Kimberley community and Traditional Owner Taskforce meetings.
- On 7 May 2008, in good faith and with mutual respect, the State and the KLC entered into a studies agreement to ensure that technical studies were conducted in an appropriate manner, and did not impact on heritage sites.
- On 11 March 2009 the State and the KLC executed a Negotiation Funding Agreement to facilitate ongoing negotiation and consultation with Traditional Owners.
- On 21 April 2009, the State, the KLC and Woodside Energy Ltd executed a Heads of Agreement to establish the Browse LNG Precinct near James Price Point, and outline a significant benefits package which featured new education and training initiatives.
- Following a comprehensive workshop with Traditional Owners on 14 August 2009, a series of technical, environmental and heritage questions were developed that ultimately formed the basis of the Traditional Owners' Information Package, later modified to produce a comprehensive Public Information Booklet hosted on the Department of State Development's website.
- On October 2009 the State and the KLC entered into a Funding Agreement to fund the KLC in order to meet the costs of the negotiations for an ILUA or related agreement, and other specified activities.
- On 13 November 2009 the State, the KLC and Woodside entered into a Heritage Protection Agreement to ensure appropriate account was taken of the Traditional Owners' views regarding heritage sites.
- Throughout 2010 funding was provided to facilitate and maintain Traditional Owner participation in studies, negotiations, consent determination and promotion of benefits negotiated in the Heads of Agreement.
- In March 2011, the Department of State Development conducted information sessions and workshops at Indigenous communities on the Dampier Peninsula and south of Broome.

The comprehensive Aboriginal Social Impact Assessment (**ASIA**), which includes substantial studies into the potential impacts of the Precinct on Indigenous communities on the Dampier Peninsula, is included in **Appendices E1-E7** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/BrowseSAR.

The process of engagement with the Indigenous communities on the Dampier Peninsula will continue**.** The next phase of work in the assessment process is the development of the impact management plans described in the Strategic Assessment Report (**SAR**). Stakeholders in the Indigenous community will continue to be engaged during the process of developing and implementing these plans.

Generic Question ID: 511 Sub ID [232] Raised by [S232 Q1376]

Some Aboriginal community members on the Dampier Peninsula are concerned that the Jabirr Jabirr peoples' decisions have not considered the impact on other Indigenous groups.

The Terms of Reference for the Aboriginal Social Impact Assessment (**ASIA**), conducted as part of the strategic assessment process, required that the assessment ensure that affected native title groups and other affected Indigenous people play a central role in the impact assessment. The ASIA team conducted community meetings in Beagle Bay, One Arm Point, Lombadina, Djarindjin, Derby and Broome. Small group meetings were held with a range of community stakeholders on the Dampier Peninsula including youth and ranger groups, women's

groups, Indigenous enterprises, and community councils. Extensive consultations were also undertaken with Indigenous organisations, and with organisations providing services to Indigenous people, in Broome, Derby and the Dampier Peninsula communities. These community inputs provided critical information to the ASIA's identification of impacts.

The potential impacts identified in the ASIA from consultation and engagement with many Indigenous communities on the Dampier Peninsula, helped to inform the management strategies and measures outlined in the Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the Strategic Assessment Report (SAR). In progressing the Browse LNG Precinct, engagement with the many Indigenous communities on the Dampier Peninsula will continue to be an ongoing priority for the State Government.

Generic Question ID: 758 Sub ID [169] Raised by [S169 Q1697]

Environs Kimberley Submission: Neither prior to or since announcement of James Price Point being earmarked as the Precinct has there been any wider public consultation (or information widely disseminated) for that site until release of the SAR. It is understood that there have been over 40,000 communications to government opposing the Precinct in the Kimberley at this site and over 10,000 public submissions during the submission period.

The extensive public consultation process which has been undertaken is documented in **Section 3.1** of the Response to Submissions Summary Report.

While there has been opposition to the proposed development of LNG in the vicinity of James Price Point, there has also been some considerable support particularly among sections of the community that are seeking to address long term disadvantage caused by lack of opportunities in the region.

The State seeks to address the chronic social issues experienced in the region by providing responsible economic development opportunities, balanced with the environmental, social and cultural expectations of the community.

While both the State and Commonwealth may benefit from the taxes and royalties returned from hydrocarbon production (which importantly will be re-invested in the community through education, health and other Government supported initiatives), the key benefits of training and jobs simply will not be achieved by processing the gas away the Kimberley region.

Generic Question ID: 899 Sub ID [169] Raised by [S169 Q1763]

Environs Kimberley Submission: The SAR states "The environmental impact assessment is designed to be transparent and accountable, and includes specific points for public involvement, including opportunities for public review of the Strategic Assessment documents". It is questionable whether this has been achieved. For example:

- The onshore site and offshore areas associated with the Precinct (i.e. Developments proposed for this site) appear not to have been subject to due and transparent processes of environmental assessment or public consultation by the Proponent. Until the SAR, there appears to have been limited information made readily (or publicly) available to the general public by the Proponent on the potential environmental (and social) impacts and cumulative impacts of developing this site or of the collective proposed developments. The general public of WA has not been provided with information until the SAR stage. It was not involved in the site selection process. It may be asserted that the NDT and other reference groups do not necessarily represent the general public of WA. The Government has not considered the general public's opposition to the development at James Price Point.
- Critical documents used by Government to support the claims made in the SAR have not been publicly released such as the Peer Reviews (e.g. Dredging).
- Resources have not been provided to eNGOs (as per other significant developments in the Exmouth Sub Basin) to assist in review of the SAR and other associated environmental documentation.

Transparency and Public Consultation/Involvement

With respect to transparency and public consultation, the main purpose of the NDT was not to represent the general public of WA, but to manage across-government planning processes and stakeholder consultation with regard to the selection and development of a suitable location for the processing of Browse Basin gas reserves. The process undertaken by the NDT was documented and the information was provided to the public and open for public comment. Similarly, the majority of the environmental study reports and reviews undertaken to support the NDT site selection process and Strategic Assessment Report were made publicly available via the Department of State Development website (http://www.dsd.wa.gov.au/7909.Aspx).

The site selection process included inputs by the State Government, the Commonwealth Government,

Traditional Owners, and industry. Extensive consultation with Traditional Owners during the site selection process was managed by the Kimberley Land Council (**KLC**) as the representative body for the many Indigenous groups in the region. The site selection process investigated a long list of development options that included:

- Floating LNG processing facilities;
- 43 potential locations in the Kimberley region;
- a range of sites in the Pilbara region to the south of the Kimberley; and
- locations to the northeast of the Kimberley in the Northern Territory.

Indigenous consultation began in 2008 with the establishment of the Traditional Owners Taskforce to assist in the site selection process. This Taskforce also facilitated consultation with all coastal Aboriginal communities (including native title holders and claimants) and participated in technical, environmental and heritage studies. Site selection also included several dozen community and Traditional Owner meetings facilitated by the native title representative body, the KLC. A Traditional Owners workshop was held in 2009 to address Traditional Owners' technical, environmental and heritage questions. In response, the State produced a Traditional Owners' Information Booklet, which assisted the process of ultimately reaching Traditional Owners' agreement to the final site location.

A two part site selection report was prepared by the NDT (NDT, 2008b**; Appendix B-3** and NDT, 2008c**; Appendix B-4**) and was subject to a public comment period. The NDT responded to the issues raised and provided all documentation to the EPA for advice under Section 16(e) of the *Environmental Protection Act 1986*. Comment received by the public is included in the EPA's consideration, but is not the only consideration in making a decision. As a matter of best practice, decision-makers do consider the level of public support making development decisions. However, decisions are made at the political level based on a range of factors beyond the level of public support for a particular decision.

The Commonwealth Government also commissioned a report by GHD to investigate the economic feasibility of alternative sites for the processing of Browse Basin gas reserves. The report found that economics dictate that any proposed site greater than 500 kilometres from the Browse Basin gas fields is prohibitively expensive to develop from a green field situation. The use of existing brown field facilities in the Pilbara would fail to realise the full potential of Browse Basin gas reserves, and deny the social and economic benefits presented by its development to the people of the West Kimberley and Western Australia as a whole.

Following further study, a short list of four sites was identified. A full assessment of the four shortlisted sites was conducted after undertaking geotechnical assessments, completing environmental studies, receiving Environmental Protection Authority (**EPA**) advice pursuant to s16(e) under the *Environmental Protection Act 1986* and engaging in further stakeholder consultations. The EPA advised that the environmental impacts and risks of locating a precinct in the James Price Point coastal area were likely to be manageable.

Following the release of the EPA advice, the State Government issued a report recommending James Price Point as the preferred location. James Price Point was determined to be the only site where all identified constraints were considered manageable and had several advantages over other sites on environmental, Indigenous, socio-economic, community, tourism and technical grounds. There has been a broad range of consultation efforts undertaken during the strategic assessment process, as detailed in **Part 2, Section 9**. This is a continual process of regular engagement and feedback from interested stakeholders, and is a key commitment for the Proponent to continue.

The Strategic Assessment Report (**SAR**) for the Precinct considers the broader social and environmental impacts, as well as the means to manage those impacts in order to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. In addition, the SAR identifies the mechanisms through which the many opportunities presented by the Precinct can be maximised for the local population of the West Kimberley.

Peer Reviewers

The peer review of the dredging assessment (**Appendix C-13**) was specifically commissioned by SEWPAC (then DEWHA) to support their regulatory assessment. Any issues identified in the document by peer reviewers are required to be addressed to the satisfaction of SEWPAC, and any subsequent agreed recommendations by peer reviewers will be considered as part of any future dredge modelling process by proponents of derived proposals.

Resourcing of NGOs

Although some development proponents may choose to provide resources to environmental non-governmental organisations (eNGOs), this is not a legislated requirement in Western Australia. However, since October 2007,

the State Government has been involved in more than 15 community workshops and public forums in the Kimberley, and has held many more meetings with local businesses, community and Indigenous organisations and individuals. In addition, each of the specialist studies for the Social Impact Assessment (Indigenous impacts, tourism, fishing, pearling and aquaculture) included their own consultation activities.

Generic Question ID: 900 Sub ID [169] Raised by [S169 Q1764]

Environs Kimberley: The Proponent has not implemented consultation processes commensurate with those of industry for other significant oil and gas projects in WA. Best Practice consultation has not been undertaken for the Project, and limited opportunities have been provided for stakeholder input and feedback throughout the assessment process (or across the state) to inform Project decision-making. This position is questionable as resources were provided by the Proponents of other oil and gas projects within the Region to contract the services of an independent Conservation Liaison Officer to assist Conservation Groups to respond to environmental approval documentation and preparation of submissions. In this instance, in the absence of such a resource, and in light of the size of the document, we have not been in a position to document our many concerns on statements made in the document, on the detail provided therein or specific Environmental Conditions required for the Project. Independent resources should be provided beyond this comment period to enable eNGOs to respond to any further issues or environmental assessment or approval related documentation in a manner commensurate with submissions made previously by Conservation Groups to Government and Proponents on oil and gas related activities and developments in the Pilbara Region where resources have been provided by Proponents for this purpose. An independent conservation eNGO liaison officer position ('Conservation Liaison Officer') should be created to assist (and represent where appropriate) the interests of Perth and Kimberley conservation NGOs on the various management committees and community reference groups. This contract position was established in the Exmouth region in 2002 to act as a resource to those key stakeholders with the aim of enhancing their capacity to participate in Community Reference Groups (CRGs) or wider consultation processes (including responding to environmental approval documentation). The CLO was jointly selected by representatives of industry and eNGOs and funding was provided by industry.

At present, there is no legislative requirement in Western Australia that development proponents fund stakeholders to contract the services of an independent expert to assist them to review assessment documents or prepare their submissions. While some oil and gas industry proponents may have chosen to provide such resources to conservation group alliances in other cases, it is not a requirement of best practice in public engagement.

Generic Question ID: 1347 Sub ID [132] Raised by [S132 Q3325]

Rather than allowing an open community consultative approach, individuals were handpicked to be part of the assessment, many of whom were known to be "pro-gas" or were not long-term local residents. Many of the concerns the submitter had were pre-judged, misinterpreted and summarily dismissed.

Community consultation for the Strategic Assessment began during the site selection process and is ongoing. The Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**) included community consultation with the general community, native title groups and other affected Aboriginal people in Broome, Derby and the Dampier Peninsula. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome and has held many more meetings with local businesses, community and Indigenous organisations and individuals. In addition, each of the specialist studies for the SIA (Indigenous impacts, tourism, fishing, pearling and aquaculture) included their own consultation activities.

The State Government welcomed all members of the community to participate in the consultations held for the Social Impact Assessment (**Appendix D**). A number of community sessions were held where all members of the broader community were provided an opportunity to make an input into the SIA. These included:

- the North West Expo (2009 and 2010);
- DSD SIA Open Day;
- Shire LNG Forum; and
- shopping centre information sessions (Paspaley Plaza on 4 and 5 December 2009; and Boulevard Shopping Centre on 29 and 30 January 2010).

In keeping with best practice, community engagement will be an ongoing process throughout not only the planning for the Precinct but throughout its life. The forms of community engagement to occur post-project approval will be determined once the Precinct governance arrangements have been established. Under the management measures outlined in the SAR, an Engagement Plan or similar document will be developed should

the project be approved. This will address non-Indigenous and Indigenous engagement and be developed in accordance appropriate State documents.
Finally, it is also important to note that the scope and intensity of community consultation should vary with the stage that project planning is at. The SAR provides a high-level impact assessment at the Precinct level, rather than a detailed project-level impact assessment. There was no detailed project plan to assess for the site during this phase of work. At the project level, commercial proponents will undertake consultation as required to develop management plans and impact assessments, as required. Currently, a project level SIA is being prepared by Woodside and includes a number of community engagement activities including meetings with a Community Advisory Committee, Stakeholder and Interest Group consultations and a Resident and Business survey.

9.1 Consultation Undertaken Towards the Social Impact Assessment

Generic Question ID: 137 Sub ID [21, 120, 76, 135, 94, 148, 153, 182] Raised by [S21 Q173]

The studies supporting the Social Impact Assessment (**SIA**) component of the SAR are inadequate: the impacts of tourism have been downplayed.

The Social Impact Assessment component of the Strategic Assessment included a Tourism Impact Assessment (**TIA**) commissioned by Tourism WA and conducted by Kadar Pearson and Partners (SAR **Appendix D-5**). The TIA assessed the impacts of the construction and ongoing operation of the proposed BLNG Precinct on the tourism industry in Broome and the West Kimberley region.

The major tourism related issues of concern identified during consultation for the TIA were:

- the potential impact of the BLNG precinct on the Broome and Kimberley tourism brands;
- the potential impact of a large FIFO construction workforce on Broome's reputation as a tourist destination;
- the impact of the Precinct workforce on the availability of visitor accommodation;
- the fear that the project would result in elevated land and house prices that would make it difficult for tourism sector employees to afford accommodation in Broome; and
- the potential impacts associated with sealing the entire length of the Cape Leveque Road on Indigenous tourism businesses operating on the Dampier Peninsula.
- The tourism impact assessment and SAR highlighted the need to develop a Tourism Management Strategy to separate Broome's image from that of the BLNG Precinct. In addition, the SAR proposes that the following impact management plans be developed to address the potential impacts of the precinct on tourism in Broome and the Dampier Peninsula:
- a management plan to ensure the effective management of the construction workforce via a managed-access camp near the Precinct;
- an access management plan to limit and manage interaction between the construction workforce and Broome and Dampier Peninsula communities when they are not at work;
- a management plan to address recreation and tourism access issues in relation to the Dampier Peninsula;
- a land and housing management plan to ensure that the supply of land and housing meets the needs of Broome and the Precinct; and
- "Sense of Place" strategies to retain the character and identity of Broome and the Dampier Peninsula.
- Furthermore, the State will consult with the Traditional Owners in the further development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) which, together with other mechanisms such as the Cultural Heritage Management Plan, will provide appropriate mechanisms to address possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.

The Precinct is also expected to deliver a number of positive benefits to the tourism industry, which may include:

- more frequent and cheaper air services;
- new investment in facilities and services;
- diversity for the highly seasonal and trade exposed (i.e. impacts of flight costs, high Australian dollar, travel scares etc) tourism sector; and
- future opportunities for small businesses to provide tourism services to workers and their families.

Generic Question ID: 95 Sub ID [1, 39, 165, 123, 119, 90] Raised by [S1 Q7]

The Precinct will result in significant negative social and economic impact on the Broome township.

DSD coordinated a comprehensive strategic-level social impact assessment on the potential development of the Browse LNG Precinct. It documented the existing or 'baseline' conditions in Broome and the rest of the impact area in Volume 1: Scope and Profile. This documented that Broome has been growing rapidly over the past decades and this is predicted to continue, regardless of LNG development. The assessment considered the impact of a range of potential development scenarios on key areas (**Volume 2**) and developed Precinct-level management measures to avoid, mitigate and manage these impacts (**Volume 3**). **Volume 3** of the SIA also included a Precinct-level governance structure to oversee the development, implementation and monitoring of the project-level social management plans.

The SIA concluded that the development of the Precinct will have an effect on Broome but that the negative impacts can largely be avoided, mitigated and managed. The social management plans In Volume 3 that result from the and the project-level assessments focus on enhancing positive effects and avoiding, minimising and managing negative impacts. The development of the Browse LNG Precinct has the potential to bring considerable benefits to Western Australia and especially the Kimberley. These are expected to include:

- increased job and business opportunities;
- improved travel and tourism services; and
- a more diverse and sustainable local economy.

The Strategic Social Management Plan in **Part 5**, **Section 5** (http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf) outlines the strategies that commercial proponents are required to put in place to manage their social and economic impact on Broome and the surrounding area and enhance the opportunities.

These strategies are aimed at avoiding many of the impacts that occurred in the Pilbara and managing those that are unavoidable. The requirement that the commercial proponents house their construction workforce in a managed-access construction camp and manage their access to Broome and Dampier Peninsula will avoid many of the potential social impacts. A number of other social management measures aim to manage potential impacts such as minimising the number of transient or opportunistic workers arriving in the region and managing those who do arrive. There are a number of other social management measures aimed at retaining Broome's community identity or 'sense of place' and ensuring Broome retains its status as one of WA's premier tourist destinations.

Generic Question ID: 59 Sub ID [6, 106, 207] Raised by [S6 Q98]

The process has been non-transparent and highly questionable from ethical standpoint (e.g. no social impact consultation with local community has occurred and social impact consultants work for Woodside). The government should cease and desist with this project immediately.

The DSD-led Social Impact Assessment (**SIA**) process was conducted at a strategic level and assessed the potential social impact of a range of development scenarios over time. This strategic social impact assessment could be considered a cumulative social impact assessment for the LNG Precinct. It involved considerable social impact consultation, including a range of consultation opportunities with the local community. The consultation undertaken is documented in the supporting **Annexures** of the DSD SIA (http://www.dsd.wa.gov.au/documents/Browse_SAR_Appendix_D-2_.pdf).

Woodside, as the most likely Foundation Proponent, is currently conducting its own project-level SIA which includes considerable local consultation. The DSD SIA and the Woodside SIA are completely separate assessments, one at the strategic level and the other at the project level.

Generic Question ID: 132 Sub ID [21, 67] Raised by [S21 Q143]

The Social Impact Assessment process was one of the most poorly-conducted and biased investigations I have ever experienced.

DSD coordinated a comprehensive strategic-level social impact assessment on the potential development of the Browse LNG Precinct. It documented the existing or 'baseline' conditions in Broome and the rest of the impact area in Volume 1: Scope and Profile. This documented that Broome has been growing rapidly over the past decades and this is predicted to continue, regardless of LNG development. The assessment considered the impact of a range of potential development scenarios on key areas (**Volume 2**) and developed Precinct-level management measures to avoid, mitigate and manage these impacts (**Volume 3**). **Volume 3** of the SIA also included a Precinct-level governance structure to oversee the development, implementation and monitoring of

the project-level social management plans.

The SIA was peer reviewed by an internationally recognised SIA expert to ensure that it met best practice standards. Dr Nick Taylor of New Zealand, the then President of the International Association of Impact Assessment (**IAIA**), was asked by the Department of State Development (**DSD**) to undertake a peer review of the Browse LNG Precinct Strategic Social Impact Assessment (**SIA**). Over the course of the SIA, Dr Taylor had periodic interaction with those conducting the SIA including several site visits. This allowed the peer reviewer to bring external insights and knowledge to the SIA process. Dr Taylor determined that "the SIA process used was sound and the approach well founded".

Generic Question ID: 207 Sub ID [40, 121] Raised by [S40 Q388]

We have heard a great deal about the consultation with Indigenous peoples, yet the local non-Indigenous population hasn't been seriously consulted.

The first phase of consultation (January – May 2009) for the Social Impact Assessment (**SIA**) provided information on the assessment process and focused on profiling and assessing the 'before change' project area to a range of stakeholders (i.e. Shire of Broome council and officers, Broome-based State Government departments and agencies, Broome-based service providers, and the local Chamber of Commerce).

The second phase of consultation (June 2009–January 2010) included six workshops in Broome, mainly with service providers, to inform them of the proposed development of the Precinct and the potential development scenarios, and to provide an opportunity for input into the identification of issues. Each workshop focused on a different theme (i.e. sport and recreation, sense of place, land and housing, health, and education and training).

A number of community sessions were held where the broader community were provided an opportunity to make an input into the SIA. These included:

• the North West Expo (2009 and 2010);

• DSD SIA Open Day;

• Shire LNG Forum; and

• shopping centre information sessions (Paspaley Plaza on 4 and 5 December 2009; and Boulevard Shopping Centre on 29 and 30 January 2010).

In addition, each of the specialist studies for the SIA (tourism, fishing, pearling and aquaculture) included their own consultation activities.

The Strategic Assessment Report (**SAR**) engagement process included the provision of fact sheets and community updates (two-weekly) in the Broome Advertiser. The fact sheets were made available at the Shire offices, the library and at all community events as well as the Department of State Development (DSD) website.

The current phase of the assessment process (i.e. public comment period on the SAR) is part of the community engagement process as well as being a statutory requirement. A number of opportunities were provided during this phase to allow for direct comment or questioning of matters related to the development.

Community engagement (Indigenous and non-Indigenous) for the Precinct does not end with the preparation of the SAR. In keeping with best practice, community engagement will be an ongoing process, not only the planning for the Precinct but throughout its life. The forms of community engagement to occur post-project approval will be determined once the Precinct governance arrangements have been established.

A project level SIA is being prepared by Woodside and includes a number of community engagement activities including meetings with a Community Advisory Committee, Stakeholder and Interest Group consultations and a Resident and Business survey.

Generic Question ID: 299 Sub ID [165] Raised by [S165 Q804]

How can a decision of such magnitude be made without proper community education and consultation on the content of impacts of the proposal and the content of the SAR? A period of three months from the release of the report is simply not long enough for such a complex proposal in a globally significant environmental and cultural region.

Effective community engagement has been a priority for State Government throughout the Strategic Assessment process for the Browse LNG Precinct. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome, and has held many more meetings with local businesses, community and Indigenous organisations and individuals. Examples include:

- **October 2007 -** An issues scoping workshop is carried out and attended by the Northern Development Taskforce, environmental NGOs, the Kimberley Land Council (KLC), representatives from the tourism

sector, and members of the community in Broome;

- **July 2008 -** A three day site evaluation workshop is hosted in Broome and attended by various community stakeholders;
- **July to September 2009 -** Social Impact Assessment (**SIA**) workshops are conducted in Broome. Service providers and other relevant people including community representatives (in the areas of sport and recreation, infrastructure, housing and land, health, education and heritage/sense of place) participate in the workshops hosted by the Department of State Development (**DSD**) and Woodside;
- **September 2009 -** Community members are invited to the SIA Open Day hosted by DSD in Broome, with the opportunity to receive information and provide input into the process;
- **December 2009 -** DSD hosts two SIA public consultation days at the Paspaley Plaza Shopping Centre;
- **January 2010 -** DSD hosts SIA public consultations at the Broome Boulevard Shopping Centre over two days;
- **February 2011 -** Community Information Sessions are conducted at Lotteries House in Broome. Representatives from DSD, LandCorp, Main Roads WA, Department of Fisheries and Woodside attend and answer questions regarding the Precinct; and
- **March 2011 -** DSD conducts several information sessions and workshops at Indigenous communities on the Dampier Peninsula and south of Broome.

Throughout all of these processes opportunities were provided to ask questions and in most instances answers were provided at the time or subsequently. It should also be noted that the SAR public comment period is an important part of the public consultation process and it is a requirement that all issues raised in public submissions are responded to.

Part 2, Section 9 of the Strategic Assessment Report and the supporting **Annexure***: Stakeholder Engagement* of the Social Impact Assessment in **Appendix D-2,** contains further information on the extensive community engagement carried out as part of the Strategic Assessment process for the Browse LNG Precinct, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part2_Strategic_Asssessment_Process.pdf.

Generic Question ID: 1057 Sub ID [114] Raised by [S114 Q2176]

The community has never been asked directly if it wishes this project to go ahead. This is hugely important and no attempt by any tier of Government has been made to ask us, do we want this? Do we want Broome's future to be that of mining and not continue how we have developed over recent decades in pursuing a 'Wilderness' based economy. Surely the carbon credits for the latter would be excellent?

The Strategic Assessment Report (**SAR**) identifies potential impacts of the project and provides measures to mitigate those impacts and maximise the opportunities. A broader discussion of economic development and planning in Broome and the West Kimberley is outside the scope of this project. However, this does not prevent the local government from engaging in community dialogue about local needs and aspirations for the area. Although the focus will be on the impacts and benefits arising from the Browse LNG Precinct, there are a number of management measures in the SAR that can make a contribution to this broader planning for the future of the West Kimberley. Management of changes to the Broome community would be captured in the management measures and social monitoring related to community identity and sense of place. This includes a management plan that will outline strategies to maintain Broome's status as a tourism town and its character (i.e. sense of place). Development of this plan will require developing a vision for Broome, which can play a role in identifying community aspirations for the town into the future.

9.2 Consultation Undertaken Towards the Environmental Impact Assessment

Generic Question ID: 62 Sub ID [7] Raised by [S7 Q76]

The Stakeholder Reference Group contained no local environmental representatives. It therefore, presented a biased view of the proposed development in public discussion.

The following local environmental representatives were part of the Stakeholder Reference Group:-

WWF Australia - Tania Vernes from Broome, representing Paul Gamblin

Environs Kimberley - Martin Pritchard from Broome

Environmental Science, Terrestrial - Tim Willing from Broome

Generic Question ID: 759 Sub ID [169] Raised by [S169 Q1698]

Environs Kimberley Submission: The wider WA public (beyond Broome), stakeholders and Indigenous communities do not appear to have had representation or been included by the State Government in any strategic or environmental discussions or assessments concerning this site, nor do the scientific community or the wider conservation sector appear to have been approached for their independent input.

The development of the Strategic Assessment Report (**SAR**) involved a comprehensive consultation process, detailed in **Part 2**, **Section 9**. This consultation process involved an initial baseline assessment that identified all relevant stakeholders to ensure their voices were heard in the assessment of the Precinct.

Indigenous community consultation has been coordinated through the Kimberley Land Council (**KLC**), the recognised Native Title Representative Body for the Kimberley region, through the establishment of a Traditional Owner Taskforce and consultations with all coastal native title holders, claimants and Aboriginal communities throughout the West Kimberley region. This consultation process included a detailed Aboriginal Social Impact Assessment and a series of Indigenous impact reports undertaken by the KLC. Traditional Owners will have a continuing role in the environmental and heritage management regime for the proposed Precinct through representation in all Precinct oversight groups.

The SAR also included the undertaking of numerous environmental studies, ranging from sampling, surveys and mapping to sophisticated computer modelling, to build a detailed picture of the marine and land environment around the proposed Precinct. This work has significantly increased the scientific knowledge of the Kimberley environment. The information gathered provides the basis for plans for managing the impacts on native flora and fauna and air and seawater quality, during construction and operation of LNG processing and shipping facilities at the Precinct. The demonstration of the ability to manage these impacts in the SAR will be independently assessed by the State and Commonwealth environmental agencies.

The public submission period to the SAR allowed broader consultation with the wider Australian community as well as the chance for further detailed submissions from relevant organisations including regulators, environmental NGOs and research institutions. The Proponent's response to all of these issues raised are contained in the Response to Submissions Summary Report and Appendix A, which will be considered by the State and Commonwealth Environment Ministers during the final assessment.

Part 3: Marine

1 Environmental Overview

Generic Question ID: 374 Sub ID [27, 42, 46, 55, 74, 84, 85, 94, 95, 96, 97, 98, 100, 108, 118, 125, 126, 132, 133, 134, 203, 234, 235] Raised by [S27 Q251]

Introducing a risk of significant oil spills is unacceptable. If an accident occurs, (and they do) oil would spread along the coast very quickly covering more than 200km of coastline in a few days, according to the modelling in the report. Just one spill could irreversibly pollute one of the least impacted marine areas on the globe and devastate world famous destinations like Broome's Cable Beach, Willie Creek, Roebuck Bay, Dampier Peninsula and the Lacepede Islands.

The reader's attention is drawn to the three main areas that oil spills are covered in the SAR:

- **Part 3, Sections 2.3.4.2** to **2.3.6.2**;
- **Part 7, Section 4**; and
- **Appendix G-3.**

The report on Hydrocarbon Spill Modelling (**Appendix G-3**) in particular describes the detailed assessment undertaken by the Proponent.

Although the development of the Precinct will increase the risk of an oil spill, these risks currently already exist from shipping moving along the coast and fuel imports that already occur through the Port of Broome. The estimated annual increase in the likelihood of spill reaching either Cable Beach or Roebuck Bay is estimated at one in 10 000 years. With the minimum time for oil to reach Roebuck Bay being 10 days. Consequently this will provide sufficient time to mobilise the necessary response resources. The following table outlines the probability of oil reaching the identified location and the minimum time it could take for the oil to get there (indicating the available response time (extract of **Table 4-2**, **Part 7**):

Location	Combined Probability	Minimum time to exposure [Days]
Lacepede Islands	1 in every 2,000 years	7
Pender Bay	1 in every 10,000 years	29
Carnot Bay	1 in every 10,000 years	8
Roebuck Bay	1 in every 10,000 years	10
Willie Creek	1 in every 3,000 years	5
Cable Beach	1 in every 10,000 years	6
Beagle Bay	1 in every 10,000 years	19

Generic Question ID: 40 Sub ID [4, 30, 69, 75, 227, 150, 292, 293] Raised by [S75 Q823]

Given the very limited knowledge available prior to the commencement of survey activity, it is impossible in such a short period of time to fully understand the range of movement patterns and survival strategies that fauna impacted by this development proposal may deploy. For example, as the WA Department of Environment and Conservation notes in the Kimberley Science synthesis, 2009: "with the exception of unpublished work by (Japanese oil company) INPEX on the Maret Islands and knowledge of the importance of the Lacepede Islands as nesting and inter-nesting habitat for green turtles, little is known about population structure of turtles that utilise habitats in the Kimberley (such as the Australian endemic Flatback turtle) or the affinities these populations may have with other populations." In other cases, for example the Snubfin dolphin, it is not even known whether or when these species are present in the area as a research program has only been underway for the last couple of years to examine the distribution, abundance and general ecology of the species in the Kimberley.

The SAR represents a synthesis of available information on marine life to inform sensible decision-making relevant to the development, drawing on surveys, literature and ongoing monitoring of marine environmental values in the region.

Since the publication of the Kimberley Science synthesis referred in this submission, comprehensive marine megafauna surveys have been undertaken to understand the distribution, movements and behaviour of marine megafauna at a local and regional context, including marine turtles and snubfin dolphins. The SAR conclusions

drew on this information, to undertake a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment, including marine turtles, dugongs and dolphin species.

Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine megafauna or the broader ecosystem integrity of the area with appropriate management measures and controls in place.

Many of these environmental surveys are ongoing to better define the spatial and temporal occurrence of key species potentially impacted by BLNG Precinct activities, for the purpose of informing management measures to further minimise these impacts.

Generic Question ID: 879 Sub ID [21, 229, 169, 125, 133] Raised by [S169 Q1736]

Environs Kimberley Submission: Conduct physical studies to determine the intertidal, nearshore and offshore marine ecology specific to the project.

The following question also relates to the above submission:

Studies are inadequate: ecological studies on marine life have not been conducted over a long enough period for decisions to be made.

The SAR represents a synthesis of available information on marine life to inform sensible decision making relevant to the development, drawing on surveys, literature and ongoing monitoring of marine environmental values in the region. A significant effort has been made to characterise the existing baseline conditions of the relevant marine receptors as part of the Strategic Assessment process.

The Strategic Assessment Report presents the outcomes from several marine studies (summarised in **Part 3**, and presented in **Appendix C**) undertaken by recognised experts, covering a range of potential marine receptors within the James Price Point area, and builds on the state-of-knowledge from marine studies and reviews that have been undertaken as part of the Northern Development Taskforce site selection process. In many cases (e.g. marine megafauna surveys), these studies have been replicated over time to take into consideration any relevant temporal variability in marine life (e.g. monthly, seasonal or inter-annual variability). Incorporating this natural variability has increased the rigour of conclusions regarding potential impacts to the marine environment. In addition to the numerous technical studies conducted, exhaustive literature searches and desktop studies have been undertaken to complement data acquired from the field studies. These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 123 Sub ID [16, 130, 142, 294, 15] Raised by [S16 Q110]

The studies predict that the natural gas project will destroy globally significant sea turtle, whale, dugong and bird habitat that can never be replaced.

The Strategic Assessment Report (**SAR**) undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment. Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine megafauna or the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

Specifically, **Part 3**, **Section 2.6.3** discusses the predicted impact of the Precinct development on marine mammals. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of marine mammals off the Dampier Peninsula as described in **Part 3**, **Section 2.6.1.2**. As concluded in **Part 3**, **Section 2.6.5.1**, potential impacts from the proposed development may impact on marine mammals at an individual level, although adverse impacts are not anticipated at a species or population level. A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on marine mammals. Refer SAR **Part 3**, **Section 2.6.4** (Management Measures) for a complete summary.

Part 3, **Section 2.4.3** acknowledges the predicted impacts on seagrass and macroalgal communities, demonstrating that permanent impacts on benthic flora will be restricted to the footprint of the 'indicative port area' (**Figure 2.4-1**). Whilst removal of macroalgal and seagrass habitat is expected to temporarily reduce benthic primary production and potential foraging habitat for dugongs and turtles in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of this habitat type within the wider Canning

Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay).

Part 4, **Section 2.6** provides a detailed assessment of the potential impacts on birds and associated habitat, and the proposed management response. The assessment drew on a range of studies and investigations undertaken at a local and regional level to characterise the known and likely occurrence of bird species (refer SAR **Part 4**, **Section 1.4.5 'Fauna Habitats'** for detail). In a regional context, it is well established that the local area has relatively low significance as a summer feeding site for migratory shorebirds relative to other areas including Eighty Mile Beach and Roebuck Bay. The James Price Point area comprises a suite of species that are widespread and well-represented on the Dampier Peninsula (Galaxia, 2011, **Appendix C-1**), and the area is not regarded as primary habitat in comparison to other coastal areas and offshore islands. The SAR considers the potential impacts relevant the BLNG Precinct development, with particular reference to managing direct and indirect disturbance on habitat for conservation significant fauna that have potential to occur in the area.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on fauna, including birds. Refer SAR **Part 4**, **Section 2.6.4** (Management Measures) for a complete summary. The SAR **Part 6** (in particular **Tables 3-3** and **3-4**) also outline management arrangements for terrestrial species including birds.

Generic Question ID: 584 Sub ID [2, 216, 120, 106, 121] Raised by [S120 Q1236]

ENGO Submission: It is not just the coastal waters of the Kimberley that are poorly understood by science, information on Commonwealth waters is sparse. There is a notable lack of knowledge extending well beyond the immediate region of the Kimberley coast to apply to the whole region of Australia's northwest waters. Biological oceanographers in Australia have acknowledged that the Kimberley Browse region remains one of the least studied regions of Australia'. (See **p. 33** of submission for context).

The objective of the Strategic Assessment Report (**SAR**), from the perspective of a marine impact assessment, was to determine and document the existing environmental values in a local and regional context, and to predict the potential impacts associated with the construction and operations of the Precinct in order to inform a management framework appropriate for this strategic proposal. As part of this process, the SAR represents a synthesis of all available information on marine species to inform sensible decision-making relevant to the development, drawing upon surveys, literature and ongoing monitoring of environmental values in the region.

Several extensive benthic and marine fauna studies, characterising the James Price Point area and the wider regional marine environment, were undertaken to support the site selection process and Strategic Assessment Report (**Part 3, Section 1.4**). In many instances these studies have been carried out by independent specialist governmental agencies such as CSIRO, AIMS, WA Department of Environment and Conservation (**DEC**), and the Museum of Western Australia. These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 1128 Sub ID [37, 79, 84, 182, 132] Raised by [S84 Q2601]

There is concern regarding the negative effects on a wide range of endangered and/or protected marine species and their habitats, including: humpback whale; dugong; pygmy blue whale; freshwater sawfish; marine turtles (flatback; green; loggerhead and hawksbill species); snubfin dolphin; seagrass beds; coral reefs and filter feeder communities; and fish aggregation areas.

The disturbance to Marine life could have dire consequences for future inheritance. It would be good to see the region passed to future generations untouched as it was given to us to look after.

The Proponent notes the concerns raised in this submission. To inform the strategic assessment, a comprehensive range of scientific studies and reviews were undertaken to characterise the marine environmental values in a local and regional context. The Proponent is confident that all of the marine species and their habitats listed in this submission have been fully considered as appropriate to inform the strategic proposal. A robust impact assessment process was undertaken to determine the predicted impacts of the Precinct development on the marine environment (SAR **Part 3**), including listed or threatened species. Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine megafauna or the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

It should be noted that one of the key objectives of the strategic assessment, as evidenced by the site selection process, was to identify a location for a common-user precinct to enable a coordinated and consistent approach to management of environmental, social and heritage impacts, thus minimising the *ad hoc* development of multiple, standalone LNG processing facilities along the coastline that could otherwise be proposed.

Generic Question ID: 77 Sub ID [2, 57] Raised by [S2 Q34]

The Strategic Assessment Report understates the potential impacts on dugong, turtles, sea snakes and fish. These impacts include underwater noise sources, pile driving, dredging, suction dredging, marine blasting, rock dumping, vessel noise, seismic testing, and drilling.

The Strategic Assessment Report (**SAR**) undertook a robust impact assessment process to predict the potential impacts of the Precinct development on the marine environment, including dugongs, turtles, sea snakes and fish. **Part 3, Sections 2.6.3, 2.7.3** and **2.5.4** respectively, discuss the predicted impact of the Precinct development on these marine fauna. As noted, a number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts were considered in detail and assessed against the temporal and spatial occurrence of these factors off the Dampier Peninsula as described in **Part 3**. As concluded in **Part 3**, potential impacts from the proposed development may result in impacts at an individual level, although adverse impacts are not anticipated on these factors at a species or population level.

Generic Question ID: 1130 Sub ID [88, 102] Raised by [S88 Q2630]

This area should be classified as a marine reserve.

The extensive marine studies undertaken do not suggest that the area in question offers any features not already better protected through Government's 22 October 2010 announcement of the formation of the Kimberley Wilderness Parks under the Kimberley Science and Conservation Strategy. The announcement included four new marine parks, almost trebling the area of marine parks and reserves in WA from 1.5 million hectares to 4.1 million hectares, and creating the first marine reserves in the Kimberley region.

The new marine parks provide significant biodiversity protection, including protection to six species of rare and endangered turtles, Australian snubfin dolphins, humpback and minke whales, dugongs and sawfish. The area includes the largest humpback whale calving area in the southern hemisphere, some of the nation's largest mangrove communities, significant turtle nesting areas, extensive coral reefs, sponge gardens and the region's outstanding scenic values. Camden Sound and North Kimberley together make up the Great Kimberley Marine Park which covers more than 17 percent of WA waters, making it Australia's second largest marine park in coastal waters behind the Great Barrier Reef Coast Marine Park. More information about the Kimberley Wilderness Parks and the Kimberley Science and Conservation Strategy is available at: http://www.dec.wa.gov.au/kimberleywildernessparks

Generic Question ID: 73 Sub ID [9] Raised by [S9 Q87]

The Department of Education has reviewed the SAR and advised that "the issues raised in the report concerning Marine Waste Discharge, Hydrocarbon Spill Modelling, Marine Benthic Primary Producer Habitat and Coastal Processes should not in our opinion impact on educational facilities".

Noted.

Generic Question ID: 446 Sub ID [44] Raised by [S44 Q416]

There is enormous potential for water contamination, harmful toxic emissions and irreversible damage to marine life and plant habitats.

The reader's attention is drawn to the following sections of the SAR that address potential impacts on marine factors:

- **Section 2.2**, **Part 3** - Relevant Factor: Marine Sediments;
- **Section 2.3**, **Part 3** - Key Factor: Marine Water Quality;
- **Section 2.4**, **Part 3** - Key Factor: Benthos Including Benthic Primary Producers;
- **Section 2.5**, **Part 3** - Relevant Factor: Fish;
- **Section 2.6**, **Part 3** - Key Factor: Mammals;
- **Section 2.7**, **Part 3** - Key Factor: Marine Reptiles;
- **Section 2.8**, **Part 3** - Relevant Factor: Marine Ecosystem Integrity;
- **Section 2**, **Part 7** - Marine Wastewater Discharge Modelling; and
- **Section 4**, **Part 7** - Hydrocarbon Spill Modelling.

These sections provide a comprehensive assessment of potential impacts upon marine life and plant habitats,

with appropriate management and mitigation measures to avoid or minimise potential impacts.

Generic Question ID: 459 Sub ID [46] Raised by [S46 Q1189]

The Precinct will severely threaten endangered species like turtles.

The Strategic Assessment Report (**SAR**) includes a comprehensive impact assessment of all relevant endangered marine fauna, including turtles, as relevant to the project context. Endangered marine fauna assessed in the SAR includes species of marine turtles, marine mammals and fish which are protected under the EPBC Act and listed in **Part 6**, **Section 2.2.2**. Impacts to these species are assessed in detail in the relevant sections of **Part 3** of the SAR (Fish - **Section 2.5**, Marine Mammals - **Section 2.6** and Marine Reptiles - **Section 2.7**).

With respect specifically to marine turtles, the focus of the impact assessment in the SAR was on those species of most relevance to the project area (i.e. green and flatback turtles). Studies have confirmed that the James Price Point coastal area is not a regionally significant nesting or foraging area for these species, and a range of management commitments are proposed to reduce the risk of impact to individuals of these species in the area.

Whilst the BLNG Precinct development is not predicted to significantly threaten the populations of green and flatback turtles, a range of management measures have been proposed in the SAR **Part 2**, **Section 2.7**, **Tables 2.7-3** to **2.7-5** to minimise impacts on marine reptiles. Additional management arrangements have also been proposed in **Part 6**, **Table 3-6** that will benefit a range of species, including marine turtles.

Generic Question ID: 557 Sub ID [170] Raised by [S170 Q1448]

WWF & ACF Submission: The marine section of the report is separate from the land-based assessment. So, where fish are concerned there is the view (**Section 2.5.7**) that effects are likely to be managed through shore-based mitigation like stormwater control. However, when approximately 2,500 ha of land is to be cleared for industrial use this is very likely to have a substantial effect on coastal processes, even if this is 1km inland.

The Strategic Assessment Report (**SAR**) divided the impact assessment between marine (**Part 3**) and terrestrial (**Part 4**) impacts as a logical grouping of relevant environmental factors. However, it is fully acknowledged that there is crossover between terrestrial and marine environments and impacts, particularly within the intertidal zone or as a result of terrestrial discharges to the marine environment. The SAR identified these inter-linkages and cross-referenced appropriately between respective Parts.

Specifically, **Part 3** discusses potential impacts from the discharge of wastewater (including stormwater runoff) from the Precinct facilities. The potential impact of the nearshore Precinct infrastructure (i.e. the port facilities) on coastal processes was initially discussed in **Part 3, Section 2.1.3** and further investigated in **Part 7, Section 5**. The study concluded that, although the coastline is partially protected by erosion resistant reef and cliff, the proposed port development will lead to a sediment deficit immediately adjacent to the facility. This zone of impact is likely to be limited to approximately 2-3km north and south of the development and is expected to occur over the short to medium term. It is expected that the predicted impacts to the local coastal geomorphology can be successfully mitigated by the application of best practice management and design measures, consistent with the commitments outlined in **Part 7, Section 5.4.2**.

Generic Question ID: 778 Sub ID [75] Raised by [S75 Q832]

The SAR report has been constructed to under-represent the potential risks to the environment. For example the SAR notes that, although the James Price Point area forms a component of the whale migration route, it is not significant for feeding, calving or socialising (**Part 1, Section 7.1**). However what the report does not state is that if whale migration is interrupted, these activities cannot occur. Similarly, surveys indicate that Roebuck Bay supports the most stable and highest population of dugongs, while James Price Point supports a transient population. No mention is made of the threat to seagrass feeding sites in Roebuck Bay that the blue-green algae Lyngbya poses. No attempts are made to establish if these are in fact the same dugongs, forced to feed outside Roebuck Bay during the seasonal die-back of seagrass in Roebuck Bay. This is bad science.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment, including humpback whales. It was considered unlikely that the Precinct development, in particular vessel movements, would have a significant impact on the humpback whale population or migration. Although there is the potential to affect individual animals given the large numbers of humpback whales that migrate offshore the Dampier Peninsula, there have only been five reported vessel collisions in Western Australian waters between 2006 and 2008. Of these only one incident involved a humpback whale (IWC, 2008). Experience at other ports along the north-west WA coast where humpback whales seasonally migrate has been considered in the context of the assessment and it is evident that humpback whales successfully cross major shipping corridors (i.e. Port Hedland and Dampier

Ports) and continue their migration (**Part 3, Figure 2.6.5**), with little evidence of vessel strike incidents.

In response to the comment raised regarding the impact of *Lyngbya majuscula* algae on the benthic habitats of Roebuck Bay, the following information is presented. There is no predicted influence of the Precinct development (Category A activities) on the nutrient enrichment of the Bay (one of the primary causes of such algal blooms). The management of stormwater run-off and wastewater discharge into the Bay is considered in the context of Category B activities (refer **Part 3, Section 2.5.7**, and **Part 6, Section 2.4.1** which addressed the potential for increased urban run-off and wastewater (effluent) disposal, increasing the risk of blue-green algae and a resulting reduction in benthic invertebrates. It is understood that the Roebuck Bay Working Group has taken the initiative to produce a Lyngbya Contingency Management Plan. These efforts are supported by the Proponent, who as a responsible stakeholder within the Broome area, will support efforts to maintain the ecological integrity of Roebuck Bay. Refer **Part 6, Section 2.4.1** and **Table 3-8** on the proposed management arrangements in relation to Roebuck Bay.

Part 3, **Section 1.4.4** provides a summary of the known population trends and transitory movements of dugongs in a local and regional context. Resident populations are known to occur at Beagle Bay and the Montgomery Islands (Mustoe and Edmunds, 2008 and RPS, 2010c; **Appendix C-9**) and large numbers of dugongs have been recorded in Roebuck Bay (RPS 2010c; **Appendix C-9**). However, the extent to which such individuals travel along the coast to the James Price Point area is not well understood. A study undertaken in collaboration with the Department of Environment and Conservation, Edith Cowan University and the Bardi Jarwi rangers at Beagle Bay (Campbell *et al*. 2010), provided some evidence for the ability of resident Beagle Bay dugongs to travel to the waters offshore from Coulomb Point. It is known that dugongs may range over comparatively large areas but preferentially forage over relatively small ones. Dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range (Gales *et al*. 2004; Preen and Marsh 1995). Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay. Management arrangements to avoid Precinct-related activities in these regionally important areas have been proposed in the Strategic Assessment Report.

Generic Question ID: 1114 Sub ID [222] Raised by [S222 Q2562]

Part 1 Section 8: There are serious concerns regarding marine pollution and public health and safety. The fossil fuel industry is known to be chronically polluting and subject to accidents that can be dangerous for people and harmful to the environment. Location of a LNG processing facility in the environment sensitive and globally significant Kimberley region greatly increases the chance of major accidents devastating this unique environment.

The Proponent disagrees with the contention that there are serious concerns regarding marine pollution and public health and safety. Risks and potential hazards associated with the LNG industry are well understood, and safeguards and mitigation measures are firmly entrenched. The LNG industry has a proven safety record with 40+ years of shipping LNG across the world with no major incidents.

From an environmental perspective, natural gas is the cleanest burning fossil fuel and significantly reduces particulate and carbon dioxide (**CO2**) emissions by 30–60% in comparison with heavier hydrocarbon fuels. When spilt on water or land, LNG will not mix with the water or soil or leave a residue, but rather evaporates and dissipates into the atmosphere.

Generic Question ID: 1398 Sub ID [150] Raised by [S150 Q3171]

Assuming the project operates for 45 years, how long will it take the marine life to recover? How many species will not be able to recover and/or become extinct?

It is acknowledged in the Strategic Assessment Report (primarily within **Part 3, Sections 2.4.3.1** and **2.3.4.1,** and **Part 7**, **Section 3.5**) that the nearshore construction activities will result in some temporary (i.e. recovery <5 years) and permanent impacts on local benthic habitats. However, it should be noted that the site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat.

The recovery time for benthic habitats is dependent on their composition and resilience. For example, tropical seagrass beds are known to be resilient habitats able to recover rapidly after disturbance (Coles et al. 2007). Halophila, the most common seagrass genus within the area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott et al. 2004 and Waycott et al. 2005). Additionally, *Halophila ovalis* is the fastest growing tropical seagrass species and prefers slightly more exposed conditions than other Halophila species (Vermaat et al. 1995). Several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredge plume impacts to seagrass habitat within the Project area (Coles et al. 2007; Unsworth et al. 2009). Given that the underlying physical sediment characteristics within this zone are not predicted to be altered, it can be

expected that seagrass and other BPPH will recover well within five years. In general, turf and macroalgae are more tolerant to reduced light climate than seagrass and exhibit much faster growth rates. Thus it is expected that algae will be more tolerant than seagrasses and any losses will similarly be recovered within five years.

No species identified within the benthic surveys were endemic to the area and therefore no extinctions are expected as a result of the Precinct development.

1.3 Physical Marine Environment

Generic Question ID: 246 Sub ID [64, 169] Raised by [S169 Q1731]

This subject was raised by two named organisations:

- Environs Kimberley Submission: An extended marine water quality monitoring program should be undertaken and, at a minimum, address similar content as the Pilbara Water Study, and be expanded to address the potential impact of the Precinct and associated activities and developments (and in particular, the effects of dredging and spoil disposal). This program should focus on physical aspects of water quality, particularly turbidity, suspended solids and benthic illumination.
- DEC Recommendation 33 (2): That the Proponent provides monitoring data that are representative of the environment and that sampling regimes greater than 12 months duration be considered/required. Discussion: **Part 3** Table 1 - 12 Water Quality gives 95th percentile total suspended solids (**TSS**) levels taken from November 2009 to September 2010 data. This is not a full 12 month seasonal cycle, so the data may not be fully representative of the marine environment TSS, given the inference that dredging will have a significant impact and that filter feeding communities are predominant, additional or baseline data collection may be included as a monitoring condition under the works approval and licence and this type of data is crucial in assessing the impacts in order to draft conditions.

A continuous water quality monitoring program was initiated in November 2009 at four sites within the nearshore James Price Point coastal area. At the time of submission of the (draft) Strategic Assessment Report for public comment, 10 months of monitoring data was available and summarised to inform the SAR (refer **Part 3**, **Section 1.3.7**). While it is noted that this does not constitute a full annual cycle it has been sufficient to allow a good characterisation of the baseline water quality within the area, including times of sustained high levels of natural turbidity associated with meteorological events. The monitoring programme, (sampling the same parameters (i.e. temperature, salinity, turbidity, PAR, fluorescence and depth), is ongoing and has been expanded to encompass a wider geographical area, and will inform the management and monitoring programs as committed in the SAR (refer **Part 3**, **Section 2.3.5** for specific details).

It is anticipated that this program will continue through to construction, after which a more specific and targeted water quality monitoring programme may be implemented.

Generic Question ID: 204 Sub ID [40, 224] Raised by [S40 Q383]

Will the proposed precinct influence the way tides impact the coastline?

The SAR specifically addressed the potential impacts of the proposed Precinct development on the tidal regime and coastal processes of the James Price Point area (refer **Part 3**, **Section 2.1**). This was supported by detailed supplementary coastal processes modelling summarised in **Part 7**, with full details presented in **Appendix G-4**.

The SAR assessed the potential for the Precinct development to affect local hydrodynamic and coastal geomorphological processes. For example, a deepening of the seabed through dredging may alter the incident waves propagating towards the local shoreline through nearshore wave processes such as refraction and shoaling, induced by the dredged seabed profile. There is the potential for local geomorphological changes to the coastline; such as the accretion and erosion of the shoreline either side of shore-crossing structures (i.e. the Marine Facility and breakwater). The reader is encouraged to refer to the SAR Supplement (**Part 7**, **Section 5**), for a full summary of the coastal processes study and an assessment against the SAR impact conclusions and outcomes.

It is predicted that potential impacts to coastal processes can be successfully mitigated by the application of appropriate management and mitigation measures, including design measures to minimise impacts on coastal processes from marine infrastructure, consistent with the commitments outlined in the SAR (**Part 3**) and also in the SAR Supplement (**Part 7**).

Generic Question ID: 344 Sub ID [38] Raised by [S38 Q339]

This submission is concerned about the potential impacts from continuous dredging on an area that has the second largest tides in the world. The dredging and spoil dispersion charts shown in **Appendix C-13** of the SAR conveniently avoid a major pelagic fish feeding ground known as the 'Peanut', which is located 22km west-south-west of James Prices Point. Any dredged spoil dispersion onto this benthic habitat will have a huge impact on the fisheries of Roebuck Bay. The contours shown in **Appendix C-13** do not make sense. How can a location 22km to the west-south-west from the proposed gas hub not be impacted on, but a location 60km to the north be within the impact zone?

The 'Peanut' fishing ground was noted as an environmental receptor as part of the Strategic Assessment Report and was duly identified on the resulting water quality impact figures within the SAR (refer **Part 3, Section 2.3.4**). The water quality 'snapshots' presented in **Appendix C-13** and summarised in **Part 3** are derived from a water quality modelling study detailed in **Appendix C-13** (**Section 5**). The extent and dispersion of dredging related suspended solids (**TSS**) depicted in these figures (i.e. the contours) are subject to several factors, including but not limited to; dredge volume, sediment physical properties, dredging location, seabed bathymetry and seasonal meteorological conditions. However, the overriding factor in the extent of sediment dispersion is the local hydrodynamic and meteorological conditions (i.e. currents, tidal flows and winds).

The resulting TSS dispersion pattern derived from the model reflects the dominating influence of local tidal flows and seasonal wind conditions. Therefore it is reasonable to conclude, from the predictive modelling, that the 'Peanut' is predicted to remain unaffected from a temporary reduction in water quality, while areas further north could be more affected. Importantly, it should be noted that the predicted plume never occupies the entire zone of influence (black dotted line in **Figures 5-16 to 5-19**, in **Appendix C-13**) simultaneously. Therefore, the boundary should not be used to depict an instantaneous dredge plume.

Prior to commencement of dredging, proponents of derived proposals would be required to prepare and implement a Dredging and Dredge Spoil Disposal Management Plan to demonstrate best practice management techniques and technologies which would be applied to minimise potential dredging impacts. A more detailed description of proposed mitigation measures is presented in the SAR (**Part 3, Section 2.3.5**).

Generic Question ID: 1267 Sub ID [123] Raised by [S123 Q2347]

There are a number of generalisations in the report that continually claim that the ecosystem can withstand turbidity, sedimentation and even invasive marine species. Many of the comments refer to Hutchins et al. (2002) (referenced in the SAR) for example: Fish in the Canning marine bioregion are adapted to extremes in turbidity (**Part 3**, **p. 2-90**) Fish in the region are resilient to IMS (**Part 3**, **p. 2-91, 98**). Diverse biota are able to inhibit colonisation of IMS (**Part 3**, p2-116). Biota can withstand and tolerate disturbance (**Part 3**, **p. 2-164**) The points are wrongly concluded from a paper (Hutchings et al. 2002) that assesses potential for US colonisation in tropical regions and is not a formative paper on the adaptability of tropical biota to turbidity and excessive sedimentation. Reference is made repetitively in SAR that marine biota are adapted to episodic disturbances, (e.g. cyclonic activity) but to hypothesise/infer that this correlates with adaptability and hence less detrimental impact from the enormous sedimentation and turbidity disturbance associated with capital and maintenance works (>21Mm 2) at the LNG Precinct is erroneous.

The Strategic Assessment Report did not assert that benthic communities have the ability to adapt (in the short term) to the predicted impacts (e.g. increase in sedimentation or decrease in benthic light availability) associated with the Precinct development. However, it is clear that the benthic communities and associated marine fauna within the James Price Point coastal area are subject to frequent and severe short term perturbations associated with cyclonic activity. These unpredictable meteorological disturbances, coupled with the influence of strong semi-diurnal tidal flows (resulting in significant re-suspension of seabed sediments) have resulted in benthic communities which, by virtue of the fact that they persist in the area, are resilient to such impacts (i.e. sedimentation and a reduction benthic light availability) and with the ability to recover rapidly post disturbance.

Local evidence supports this hypothesis, given that hard coral colonies observed along the benthic video transects were often small, singular colonies in low densities (SKM, 2010a), suggesting that they are frequently subjected to natural disturbances and subsequent recruitment. Similarly, several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredging activities (Coles et al. 2007; Unsworth et al. 2009). Halophila, the most common seagrass genus within the area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott et al. 2004 and Waycott et al. 2005).

1.4 Ecological Marine Environment

Generic Question ID: 1026 Sub ID [224, 205, 215] Raised by [S224 Q1954]

KLC Submission: **Part 3**, **Section 2.5.4.5** Potential Impacts to Fish, Marine Fauna and Marine Reptiles due to Marine Discharges - The SAR should provide robust and detailed assessment on cumulative and additive impacts as this is a key concern for Traditional Owners.

The Strategic Assessment Report (**Part 3, Section 2.3.4**) noted the potential impacts from routine wastewater discharge into the marine environment. It was acknowledged that the primary impact associated with wastewater discharges during construction and operations is the potential to produce a localised zone of reduced water quality within the BLNG Precinct port area (i.e. Low Ecological Protection Area 'mixing zone'). Wastewater discharge modelling presented in **Part 7, Section 2** demonstrated that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point). Additionally, the SAR commits future precinct proponents to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area.

The impacts of discharges on fish, marine fauna and marine reptiles are presented in **Part 3** of the Strategic Assessment. The SAR concludes that acceptable environmental outcomes are achievable as potential impacts would be localised and the quality of discharged water would be managed and monitored to ensure compliance with the ANZECC/ARMCANZ 2000 guidelines.

Recognising theme comments on cumulative impacts, the Proponent has undertaken an additional synthesis of cumulative environmental impacts relevant to Category A activities for key factors. The reader is encouraged to refer to the Response to Submissions Summary Report **Section 5** for additional detail.

Generic Question ID: 566 Sub ID [120] Raised by [S120 Q1201]

ENGO Submission: The Foundation Proponent, Woodside, decided on the environmental studies and their scope. Conservation groups believe that an important ecological system has not been addressed (referenced later in document as pelagic ecosystems Section 8.16) and the scope of many of the environmental studies is too narrow and do not provide the science required for informed decision-making.

Based on the Strategic Assessment Agreement, Terms of Reference were drafted to detail the scope of the Strategic Assessment. The Terms of Reference outlined all environmental and social considerations to be addressed as part of the assessment and was released for public review with the Strategic Assessment Agreement in July 2008 (DSD, 2010c; **SAR Appendix A-3**).

Comprehensive baseline environmental data was collected to support the SAR, in line with expectations outlined in the Scope of the Strategic Assessment (DSD, 2010b; **Appendix A-2**) as endorsed by the EPA and the then Commonwealth Department for the Environment, Water, Heritage and the Arts (**DEWHA**), now SEWPaC. These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework appropriate for this strategic proposal.

The 'offshore' or pelagic baseline marine environment (i.e. > 3 nm from the coastline) has been considered in the context of describing the local and regional marine environmental values outside the BLNG Precinct area to place the impact conclusions into regional context. However, further investigations as part of the future 'upstream' Environmental Impact Statements, to be developed by commercial proponents, will be assessed as part of a separate Commonwealth environmental approval process and is outside the scope of the SAR.

Generic Question ID: 618 Sub ID [62, 226] Raised by [S62 Q528]

A proper survey for sea mammals and turtles should be carried out without seismic testing being done at the same time over a longer period.

To complement the existing data on marine mammals in the Kimberley region, a range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009 as part of the Strategic Assessment process, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula (refer SAR **Part 3, Section 1.4.4.4** for details). Additional surveys have also been undertaken during 2010 and will continue into 2011 to further define humpback whale distribution and abundance off the west coast of the Kimberley. This consolidated survey program is, to the knowledge of the Proponent, the most comprehensive study undertaken on Western Australia's humpback whales. In addition, the strategic assessment was informed by a range of turtle survey methods including dedicated turtle vessel surveys, beach surveys, satellite telemetry and aerial surveys (**Appendix C-2**).

In 2009, during the main humpback survey effort detailed in the SAR (**Appendix C-8**), no seismic surveys were

undertaken in the survey area. However, during the 2010 megafauna surveys, two seismic surveys (Koolama 2D Seismic Survey and an Ultra High Resolution Survey) were undertaken by Woodside. Details of these programmes were provided to the relevant environmental regulatory authorities for consideration and were subject to conditions to minimise the potential to affect cetaceans. There was no indication that any of these programmes interfered with the migration movements of humpbacks along the Dampier Peninsula and therefore the baseline data collected during this period is thought to be representative of the regular humpback migration pathways.

Generic Question ID: 1382 Sub ID [147] Raised by [S147 Q2376]

The aerial survey used to compare the three areas was the "Reference Site Survey". We believe the Reference Site Survey was not designed appropriately for such comparisons. There were three transects, one passing somewhat near each site (the JPP transect does not actually transit the JPP Management Area). Only a very small part of each transect is within the area of interest for each site and the Gourdon Bay transect extends quite a long way past the 50m depth contour while the other two do not.

One aim of the Reference Site Survey was to allow comparisons across years in a BACI design. A power analysis was conducted to determine whether there would be enough data from the surveys to detect changes in whale numbers. The power analysis showed there was very little power to detect changes in whale numbers by repeating the Reference Site Survey:

"... It can be seen that six passes of each transect during the peak migration period would have approximately a 55% chance of detecting a change in the means of around fifteen animals. Fifteen animals represent between 50% and 100% of any sample along one of the transects. The power curves indicate that a prohibitively high number of flights would be needed to detect a small change in the means of fewer than 10% of the higher sample counts."

However, the report still suggests that repeating the Reference Site Survey is an appropriate BACI design, which we find confusing. There are also the following problems with the way the power analysis was conducted:

- Only the data from 2008 was used: There are data for eight transects in 2008 and only three of those were repeated in 2009. The power analysis was conducted using only the 2008 survey, but all eight transects. It would be more appropriate to conduct a power analysis using both surveys and only the three transects surveyed in both.

The power analysis was conducted using raw data: It is not appropriate to conduct a power analysis using raw sighting data, as this doesn't take into account any changes in detection probability between surveys/years.

The reason for selecting these three transects for the 'Before After Control Impact' (**BACI**) study was to take advantage of the data acquired in 2008 by the Centre for Whale Research and thus maintain valuable inter-annual variance in the baseline data on which the BACI would be based. Inclusion of two year's worth of data rather than one year, dramatically increases the potential to detect change. At the time of the design the precise location of the BLNG Precinct had not been determined and therefore any positioning of the James Price Point transect would have been guesswork.

This transect was selected because it was considered close enough to the proposed development area to provide a representative "impact" sample across the migration corridor at this location. The length of each transect in relation to the site locations and water depth is considered irrelevant in a BACI context; it is the change over time along each transect in isolation of the others that is tested under BACI analysis and for these reasons it is concluded that the design is appropriate.

However, since publication of the SAR and supporting Appendices, and in consultation with the Australian Marine Mammal Centre, it has been agreed that the ability to detect change offshore of James Price Point as a result of the BLNG Precinct development proceeding, using the transects off Pender and Gourdon bays as reference sites is likely to be poor. The reference transects have now been dropped from ongoing monitoring.

The issues associated with the appropriate selection (from a BACI perspective) of reference sites, was acknowledged in the response to submissions - summary report. This issue has no bearing on the conclusions on humpback whale distribution and abundance presented in the SAR, as it was relevant only as part of a future assessment and monitoring of potential impacts associated with the operational development.

Generic Question ID: 707 Sub ID [120] Raised by [S120 Q1482]

ENGO Submission: The SAR claims that humpback whales and dugongs are considered likely to be the most sensitive to the proposed development. On this basis the Proponent chose aerial survey design suited to detecting these two species despite the fact that some smaller species, such as inshore dolphins, are likely to be more vulnerable to disturbance by this development. Small megafauna such as the endemic Australian snubfin dolphin, and other species for which aerial surveys are inappropriate were expected to be detected on the Vessel Transact Surveys (**VTS**). The survey design appears to have been developed to ensure that nearshore dolphin species would not be detected, yet this has not prevented the Proponent from presenting key findings on the species likelihood of occurrence in the development area.

Although aerial and vessel surveys were not specifically designed to target coastal dolphin species, the surveys were extensive and appropriately designed to note the presence of these species (RPS, 2010d; **Appendix C-10).** Indeed snubfin dolphins were observed from vessels in the sheltered waters off Roebuck Bay (approximately 65km south of James Price Point) on several occasions (RPS, 2010d; **Appendix C-10**). Taking into account both the survey data and available literature **i**t has been concluded that coastal dolphin species (i.e. indopacific and snubfin dolphin) are seldom found outside of shallow sheltered bays and inlets. It is known that individuals often travel between areas and therefore it is acknowledged that individuals may occasionally occur within the coastal waters adjacent to James Price Point. However, it is highly unlikely that they utilise the waters offshore from James Price Point for feeding and breeding, given nearby preferential habitats at Roebuck Bay, Barred Creek and Willie Creek.

Generic Question ID: 1021 Sub ID [224] Raised by [S224 Q1945]

KLC Submission: **Part 3**, **Figure 1-45** Turtle Survey Tracklines - This figure indicates only three winters (dry season) vessel based surveys have been undertaken. This is unlikely to be sufficient to establish an appropriate baseline for turtles in this area given the importance of turtles to Traditional Owners. Further surveys need to be undertaken and the results of these surveys shared with Traditional Owners.

As part of the Strategic Assessment process, a range of surveys were undertaken to understand the distribution, abundance and seasonality of marine turtles, with a particular focus on the James Price Point coastal area. The turtle studies used a number of different techniques including aerial surveys, vessel surveys, beach studies and satellite tracking, together with a desktop study to support conclusions on the ecology of marine turtles in the JPP area. The figure cited in this submission (**Figure 1-45**) only shows the survey trackline from vessel surveys. Beach studies were conducted along the James Price Point coastal area in November 2009, January 2010 and February 2010 to cover the entire breeding season for green and flatback turtles (refer to **Appendix C-2** of the SAR). Additional beach surveys along the James Price Point coastal area were also undertaken during the 2010/2011 nesting season (i.e. November 2010 to January 2011) (RPS 2010, unpublished report).

At the time of the SAR submission, monitoring had been conducted over a single nesting season. Subsequently, beach monitoring and aerial surveys were conducted during 2010 (RPS, unpublished report) and will continue throughout 2011. The frequency of turtles observed during these subsequent surveys remained low around the James Price Point coastal area compared to other locations along the coast (e.g. Carnot Bay, Cape Latreille, the Lacepede Islands and Roebuck Bay).

Generic Question ID: 1022 Sub ID [224] Raised by [S224 Q1946]

KLC Submission: **Part 3, Section 1.4.4.5** Dugongs - The SAR recognises that the presence and abundance of seagrass, the main food source, in the area is highly variable, and therefore caution needs to be applied when analysing dugong surveys results and when drawing conclusions on the importance of the James Price Point to dugongs.

The SAR **Part 3, Section 1.4.4** provides a summary of the known population trends and transitory movements of dugongs in a local and regional context. Resident populations are known to occur at Beagle Bay and the Montgomery Islands (Mustoe and Edmunds, 2008 and RPS, 2010c; **Appendix C-9**) and large numbers of dugongs have been recorded in Roebuck Bay (RPS 2010c; **Appendix C-9**). However, the extent to which such individuals travel along the coast to the James Price Point area is not well understood. A study undertaken in collaboration with the Department of Environment and Conservation, Edith Cowan University and the Bardi Jarwi rangers at Beagle Bay (Campbell et al. 2010), provide some evidence for the ability of resident Beagle Bay dugongs to travel to the waters offshore from Coulomb Point. It is known that dugongs may range over comparatively large areas but preferentially forage over relatively small ones.

The SAR assessed the primary impact of the Precinct development in relation to dugongs regarding the potential loss of foraging habitat. **Part 3, Section 2.4.3** acknowledges the predicted impacts on seagrass and macroalgal communities, demonstrating that permanent impacts on benthic flora will be restricted to the

footprint of the 'indicative port area' (**Figure 2.4-1**). Whilst the removal of macroalgal and seagrass habitat is expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of this habitat type within the wider Canning Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay). Dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range (Gales et al. 2004; Preen and Marsh 1995). Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay. Management arrangements to avoid Precinct-related activities in these regionally important areas have been proposed in the Strategic Assessment Report.

Generic Question ID: 1265 Sub ID [123] Raised by [S123 Q2341]

Compared to temperate marine ecosystems that have been well studied, the vertebrate and invertebrate marine ecosystems of the Canning marine bioregion and Kimberley have been poorly studied, as identified (SAR 1.113 and Intertidal survey, Canning Bioregion, preliminary field results, Wilson, 2008).

Several extensive and long-term benthic and marine fauna studies, characterising the James Price Point area and the wider regional marine environment, were undertaken to support the site selection process and Strategic Assessment Report (**Part 3**, **Section 1.4**). In many instances these studies have been carried out by independent specialist governmental agencies such as CSIRO, AIMS, WA Department of Environment and Conservation, and the Museum of Western Australia. These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 1379 Sub ID [147] Raised by [S147 Q2372]

In relation to **Appendix C8** - Humpback Whale Survey Report and **Appendix C9** - Nearshore Regional Survey Dugong Report, the submitter notes that the authors of these two reports make some broad reaching conclusions that are not justified according to either the data and/or the methods used to collect or analyse data. Very little research has been conducted on both dugongs and humpback whales along the Dampier Peninsula, such that these two reports represent the bulk of information about these animals around the James Price Point area. These reports alone do not provide enough conclusive knowledge about either species to confidently assess the potential impacts of the proposed development. Furthermore, there are no publications to our knowledge on the presence/absence, abundance or habitat use of dolphins across the entire Pilbara/western Kimberley that might provide the basis for assessing the potential impacts of such a development.

Several extensive marine fauna studies, characterising the James Price Point area and the wider Dampier Peninsula, were undertaken to support the site selection process and Strategic Assessment Report (as summarised in **Part 3, Section 1.4**). These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

It should be noted that comprehensive vessel and aerial marine megafauna surveys were designed and implemented with particular focus on humpback whales and dugongs, but also enabled dolphin species and other marine fauna to be also identified and reported for an informed assessment of the significance of the local area relative to other regionally important habitats. The reader is encouraged to refer to **Part 3, Section 1.4.4.4** (Cetaceans) for a complete summary of the survey effort and results, with additional detail provided as technical appendices.

1.5 Marine Management Framework

Generic Question ID: 477 Sub ID [166] Raised by [S166 Q1392]

Shire of Broome Submission (1d): The establishment of a coastal development fund and coastal management plans, a matter raised in Council's resolution of 7 November 2008, has not been adequately addressed in the SAR **Part 5**.

A Coastal Processes Management Plan is recommended in **Part 7**, **Section 5.4.2** of the SAR as an adaptive management approach to ensure that physical impacts arising from the port development are minimised.

A Strategic Social Impact Management Plan (**SSIMP**) will provide a framework for the further development of strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the establishment of the Precinct.

The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions

Summary Report. The Shire of Broome will play an instrumental role in overseeing the delivery of benefits to the Broome community, and implementation of social management measures, as part of those Governance arrangements.

Generic Question ID: 779 Sub ID [75] Raised by [S75 Q833]

Neither the documentation about marine life or **Part 1**, **Figure 7.1** make mention of the existence of the Rowley Shoals Marine Park situated 300km NW of Broome. The only place in the SAR documents that proves a modelling assessment of its need for protection or management recommendations, for example in relation to vessel movements, accident contingency or cyclones, is a brief mention in **Part 5**, **Section 4.1.1** (**p. 4-3**), where the potential for negative impacts of increased vessel movements is mentioned.

The presence and sensitivity of the Rowley Shoals Marine Park is mentioned several times in **Part 3** (**Sections 1.5.4**, **1.4.2**, **1.4.4.6** and **2.5.2**). Due to its remoteness from the proposed Precinct facilities, there are no predicted impacts to marine fauna or benthic habitats within the Rowley Shoals. The only potential impact, though remote, to this offshore area would be from a major hydrocarbon spill. However, supplementary modelling undertaken and presented in **Part 7**, demonstrates that the risk to the area is negligible (**Part 7, Figure 4-4**), with the prevailing winds and currents likely to push any spill northwards from the Precinct area.

2 Marine Factors

Generic Question ID: 84 Sub ID [2, 170, 31] Raised by [S2 Q40]

Seagrasses in the vicinity are particularly susceptible to smothering and a reduction in light available for photosynthesis, and are considered to be at risk from the potential impacts associated with the BLNG Precinct.

Changes in water quality due to dredging and nearshore construction activities will only result in mortality when light and sedimentation levels go below and above, respectively, certain thresholds for various benthos types. For the purposes of the BLNG Precinct development, specific thresholds for sedimentation and light availability were defined based on comprehensive reviews of latest scientific literature and studies. The reader is encouraged to refer to the **SAR Part 3, Section 2.4.2** for further description and rationale for these thresholds.

It is acknowledged in the Strategic Assessment Report (primarily within **Part 3, Sections 2.4.3.1** and **2.3.4.1,** and **Part 7**, **Section 3.5**) that the dredging and nearshore construction activities will result in some temporary (i.e. recovery <5 years) and permanent impacts on local benthic habitats (including seagrass). However, it should be noted that the site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat. This resulted in the selection of the site near James Price Point, where seagrass coverage is generally low and thus the 'indicative port development' scenario is predicted to result in a loss of approximately 97ha of seagrass. Whilst removal of such habitat is expected to temporarily reduce benthic primary production in the area, this is not expected to impact on the general ecosystem function and integrity of the James Price Point area, given the prevalence of this habitat type within the wider bioregion. In addition, studies have shown that tropical seagrass beds are known to be resilient habitats, able to recover rapidly after disturbance (Coles *et al.* 2007). *Halophila,* the most common seagrass genus in the vicinity of the Project area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott *et al.* 2004; and Waycott *et al.* 2005).

It is expected that potential impacts can be successfully mitigated by application of management and mitigation measures. Prior to commencement of dredging, proponents of derived proposals will be required to prepare and implement a Dredging and Dredge Spoil Disposal Management Plan (**DSDMP**) to demonstrate best practice management techniques and technologies which would be applied to minimise potential dredging impacts. While the effect may cause mortality to some BPPH and BPPs in the vicinity of the development area, it is predicted that this would be a temporary loss, as the underlying conditions for re-colonisation would be present after the nearshore construction and dredging activities have been completed.

Generic Question ID: 369 Sub ID [27, 120] Raised by [S27 Q236]

Removal of 1.5 kilometres of shoreline at James Price Point will cause destruction of the environment (land).

A shore crossing for an LNG facility at the Precinct is critical for the operation of the facility. The shore crossing is required to carry several important pieces of infrastructure. There are two types of corridors required for the LNG Precinct.

The first type of corridor is for the pipelines coming from the gas fields offshore and include:

- Multiple large pipelines that carry the gas and liquids in from the gas field (and offshore facilities). As these are high pressure gas pipelines they need to meet appropriate safety requirements to ensure they

are appropriately separated from each other; and from roads and areas of public access.
- Return lines that pump the chemicals recovered from the liquid stream back offshore to the gas fields. This primarily consists of Monoethylene Glycol (**MEG**) which is an anti-freeze very similar to what is put in car radiators in colder climates.

The large pipelines need to cross the shore a safe distance from the area that ships will operate in to maintain safety of the facilities.

The second type of corridor is for the loading of LNG onto ships and connecting the LNG facilities to the Marine Facilities. The items in this corridor include:

- LNG loading lines required to carry the LNG from the tanks to the ship and gas (**LNG**) vapour from the ship back to the LNG facility. Consequently two lines are needed for each berth.
- Condensate (light oil) loading lines are required to load the condensate from the storage tank out to the loading berth.
- Liquefied Petroleum Gas (**LPG**) loading lines need to be allowed for in case a future proponent produces LPG which needs to be removed from the gas to meet the LNG specification requirements.
- A haul road to connect the Materials Offloading Facility to the LNG plant to carry the very large modules (potentially up to 10,000 tonnes) up to the LNG facility. This haul road requires about 75 metres of width.
- Access road to the jetty for workers and maintenance equipment.
- Various other utilities also need to be supplied including power, water, communications, etc.
- Appropriate safety distance between multiple operators and areas that are publicly accessible.

As the Precinct is designed to be expanded in the future, the corridor and beach crossing has to allow enough room for the facilities that will already be operating and for the installation of the new facilities to support expansion while the existing facilities remain in use. For example, when a new pipeline from the sea is pulled ashore this cannot occur too close to an existing pipeline that is already operating so that the safety of the workers, community and environment is maintained.

Generic Question ID: 554 Sub ID [75, 170] Raised by [S170 Q1445]

WWF & ACF Query: Please provide information about the pattern of annual movements of vessels across the area, including extending this across the northwest shelf where appropriate. In considering "all relevant effects", any foreseeable increase in traffic associated with LNG would need to be assessed. Using the information gathered and some understanding of the behaviour or turtle and marine mammals, it should be possible to model the risk to inform a likelihood scenario. For protected species like green turtles and humpback whales, where there is existing data, it is reasonable to expect basic evidence to support conclusions.

The Strategic Assessment Report (**SAR**) acknowledged that there is the potential for vessel movements to affect individual marine animals, particularly humpback whales. Although there is the potential to impact individuals, given the numbers of humpback whales migrating along the Western Australian coast, there have only been five reported vessel collisions (only one incident involved a humpback whale, IWC 2008) in Western Australia between 2006 and 2008. Records from other ports along the WA coastline have been considered in the context of the assessment, and it is evident that humpback whales successfully cross major shipping corridors and continue their migration (**Part 3**, **Figure 2.6.5**), with little evidence of mortality from vessel strikes. The number of vessel movements during operations (approximately 1,300/annum) represents a small increase in current vessel movements along the Western Australian coastline and within the humpback whale migration corridor.

It is considered unlikely that the additional vessel traffic associated with the BLNG Precinct development would have a significant impact on the humpback whale population. Although the risk of vessel strikes on individual humpbacks is proportionally increased, the mitigation measures that will be implemented (to be described in the proposed vessel management plans) are intended to ensure an appropriate adaptive management response by the Port Authority and future Precinct proponents.

The SAR noted that turtles are susceptible to injury or mortality resulting from interaction with construction equipment and there is the potential for direct contact and entrainment as a result of vessel operations during the development and operation of the BLNG Precinct Port area as outlined in the SAR **Part 3, Section 2.7**. Although there is the potential for marine turtles to be impacted, it is expected that potential impacts on marine reptiles can be successfully mitigated through application of management and mitigation measures such as briefings of vessel contractors on sensitive environmental features, and vessel speed restrictions. A more detailed description of proposed mitigation measures is presented in **Part 3, Section 2.7.4** of the Strategic

Assessment. The significance of the residual impacts on marine reptiles is assessed to be very low, given their relatively low density and occurrence in the James Price Point coastal area and it is likely that there would be no detectable impact to communities and populations.

Generic Question ID: 613 Sub ID [75, 120] Raised by [S120 Q1254]

ENGO Submission: The Downstream Browse Underwater Noise Assessment 59 [(SVT, 2010) did not have the information necessary to provide an assessment of the impact of noise. The study used criteria or data from other species and other activities to assess the impacts of noise pollution, which questions the accuracy of their modelling.

The underwater noise study was defined to provide an assessment on the predicted impacts of the Precinct construction on marine megafauna at this strategic proposal stage. The study identified and assessed the predicted noise levels associated with piling, blasting, dredging and vessel movements, as these activities were deemed to be either the most noise intensive sources (i.e. nearshore blasting and piling) or the most common activities with predicted long exposures periods (i.e. vessel movements and dredging). The limitations, in terms of predicted construction activities and appropriate threshold criteria for disturbance and injury, have been acknowledged and stated in the SAR and the corresponding technical report (**Appendix C-12**).

As construction techniques, phasing and schedule becomes more defined during the current FEED phase, additional realistic scenarios (including cumulative sources) will be incorporated into the noise assessment undertaken as part of the future proponent's derived proposal process.

Similarly, it was noted that there is limited credible scientific data on the auditory sensitivity of dugongs for determining potential injury and behavioural disturbance as a result of underwater noise. It is known that dugongs are mid-frequency marine species, as are dolphins. Therefore, the approach taken to utilise the noise threshold criteria of cetaceans for dugongs was deemed appropriate considering the lack of data to support distinctive thresholds specific to dugongs. That said, the proponent notes this limitation, and will encourage future proponents to consider the relevance of information on the auditory sensitivity of manatees as a suitable proxy for dugongs for future underwater noise assessments for derived proposals.

Generic Question ID: 241 Sub ID [64] Raised by [S64 Q665]

DEC Recommendation 30: That, in addition to Proponent commitments to prepare:

- a port facilities construction environmental management plan;
- a marine fauna and vessel interaction management and monitoring strategy;
- a vessel management plan; and
- a dredge and dredge spoil disposal management plan;

the Proponent prepares and implements:

- a BLNG Precinct environmental management plan;
- a hydrocarbon and chemical spill contingency plan; and
- a marine wastewater discharge management plan in consultation with DEC, where relevant.

DEC Recommendation 31: That proponent(s) of derived proposals report marine fauna mortalities to DEC within 24 hours to enable potential forensic investigation.

The Proponent acknowledges and agrees with the commitment for the above management plans to be prepared.

As outlined in **Part 3**, **Section 2.6.4** of the Strategic Assessment Report, it is proposed that future proponents of the Precinct development will be required to report any marine fauna mortalities resulting from Precinct activities to the relevant authorities (i.e. Broome Port Authority, DEC and SEWPaC). Time frames for reporting such incidents, as for all other reportable environmental incidents, will be agreed with the relevant authorities and outlined within the appropriate management plans (e.g. Vessel Management Plan) that will be subject to approval and review by DEC and other relevant agencies.

Generic Question ID: 418 Sub ID [93] Raised by [S93 Q705]

TRIN submission: The reporting regime as outlined in the SAR is inadequate to ensure proper reporting and monitoring of environmental harm. The SAR must require that "proponents of derived proposals" follow a detailed and specific plan for reporting, including setting a time limit for reporting incidents, establishing a clear reporting system that includes copies to the EPA, DEC, SEWPaC, which are then made public within a short and reasonable time frame.

The State Government will monitor the development of the BLNG Precinct by commercial proponents, progress on the implementation of State measures, and cumulative impacts of activities based on monitoring programs of individual commercial proponents. Commercial proponents will be required to incorporate monitoring and adaptive management into their operations. Monitoring programs will be outlined in Management Plans developed by commercial proponents and provided to the relevant agencies for their consideration during the derived proposal and/or Action application processes. All such Management Plans will include contingency measures and remedial actions to be triggered should monitoring indicate that performance measures or targets have not been achieved or are not likely to be achieved.

The monitoring of environmental performance of the construction and operational activities, including the reporting of environmental incidents, will be detailed in the various management plans to be prepared and implemented by proponents of future derived proposals, consistent with the management framework of the Strategic proposal.

To ensure delivery of the necessary environmental and social management measures as outlined above, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 508 Sub ID [232] Raised by [S232 Q1373]

The Indigenous members of the Dampier Peninsula are concerned about the impact on fish, turtles and dugongs as important food sources. What would happen to these food sources if there was an oil spill?

The Traditional Owners' concerns are acknowledged, and are addressed in the SAR. The potential environmental impact associated with a hydrocarbon spill at the Precinct development has been assessed in **Part 3** and further investigated in a modelling study (**Part 7, Section 4**). It was acknowledged that there is a potential for non-routine discharges of hydrocarbons to the marine environment during the processing, storage and handling of hydrocarbons. The findings of the study showed that coastal impacts from hydrocarbon spills are likely to be limited to the James Price Point coastal area during calm periods and onshore winds, moving offshore with prevailing south-easterly winds. The likelihood of any hydrocarbon spill impacting on regionally significant environmental receptors is low, ranging from 1 in every 2,000 years for the Lacepede Islands to less than 1 in every 10,000 years for Roebuck Bay. Nonetheless, the impact of such an event would be significant without appropriate mitigation and contingency response. Preventative measures and contingency plans to minimise the risk associated with such an event are detailed in **Part 7, Section 4.4.2**.

The Proponent confirms the importance for a comprehensive planning and management process to ensure an effective and coordinated response should a significant hydrocarbon spill occur. Taking into account the impact conclusions in the SAR, **Part 7** outlines the commitment by the State Government to ensure resourcing and maintenance of hydrocarbon spill response equipment, and effective training for personnel, as part of the Broome Port Authority's functions. Refer **Part 7, Section 4.4.2.2** (**Table 4-3**) for full details.

Generic Question ID: 525 Sub ID [170] Raised by [S170 Q1407]

WWF & ACF Section 3: The SAR contains many references to modelling work, survey work and management processes that are not yet published or not easily accessible. Some of this work (e.g. sediment plume modelling) is critical to understanding the risks and likely impacts of the proposed development. For example, there is a need to assess the potential effect sediment plumes have on benthic primary producers (**BPP**) including seagrass. Given that irreversible seagrass loss has been a common characteristic of port developments in Western Australia and recovery of these ecosystems is rare (Walker et al. 2003), marine ecologists advise that impacts on seagrass could be extensive and have devastating ecological cascade effects (Duffy 2006; Short et al. 2006; Moksnes et al. 2008), such as experienced during major flood events that saw significant reduction of available seagrass habitat. This is because seagrass is a primary producer on which many elements of the near-coastal environment depends. Given its critical role in the ecosystem, the WA EPA would normally establish a very high threshold of acceptable change for these communities. These high thresholds of acceptable change have not been adequately addressed in the SAR. If the predictions of the marine benthic experts and vegetation experts hold true, it appears that there is evidence for a potentially substantial change to the marine environment offshore and this could have substantial flow-on effects on other ecological processes and species. This being the case, the assessment needs to go much further and evaluate

notable losses against thresholds with evidence based on a robust environmental assessment methodology. Furthermore, even though this is stated numerous times in the SAR, it is with some doubt that long-term effects on fish and other marine assets can be considered 'temporary' given the lack of empirical information that supports these assertions.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment (refer **Part 3**, **Section 2.4.3** specifically regarding the impact assessment on benthic habitats). Particular focus was given to the predicted impacts on benthic habitats associated with nearshore construction and dredging (detailed in **Appendix C-13** and **Appendix G-2**). The process undertaken to assess the potential impacts associated with dredging has been aligned to the Draft Western Australian EPA Environmental Assessment Guidelines for Marine Dredging Proposals (EAG7) (EPA 2010). Modelling of the sediment dispersion resulting in increased turbidity and sedimentation was undertaken by specialist scientists and modellers in consultation with the OEPA, and summarised in **Appendix C-13**.

With regards specifically to seagrass, within the Project area and typically throughout tropical Australia, seagrass meadows are predominantly ephemeral and comprised of structurally small species of low biomass (i.e. Halophila spp.). These tropical seagrass beds are known to be resilient habitats able to recover rapidly after disturbance (Coles et al. 2007). Halophila, the most common seagrass genus within the Project area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott et al. 2004 and Waycott et al. 2005). Several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredge plume impacts to seagrass habitat within the Project area (Coles et al. 2007; Unsworth et al. 2009).

The SAR also assessed the potential flow-on effects of the loss of benthic habitats on local marine fauna. Whilst, it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine megafauna or the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

Generic Question ID: 571 Sub ID [120] Raised by [S120 Q1217]

ENGO Submission: Despite the 2009 surveys - based on a geographically and temporally limited study, the SAR engages in an exercise of misleading comparisons (Rowley Shoals), minimising the significance of the findings and avoiding any examination of the potential ecological importance of the waters off James Price Point to the broader marine life of the Dampier Peninsula. (SAR **Vol 3**, **p. 2-86**). (Submission **p. 16 - 17**).

Extensive marine studies have been completed in the James Price Point coastal area, in order to inform the baseline understanding and impact assessment presented in the Strategic Assessment Report (**SAR**). These studies, as well as relevant peer reviewed scientific literature, have been used to support the baseline reporting and impact assessment conclusions in the SAR. The majority of the studies have been undertaken by recognised experts and independent institutions (e.g. AIMS, CWR and CSIRO) and build on the state-of-knowledge from a range of studies and reviews undertaken as part of the Northern Development Taskforce site selection process (**Appendix B-2**).

The significance of the broader regional marine environment off the Dampier Peninsula, including Roebuck Bay, Beagle Bay, Pender Bay and the Lacepede Islands has been acknowledged and detailed in the SAR. However, it should be noted that the site selection process undertaken by the Northern Development Taskforce (**Appendix B-2**), led to the selection of James Price Point as a suitable location for the Precinct development. James Price Point was chosen as the preferred option as this area satisfied several criteria, including avoiding environmentally sensitive areas.

Generic Question ID: 620 Sub ID [120] Raised by [S120 Q1255]

ENGO Submission: The Downstream Browse Underwater Noise Assessment 59 (SVT, 2010) admits that exposure time is important, but the maximum time for the predictions of distance zones is 24 hours, which is too short a period for dredging and vessel movements.

The underwater noise assessment identified and assessed the predicted noise levels associated with piling, blasting, dredging and vessel movements, as these activities were deemed to be either the most noise intensive sources (i.e. nearshore blasting and piling) or the most common activities with predicted long exposure periods (i.e. vessel movements and dredging).

As noted, exposure time is important in assessing the potential for physical injury to sensitive marine fauna. However, a maximum 24 hour exposure period for dredging and vessel movements was determined appropriate for the purposes of the impact assessment, as the modelling demonstrated that even after 24 hours of exposure, the zone of possible injury was restricted to within 50-75m of dredging activities based on the noise

assessment criteria defined in the modelling report. Mobile marine fauna (e.g. cetaceans, dugongs and turtles) are unlikely to occur within such close proximity to dredging activities for extended periods of time that they would incur onset of hearing damage. Similarly, modelling of the sound exposure level for general vessel noise demonstrated that exposure over a 24 hour period would not exceed thresholds that could cause physical injury based on the noise assessment criteria used. It was not therefore necessary to model any greater duration of exposure.

Generic Question ID: 632 Sub ID [120] Raised by [S120 Q1270]

ENGO Submission: Acoustic pollution - The construction and operation of the BLNG Precinct will include activities that will emit underwater noise and vibration above background (ambient) levels. The assessment on noise produced by the BLNG included: pile driving; marine blasting noise; dredging; and vessel movements. The impact of the noise on marine life depends on the animal, its distance from the noise and the type of noise emitted (Hatch at al. 2009). The difference in frequency of sound plays a role in how it affects the environment. All of the noise levels described in the SAR have the potential to impact on humpback whales as well as other marine fauna in the vicinity.

It was noted that the construction and operation of the BLNG Precinct will include activities that will emit underwater noise and vibration above background (ambient) levels. The underwater noise assessment identified and assessed the predicted noise levels associated with piling, blasting, dredging and vessel movements, as these activities were deemed to be either the most noise intensive sources (i.e. nearshore blasting and piling) or the most common activities with predicted long exposures periods (i.e. vessel movements and dredging). See **Part 3Section 2.5.3.2** and **2.5.4.4** and **Appendix C-13.**

Generic Question ID: 634 Sub ID [120] Raised by [S120 Q1272]

ENGO Submission: Cumulative impacts of noise pollution (on marine fauna) have not been considered in the SAR.

Dominant noise sources from construction activities were chosen for further investigation and modelling as part of the Strategic Assessment Report in **Part 3 Sections 2.5** and **2.6** (**Appendix C-12**). In addition, the modelling of cumulative noise sources (e.g. simultaneous piling and blasting activities) was further considered during the scoping phase of the Underwater Noise Assessment; however as the phasing of the construction activities was unknown it was deemed impractical to model the multitude of potential construction scenarios for this strategic assessment. As construction techniques, phasing and schedule becomes more defined during the current FEED phase (i.e. Front End Engineering and Design), additional realistic scenarios (including cumulative sources) will be incorporated into the noise assessment undertaken as part of the future proponent's derived proposal process.

Generic Question ID: 876 Sub ID [169] Raised by [S169 Q1732]

Environs Kimberley Submission: Establish Perth and Broome based Dredging Expert Panels (comprised of expert representatives of key stakeholders such as Dept of Environment and Conservation, Dept of Fisheries and conservation groups, etc) to investigate all dredging and spoil placement activities associated with the proposed project. The panel should address:

- results of existing modelling and the peer reviews undertaken;
- volume and source of fines and the zone of influence of dredging plus any potential impacts (e.g. turbidity, suspended solids, benthic illumination, etc) and required studies (e.g. biodiversity of the dredging channels and the zone of influence, modelling of turbidity, all potential physical and biological marine impacts and mitigation measures, etc);
- formal communications between the Panel and other stakeholders and wider WA community; and
- setting of performance criteria and mitigation measures for any proposed dredging activity. The criteria should be subject to rigorous community and stakeholder consultation.

The formation of an expert panel or an advisory group to review the progress of the dredging activities, monitoring and mitigation strategies has been proposed within the Strategic Assessment Report (**Part 3, Section 2.4.4**). However, it is for the Environmental Protection Authority and SEWPaC to determine the appropriateness of this management measure and to determine the 'terms of reference' of the panel if deemed appropriate.

Generic Question ID: 878 Sub ID [169] Raised by [S169 Q1734]

Environs Kimberley Submission: Conduct modelling based on the results of studies of similar operations (e.g. Geraldton, Onslow Salt, Port Hedland and other historical and current dredging and spoil activities).

A detailed dredging impact assessment was undertaken in close consultation with the OEPA and is presented in the SAR (**Part 3**, with full details in **Appendix C-13**). The scope and appropriateness of the modelling was determined in consultation with the EPA, taking into consideration previous project experiences and lessons learnt from recent dredging campaigns.

Generic Question ID: 880 Sub ID [169] Raised by [S169 Q1737]

Environs Kimberley Submission: Conduct mapping to sufficiently detail the intended area (i.e. size and length) of the proposed dredging area.

The proposed dredging area was characterised in the Strategic Assessment Report (**Part 3, Figure 2.4-2**) and the Zone of High Impact (i.e. permanent impact) associated with this area was modelled and mapped. The distribution of benthic habitats was underlaid on these figures to determine the predicted BPPH loss associated with the dredging activities. It was acknowledged that a small proportion of the predicted Zone of High Impact (i.e. within the adjacent pearl lease) was not mapped due to restrictions on access. Subject to future access to this area to be granted by leaseholders, this would enable these additional areas to be mapped to inform the forward derived approval process.

Generic Question ID: 881 Sub ID [169] Raised by [S169 Q1738]

Environs Kimberley Submission: Conduct a review of impacts in light of Marine Flora (mangroves, corals, seagrasses and algae) including, but not limited to, habitats, communities and key species present in the development area and region; extent of communities affected by the development; presence of listed threatened marine species and/or restricted communities; scale of potential loss of listed species and/or restricted communities in a regional context.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment, including mangrove, corals, seagrass and algae. Quantification of the predicted loss of BPPH (including coral, seagrass and algae) from the Precinct development activities was undertaken and presented in **Part 7**, **Section 3**. No loss of mangrove habitat was predicted as the closest such habitat is at Barred Creek, approximately 20km south of James Price Point. Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

The presence of listed or threatened marine species is presented in **Part 3, Section 1.4.4**, with the predicted impacts to such species assessed in the relevant sub-section in **Part 3**, **Section 2**. The baseline setting and impact conclusions were defined to characterise impacts at a local and regional context and to inform a management framework appropriate for this strategic proposal, while recognising the efforts invested through the site selection process to avoid areas of regional importance for key marine environmental values.

Generic Question ID: 883 Sub ID [169] Raised by [S169 Q1740]

Environs Kimberley Submission: Review biotic component and condition of major marine habitats including, but not limited to:

- a desktop review of technical reports produced for this region to provide a description of intertidal, nearshore and offshore marine ecology and assess whether the existing level of data, research and information is adequate to properly assess impacts and other studies required; and
- in conjunction with the subtidal habitat survey, conduct a seabed sediment sampling program along the proposed shipping channel route, any proposed spoil ground locations and jetty/channel location.

The Strategic Assessment Report presents the outcomes from several marine studies and reviews (summarised in **Part 3**, and presented in **Appendix C**) undertaken by recognised experts, covering a range of potential marine receptors within the James Price Point area, and builds on the state-of-knowledge from a range of marine studies and reviews that have been undertaken as part of the Northern Development Taskforce site selection process.

Sediment sampling was undertaken to characterise the baseline sediment quality within the area. The results are presented in **Part 3, Section 1.3.3**. The requirement for additional sediment sampling will be reviewed in the context of information to support any future Commonwealth Sea Dumping permit application per the established

requirements of the *Environment Protection (Sea Dumping) Act 1981*.

Generic Question ID: 884 Sub ID [169] Raised by [S169 Q1741]

Environs Kimberley Submission: Conduct a detailed bathymetric survey of the proposed dredging route.

Bathymetry data on the broader James Price Point area was collected in 2009 using Light Detection and Ranging (**LiDAR**) system technology. This data enabled the definition of a broad fine-scale bathymetric map of the James Price Point Area (**Part 3, Figure 1-8**). Additional finer scale bathymetric data has been collected during subsequent geophysical and ultra high resolution surveys to inform the engineering design of the Precinct facilities, including proposed dredging areas.

Generic Question ID: 885 Sub ID [169] Raised by [S169 Q1742]

Environs Kimberley Submission: Evaluate the habitat of the parallel ridges present along the deep shelf/nearshore shelf slope.

The ridges referred to in this comment were identified during the Light Detection and Ranging (**LiDAR**) mapping undertaken by Fugro (**Part 3, Figure 1-8**).These ridges were incorporated in the benthic surveys and mapping undertaken to inform the SAR (**Part 3, Figures 1-25**, **1-26**, **1-27**). The results showed that these areas were characterised by non-BPPH sessile invertebrates. The scope and breadth of the benthic baseline studies undertaken as part of the site selection and strategic assessment process have provided a sound basis for the impact assessment conclusions presented in the SAR.

Generic Question ID: 886 Sub ID [169] Raised by [S169 Q1743]

Environs Kimberley Submission: Ascertain likely impact of, and mitigation measures for:

- cumulative impacts on water quality of discharges to the marine and any creek environments from the Precinct and associated operations;
- discharge of dredge water (e.g. fragile environments etc) and evaluation of disposal options for produced water etc including, but not limited to, marine disposal at the jetty head, deep well injection or onshore re-use (e.g. irrigation);
- discharge of produced water and warm-hot water from the plant to the environment (e.g. temperature range of the discharged water, demonstrated impacts of discharges);
- impacts of breakwater (e.g. increased dredging, effect on beach formation, sand drift and influence on sensitive environments such as mangroves);
- dredging works on islands and reefs; and
- tidal movement and currents on dredging operations and spoil management for the entire length of the pipeline, as well as for proposed inshore works.

The Strategic Assessment Report (**SAR**) undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment, including water quality and benthic habitats. Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine megafauna or the broader ecosystem integrity of the area. With regards to the specific aspects raised in this submission, the SAR impact assessment conclusions were:

- Given the dynamic nature of the receiving environment at James Price Point, routine wastewater discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point). Therefore, it is predicted that wastewater would meet a 95% level of species protection at the edge of the active mixing zone, according to the definitions of the ANZECC/ARMCANZ 2000 guidelines.
- The nearshore marine construction activities (dredging, breakwater installation and spoil disposal) are predicted to result in the localised permanent and temporary loss of benthic habitats within a predicted Zone of High Impact and Zone of Moderate Impact (respectively). However, in considering the wider ecosystem integrity of the broader area (i.e. the Dampier Peninsula), the predicted loss was not anticipated to threaten the ecosystem functionality of such BPPH, especially considering the relative size of this loss in relation to the wider extent of BPPH throughout the Dampier Peninsula. The predictive modelling undertaken to support this conclusion incorporated local hydrodynamic conditions, including tidal regimes and currents.
- Whilst impacts on sediment transport (i.e. coastal processes) were predicted as a result of the physical

presence of the nearshore marine infrastructure, such impacts were predicted to be highly localised, with the zone of impact predicted to be limited to approximately 2-3km north and south of the proposed development.

A range of mitigation measures, including the application of best practice management and design measures, have been proposed in the SAR, to manage and monitor potential impacts on the marine environment. The application and compliance with such measures will be managed through the implementation of environmental management plans relevant to the specific activities likely to occur during construction and operations of he Precinct Development.

Generic Question ID: 888 Sub ID [169] Raised by [S169 Q1745]

Environs Kimberley Submission: No review of data across regions or migration paths or of coastal processes has been conducted in a wider regional or state context. The ocean, its processes and its marine flora and fauna is not confined to jurisdictional boundaries and proper mapping should be presented overlaid with possible facilities, activities and infrastructure to allow for transparency to the reader and measurement of potential impacts.

The Proponent agrees that the ocean, its processes and its marine flora and fauna are not confined to jurisdictional boundaries. For this reason, the SAR has addressed the existing marine environmental values and the impact conclusions at both a local and regional context, drawing on the results of all available and relevant data.

The SAR represents a synthesis of available information to inform sensible decision-making relevant to the development, drawing on surveys, literature and ongoing monitoring of marine environmental values in the region. A significant effort has been made to characterise the existing baseline conditions of the relevant marine receptors as part of the Strategic Assessment process. The Strategic Assessment Report presents the outcomes from a range of marine studies (summarised in **Part 3**, and presented in **Appendix C**) undertaken by recognised experts, covering a range of potential marine receptors within the James Price Point area, and builds on the state-of-knowledge from a range of marine studies and reviews that have been undertaken as part of the Northern Development Taskforce site selection process. In addition to the numerous technical studies conducted, exhaustive literature searches and desktop studies have been undertaken to complement data acquired from the field studies. These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning marine bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 1020 Sub ID [224] Raised by [S224 Q1944]

KLC Submission: **Part 3**, **Section 1.4.3.1** Crustaceans - The SAR states that the surveys for crustaceans were opportunistic and non-quantitative. Quantitative surveys will need to be undertaken and the results of these surveys will need to be presented in future revisions of the SAR.

In June 2008, CSIRO, AIMS and the WA Department of Environment and Conservation undertook a number of detailed surveys to characterise the marine benthic habitats and epi-benthic marine fauna (including crustaceans) along the Dampier Peninsula and at Gourdon Bay to the south of Broome, to inform the NDT site selection process. The outcomes of this work have been documented in Fry et al. (2008) and are referenced in the SAR.

Further studies were undertaken by Irvine and Keesing (2009) to collect benthic flora and fauna from a variety of habitat types along the Dampier Peninsula. This study was conducted using towed video transects (qualitative methods) and epi-benthic dredge samples to enable comparison with the Fry et al. (2008) study and methodologies.

These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 1081 Sub ID [157] Raised by [S157 Q2431]

WAFIC Submission: Saltwater intakes can result in the entrainment and entrapment of larval, fish and invertebrates (including prawns) and may have the potential to ingest and kill prawn larvae and nauplii and disrupt critical alongshore water movement and salinity. More details of the times of water extraction and impacts on prawns, fish and their larvae are required to determine potential impacts on prawn production in the nearby Broome Prawn Fishery.

It is understood that there is a risk associated with the entrainment of marine fauna within the intake

infrastructure of the Precinct facilities. This risk can be readily taken into account in the design of the Precinct facilities, with the intake velocity of the pipeline for desalination plant restricted to allow successful 'escape' of larger mobile marine fauna (e.g. fish and turtles) and intake screens. It is acknowledged that planktonic crustacean larvae are unable to actively avoid entrainment and there will be some level of mortality associated with their ingress into the desalination plant. Bramer and Seaby (2004), in laboratory experiments designed to mimic entrainment in power station facilities, determined that mortality levels of three species of marine planktonic crustacea (*Crangon crangon, Homarus gammarus* and *Acartia tonsa*) that were subjected to the stressors of such intake facilities, ranged between 10-20%. It is not anticipated that the entrainment of some planktonic larvae into the Precinct facilities will have a significant effect on such species. Furthermore, the low intake velocity would significantly limit the extent to which less mobile planktonic crustacean larvae would be drawn to the intake pipeline, relative to the significant effects of natural tidal forces.

The SAR identified that routine discharges have the potential to produce a localised zone of reduced marine water quality within the Precinct Port Area. Results of the modelling study indicate that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point). Additionally, the SAR commits future precinct proponents to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area, with biannual ecotoxicity testing to identify discharge parameters to be improved to achieve a target of 99% species protection.

Generic Question ID: 1324 Sub ID [226] Raised by [S226 Q3279]

Part 3 Section 1: The massive dredging works required to create a huge port will involve blasting of coral reefs and smothering of seagrass meadows which will destroy dugong habitat, while flatback turtles risk being sucked up by dredgers.

It is acknowledged in the Strategic Assessment Report (primarily within **Part 3, Sections 2.4.3.1** and **2.3.4.1,** and **Part 7**, **Section 3.5**) that the dredging and nearshore construction activities will result in some temporary (i.e. recovery <5 years) and permanent impacts on local benthic habitats (including corals and seagrass). However, it should be noted that the site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat. This resulted in the selection of the site at James Price Point, where seagrass and coral coverage is generally low and thus the 'indicative port development' scenario is predicted to result in a loss of approximately 97 and 0.46 ha of seagrass and coral habitat respectively. Whilst removal of such habitat is expected to temporarily reduce benthic primary production in the area, this is not expected to impact on general ecosystem function and integrity of the James Price Point area, given the prevalence of this habitat type within the wider bioregion. In addition, studies have shown that tropical seagrass beds are known to be resilient habitats, able to recover rapidly after disturbance (Coles et al. 2007). *Halophila,* the most common seagrass genus in the vicinity of the Project area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott et al. 2004; and Waycott et al. 2005).

The SAR assessed the primary impact of the Precinct development in relation to dugongs regarding the potential loss of foraging habitat. Dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range (Gales et al. 2004; Preen and Marsh 1995). Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay.

Considering the relatively low density of turtles within the James Price Point area, the risk of entrainment in dredging equipment is considered to be very low. Nonetheless, the SAR committed to the preparation and implementation of a Dredging and Dredge Spoil Disposal Management Plan (**DSDMP**). This will require proponents of derived proposals to implement appropriate techniques and technologies, with respect to managing impacts on marine reptiles, based on the proposed dredging program and dredging methodology once confirmed.

2.1 Relevant Factor: Tidal regimes, Wave Climate, Currents and Hydrodynamics

Generic Question ID: 816 Sub ID [75, 106] Raised by [S75 Q845]

The information in the SAR has not provided sufficient certainty that the risk of flow-on ecological effects impacting on marine ecosystem integrity is acceptably low. The submission maintains that the same situation as described in EPA's Gorgon LNG impact assessment report exists in the case of this proposal.

The Strategic Assessment Report assessed the predicted impacts of the Precinct development on the marine environment, including the risk of flow-on effects (e.g. a reduction of foraging habitat as a result of a loss of seagrass from dredging and similar activities). Whilst it was noted that impacts to marine environmental

receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine fauna or the broader ecosystem integrity of the area, with appropriate management measures and controls in place. Refer **Part 3, Section 2.7** (Marine Ecosystem Integrity) for more detail on the impact conclusions and management framework proposed by the Proponent.

It is ultimately the regulatory assessment by EPA and SEWPaC, and Ministerial decision-making regarding the Precinct, that will conclude the acceptability of the proposal and the conditions that are considered appropriate to achieve acceptable outcomes.

Generic Question ID: 722 Sub ID [70] Raised by [S70 Q590]

Where will the materials and equipment required to stop a spill spreading be kept and who will pay for this?

The Broome Port Authority (**BPA**) has responsibility for hydrocarbon spill preparedness and response for areas in its jurisdiction. With particular regard to oil spill response capabilities of the Broome Port Authority, the following points reinforce this capability and responsibility:

- The Port authority is responsible for the immediate response and management of tier 2 incidents in the region.
- BPA has a stockpile of response equipment and dispersant, sufficient for a first strike capability. This would be supplemented by the Dampier stockpile in the event of a large spill.
- In line with the BLNG Precinct Environmental Management Plan (**BPEMP**) already committed in the SAR, equipment would be located at the Precinct to hasten response to any oil spill during the early construction phases.

A summary of mitigation and management of hydrocarbon spills is provided in **Part 7, Section 4.4.2**.

Emergency response is discussed further in this Response to Submissions Summary Report **Section 4.4.1.**

Generic Question ID: 726 Sub ID [70] Raised by [S70 Q599]

Dredging (reported volumes seem to vary from 21 to 38 million cubic metres, the latter said by Woodside at the Broome Fishing Club), ship movements, massive breakwaters and disruption of tidal flows and wastewater discharge all impact in unknown ways on an unstudied ecology.

The Strategic Assessment Report forms the basis for the approvals sought and therefore the dredge volumes contained in the report should be used for impact assessment.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment. The impacts associated with dredging, shipping movements, physical presence of nearshore infrastructure, wastewater discharge and the disruption of coastal process were assessed and are included in the SAR **Part 3**. Whilst, it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of marine megafauna or the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

In terms of the understanding of the baseline marine environment at James Price Point, several extensive benthic and marine fauna studies, characterising the James Price Point area and the wider regional marine environment were undertaken to support the site selection process and Strategic Assessment Report. In many instances these studies have been carried out by independent specialist governmental agencies such as CSIRO, AIMS, WA Department of Environment and Conservation, and the Museum of Western Australia. These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 773 Sub ID [75] Raised by [S75 Q825]

The choice of the Broome Port Authority to manage the marine environment is questionable, given their history of managing the environment around the Broome Port. Despite growths of the blue-green cyanobacteria, lyngbya majuscula being observed on the tidal flats managed by the SPA since 2005 and water testing near the Broome Jetty in 2005-8 revealing that the values reported are well in excess of current water quality guidelines for both marine inshore and estuarine waters) the Broome Port Authority has not initiated any research into the issues concerned. Average TP concentration was particularly high, being 6 times higher than the guideline for marine inshore waters and 4.5 times higher than the guideline for estuaries (source: Roebuck Bay Ecological Character Description, Dept of Environment and Conservation, 2008). Neither the Broome Port Authority nor

any other WA government agency has initiated any modelling or research into the water circulation patterns in Roebuck Bay. Should an oil spill or any other polluting accident occur, no-one knows if the tide will suck out the pollutants and carry them out to sea or whether mitigating action should focus on the inner shores of the bay where pollutants will be deposited. This lack of initiative is not a demonstration of a responsible management authority.

The Broome Port Authority has been proposed as the agency to be appointed jurisdictional responsibility for operations within the proposed Precinct port area. Ultimately, it is the Department of Transport, under the *Port Authorities Act 1999*, which will be responsible for appointing the port authority to manage the Precinct port area.

The Proponent cannot comment on the reference to historical information on investigation of water quality in Roebuck Bay, cited in this submission. In the context of this proposal, as part of the BLNG Precinct Environmental Management Plan, the Broome Port Authority will address (among other items) "an ecological and water quality monitoring program within the port boundaries and appropriate reference areas". This proposed monitoring programme, in conjunction with the proposed operational water quality monitoring activities planned for each proponent's facilities, is expected to ensure that the appropriate guidelines are being met.

Hydrocarbon spill modelling was undertaken as part of the SAR and the results of the study are presented in **Part 7**. The findings of the study (**Part 7**, **Section 4.3.3**) show that coastal impacts from hydrocarbon spills are likely to be limited to the James Price Point coastal area during calm periods or onshore winds associated with the wet season, moving offshore with prevailing south-easterly winds in the dry season. The probability of a hydrocarbon spill impacting Roebuck Bay is less than 1 in every 10,000 years (**Figure 4-4, Part 7**). Preventative measures and contingency plans to minimise the risk associated with such an event are detailed in **Part 7, Section 4.4.2**.

The Proponent confirms the importance for a comprehensive planning and management process to ensure an effective and coordinated response should a significant hydrocarbon spill occur. Taking into account the impact conclusions in the SAR, **Part 7** outlines the commitment by the State Government to ensure resourcing and maintenance of hydrocarbon spill response equipment, and effective training for personnel, as part of the Broome Port Authority's functions. Refer **Part 7, Section 4.4.2.2** (**Table 4-3**) for full details.

Generic Question ID: 814 Sub ID [75] Raised by [S75 Q843]

The SAR assessment should state clearly and without caveat that the BLNG Precinct cannot proceed unless it can be certain that no impact would occur on the marine integrity of Roebuck Bay (a Ramsar site), the Rowley Shoals Marine Park, the Camden Sound whale breeding area and the Lacepede Islands Nature Reserve.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on sensitive marine environments, including Roebuck Bay, Camden Sound and the Lacepede Islands. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the marine environmental receptors in a local and regional context.

Though no significant impacts to the ecological integrity of Roebuck Bay, Camden Sound, the Lacepede Islands or Rowley Shoals are predicted from routine construction and operational activities, the SAR acknowledges the potential impact associated with a major hydrocarbon spill. Whilst the likelihood of a major spill is considered remote, the consequence was noted as potentially severe if appropriate response measures were not effectively implemented. The likelihood of a hydrocarbon spill impacting on regionally significant environmental receptors is low, ranging from 1 in every 2,000 years for the Lacepede Islands to less than 1 in every 10,000 years for Roebuck Bay (**Figure 4-4, Part 7**). None of the scenarios modelled during the study predicted an impact to Camden Sound or the Rowley Shoals, taking into account the significant distance away from the BLNG Precinct area.

Preventative measures and contingency plans to minimise the risk associated with such an event are detailed in **Part 7, Section 4.4.2**. In addition, the Proponent confirms the importance for a comprehensive planning and management process to ensure an effective and coordinated response should a significant hydrocarbon spill occur.

Generic Question ID: 1035 Sub ID [111] Raised by [S111 Q2085]

It is highly likely that there will be a number of high intensity rainfall events so the likelihood of unplanned discharges being transported to the marine environment is actually very likely.

It is noted that the creation of paved areas within the Precinct development will result in run-off during high intensity run-off events. During such events, stormwater will be collected via a system of drains and initially routed (as a 'first flush') to the wastewater treatment plant for removal of potential contaminants and then discharged via the marine outfall. The first flush of a runoff event removes contaminants from surfaces (particularly impervious surfaces). Treatment technologies for contaminants such as hydrocarbons and metals limit the impact of constituents in discharges. Considering the commitment in the SAR to meet the relevant ANZECC /ARMCANZ 2000 water quality guidelines outside of the active mixing zone, the potential impact of stormwater run-off on the marine environment was deemed to be low. During operations, stormwater, as well as other routine discharges, will be managed through the Marine Wastewater Discharge Management Plan.

Generic Question ID: 1262 Sub ID [123] Raised by [S123 Q2329]

Can the Proponent provide further data that explores the hypothesis that marine biota are able to adapt to severe anthropogenic disturbance such as that proposed by the Proponent both during capital and maintenance works?

The Strategic Assessment Report did not assert that benthic communities have the ability to adapt (in the short term) to the potential impacts (e.g. increase in sedimentation or decrease in benthic light availability) associated with dredging. However, the resilience to mortality and the ability for rapid recovery of some communities (in particular seagrass) was noted, consistent with observations from other capital dredging campaigns and supporting scientific literature. Several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredging activities (Coles *et al*. 2007; Unsworth *et al*. 2009). Halophila, the most common seagrass genus within the area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott *et al*. 2004 and Waycott *et al*. 2005).

Generic Question ID: 1272 Sub ID [147] Raised by [S147 Q2382]

In relation to comments in **Part 3**, **Section 2.6.3.3**, there is no evidence to suggest that animals will simply 'move away from an area' when a spill takes place. In fact, recent information available from the US Government agency (NOAA) speaks directly against this. (Note additional data and information to support the submitters point are presented on p.4-6 of the submission).

It has been fully acknowledged and stated in the SAR that the potential impact of a major hydrocarbon release on marine fauna (including marine mammals) could be significant without appropriate measures in place. It was noted in **Part 3, Section 2.6.3.3** that marine mammals may suffer a range of effects associated with a hydrocarbon spill, ranging from behaviour responses (i.e. avoidance) to mortality.

Whilst the likelihood of a major spill is considered remote, the consequence is noted as potentially severe if appropriate response measures were not effectively implemented. Hydrocarbon spill modelling undertaken as part of the Strategic Assessment Report (**Part 7**), identified the significant risk associated with a large scale spill. The findings of the study (**Part 7, Section 4.3.3**) show that coastal impacts from hydrocarbon spills are likely to be limited to the James Price Point coastal area during calm periods or onshore winds associated with the wet season, moving offshore with prevailing south-easterly winds in the dry season. The likelihood of a hydrocarbon spill impacting on regionally significant environmental receptors is low, ranging from 1 in every 2,000 years for the Lacepede Islands to less than 1 in every 10,000 years for Roebuck Bay (**Figure 4-4, Part 7**). Preventative measures and contingency plans to minimise the risk associated with such an event are detailed in **Part 7, Section 4.4.2**.

2.2 Relevant Factor: Marine Sediments

Generic Question ID: 524 Sub ID [170] Raised by [S170 Q1406]

WWF & ACF Submission Section 2: Many of the ecological studies in the SAR provide some baseline understanding of the environment. However, they often leap to unqualified assumptions about potential risk. For example, in relation to "... the potential impact of nutrient and contaminant release from sediments during maintenance dredging activities", the SAR says: "the sediments and nearshore waters of the James Price Point area are naturally nutrient poor, so this effect is unlikely to occur". This statement not only exemplifies some significant unqualified assumptions being made in the SAR, it is also contrary to a fundamental principle of ecology. Intact environments are almost always nutrient poor and even slight nutrient input to these environments can cause significant effects. For example, adding nutrients so they are no longer limiting can

create radical changes in the trophic system and often irreversible change (Done 1992; Smith *et al.* 1999; Burkepile *et al.* 2006; Dodds 2006).

With reference to the following statement contained within **Part 3, Section 2.8.3.2** of the SAR: "...the sediments and nearshore waters of the James Price Point area are naturally nutrient poor, so this effect is unlikely to occur".

It is possible that this statement has been taken out of context. To clarify, impacts to sediment quality from dredging activities are believed to be low, not because the receiving environment has a low nutrient concentration, but because the dredged sediments that would be exposed to the receiving environment are low in nutrients (as outlined in **Appendix C-13, Section 4.9**). It is agreed that low-nutrient environments are sensitive to increased nutrient loads, since primary producers are likely nutrient-limited. However, given that the baseline sediments have a low nutrient concentration, it is not predicted that disposal of dredged material will significantly increase the level of nutrients available to these nutrient-limited components of the ecosystem.

Generic Question ID: 573 Sub ID [120, 87] Raised by [S120 Q1219]

ENGO Submission: The SAR acknowledges (**Table 3-7**) that "Some marine construction activities will extend into Commonwealth marine areas". That the project will, according to **Figures 2.4-1**, **2.4-2** and **2.4-3**, create an estimated 52 square kilometre (5,200 hectare) permanent 'marine dead zone' extending from the shore out to Commonwealth waters. (SAR, **Vol 3**, **p. 2-67**, **p. 2-68**, **2-69**). Beyond the dead zone, **Figures 2.4-4**, **2.4-5** indicate that impacts from sediment plumes caused by dredging and related activities will spread over 80 kilometres up and down the Dampier Peninsula coast and up to 20 kilometres out to sea, at varying intensities. The total affected area from sedimentation and turbidity is estimated be around 1,600 square kilometres, or 160,000 hectares. There is potential for this dredge plume to extend into the Lacepede Islands and Pender Bay habitat areas. No mention of this is, or the impacts it would cause, is made in the SAR.

A detailed dredging impact assessment was undertaken in close consultation with the OEPA, and is presented in the SAR (**Part 3**, with full details in **Appendix C-13**). **Part 3**, **Section 2.4.3** acknowledges the predicted impacts on benthic communities, demonstrating that permanent impacts on benthic communities will be restricted to the footprint of the 'indicative port area' (**Figure 2.4-1**). It should be noted that the Zone of Moderate Impact corresponds to the area in which changes in water quality (i.e. a reduction in benthic light availability) may result in the temporary loss of BPPH, which is expected to recover. Studies have shown that tropical seagrass beds are known to be resilient habitats, able to recover rapidly after disturbance (Coles et al. 2007). Halophila, the most common seagrass genus in the vicinity of the Project area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott et al. 2004; and Waycott et al. 2005).

The application of a conservative sediment transport modelling process applied in the SAR (due to the uncertainty in geotechnical or infrastructure information at the time) identified a maximum prediction of the scale of impact associated with these works, appropriate for the Strategic Assessment. **Part 3, Figure 2.4-6** demonstrates the sensitivity of the system to varying model inputs. Nevertheless, whilst the removal of such habitats is expected to temporarily reduce benthic primary production in the area, this is not expected to impact on the general ecosystem function and integrity of the James Price Point area, given the prevalence of this habitat type within the wider bioregion. The Lacepede Islands Group and Pender Bay are not expected to be impacted by the dredging activities. **Part 3, Figure 2.3-2** demonstrates the furthest predicted extent of the Zone of Influence, where changes in water quality may be apparent but no environmental impact is predicted. This area does not include the Lacepede Islands or Pender Bay.

The management measures presented in the SAR, including the preparation and implementation of Dredging and Dredge Spoil Disposal Management Plan to the satisfaction of regulatory agencies, are central commitments to manage and monitor impacts on water quality and benthic communities in the vicinity of the development area.

Generic Question ID: 940 Sub ID [227, 223] Raised by [S227 Q1998]

The dredging of this area with its tidal force is completely ignoring the tidal scour that will happen. It will go as far as just North of Port Hedland to as far north of the proposal on the Dampier Peninsula. The huge plumes of sediment formed by the dredging will kill everything within and around more than 25 square kilometres.

The extent and dispersion of dredging related suspended sediments assessed in the Strategic Assessment Report is subject to several factors, including but not limited to: dredge volume; sediment physical properties; dredging location; seabed bathymetry; and seasonal meteorological conditions. However, it is noted that the overriding factor in the extent of sediment dispersion is the local hydrodynamic and meteorological conditions (i.e. currents, tidal flows and winds). These factors were incorporated into the dredge modelling process to inform the SAR (refer **Appendix C-13** for full details).

It is acknowledged in the Strategic Assessment Report (primarily within **Part 3, Sections 2.4.3.1** and **2.3.4.1**, and **Part 7, Section 3.5**) that the dredging and nearshore construction activities will result in some temporary (i.e. recovery <5 years) and permanent impacts on local benthic habitats. However, it should be noted that the site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat. This resulted in the selection of the site at James Price Point, where BPPH coverage is generally low and thus the worst case 'indicative port development' scenario (including both pipeline corridors) is predicted to result in a loss of approximately 11km2 of BPPH (**Part 7**, **Section 3.4.3**). Whilst removal of such habitat is expected to temporarily reduce benthic primary production in the area, this is not expected to impact on general ecosystem function and integrity of the James Price Point area, given the prevalence of this habitat type within the wider bioregion.

It is expected that potential impacts can be successfully mitigated by application of management and mitigation measures. Prior to commencement of dredging, proponents of derived proposals will be required to prepare and implement a Dredging and Dredge Spoil Disposal Management Plan (**DSDMP**) to demonstrate best practice management techniques and technologies which would be applied to minimise potential dredging impacts. While the effect may cause mortality to some BPPH and BPPs in the vicinity of the development area, it is predicted that this would be a temporary loss, as the underlying conditions for re-colonisation would be present after the nearshore construction and dredging activities have been completed.

Generic Question ID: 234 Sub ID [64] Raised by [S64 Q658]

DEC Recommendation 26a: That the Proponent and the Broome Port Authority seek agreement with the OEPA regarding benchmark sediment and water quality trigger values for metals and organics and remain accountable to these values.

DEC Recommendation 26b: That the Proponent be required to implement the planning and implementation commitments specified in **Table 2.2-6** and **2.3-2** in consultation with the OEPA, and DEC where relevant.

Discussion: DEC is aware of a potential for bioaccumulation of elevated levels of contaminants in marine mammals, reptiles and birds over time. DEC prefers that potential water and sediment quality issues relating to process water and other discharge specific to this proposal be managed within the port precinct where human activity is proposed to be highest and where management can be facilitated by the Broome Port Authority under an environmental management plan.

The Strategic Assessment Report (**SAR**) acknowledges the requirement for benchmark water quality trigger values. The SAR has stated that the management of routine discharges from the Precinct development will be undertaken in line with the ANZECC Water Quality Guidelines (ANZECC/ARMCANZ 2000). Taking into account the results of discharge modelling undertaken to inform the SAR (**Part 7**), proponents of derived proposals shall ensure that within the discharge mixing zone (estimated to be no greater than 300m from the discharge location) the 95th percentile of bioaccumulation toxicant concentrations meets ANZECC/ARMCANZ (2000) NWQMS 80% species protection guideline trigger levels. Beyond the boundary of the mixing zone (i.e. outside of the Port area) the Proponent will ensure that the 95th percentile of toxicants meets ANZECC/ARMCANZ (2000) NWQMS 95% species protection trigger levels. As part of the BLNG Precinct Environmental Management Plan, the Broome Port Authority will address (among other items) "an ecological and water quality monitoring program within the port boundaries and appropriate reference areas".

The Proponent confirms that the mitigation measures outlined in **Part 3, Tables 2.2-6** and **Table 2.3-2** will be implemented in consultation with DEC and the OEPA, as appropriate.

Generic Question ID: 243 Sub ID [64] Raised by [S64 Q666]

DEC Recommendation 32 (**Part 1**): That clear and concise delineation of the significance of impacts be required for all Management Plans to allow a thorough assessment of derived proposals.

Discussion: There are conflicting inferences of significance of impacts for the project. The SAR references the Dredging and Dredge Spoil Disposal Management Plan but it appears to require further detailed work (prior to commencement of dredging) to demonstrate best practice management techniques and technologies.

It is noted that this submission was written with reference to the Executive Summary, which provides an overview summary of impact assessment findings summarised by factor. More specific impact conclusions and management response are presented in the corresponding technical Parts of the SAR. In this context, impacts associated with specific species or sub-factors have been summarised in a generic manner in the Executive Summary. The Proponent is confident that the SAR Executive Summary has accurately reflected the overall conclusions of the specific impact assessment chapters.

The dredging impact assessment that was conducted for the SAR was based on sediment and water quality modelling intended to present a conservative estimate of impacts appropriate for this strategic proposal stage.

At present, the level of engineering design of potential commercial proponents that will locate in the Precinct is not currently available. In the case of dredging for example, commercial proponents will undertake further investigations into locations of marine infrastructure (thereby affecting dredging locations and volumes), dredging vessel types, dredge logs, applicable plume management techniques etc. Once this level of maturity in the engineering design is advanced, the Proponent expects more focused dredge plume modelling and impact evaluation in the context of the SAR findings to be conducted by commercial proponents as part of the derived proposal process under s39 B of the *Environmental Protection Act 1986* (**EP Act**). This process and other management measures for dredging will be documented in commercial proponent's Dredging and Dredge Spoil Disposal Management Plans, to be developed and implemented in consultation with DEC and other key stakeholders.

Generic Question ID: 371 Sub ID [27] Raised by [S27 Q240]

The result of dredging and marine works will be a 25km2 'marine dead zone'.

Part 3, **Sections 2.4.3.1** and **Appendix G-2** acknowledges that the dredging and nearshore construction activities will result in permanent and temporary impacts to benthic habitats affected by the turbidity and sedimentation. The worst case scenario (i.e. the whole port development area including northern and southern pipeline corridors) investigated for the Strategic Assessment Report (**Part 7, Section 3, Table 3-1**) indicates a maximum permanent loss of 11km2. Of this total, the 'indicative port development' scenario is predicted to result in a loss of approximately 321ha (3.2km2) of combined Benthic Primary Producer Habitat (**BPPH**) (primarily macroalgae and seagrass). Refer **Part 7, Section 3, Table 3-1** for details.

It should be noted that the site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat. This resulted in the selection of the site at James Price Point site where BPPH coverage is generally low. Whilst removal of macroalgal habitat is expected to reduce benthic primary production in the area, this is not expected to impact on general ecosystem function and integrity of the James Price Point area, given the prevalence of this habitat type within the wider bioregion.

It is expected that potential impacts can be successfully mitigated by application of management and mitigation measures. Prior to commencement of dredging, proponents of derived proposals will be required to prepare and implement a Dredging and Dredge Spoil Disposal Management Plan (**DSDMP**) to demonstrate best practice management techniques and technologies which would be applied to minimise potential dredging impacts. While the effect may cause mortality to some BPPH and Benthic Primary Producers (**BPP**s) in the vicinity of the development area, it is predicted that this would be a temporary loss, as the underlying conditions for re-colonisation would be present after the nearshore construction and dredging activities have been completed.

Generic Question ID: 815 Sub ID [75] Raised by [S75 Q844]

Part 7, **Section 5.3.3.2**: The SAR makes no mention of the additional sediment that may be available from erosion of the materials used to construct the breakwaters, the cumulative impact of annual movement of sediment or where the accumulated sediment will be transported to in the event of a cyclone. Considerable more work is needed to understand the potential situation.

Breakwaters will be constructed from hard material (e.g. concrete, igneous rocks, etc) and will not contribute to the available sediments.

Part 7, **Section 5** and **Appendix G-4** of the SAR describe the assessment methodology and potential impacts on coastal processes (sediment transport). The analysis included:

- analysis of historical photos (**Figure 5-3**, **Part 7**);
- estimate of littoral (long shore) sediment transport over the last 20 years based on results from a numerical model including cyclones over those 20 years (**Figure 5-6**, **Part 7**); and
- two dimensional numerical sediment transport model for ambient conditions (non-cyclonic conditions) and cyclonic conditions (**Figure 5-7**, **Part 7**).

Each of the above aspects are discussed in more detail in **Appendix G-4**.

The analysis of this large volume of information is summarised into a conceptual model presented in **Figure 5-8** (**Part 7**) and covered in greater detail in **Appendix G-4**. The key conclusion was that impacts on sediment processes (including cyclones) will be initially limited to 2-3km north and south of the port. The Proponent has committed to implementing a Coastal Processes Management Plan that will include implementation of measures such that trapped material is returned to the coastal system or replaced by other material at a suitable location, so that the dynamic balance of sediment may be managed on a regional scale (**Table 5-2**, **Part 7**).

2.3 Key Factor: Marine Water Quality

Generic Question ID: 248 Sub ID [32, 64, 170] Raised by [S64 Q669]

DEC Recommendation 34 (3): That the Proponent provides further details and information on all prescribed activities that may produce emissions which are discharged to the marine environment.

Discussion: The SAR notes that the proposal has the potential to impact the marine environment and **Part 1**, **Tables 7-4** to **7-9** identify the significance of potential marine impacts and mitigation measures. The document does not provide sufficient detail of the emissions to allow an assessment of likely environmental impacts. Routine wastewater discharges will occur to the marine environment and monitoring of the releases will be required. Disposal of treated wastewater is not finalised as proponents are required to provide a Marine Wastewater Discharge Management Plan.

The information presented in the SAR is relevant to a strategic proposal of the LNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development (further detail provided below). The Proponent acknowledges that, subsequent to the environmental approvals process under Part IV of the EP Act, there remains a requirement for works approvals and environmental licences under Part V of the Act. This is a future process that proponents of derived proposals will be expected to engage with DEC as final details on emissions, discharges and wastes are characterised as appropriate at that stage of project development.

Part 3, Section 2.3.2.2 outlines the potential sources of routine wastewater discharge construction and operational phases of the Precinct development. Key marine discharges are likely to consist of:

- hydrotest water from commissioning of onshore hydrocarbon storage tanks (the management of this planned discharge will be discussed as part of a Hydrotesting Procedure / Pipeline Pre-Commissioning Plan);
- ballast water and other wastewater associated with marine vessels;
- stormwater run-off;
- treated process water (i.e. produced water, condensed wastewater and desalination brine); and
- domestic wastewater (i.e. sewage and grey water).

Specific treatment methodologies have yet to be selected as they are highly dependent upon the specific characteristics of the wastewater stream. Modelling of the wastewater discharge (detailed in **Part 7, Section 2**) to examine the potential range of environmental outcomes in terms of the size of mixing zones and dilution levels was undertaken as part of the Strategic Assessment Report.
The Strategic Assessment Report (**Part 3, Section 2.3.4**) noted the potential impacts from routine wastewater discharge into the marine environment. It was acknowledged that the primary impact associated with wastewater discharges during construction and operations is the potential to produce a localised zone of reduced water quality within the BLNG Precinct port area (i.e. Low Ecological Protection Area 'mixing zone'). Preliminary wastewater discharge modelling presented in **Part 7, Section 2** demonstrated that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be readily detectable, except within the immediate mixing zone (<300m from the discharge point).

As stated in **Part 3, Section 2.3.5** a Marine Wastewater Discharge Management Plan (**MWDMP**) will be developed to ensure that disposal of treated wastewater from the construction and operation of the Browse LNG Project (the Project) is undertaken and managed in a way that reduces the environmental impacts to as low as reasonably practicable. The plan will include a more detailed characterisation of the wastewater streams, having the benefit of input of progressed engineering studies, and will include a description of engineering and management controls to be implemented to mitigate environmental impacts. This MWDMP will be submitted to the OEPA for consideration and assessment as part of the Foundation Proponent's derived proposal.

Generic Question ID: 258 Sub ID [64, 224] Raised by [S64 Q678]

DEC Recommendation 41 (10): That the Proponent provides further details of proposed wastewater treatment processes.

Discussion: There is no information on the treatment plants as indicated in **Section 2.1** and no subsequent indication of the quality of the discharge parameters apart from a statement that wastewater would be disposed of according to water quality criteria. To meet environmental protection guidelines the exact locations need to be defined as part of the detailed engineering design work by project proponents at the derived proposal stage.

Section 2.3.2 indicates the port layout was not included in four modelling scenarios but **Section 2.3.3** suggests that the final design of the outfalls and resulting dilution calculations will need to account for other port structures

to determine the actual dilution level.

For the Strategic Assessment an outcomes based approach was adopted for water quality. This has resulted in the Proponent committing to 'ensuring that the treated discharge meets appropriate environmental guidelines (i.e. 95% level of species protection; Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC/ARMCANZ 2000) outside the Browse LNG Port Area' (**Table 2.3-4**, **Part 3**).

An outcome based approach was considered most appropriate as the Browse LNG Precinct has been designed to allow for multiple future proponents. As water treatment processes will need to be designed to meet each proponents specific wastewater characteristics, any specification of those technologies at this point of time is risks is likely to result in suboptimal or ineffective treatment (i.e. selected technology doesn't match wastewater characteristics). To address this uncertainty, future proponents will be required to 'prepare and implement a Marine Wastewater Discharge Management Plan (**MWDMP**), to the satisfaction of the Western Australian Minister for Environment'. This plan shall include 'details of the discharge including outfall location, outlet design and discharge volumes, rates and quality' (**Table 2.3-4**, **Part 3**). Modelling at this stage will then take account of other port structures. In addition any wastewater treatment plant would be subject to the Works Approval provisions of the WA *Environmental Protection Act 1986*.

The SAR (**Section 2.0**, **Part 7**) demonstrated that dilutions level in excess of 100 times can readily be achieved within the active mixing zone (to be confirmed based on actual design parameters, port layouts, etc and presented in the MWDMP). Consequently it can be anticipated that the water treatment system will need to meet a discharge quality of approximately 100 times the ANZECC 95% level of species protection which is a very stringent discharge requirement.

Generic Question ID: 576 Sub ID [120, 84] Raised by [S120 Q1222]

ENGO Submission: The SAR fails to address the cumulative impacts of the above disturbances in the pristine marine environment surrounding James Price Point. For example, in relation to the various planned pollution and contamination processes highlighted above, including pipe laying, dredging and spoil dumping and 'routine' marine discharges, the report simply states that modelling will be undertaken "during the derived proposal stage". [SAR, **Part 3**, p2-54].

It should be noted that the scope of the detailed assessment reported in the Strategic Assessment Report is focused on Category A related activities (i.e. the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons in State waters), with commentary provided on Category B and Category C activities in the context of cumulative impacts.

With regards to the proposed dredging activities, the cumulative impacts from dredging and spoil disposal were modelled to assess the predicted impacts on water quality and benthic habitats and to inform the management framework presented in the SAR (**Part 3, Section 2.3** and **Appendix C-13**). Similarly, the modelling of the routine wastewater discharges took into consideration the total predicted volume anticipated from the Precinct facilities, including process water, brine from desalination, stormwater runoff and domestic wastewater (**Part 7, Section 2**), thus assessing the cumulative impacts of these related activities. Refer also to **Section 5** of the Response to Submissions Summary Report for more discussion of cumulative impacts.

Generic Question ID: 447 Sub ID [104] Raised by [S104 Q940]

DoH Submission: It is recommended that recreational water quality monitoring be undertaken in surrounding recreational areas in accordance with the Chapters 5 and 7 of the NHMRC 2008 Guidelines for Managing Risks in Recreational Waters and the ANZECC & AMCANZ 2000 Guidelines as relevant. Water samples should also be analysed for phytoplankton species known to produce toxins which may be concentrated in shellfish. Consumption of shellfish containing such toxins may result in food poisoning. The six types of food poisoning associated with consumption of shellfish containing phytoplankton toxins are PSP (paralytic shellfish poisoning), ASP (amnesic shellfish poisoning), NSP (neurological shellfish poisoning), AZP (Azaspiracids), YTX (Yessotoxins) and DSP (diarrhoeic shellfish poisoning). Identification of toxic species as a result of enumeration of phytoplankton may be an indication of a public health risk. Trigger cell counts for each type of toxic phytoplankton have been established at levels where appropriate action should be taken (see Table 7 of the WASQAP 2007 - Operations Manual).

It is not predicted that routine wastewater discharge will result in any significant increase in phytoplankton abundance and therefore it is not anticipated that regular operational monitoring of phytoplankton species will be undertaken. The SAR proposes that future precinct proponents commit to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area. Impacts to 'sea life' would be managed by adhering to ANZECC/ARMCANZ (2000) water quality guidelines designed to ensure a high level of species protection. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering

receiving waters or deviations in water quality above background would not be readily detectable, except within the immediate mixing zone (<300m from the discharge point).

Routine monitoring of water quality at the marine outfall, to ensure compliance with these guidelines, would be conducted throughout the operation of the outfall. In addition, ecotoxicological testing of marine organisms would be conducted to determine the whole effluent toxicity (**WET**) of the discharge water and routine ecotoxicity sampling would be conducted within the BLNG Port Area during outfall operation to determine if contaminant levels in marine organisms remain within acceptable limits with reference to the ANZECC/ARMCANZ 2000 guidelines. Such WET testing would be undertaken in accordance with ANZECC/ARMCANZ (2000), with a suitable range of aquatic organisms selected from different taxonomic groups to reliably determine the effluent toxicity.

Generic Question ID: 575 Sub ID [120] Raised by [S120 Q1221]

ENGO Submission: In relation to the potential for a major 'non-routine' marine pollution event, the SAR states "The potential for and impacts of a major hydrocarbon spill will be the focus of a supplemental spill modelling exercise to be undertaken during the derived proposal stage." [SAR, **Part 3**, p2-48]. The unsubstantiated view of the Proponent in relation to ongoing ('routine') marine pollution in the pristine marine environment at James Price Point is that (a) it happens elsewhere 'with manageable and acceptable outcomes', and (b) the pollution will be 'rapidly mixed and diluted in the receiving environment'. The continuous reliance in the SAR upon the 1950s view that 'the solution to pollution is dilution' would be laughable if it were not so serious.

The Strategic Assessment Report acknowledges the significant potential impact associated with a major spill of hydrocarbon liquids. Whilst the likelihood of a major spill was considered remote, the consequence was noted as potentially severe if appropriate response measures were not effectively implemented. Hydrocarbon spill modelling undertaken as part of the Strategic Assessment Report (**Part 7**), identified the significant risk associated with a large scale spill. The findings of the study (**Part 7**, **Section 4.3.3**) show that coastal impacts from hydrocarbon spills are likely to be limited to the James Price Point coastal area during calm periods or onshore winds associated with the wet season, moving offshore with prevailing south-easterly winds in the dry season. The likelihood of a hydrocarbon spill impacting on regionally significant environmental receptors is low, ranging from 1 in every 2,000 years for the Lacepede Islands to less than 1 in every 10,000 years for Roebuck Bay (**Figure 4-4, Part 7**). Preventative measures and contingency plans to minimise the risk associated with such an event are detailed in **Part 7, Section 4.4.2**.

With regards to routine marine discharges, it was acknowledged within the SAR that routine discharges have the potential to produce a localised zone of reduced marine water quality within the Precinct port area. Results of the modelling study indicate that the active mixing zone is predicted to remain within 300 metres of the discharge location. Additionally, the SAR commits future precinct proponents to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area, with biannual ecotoxicity testing to identify discharge parameters to be improved to achieve a target of 99% species protection. The discharge of process water and brine water, if required, is expected to be readily manageable through the adoption of appropriate treatment technologies, where required, and engineering design of outfalls which will require assessment and licensing by the Department of Environment and Conservation under Part V of the *Environmental Protection Act 1986*. Since specific design, engineering and reservoir fluid details are not yet available to model the fate of specific wastewater discharges, dilution modelling is used to inform the wastewater quality that can be achieved after appropriate treatment.

Generic Question ID: 727 Sub ID [70] Raised by [S70 Q600]

Another big concern is wastewater discharge, not just from the BLNG Precinct but from the ballast of so many vessels. If treatment methodologies have yet to be selected, how is it possible to conclude there will be no significant risks to water quality? What will stop the huge number of vessels bringing in undesirable bio-toxins or organisms and dumping them here to negatively affect ecosystem integrity?

Though specific wastewater treatment technologies have not been finalised at this stage of the project, the general treatment principles and methods are known and were used for context in the impact assessment process. Additionally, the SAR commits future precinct proponents to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area, with biannual ecotoxicity testing to identify discharge parameters to be improved to achieve a target of 99% species protection.

Ballast water discharge will be undertaken in accordance with established international guidelines (*International Convention for the Control and Management of Ship's Ballast Water and Sediments*) and federal legislation (*Australian Ballast Water Management Requirements* under the *Quarantine Act 1908*). The implementation of and adherence to this legislation should minimise the risk of Invasive Marine Species incursions.

Generic Question ID: 787 Sub ID [75] Raised by [S75 Q841]

Part 7, **Section 2** of the SAR focuses on wastewater discharge. It is noted that **Figure 2.2** appears to be based on a different breakwater configuration from that used in other modelling in the report. It is also noted that treatment methodologies have yet to be selected and are highly dependent on the characteristics of the wastewater stream. No further information is provided, making the conclusion from the modelling that discharge will not be a problem questionable. Wastewater discharge and dredging modelling should be based on the real design of the port facility and real discharge information (once known). This will then provide a real assessment of the impact on marine life.

The level of information presented in the SAR is appropriate for a strategic assessment of the Browse LNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development. Consequently for the Strategic Assessment, an outcomes based approach was adopted for water quality. This has resulted in the Proponent committing to 'ensuring that the treated discharge meets appropriate environmental guidelines (i.e. 95% level of species protection; Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC/ARMCANZ 2000) outside the Browse LNG Port Area' (**Part 3**, **Table 2.3-4**). This will ensure that marine life is protected (i.e. this water quality objective needs to be met irrespective of the source of the wastewater or the treatment selected by each proponent).

An outcome based approach was considered most appropriate as the Browse LNG Precinct has been designed to allow for multiple future proponents. As water treatment processes will need to be designed to meet each proponents specific wastewater characteristics, any specification of those technologies at this point of time is likely to result in suboptimal or ineffective treatment (i.e. selected technology doesn't match wastewater characteristics). To address this uncertainty future proponents will be required to 'prepare and implement a Marine Wastewater Discharge Management Plan (**MWDMP**), to the satisfaction of the Western Australian Minister for Environment'. This plan shall include 'details of the discharge including outfall location, outlet design and discharge volumes, rates and quality' (**Part 3**, **Table 2.3-4**). Modelling at this stage will then take account of other port structures. In addition, any wastewater treatment plant would be subject to the Works Approval provisions of the WA *Environmental Protection Act 1986*.

The SAR (**Part 7**, **Section 2.0**) demonstrated that dilutions level in excess of 100 times can readily be achieved within the active mixing zone (to be confirmed based on actual design parameters, port layouts, etc and presented in the MWDMP). Consequently it can be anticipated that the water treatment system will need to meet a discharge quality of approximately 100 times the ANZECC 95% level of species protection, which is a very stringent discharge requirement.

Generic Question ID: 807 Sub ID [75] Raised by [S75 Q857]

The SAR (**Part 1**, p. ES-79) states that Roebuck Bay is not expected to be impacted by the BLNG Precinct activities. This maybe the case, although the data on the possible impact from sedimentation associated with dredging and changed water flows at the Precinct site is unconvincing. However, the increase in activity at Broome Port and the associated impact on water quality undoubtedly has significant potential to produce negative impacts on shorebirds.

The application of a conservative sediment transport modelling process applied in the SAR identified a maximum prediction of the scale of impact associated with these works, appropriate for the Strategic Assessment. The results detailed in **Part 3, Section 2.4.3** and **Appendix C-13** clearly identified that there will be no impact to water quality or benthic habitats in Roebuck Bay associated with the dredging activities.

While it is expected that there will be an increase in vessel movements associated with the Precinct construction and operational activities, this activity will be centred around James Price Point (60km north of Broome). It is unlikely that there will be significant increases in vessel activity within Roebuck Bay associated (directly or indirectly) with the Precinct development and therefore no significant impact to Roebuck Bay from vessels is expected. The SAR acknowledges that disturbance of Roebuck Bay and Eighty Mile Beach may occur indirectly due to the development from increased recreation use arising from any increase in population in Broome (**Part 6**, **Table 3-8**). Proposed measures to minimise such impacts include ongoing support to the development of Roebuck Bay Management Plan and the Department of Environment and Conservations (**DEC**s) management of Eighty Mile Beach.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on fauna, including migratory birds. Refer SAR **Part 4, Section 2.6.4** (Management Measures) for a complete summary. The SAR **Part 6** (in particular **Table 3-3** and **3-4**) also outline management arrangements for terrestrial species including migratory shorebirds.

Generic Question ID: 877 Sub ID [169] Raised by [S169 Q1733]

Environs Kimberley Submission: Conduct long term monitoring of nearshore turbidity as well as for other waterways that may be potentially impacted by the development such as creeks (i.e. at a minimum two years and for each season) to provide baseline data for the monitoring of the impacts of the development overtime (e.g. discharges, dredging, spoil placement etc).

A continuous water quality monitoring program was initiated in November 2009 at four sites within the nearshore James Price Point coastal area. At the time of submission of the Strategic Assessment Report, 10 months of monitoring data had been collected, and was summarised to inform the SAR (refer **Part 3**, **Section 1.3.7**). While it is noted that this does not constitute a full annual cycle it has been sufficient to allow a good characterisation of the baseline water quality within the area, including times of sustained high levels of natural turbidity associated with meteorological events. The monitoring programme is ongoing and has been expanded to encompass a wider geographical area, and will inform the management programs as committed in the SAR (refer **Part 3**, **Section 2.3.5** for specific details).

Generic Question ID: 1024 Sub ID [224] Raised by [S224 Q1952]

KLC Submission: **Part 3 Section 2.4.3.1** Dredge Spoil Disposal Grounds - The SAR makes reference to a detailed assessment being undertaken for spoil grounds within the Commonwealth Sea Dumping Permit process. If this is the case what opportunities do Traditional Owners have to review and comment on the suitability of spoil grounds?

As described in **Part 3, Section 2.2.1.1,** dumping of dredge spoil as part of the capital or maintenance dredging activities will be subject to assessment under the *Environment Protection (Sea Dumping) Act 1981*. Any application for sea dumping will be prepared consistent with the National Assessment Guidelines for Dredging (**NAGD**). The proposed spoil disposal site will be strategically placed to avoid or minimise impacts to benthic habitats or significant seabed features (e.g. reefs or shoals). In addition, the spoil disposal ground(s) are planned to be outside of the existing native title claim boundary (i.e. >3nm from the coastline) and any registered Department of Indigenous Affairs Aboriginal heritage sites.

The Proponent of the Precinct development invites full stakeholder involvement in the impact assessment of environmental, social and heritage values, and will continue to consult with Traditional Owners consistent with all work to date. In addition, for this specific topic, it will be the responsibility of commercial proponents undertaking dredging and dredge spoil disposal to undertake sufficient consultation with stakeholders to the satisfaction of the Commonwealth government (SEWPaC) under the requirements of the *Environment Protection (Sea Dumping) Act 1981*.

Generic Question ID: 1079 Sub ID [157] Raised by [S157 Q2429]

WAFIC Submission: Industry supports the establishment of a Dredging Management Advisory Group prior to the referral of future dredging proposals and asks that commercial fishing, pearling and aquaculture expertise be represented on the group, or else, that the group closely communicates with the commercial fishing, pearling and aquaculture industries. In addition to the roles of this group identified in **Part 3**, **Table 2.3-2**, it should also recommend or conduct risk assessments of dredging on intersecting and adjacent commercial fishing, pearling and aquaculture operations.

The Dredging Management Advisory Group (**DMAG**) will be established to provide advice to the Proponent, EPA and/or the Minister for the Environment as appropriate on marine studies and environmental risk assessments and to monitor dredge management plans prepared by proponents of future major dredging proposals. As an oversight group the DMAG will be comprised of Environmental Regulator including the Office of EPA, DEC, DoF and SEWPaC along with commercial proponents and an independent chair with extensive knowledge of marine environments (See **Part 3, Table 2.3-2**). Part of the responsibilities of this group include identification of risk to key environmental values which will include, as a component of the marine environment, commercial fishing and pearling operations.

Prior to commencement of dredging, proponents of derived proposals shall prepare and implement a Dredging and Dredge Spoil Disposal Management Plan, to the satisfaction of the Western Australian Minister for Environment, demonstrating the application of best practice management techniques and technologies to minimise potential dredging impacts. This will be subject to stakeholder consultation including with commercial fishers and pearlers.

Proponents of derived proposals will also be required to develop a fishing industry mitigation and management strategy with the commercial fishers to mitigate and manage the impacts from the development of the Precinct at James Price Point (**See Part 5, Section 4.6.8**).

Generic Question ID: 1080 Sub ID [157] Raised by [S157 Q2430]

WAFIC Submission: The operation of a 20GL a year desalination plant and volumes of discharges of highly saline water will also impact on the receiving water quality and potentially on fishing operations. The SAR asserts that wastewater will be 'discharged into a well-mixed and highly flushed environment' which will accordingly 'accelerate dilution of any routine discharge'. Further explanation and engagement with the commercial fishing industry on this matter is required to demonstrate how the brine will or will not impact on fish in the vicinity of the BLNG Precinct.

The Strategic Assessment Report (**SAR**) has assessed the potential impacts to the marine environment from routine wastewater discharges from the onshore Precinct facilities. With specific reference to possible desalination, the predicted impacts associated with this ancillary infrastructure were assessed in the relevant impact assessment sections of the SAR. The discharge of brine (the primary impact on the marine environment associated with desalination) was assessed within **Part 3**, **Section 2.3.4.2** along with the other likely wastewater streams, and was further investigated as part of the marine wastewater discharge modelling summarised in **Part 7, Section 2** and included in detail as **Appendix G-1**.

It was acknowledged within the SAR that routine discharges have the potential to produce a localised zone of reduced marine water quality within the Precinct port area. Results of the modelling study indicate that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point). Additionally, the SAR commits future precinct proponents to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area, with biannual ecotoxicity testing to identify discharge parameters to be improved to achieve a target of 99% species protection. Therefore it is expected that there will no impacts to commercial fisheries associated with the wastewater discharge from the Precinct facilities.

The Proponent is committed to continued engagement and information sharing with the commercial fishing industry on this and other matters, and will encourage future commercial proponents to similarly maintain an open dialogue with key fishing industry stakeholders.

Generic Question ID: 1082 Sub ID [157] Raised by [S157 Q2432]

WAFIC Submission: **Part 3**, **Table 2.3-2**: State Government Measures for the Management of Impacts on Water Quality. The commercial fishing industry supports the preparation of a BLNG Precinct Environment Management Plan for the port area in consultation with DEC and other relevant agencies. It would also like the consultation to formally extend to the Department of Fisheries. Further, there should be an amendment to the list of issues identified for addressing by the BPEMP so as to include the collation of adequate environment baseline data for fish.

A key priority of the State and the Port Authority during the development of the Browse LNG Precinct is to minimise the impacts on fish species and their environment. The Port Authority will consult with the Department of Fisheries when preparing the BLNG Precinct Environmental Management Plan (**BPEMP**). The BPEMP will also address the collation of adequate environmental baseline data for fish species.

The SAR, **Part 3, Section 2.5.2** summarises the extent of existing knowledge and information, including current and relevant baseline studies relating to marine fish species within the James Price Point coastal area and key Commonwealth and State policy documents for assessing the issues relating to fish and expectations for management.

A detailed summary of fish species is provided in **Part 3, Section 2.5.**

Generic Question ID: 1127 Sub ID [84] Raised by [S84 Q2607]

Millions of litres of oil will be discharged into the marine environment each year. This oil is part of the 'produced formation water' that is separated from the oil and gas mix at the production platform. The Australian Standards currently allow for the discharge of 30 milligrams of oil per litre of water discharged into the ocean.

The potential impacts associated with discharges from 'upstream' (beyond 3 nautical miles offshore) infrastructure of commercial proponents operating within the Browse LNG Precinct (including discharges from offshore production infrastructure) will be investigated and assessed as part of a separate federal environmental approval process. These offshore discharges, which are required to achieve a maximum average oil in water content of 30mg/L over 24hrs under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009*, is outside the scope of the Strategic Assessment Report. The SAR is focused on the 'downstream' processing and export of LNG and associated hydrocarbons at the proposed Precinct location at

James Price Point.

2.4 Key Factor: Benthos Including Benthic Primary Producers

Generic Question ID: 236 Sub ID [64, 195, 111, 116] Raised by [S64 Q660]

DEC Recommendation 27: That the potential loss of benthic primary producer habitat is required to be limited to levels consistent with those outlined in the EPA's Environmental Assessment Guideline No. 3 or at lower levels.

Loss of benthic primary producer habitat can directly and indirectly affect fauna specially protected under the Wildlife Conservation Act 1950 and should be limited to the identified zones of impact and according to the EPA's Environmental Assessment Guideline No. 3.

The SAR Part 7, Section 3 provides a detailed assessment of the potential loss of Benthic Primary Producer Habitat (**BPPH**) in the context of the local area. It should be noted that the Environment Assessment Guideline No. 3 (**EAG3**) (Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment) outlines a process whereby areas Local Assessment Units (**LAU**s) are defined and used to calculate cumulative losses of Benthic Primary Producer Habitat during the impact assessment process (EPA, 2009). It is also important to note that EAG3 is intended to provide guidance only and that the levels of cumulative loss stipulated are not legislated acceptability criteria. Exceedance of the cumulative loss guidelines is intended to prompt a closer examination of the potential ecological significance of the impact to ensure that the development will not pose an unacceptable risk to ecological integrity. The total permanent loss of BPPH will be assessed by the EPA, based primarily on the overall risk to ecological integrity within the local assessment unit and noting the comprehensive site selection process that has minimised impacts on regionally important benthic habitats.

As BPPH extent within the LAU is low, any predicted losses of BPPH would be disproportionately high compared to the magnitude of losses that may occur if the development was sited elsewhere along the coastline, where BPPH is more common. Therefore, despite predictions that the LAU cumulative loss guidelines may be exceeded, the actual magnitude of predicted losses of BPP communities is relatively low and BPP types that may suffer losses are common within the wider bioregion. Hence, the risk to the ecological integrity of the marine environment within the LAU is considered to be low.

Generic Question ID: 706 Sub ID [120, 87, 236, 223] Raised by [S120 Q1480]

ENGO Submission: The Benthic Primary Producer Habitat Loss Calculations clearly contravene the EPA's loss thresholds.

This submission was also raised elsewhere:

Regarding the proposed dredging for the associated port, little has been mentioned of the possible breaching of up to 10 out of the 14 EPA guidelines for industrial development affecting Benthic Habitats.

As outlined in Environmental Assessment Guideline 3 (EPA, 2009) "cumulative loss guidelines... are not intended to be applied as rigid limits. Cumulative loss guidelines (CLGs) represent a level of cumulative loss that, if not exceeded, is unlikely to pose unacceptable risk to ecological integrity." Exceedance of the CLGs is intended to prompt a closer examination of the potential ecological significance of the impact to ensure that the development will not pose an unacceptable risk to ecological integrity. As per Environmental Assessment Guideline 3 (EPA, 2009), it is noted that the acceptability of any permanent loss of BPPH will remain the judgement of the EPA, based primarily on the overall risk to ecological integrity within the local assessment unit.

The actual magnitude (in terms of area) of predicted losses of BPP communities is relatively low and habitat types that will suffer losses are common within the wider bioregion. Hence, the risk to the overall ecological integrity of the marine environment within the Local Assessment Unit is considered to be low.

For additional detail, the reader is encouraged to refer to the SAR **Part 7, Section 3** which provides a detailed assessment of the potential loss of BPPH in the context of the local area.

Generic Question ID: 349 Sub ID [34, 235] Raised by [S34 Q313]

The diversity and abundance of corals witnessed there, on the rare extreme low spring tides, are like none I have witnessed anywhere else, in my skin-diving experience, with many, unusual species I am still yet to identify.

The Strategic Assessment Report (**SAR**) included an assessment of the existing marine environment, including intertidal benthic habitats at James Price Point. Benthic habitats were surveyed as part of the *James Price Point Intertidal Survey* (**Appendix C-9**) and are presented in **Part 3, Sections 1.4.1.1** and **1.4.2.4**. The survey results confirmed that the lower littoral zones of the reef platform at James Price Point, which is exposed at extreme low spring tides, exhibited the greatest diversity of flora and fauna, including soft and some hard corals (predominantly individual faviid colonies). In summary, hard corals are scattered throughout the James Price

Point area in generally low densities (refer SAR **Part 3, Section 1.4.2.4** and **Section 2.4.1.2**).

On a regional scale, the abundance and diversity of corals within the James Price Point area is considered to be low compared to other locations throughout the North West Marine Region. In a local context, diversity was observed to be highest off Coulomb Point north of James Price Point which is similar to the diversity of nearshore corals further south including Port Hedland and Cape Lambert but lower than at the Dampier Archipelago or Mermaid Sound. Further, no species of local, regional or conservation significance were identified from these surveys and thus the intertidal corals at James Price Point are not concluded to have special significance within the region. Notwithstanding, impacts to benthic habitats have been fully assessed in the strategic assessment. A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on benthic habitats. Refer SAR **Part 3, Section 2.4.4** (Management Measures) for a complete summary.

Generic Question ID: 86 Sub ID [2] Raised by [S2 Q42]

Filter feeders such as sponges were considered to be the most prevalent species in the James Price Point nearshore environment and at serious risk from increased sedimentation from dredging and dredge soil disposal. Fifty-two species of tropical marine sponges were identified between Coulomb Point and Quondong Point.

Surveys to date have identified that filter feeders were amongst the most abundant species, relative to other benthic habitats, in the James Price Point nearshore environment. Benthic cover was predominantly sparse to medium (i.e. 2-16%). Sponges were commonly found in mixed benthic communities that contained a diverse range of sessile invertebrates (sea whips, gorgonians) with limited exclusive sponge communities identified.

Part 3, Section 2.4.3 acknowledges the predicted impacts on filter feeding communities, demonstrating that permanent impacts on benthic flora will be restricted to within close proximity of the port infrastructure footprint (**Figure 2.4-1**).

Whilst removal of macroalgal and seagrass habitat is expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of this habitat type within the broader Canning Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay).

Generic Question ID: 549 Sub ID [170] Raised by [S170 Q1433]

WWF & ACF Submission: What evidence is there, from other port developments and dredging projects in WA, for impacts on seagrass and potential for recovery? Current understanding in most cases is that seagrass is permanently affected with little success in recovery.

Within the Project area and typically throughout tropical Australia, seagrass meadows are predominantly ephemeral and comprised of structurally small species of low biomass (i.e. Halophila spp.). Halophila ovalis is the fastest growing tropical seagrass species and prefers slightly more exposed conditions than other Halophila species (Vermaat et al. 1995). These tropical seagrass beds are known to be resilient habitats able to recover rapidly after disturbance (Coles et al. 2007) and are often pioneering colonisers of bare substrates (Birch and Birch 1984; Huisman 2000; Waycott et al. 2004 and Waycott et al. 2005). Several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredging activities (Coles et al. 2007; Unsworth et al. 2009). Given that the underlying physical sediment characteristics within this zone are not predicted to be altered, it can be expected that seagrass and other BPPH will recover.

Generic Question ID: 596 Sub ID [120] Raised by [S120 Q1249]

ENGO Submission: The marine vegetation (seagrass) of all four sites including James Price Point were surveyed over 35 days in May and June 2008." If all sites were allocated the same time, then James Price Point possibly had as little as five whole days of actual survey time. Further vegetation surveys were done in the dry season, "The Coulomb-Quondong survey area was surveyed from 21-25 August 2008, with 20 person-days invested." (ENV, 2008) (See **p. 37-38** of submission for context).

In responding to this comment, the Proponent has assumed that the submitter is referring to surveys and investigations of benthic marine habitats, not terrestrial habitats.

Several extensive benthic surveys characterising the James Price Point area and the wider regional marine environment were undertaken to support the site selection process and Strategic Assessment Report (**Part 3**, **Section 1.4**). In many instances these studies were carried out by independent specialist governmental agencies such as CSIRO, AIMS, WA Department of Environment and Conservation, and the Museum of Western Australia.

The joint AIMS/CSIRO benthic habitat study commissioned for the Northern Development Taskforce site

selection process (Fry et al. 2008, **Appendix C-4**) undertook 201 transects of the seabed along the Dampier Peninsula. A further 163 transects were surveyed by SKM as part of the SAR marine habitat mapping study (**Appendix C-5**). These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

Generic Question ID: 701 Sub ID [120] Raised by [S120 Q1476]

ENGO Submission: The Priority 1 PEC, dwarf pindan heath has been insufficiently surveyed outside of the Broome area and the lack of detailed investigation into the ecological characteristics and extent of this ecosystem suggests that there is likely to be unmeasured impacts upon this priority ecological community in the event of any development in the James Price Point area.

The 114ha of coastal heath mapped in the James Price Point coastal area **(Part 4, Section 2.4.3.1)** may correspond to the Priority Ecological Community (**PEC**) (Priority 1) described as the dwarf pindan heath community and hence is considered to be of moderate conservation significance (Biota, 2009c; **Appendix C-18**). Up to 8.9ha of this vegetation may be cleared for construction of the northern pipeline representing a local loss of approximately 7.8% of the coastal heath **(Part 4, Section 2.4.3.1, Table 2.4-5).** Regionally, 705ha of coastal heath has been mapped at four sites on the Dampier Peninsula (ENV, 2008a; **Appendix C-14**) and the 8.9ha of clearing proposed represents only 1.3% of the mapped extent of this vegetation type on the Dampier Peninsula. The known regional extent of coastal heath on the Dampier Peninsula (705ha) is likely to be an underestimate as mapping has only been conducted at four sites.

The Proponent recognises the importance of conservation significant vegetation communities, including coastal heath, within the James Price Point area and has committed to minimise direct and indirect impacts of the development. The Proponent will work with proponents of derived proposals to achieve this through all phases of project development (**Part 4, Section 2.7.4**).

The Proponent recognises the importance of monitoring and management of indirect impacts on the coastal heath. The proposed Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**), to be developed in consultation with the Department of Environment and Conservation (**DEC**), will include coastal heath vegetation and will provide a management framework for proponents of derived proposals. The effectiveness of this strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones. Annual reporting on the success of this program is to be made publicly available, providing transparency of the process.

To inform this strategy, a Vegetation Monitoring Program (**VMP**) has been initiated to collect baseline data at selected sites in conservation significant vegetation types, including coastal heath, with potential to be at risk of indirect impacts from the proposed BLNG development, as well as control sites. This program is expected to continue throughout the planning, construction and operational period of this project. Further development of the VMP will be undertaken in consultation with DEC.

Generic Question ID: 882 Sub ID [169] Raised by [S169 Q1739]

Environs Kimberley Submission: Conduct a review of impacts in light of Marine Benthic Habitats including, but not limited to:

- habitats and intertidal communities in the vicinity of relevant development components;
- geographic extent of affected habitats and communities and proportion affected by the development;
- characterisation of sediments to be dredged and the chemical properties of the proposed disposal site and impacts on associated marine communities;
- evaluate equipment options to minimise dredging impacts; andset performance criteria for environmental protection.

The Strategic Assessment Report undertook a comprehensive impact assessment process to determine the predicted impacts of the Precinct development on the marine environment, subtidal and intertidal habitats. Quantification of the predicted loss of BPPH within the subtidal and intertidal zones from the Precinct construction activities was undertaken and presented in **Part 7**, **Section 3**. Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

It is noted that little geotechnical information has been determined from the proposed dredging area, though chemical and particle size distribution analyses were undertaken on twenty-one 'grab' samples of surface

sediments. The results of these analyses are presented in **Part 3, Section 1.3.3**. No chemical or physical testing of sediments has been undertaken at the spoil disposal site(s), as the location of this site(s) has not been decided. However, the environmental impacts associated with spoil disposal will be assessed as part of the Commonwealth Sea Dumping permit application process under the *Environment Protection (Sea Dumping) Act 1981*.

The minimisation of dredging impacts through the application of best practice management techniques and technologies will be outlined in the Dredging and Spoil Disposal Management Plan (**DSDMP**). Prior to commencement of dredging activities, proponents will prepare and implement a DSDMP, to the satisfaction of relevant environmental regulatory authorities. It is expected that performance criteria and ministerial conditions for the proposed activities will be considered by the EPA and SEWPaC as part of the assessment process and advice to respective Ministers, in order to ensure acceptable environmental outcomes are achieved. Subject to the implementation conditions and final commitments relevant to this strategic proposal, it is expected that performance criteria for environmental protection will be further defined as part of the management and monitoring arrangements prescribed through EMPs and licence conditions for prescribed activities under Part V of the *Environmental Protection Act 1986*. The Department of State Development and future Precinct proponents will work with the OEPA and other statutory authorities to ensure that appropriate safeguards are in place, consistent with the objectives and outcomes for the strategic approval.

Generic Question ID: 1025 Sub ID [224] Raised by [S224 Q1953]

KLC Submission: **Part 3**, **Table 2.4-5** Condition No. M2.4 - The SAR does not present outcomes in terms of BPPH loss. Specific management measures in terms of habitat loss should be presented so that Traditional Owners can gain a better understand of the potential impacts and the ability to manage these impacts.

It is acknowledged in the Strategic Assessment Report (primarily within **Part 3, Sections 2.4.3.1** and **2.3.4.1** and **Part 7, Section 3.5**) that the dredging and nearshore construction activities will result in some temporary (i.e. recovery <5 years) and permanent impacts on nearby benthic habitats affected by the turbidity and sedimentation. The predicted BPPH loss associated with the Precinct development was quantified and presented in **Part 7, Section 3**.

The site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat. This resulted in the selection of the site at James Price Point site where BPPH coverage is generally low and thus the 'indicative port development' scenario is predicted to result in a loss of approximately 321ha of combined BPPH (primarily macroalgae and seagrass). Whilst removal of such habitat is expected to reduce benthic primary production in the area, this is not expected to impact on general ecosystem function and integrity of the James Price Point area, given the prevalence of this habitat type within the wider bioregion.

The Proponent proposes that future management plans, such as a Dredge and Spoil Disposal Management Plan, will be developed by future proponents within the Precinct, to the satisfaction of the WA Minister for Environment in order to address the specific management measures to minimise loss of BPPH (SAR **Part 3**, **Table 2.4-5**).

Generic Question ID: 1086 Sub ID [157] Raised by [S157 Q2434]

WAFIC Submission: **Part 3**, **2.4.3.1** Potential impacts to benthos due to marine site disturbance and excavation WAFIC notes that a location for the spoil disposal ground (or grounds) has not yet been fixed. Given that the draft SAR acknowledges that, in relation to the dredge spoil disposal grounds, 'the worst case scenario is that all benthos within the spoil ground will be permanently lost...' (**p. 2-65**), the commercial fishing industry is of the view that the location should avoid, as much as possible, prominent commercial fishing areas and the general principle of compensating pre-existing users for significant losses should be respected.

While it was acknowledged that the precise location of the dredge spoil disposal ground had not been determined, the principle of avoiding areas of environmental sensitivity has been taken into account in the assessment of this predicted impact.

A strategic review of potential offshore spoil disposal locations was undertaken for the SAR. The review (detailed in **Appendix C-13**) identified and mapped the key environmental and social constraints in the region with the objective of identifying an area of minimal constraints in which a spoil ground could be located.

The implications of alternative spoil ground locations were assessed using sensitivity tests in **Section 5.6** of **Appendix C-13**. However, the ultimate location of the spoil ground will be assessed under the Commonwealth Sea Dumping Permit Process.

Generic Question ID: 1115 Sub ID [107] Raised by [S107 Q2286]

How will seagrass communities be impacted by the proposed groundwater abstraction? Many seagrass communities rely on the submarining of groundwater.

The potential risk of adverse impacts on seagrass communities from groundwater abstraction activities is considered to be very low. It is not clear what effect, if any, nutrient loading from groundwater seepage has on the distribution of seagrass communities within the Precinct development area. Irrespective, groundwater abstraction will be tightly regulated to ensure a limit of drawdown does not result in significant effects to environmental and social values with particular reference to terrestrial receptors.

In this context, it should be noted that the use of groundwater is controlled under the *Rights in Water Irrigation Act 1914* (**RIWI Act**), administered by the Department of Water (**DoW**) (**Part 4, Section 2.3.3.4**). The DoW determines the level of groundwater abstraction that may occur without unacceptable environmental impacts and this limit is defined as the sustainable yield of the aquifer (**Part 4, Section 2.3.3.4**). This licence process provides certainty that the environmental impacts of the proposed groundwater licence application will be assessed by the DoW and that no unacceptable environmental impacts will be approved. The DoW will not approve licence applications for groundwater abstraction beyond the sustainable yield.

2.5 Relevant Factor: Fish

Generic Question ID: 197 Sub ID [24, 27, 42, 45, 84, 85, 94, 97, 98, 105, 118, 120, 126, 134, 149, 151] Raised by [S45 Q428]

The Strategic Assessment Report notes that James Price Point is likely to feature the three endangered sawfish species found in the Kimberley, though there is a lack of data. Further study is required to determine if this indeed is an important habitat and/or migration zone for these species.

Whilst James Price Point occurs within the range of all three listed sawfish species, there is no evidence of key feeding, pupping or nursery habitats occurring in the area, and therefore, on a regional scale, the area does not appear critical for populations of these species. Extensive surveys conducted at James Price Point support this, with no species of sawfish being recorded (Cappo et al., 2010; RPS, 2010). Tracking of both dwarf and green sawfish in Pilbara and Kimberley marine waters has indicated that these species typically display strong site fidelity around mangrove habitats, moving in and out of mangroves with the prevailing tide (Stevens et al., 2008). It has been hypothesised that mangroves may offer feeding opportunities or shelter from predation on high tides (Stevens et al., 2008). Whilst this study was conducted in areas where mangroves were present, it does indicate that sawfish are likely to aggregate near mangrove habitats and therefore coastal areas without mangroves, such as James Price Point, may support fewer sawfish on a regional scale than areas with established mangrove communities. The importance of the Fitzroy River and King Sound, as nursery areas, for freshwater and dwarf sawfish, also suggests that the abundance of these species may be relatively low, on a regional scale, in the vicinity of James Price Point (Whitty et al., 2008; Morgan et al., 2009).

Notwithstanding the absence of preferential habitat (and hence relatively low importance of the James Price Point area to sawfish on a regional scale), there is the potential that the proposed development activities may impact individual sawfish in the vicinity. Given that the range of all three species extends both north and south of James Price Point, it is possible that sawfish move parallel to the shore through the area. This would appear particularly likely for the freshwater and dwarf sawfish which appear to have important nursery areas north of James Price Point (i.e. in the Fitzroy River and King Sound, respectively) but which have also been caught from south of James Price Point. Morgan et al. (2009) have indeed suggested that adult female freshwater sawfish may undertake seasonal migrations back to the mouth of the Fitzroy River for pupping. Negative interactions might arise through coastal infrastructure of the project impeding sawfish movement in shallow water. However, given that sawfish have been caught in deep offshore waters by trawl fisheries (Morgan et al., 2009), it seems likely that these species would be capable of navigating around coastal infrastructure by moving through deeper water. Indirect negative interactions with sawfish might also arise from increased localised turbidity associated with dredging and construction. However, since sawfish are adapted to feeding in typically turbid Pilbara and Kimberley waters, increased turbidity is unlikely to impact on their ability to forage successfully.

Part 6, **Section 2.4.2.4** of the SAR discusses the potential impact of the Precinct development on migrating sawfish. It was acknowledged that impacts to sawfish may occur as a result of the construction and physical presence of the nearshore infrastructure by creating a barrier to their movements along the shoreline. However, given that sawfish have been caught in relatively deep water by trawl fisheries, it is suggested that such species can be expected to successfully circumvent these potential barriers, with no impacts predicted to sawfish at a population level.

In conclusion, whilst there remain gaps in understanding of the life-cycles and habitat use of the three species of endangered sawfish found in the Kimberley, the Proponent is confident that there is sufficient information to conclude that the proposed development would not have a significant effect on these species on a regional scale.

Generic Question ID: 572 Sub ID [2, 120] Raised by [S120 Q1218]

ENGO Submission: The failure to conduct studies which explain why the waters off James Price Point are a major fish aggregation site and how development will impact it, contradicts the NDT Report which states, "In particular, studies into fish aggregation and whale migration will be critical to establishing whether impacts can be avoided or minimised" (NDT, 2008). (Submission **p.16-17**)

ENGO Submission: When making reference to the possible cumulative impacts on fish stocks of marine pollution, habitat loss and increased recreational fishing pressure, the SAR simply dismisses the issue: "Given that the majority of fish stocks targeted by recreational fishers are in offshore waters outside the JPP coastal area and associated with habitat that is present throughout the Canning marine bioregion, the cumulative impact to fish abundance is predicted to be low." (SAR, **Vol 3**, **p.2-102**).

Related questions from other submissions include:

- Fish species diversity has been reported as nearly double that of similar habitats in the Great Barrier Reef Marine Park. The most extensive biota mapped through the study area was a highly diverse combination of sponges, sea whips, sea grasses, gorgonians, ascidians, sea pens, non photosynthesizing soft corals, and macroalgae which, when combined with the influences of the local tidal conditions, ocean currents, remobilisation of fine sediments and possible high primary productivity (i.e. chlorophyll and plankton), makes this a unique biodiversity hot spot on the Kimberley coast.
- Further studies on what impact the potential loss of benthic habitats 'peanut' and 'puddle' would have on migratory fish from Roebuck Bay is needed. It is a well known local fishing fact that all of the bait fish from Roebuck Bay migrate from the Roebuck wetlands in the wet season to the two reef systems known as the 'Peanut' and the 'Puddle' during the dry season. Further studies should be undertaken into the impacts that the loss of those benthic habitats will have on migratory bait fish from Roebuck Bay. If these fish do not return to Roebuck Bay then the fisheries of Roebuck Bay will collapse.

Survey efforts undertaken to date to characterise the fish fauna in the area were completed by the Australian Institute of Marine Science, to inform the baseline context of the Strategic Assessment Report. Whilst the James Price Point coastal area sampled during the Baited Remote Underwater Video Stations (**BRUVS**) study area (Cappo *et al*. 2010b; **Appendix C-6**) was notable for the diversity and abundance of the fauna, given the shallow depth and lack of seafloor topographical complexity, studies (Allen 1992; Allen 1997; Newman et al. 2003 and Travers et al. 2006) have considered the fish fauna within the coastal Kimberley region to be low in diversity when compared to fish species found offshore from the Kimberley coast (i.e. at the Rowley Shoals, Allen 1992).

The inshore fish fauna of the Kimberley can be best described as belonging to the Indo-Australian sub-province of the Indo-West Pacific region and are primarily inshore coastal fishes that are adapted to silty environments associated with large tidal fluctuations (Allen, 1992). The diversity of fish species observed in the James Price Point coastal area were well represented in the wider Canning marine bioregion and not considered locally unique in distribution or abundance. The species identified by Cappo *et al.* (2010b) were typical of the fish communities within the Canning marine bioregion as described by Newman et al. (2003).

It is acknowledged that the Kimberley region is host to some fish species listed as threatened and protected under the EPBC Act including freshwater sawfish (*Pristis microdon*), green sawfish (*Pristis zijsron*) and dwarf sawfish (*Pristis clavata*). However, the BRUVS study determined that no fish species classified as threatened under the EPBC Act were noted during the study (Cappo *et al*., 2010b; **Appendix C-6**). The site is unlikely to support a suitable habitat to the threatened sawfish species. However, all of the EPBC listed sawfish species may pass through the James Price Point coastal area while migrating from nursery grounds to feeding grounds (such as the Fitzroy River) (Morgan et al., 2009; **Appendix C-7**). On the balance of available science, whilst benthic habitats at the northern and southern ends of the James Price Point coastal area contain benthic communities which are important to a range of fish species, it is not accurate to depict the area as a biodiversity hotspot on the Kimberley coast, relative to the ecologically important habitats including offshore islands in a regional context.

The impact assessment conclusions made on fish populations within the James Price Point area was based on the existing knowledge of the diversity, abundance and sensitivity of the receptors (i.e. fish stocks) and the probability of adverse impacts occurring, given the scope of predicted construction and operational activities.

It was acknowledged that, based on stakeholder anecdotal evidence, there are some fish aggregation areas within the vicinity of James Price Point (i.e. the Peanut and Puddle). These were identified as key environmental receptors in the SAR assessment.

It was concluded that, given the relatively small area of influence of the predicted Precinct development activities (primarily nearshore impacts associated with reduced water quality and loss of benthic habitat), the

cumulative impact on fish stocks on a regional level is low.

Generic Question ID: 489 Sub ID [232, 169] Raised by [S232 Q1353]

The Aboriginal community members wondered about the impact on the fish around the Dampier Peninsula and their future fishing activities.

The Strategic Assessment Report (**SAR**) considered a range of potential impacts associated with fish (**Part 3, Section 2.5.4**) and concluded that the significance of impacts to fish populations is low, given the localised nature of the marine aspects such as site disturbance and excavation, noise and vibration and marine discharges associated with the Precinct. Subsequently, it is likely that there will be no detectable impacts to fish communities or populations as a result of the BLNG Precinct.

The Proponent acknowledges that local environmental values and species (including fish) within the James Price Point area are of cultural importance (refer **Part 5, Section 3.8** for full details). In order to investigate such linkages the Department of Fisheries commissioned a customary fishing study (Big Island Research, 2010). It is noted in the SAR that the Precinct development is likely to affect customary fishing in the immediate vicinity of the Precinct, as the facilities would restrict access for land based fishing at the site. However, access to James Price Point itself would be maintained from Broome. Therefore, while there are cultural values associated with customary fishing that may be affected as a result of the development, it is unlikely that customary fishing would cease as a result of the development, as such fishing activities are typically undertaken at a number of coastal locations along the Dampier Peninsula and reasonable access to James Price Point will remain. On this basis, it is concluded that the broader cultural values associated with local fishing activities can be maintained notwithstanding the implementation of the Precinct development.

Generic Question ID: 348 Sub ID [38] Raised by [S38 Q1214]

Further studies on what impact the potential loss of benthic habitats 'peanut' and 'puddle' would have on migratory fish from Roebuck Bay is needed. It is a well known local fishing fact that all of the bait fish from Roebuck Bay migrate from the Roebuck wetlands in the wet season to the two reef systems known as the 'Peanut' and the 'Puddle' during the dry season. Further studies should be undertaken into the impacts that the loss of those benthic habitats will have on migratory bait fish from Roebuck Bay. If these fish do not return to Roebuck Bay then the fisheries of Roebuck Bay will collapse.

The Strategic Assessment Report (**SAR**) investigated and assessed the predicted impacts on benthic habitats associated with dredging and nearshore construction activities. The 'Peanut' and 'Puddle' receptors were identified in consultation with local stakeholders and are presented on the water quality impact figures (**Part 3, Section 2.3.4**). The predicted impacts on benthic habitats within the broader James Price Point area were assessed in **Part 3, Section 2.4.3** and further quantified in **Part 7, Section 3** of the SAR . No permanent loss of benthic habitats are predicted at the 'Peanut' and 'Puddle' locations (refer **Part 3, Figure 2.4-2)**. Temporary impacts (i.e. temporary loss with recovery within five years) on photosynthetic benthic habitats (i.e. seagrass, macroalgae, coral and filter feeders) were predicted at the 'Puddle' after the application of light thresholds on the water quality model. However, the temporary loss of some benthic habitats at this site is not predicted to have an impact on bait fish as such aggregations are unlikely to be associated with benthic habitats. Rather, scientific literature indicates that such fish aggregations at reef or shoal areas such as the 'Peanut' or 'Puddle' are associated with episodic nutrient rich upwellings driven by seasonal currents or tidal resuspension, resulting in a localised abundance in plankton (Pattiaratchi, 2007).

Generic Question ID: 578 Sub ID [120] Raised by [S120 Q1225]

ENGO Submission: At every stage of the report, when cumulative impacts are even mentioned, such as in relation to the cumulative impacts of increased recreational fishing and loss of fish habitat, the report authors minimise and dismiss the potential cumulative impacts and risks without providing any evidence to support their conclusions. See for example SAR **Part 3**, **p. 2-102**: "... the cumulative impact to fish abundance is predicted to be low".

It should be noted that the scope of the detailed assessment reported in the Strategic Assessment Report is focused on Category A related activities (i.e. the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons in State waters), with commentary provided on Category B and Category C activities in the context of cumulative impacts.

The impact assessment conclusions on environmental receptors (including fish) within the James Price Point area were based on the existing knowledge of the diversity, abundance and sensitivity of the receptors (i.e. fish stocks) and the probability of an impact being manifested, given the scope of predicted construction and operational activities. With regards to fish, it was concluded that, given the relatively small area of influence of the predicted Precinct development activities (primarily nearshore impacts associated with reduced water quality

and loss of benthic habitat), the cumulative impact on fish stocks on a regional level is low.

It is also noted that, as part of this Response to Submissions phase, the Proponent has completed a synthesis of cumulative impacts of Category A activities as relevant to key environmental factors. Refer to **Section 4.5.4** of the Response to Submissions Summary Report for additional context regarding cumulative impacts on the marine environment.

Generic Question ID: 590 Sub ID [120] Raised by [S120 Q1244]

ENGO Submission: The fish survey did not address regional questions as it described the fish fauna in a 25km2 area off James Price Point and didn't examine fish communities north or south of the area. Thus the study cannot compare within or between regions and cannot comment on the relative significance or value of the area in a regional context. For example, were the differences in fish populations due to oceanographic processes? "Due to the absence of data elsewhere the Kimberley, there is no way to compare the unusually high densities of bait fish and pelagic predators at James Price point area to the rest of the Kimberley." [Cappo pers comms, Dec 2010]. "A meta-analysis including the stereo-BRUVS data collected by Watson et al. (2008) from the Burrup Peninsula would enable much better interpretation of the faunal patterns recorded here for the James Price Point Study area. (Cappo, 2010).

The BRUVS survey was designed to determine fish diversity within the Coulomb Point to Cape Boileau area. Whilst the survey did not aim to sample the wider Canning marine bioregion, comparisons with regional fish populations are valid in order to evaluate the results of the survey in the context of fish communities within the broader Dampier Peninsula and Canning marine bioregion.

The results of the study indicate that the diversity of fish species observed in the James Price Point coastal area were well represented in the wider Canning marine bioregion and not considered locally unique in distribution or abundance. The species identified by Cappo *et al.* (2010b) were typical of the fish communities within the Canning marine bioregion as described by Newman *et al.* (2003).

Generic Question ID: 657 Sub ID [194] Raised by [S194 Q946]

It is established in **Part 3 Section 2.5.4.3** of the SAR that there is a serious threat to fish populations due to Sediment Deposition, mostly due to the impacts of residue on benthic habitats. Some of the mitigation strategies to this issue in **Table 2.5-2** M2.4 are seriously inadequate or irrelevant. This is obvious in the comment: "a communications strategy to inform other local marine users of times of peak construction activity that may influence non-construction related activities within the area." This is suggesting telling a fisherman (as an example of a marine user) that there is a peak construction activity and that it will affect the fishing within the area. This will not mitigate the sediment impacts of dredging, it will just reduce the witnesses to the event. This is not a mitigation strategy. Similarly, the comment: "consideration of the re-use of suitable dredge material for MOF construction, where practicable". There is concern that, once the realistic associated costs of re-locating the dredged material for reuse, and the associated costs of treating the dredged material for reuse are considered, then the company might conclude that it is more practicable to deposit the sediment directly into the ocean, thus the issue will remain and will not have been mitigated at all.

It has been acknowledged that there exists the potential for negative impacts to fish associated with the dredging activities. These potential impacts have been noted and discussed in **Part 3, Section 2.5.4.3**, though it is not accepted that these impact are a 'serious threat to fish populations'. Fish within the James Price Point coastal area are expected to be able to withstand periodic increases in suspended sediments, as evident during naturally occurring turbid conditions (e.g. wet season spring tides).

Certain species of fish that are dependent upon specific habitat requirements will be more sensitive to disturbances to and/or loss of benthic habitat. Benthic dwelling and territorial species that show high site fidelity are the most sensitive to changes in benthic habitat cover. Those species considered to be habitat generalists will be more resilient to changes in benthic habitat. The same principles apply to changes in food availability, with feeding generalists less sensitive to specific changes in the availability of different food types. Results from the 2009 BRUVS survey suggest that there were very few species that were restricted to one specific habitat type (Cappo *et al*., 2010b). Given the mixed nature of habitats within the James Price Point coastal area, it is likely that the fish species present are not restricted to any one BPP type and will be fairly resilient to changes in the type and abundance of habitat. In addition, individual habitat types have an extensive distribution within the wider Dampier Peninsula region.

The management measures outlined in **Table 2.5-2** have been identified as a framework to avoid, minimise, manage and mitigate the potential impacts to fish as a result of the nearshore construction activities, as appropriate at this stage of strategic proposal. The specific strategies quoted are an example of the range of measures that will be outlined within the relevant Environmental Management Plans and are not meant to be definitive. The re-use of dredged material for reclamation remains a possible and practical option for spoil

disposal. The appropriateness of this option is largely dependent on the suitability of the fill material, in terms of physical sediment properties, for reclamation and construction. While cost is a consideration, it is not the overriding factor in determining the suitability of this option.

Generic Question ID: 1077 Sub ID [157] Raised by [S157 Q2427]

WAFIC Submission: **Part 3**, **Section 2**, **p. 2-1** - It is not clear as to what basis it was deemed that fish did not warrant a detailed assessment or management measures. Certainly fish, as defined by the *Fish Resources Management Act 1994 (WA)*, is an integral factor to commercial fishing, pearling and aquaculture sectors. Similarly, the availability of locally harvested seafood is also an important factor to the Western Australian community.

In the context of the environmental and social receptors most relevant to the James Price Point area, the potential impact to fish (**Part 3, Section 2.5**), commercial fishing (**Part 5, Section 4.5**), recreational fishing (**Part 3, Section 4.8**) and pearling and aquaculture (**Part 3, Section 4.6**) have been systematically assessed as part of the SAR.

Generic Question ID: 1088 Sub ID [157] Raised by [S157 Q2435]

WAFIC Submission: The draft SAR acknowledges that physiological damage to any fish species 'can result from close exposure to high intensity noise sources from pile driving or blasting' (**Part 3**, **Section 2.5.4.4**, **p. 2- 96)**. Further, there is also some discussion of physiological effects on fish from long term noise exposure (associated with vessel movements, for example). There is no reference to research applied to pearl oysters.

Part 5, **Section 4.6.5.7** discusses the potential impact of noise and vibration on pearl oysters. It is noted that the Precinct may introduce sources of noise and vibration including piling, blasting and vessel movements. Prior to the transfer of oysters to their marine 'grow out' areas, noise and vibrations can cause spat to unsettle. However, strong spat growth in nursery culture means strong byssal attachment to the culture gear. While vibration may be a stress on the oysters which may induce spawning there is no evidence in the published literature to suggest this. In addition, vessels associated with the pearling activities in close proximity to the leases and the shell cleaning process itself would generate significantly more measurable noise and vibration than the relatively distant noise sources predicted from the Precinct construction or operations. Marine noise and vibration generated by construction activities is unlikely to exceed levels associated with regular pearling vessel movements in leased areas.

Generic Question ID: 1089 Sub ID [157] Raised by [S157 Q2436]

WAFIC Submission: **Part 3 Section 2.5.7** Cumulative impacts of the proposal and associated activities and projects:

The cumulative impacts of the proposal have been modelled on fish but this section is addressed in general terms only. We note the assertion that "the greatest impact associated with increased vessel activity is an increase in recreational fishing" (**p. 2-102**). However, the draft SAR goes on to say:

"Given that the majority of fish stocks targeted by recreational fishing are in offshore waters outside the JPP coastal area and associated with habitat that is present throughout the Canning marine bioregion, the cumulative impact to fish abundance is predicted to be low (**p. 2-102**)."

Further explanation is requested of the basis on which the cumulative impact to fish abundance is predicted by the draft SAR to be 'low'.

A full assessment of the predicted impacts from the Precinct development on commercial and recreational fishing activities is presented in **Part 5, Sections 4.5, 4.6** and **4.8**. The statement that the cumulative impacts to fish abundance is low was based on the conclusion that no significant alterations to the broader ecosystem integrity of the area were predicted (**Part 3**, **Section 2.4.3**) and no significant increase in fishing pressure directly associated with the Precinct development is expected.

Locally important fishing areas were identified and considered as part of the strategic impact assessment. For example, the 'Peanut' and 'Puddle' receptors were identified in consultation with local stakeholders. No permanent loss of benthic habitats are predicted at the 'Peanut' and 'Puddle' locations (refer **Part 3, Figure 2.4-2)**. Temporary impacts on photosynthetic benthic habitats (i.e. seagrass, macroalgae, coral and filter feeders) were predicted at the 'Puddle' after the application of light thresholds on the water quality model. However, the temporary loss of some benthic habitats at this site is not predicted to have an impact on bait fish as such aggregations are unlikely to be associated with benthic habitats. Rather, scientific literature indicates that such fish aggregations at reef or shoal areas such as the 'Peanut' or 'Puddle' are associated with episodic nutrient rich upwellings driven by seasonal currents or tidal resuspension, resulting in a localised abundance in plankton (Pattiaratchi 2007).

Refer also to **Section 5** of the Response to Submissions Summary Report, in relation to theme comments on cumulative impacts.

2.6 Key Factor: Marine Mammals

Generic Question ID: 39 Sub ID [4, 5, 21, 24, 27, 28, 34, 35, 36, 42, 43, 45, 47, 50, 54, 55, 62, 63, 65, 70, 76, 77, 78, 84, 85, 86, 90, 91, 96, 97, 98, 99, 100, 116, 118, 126, 133, 134, 135, 144, 145, 151, 164, 223, 226, 235, 236, 292, 293] Raised by [S5 Q75]

A number of submissions raised similar points:

- Humpback Whales migrate to and from the Antarctic every year, and the James Price Point area is an important calving ground. The dredging and blasting of the sea-bed for up for 1500 surfer tankers a year, and the movement of shipping, would directly affect the whales breeding and feeding areas
- The proposed port and shipping (up to 2,700 ship movements per year) will disrupt the migration routes, and calving and nursery grounds, of the largest humpback whale population in the world. Further study should be conducted into these impacts.

A range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula, and in particular the James Price Point coastal area (refer SAR **Part 3,Section 1.4.4.4** for details). It is acknowledged that the broader regional marine environment is of regional significance for humpback whales, as they utilise areas such as Camden Sound (approximately 344km north of James Price Point), and Pender Bay (approximately 103km north east of James Price Point) as calving, staging and resting areas. From all survey efforts to date, there is no evidence to suggest that James Price Point is a calving ground. The significantly higher numbers of calves recorded at Pender Bay than either James Price Point or Gourdon Bay throughout the 2009 survey supports the assertion that their calving grounds lie to the north of Lacepede Islands and Beagle Bay and not at James Price Point (RPS, 2010a; **Appendix C-8**).

Although there is the potential to affect individual animals given the large numbers of humpback whales that migrate offshore the Dampier Peninsula, there have only been five reported vessel collisions in Western Australian waters between 2006 and 2008. Of these only one incident involved a humpback whale (IWC, 2008). Experience at other ports along the north-west WA coast where humpback whales seasonally migrate has been considered in the context of the assessment and it is evident that humpback whales successfully cross major shipping corridors (i.e. Port Hedland and Dampier ports) and continue their migration south (**Part 3, Figure 2.6.5**), with little evidence of vessel strike incidents.

Therefore it is considered unlikely that the additional vessel traffic associated with the BLNG Precinct development would have a significant impact on the humpback whale population. Although the risk of vessel strikes on individual humpbacks is proportionally increased, the mitigation measures that will implemented (e.g. through vessel management plans) are intended to ensure an appropriate adaptive management response by the Port Authority and future proponents.

In October 2010 the Western Australian Government announced the formation of the Kimberley Wilderness Parks, as a key component of the State Government's Kimberley Science and Conservation Strategy. As part of this initiative, the Camden Sound and North Kimberley marine parks are proposed to be managed together as the Great Kimberley Marine Park, recognising the importance of protecting regionally important aggregation and calving areas for the Group IV humpback population.

Generic Question ID: 195 Sub ID [24, 27, 34, 45, 105, 85, 98, 84, 94, 97, 118, 149, 134, 235] Raised by [S24 Q195]

A study of humpback whales should be conducted over at least four years, without any interference of seismic testing during that time.

Knowledge of the humpback whales along the Kimberley region has increased considerably since the mid-1990s. Since cessation of commercial whaling in the Southern Ocean, the 'Group IV' population has increased by approximately 10% per annum and was estimated to total 21,750 (95% CI:17,550-43,000) during the northward migration in 2008 (Hedley *et al*, 2009). Data collected over recent years has demonstrated that humpback whale population is steadily increasing (Hedley *et al*, 2009). To complement the existing data on Humpback whales in the Kimberley region, a range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009 as part of the Strategic Assessment process, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula (refer SAR **Part 3, Section 1.4.4.4** for details). Additional surveys have also been undertaken during 2010 and will continue into 2011 to further define humpback whale distribution and abundance off the west coast of the Kimberley. This consolidated survey program is, to the knowledge of the Proponent, the most comprehensive study undertaken on Western

Australia's humpback whales.

In 2009, during the main humpback survey effort detailed in the SAR (**Appendix C-8**), no seismic surveys were undertaken in the survey area. However, during the 2010 megafauna surveys, two seismic surveys (Koolama 2D Seismic Survey and an Ultra High Resolution Survey) were undertaken by Woodside. Details of these programmes were provided to the relevant environmental regulatory authorities for consideration and were subject to conditions to minimise the potential to affect cetaceans. There was no indication that any of these programmes interfered with the migration movements of humpbacks along the Dampier Peninsula and therefore the baseline data collected during this period is thought to be representative of the regular humpback migration pathways.

Generic Question ID: 11 Sub ID [2, 31, 56, 57, 70, 200, 159, 129, 126, 136] Raised by [S2 Q12]

The proposed industrial precinct at James Price Point will pose an unacceptable risk to the marine environment (including: humpback whales and their calves).

There is not nearly enough known about Kimberley fauna, flora and ecosystems to warrant damaging these through ignorance.

Numerous comprehensive terrestrial and marine flora and fauna studies have been undertaken in the James Price Point coastal area and are listed in **Part 4**, **Section 1.2** and **Part 3**, **Section 1.2** of the Strategic Assessment Report (**SAR**) respectively. These studies provide an informed understanding of the flora and fauna values and ecological processes in the James Price Point coastal area and in a regional context.

The SAR undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the terrestrial and marine environments. Whilst it was noted that impacts to terrestrial and marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of flora, vegetation and fauna (including that of conservation significance) or the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

It is ultimately the regulatory assessment by the Environmental protection Authority (**EPA**) and the Department of Sustainability, Environment, Water, Populations and Communities (**SEWPaC**), and Ministerial decision-making regarding the Precinct that will conclude the acceptability of the proposal and the conditions that are considered appropriate to achieve acceptable outcomes.

Part 3, Section 2.6.3 discusses the predicted impact of the Precinct development on humpback whales. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of humpback whales off the Dampier Peninsula as described in **Part 3, Section 2.6.1.2**. As concluded in **Part 3, Section 2.6.5.1**, potential impacts from the proposed development may impact on humpback whales at an individual level, although adverse impacts are not anticipated on humpback whales at a species or population level.

A range of marine and terrestrial studies and monitoring programs will be expected to continue to inform adaptive management and monitoring commitments going forward. Refer SAR **Part 3, Section 2.6.4** (Management Measures) for a complete summary.

Generic Question ID: 9 Sub ID [1, 46, 47, 93, 65] Raised by [S1 Q10]

The Precinct will damage rare and endangered flora and fauna such as humpback whales and dugong

The Strategic Assessment Report (**SAR**) presents the full results of the impact assessment process of the predicted impacts of the Precinct development on benthic communities (including seagrass and algae) and marine mammals (such as Humpback whales and Dugongs), and the management response proposed by the Proponent. Comprehensive Marine Megafauna surveys have been undertaken to understand the distribution, movements and behaviour of marine mammals at a local and regional context, to inform the Strategic Assessment.

Part 3, Section 2.4.3 acknowledges the predicted impacts on seagrass and macroalgal communities, demonstrating that permanent impacts on benthic flora will be restricted to the footprint of the 'indicative port area' (**Figure 2.4-1**). Whilst removal of macroalgal and seagrass habitat is expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of this habitat type within the wider Canning Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay).

The SAR also assessed the potential for temporary loss of seagrass to indirectly impact dugongs through a

subsequent loss of foraging habitat. The temporary loss of seagrass is not expected to significantly impact on the overall food resource availability for dugongs given the prevalence and natural variability of seagrass within the wider Canning Bioregion. Dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range. In addition, the *Nearshore Regional Dugong Survey Report* (RPS 2010c; **Appendix C-9**) concluded that dugong presence is sporadic along much of the West Kimberley coast. Whilst it is known that dugongs are likely to be present around James Price Point, it is noted that this presence is in relatively low numbers compared to other areas along the West Kimberley coastline. Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay. Management arrangements to avoid Precinct-related activities in these regionally important areas have been proposed in the SAR.

Part 3, Section 2.6.3 discusses the predicted impact of the precinct development on humpback whales. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of humpback whales off the Dampier Peninsula as described in **Part 3, Section 2.6.1.2**. As concluded in **Part 3, Section 2.6.5.1**, potential impacts from the proposed development may impact on humpback whales at an individual level, although adverse impacts are not anticipated humpback whales at a species or population level.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on marine mammals. Refer SAR **Part 3, Section 2.6.4** (Management Measures) for a complete summary.

Generic Question ID: 641 Sub ID [232, 42, 84, 123] Raised by [S232 Q1382, S123 Q2999]

A number of submissions raise similar points regarding Dugong populations:

- The Indigenous community on the Dampier Peninsula expressed concern for the Dugong travelling from Beagle Bay up and down the coastline. What impact will there be on the Dugongs' travel pattern along the coastline?
- Furthermore scientific studies on impacts to dugongs have not been adequately undertaken.
- There are no quantifiable date to substantiate population claims for dugong in the Kimberley and little scientific understanding of the biology, breeding, feeding and movement range of dugong.

The Strategic Assessment Report (**SAR**) presents the full results of the impact assessment process of the predicted impacts of the Precinct development on dugongs and the management response proposed by the Proponent (see **Part 3, Section 2.6** and also **Part 6, Section 2.4.3.2**). Comprehensive aerial surveys of dugongs were undertaken during March, July and September 2009 to determine the distribution of movements of dugongs on a local and regional scale to inform the Strategic Assessment Report (see **Appendix C-9**). Further, benthic habitat surveys were undertaken which included an assessment of the distribution of benthic habitats (including seagrass), which are important dugong foraging habitat (see **Appendices C-4** and **C-5**). After consideration of these scientific studies the Strategic Assessment determined that the impacts of the proposed Precinct to dugongs, both direct and indirect, would be low.

The SAR **Part 3**, **Section 1.4.4** provides a summary of the known population trends and transitory movements of dugongs in a local and regional context. Resident populations are known to occur at Beagle Bay and the Montgomery Islands (Mustoe and Edmunds 2008; RPS 2010c; **Appendix C-9**) and large numbers of dugongs have been recorded in Roebuck Bay (RPS 2010c; **Appendix C-9**). However, the extent to which such individuals travel along the coast to the James Price Point area is not well understood. A study undertaken in collaboration with the Department of Environment and Conservation, Edith Cowan University and the Bardi Jarwi rangers at Beagle Bay (Campbell *et al*. 2010), provide some evidence for the ability of resident Beagle Bay dugongs to travel to the waters offshore from Coulomb Point. It is known that dugongs may range over comparatively large areas but preferentially forage over relatively small ones.

The SAR assessed the primary impact of the Precinct development in relation to dugongs regarding the potential loss of foraging habitat. **Part 3, Section 2.4.3** acknowledges the predicted impacts on seagrass and macroalgal communities, demonstrating that permanent impacts on benthic flora will be restricted to the footprint of the 'indicative port area' (**Figure 2.4-1**). Whilst the removal of macroalgal and seagrass habitat is expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of this habitat type within the wider Canning Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay). In addition, the *Nearshore Regional Dugong Survey Report* (**Appendix C-9**) concluded that dugong presence is sporadic along much of the West Kimberley coast. Whilst it is known that dugongs are likely to be present around James Price Point, it is noted that this presence is in relatively low numbers compared to other areas along the West Kimberley coastline. Dugongs have been

known to relocate to adjacent areas in search of seagrass beds following losses within their home range (Gales *et al*. 2004; Preen and Marsh 1995). Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay. Management arrangements to avoid Precinct-related activities in these regionally important areas have been proposed in the Strategic Assessment Report.

Generic Question ID: 75 Sub ID [2, 70, 228] Raised by [S2 Q32]

Projections for increased shipping in NW Australia from the ports of Dampier, Port Hedland and Broome (James Price Point) and the cumulative impact of the offshore development of the oil and gas industry could have a serious impact on the survival of the Breeding Group D population of humpback whales.

It is noted that the North West Marine Region is of regional significance for the 'Group IV' humpback whale population, in particular recognising that they utilise areas such as Camden Sound (approximately 344km north of James Price Point), and Pender Bay (approximately 103km northeast of James Price Point) as calving, staging and resting areas.

The number of anticipated vessels movements (approximately 1,300 per annum during operations) to and from the BLNG Precinct represents a small increase in the current vessel movements to and from existing Western Australian ports. There have only been five reported vessel collisions in Western Australian waters between 2006 and 2008. Of these only one incident involved a humpback whale (IWC, 2008). Experience at other ports along the northwest WA coast where humpback whales seasonally migrate have been considered in the context of the assessment and it is evident that humpback whales successfully cross major shipping corridors (i.e. Port Hedland and Dampier Ports) and continue their migration south (**Part 3, Figure 2.6.5**), with little evidence of vessel strike incidents. Considering the relatively small increase in vessel movements associated with the proposed development, it is considered unlikely that the additional vessel traffic would have a significant impact on the 'Group IV' humpback whale population.

Generic Question ID: 76 Sub ID [2, 28, 120] Raised by [S2 Q33]

The report fails to consider the impacts of the expansion of the Broome Port as a supply base for the Browse Basin or the disturbance caused by service boats moving between Broome and James Price Point. The submission states that estimated shipping movements out of James Price Point have been projected at 2,700 per annum. This does not include shipping movements associated with a supply base at Broome or James Price Point or port expansions related to other "derived proposals" such as mineral exports. Another Industrial Port facility is being proposed for Point Torment, near Derby. Industrial shipping from this development will impact on Kimberley whales.

It is the State's expectation that the 'sense of place' of Broome is protected. Accordingly, excessive expansion of the Port of Broome is not envisaged as part of the Browse LNG Precinct.

Any unrelated growth in the Port of Broome is outside the scope of the Strategic Assessment Report. If in the future it requires expansion, the Broome Port Authority will be required to submit any significant proposal for assessment by the Environmental Protection Authority (**EPA**), and any other relevant State or Commonwealth Government authority responsible for assessment processes under those circumstances.

Similarly any activity currently being considered for Point Torment near Derby would also be required to undertake a suitable level of assessment by the EPA and other assessments as appropriate.

The SAR envisages that the Precinct will include the necessary marine facilities to support the offshore and onshore developments, minimising impacts on the Port of Broome. Shipping movements required to supply offshore components associated with Precinct operations are considered in **Part 3, Section 2.6** of the Strategic Assessment Report, along with predicted impacts on marine mammals. Should the project go ahead, a Vessel Management Plan will be developed to include the following measures to mitigate the impact on marine mammals:

- Vessel speed restrictions within the Marine Precinct Port area;
- Training for selected vessel crew to sight and manage interactions with marine mammals; and
- Vessel contractor(s) to be provided with a map showing sensitive environmental features, including humpback whale aggregation areas and foraging areas for dugongs. These areas will be avoided as far as practicable.

The implementation of the aforementioned mitigation measures and safeguards will be effective in mitigating the impact of the Browse LNG Precinct port area. All management plans will be developed in consultation with the State Department of Environment and Conservation and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

The State has made the specific commitment that mineral exports will not occur from the Browse LNG Precinct. Accordingly this is not part of the scope of the Strategic Assessment Report.

Generic Question ID: 238 Sub ID [64, 120, 147] Raised by [S64 Q661]

DEC Recommendation 28: That the following actions are implemented to provide for appropriate assessment and management of impacts on marine mammals:

- The Proponent undertakes additional surveys within two kilometres of the coast, from Broome to Cape Leveque, using methods approved by DEC to identify localised critical habitat of Indo-Pacific humpback and snubfin dolphins.
- The Proponent undertakes additional survey of the proposed port development area and proposed pipeline route, using methods approved by DEC, to better determine presence/absence over time of Indo-Pacific humpback and snubfin dolphins, as well as humpback whale cows and calves.
- The Proponent ensures hydrocarbon and chemical spill contingency planning for the site considers the priority protection of localised and regional critical habitats for turtles, dugong, Indo-Pacific humpback and snubfin dolphins, and humpback whales.
- The Proponent undertakes surveys for dugongs and cetaceans in the port development area during and immediately after the completion of the construction phase, using survey methods approved by DEC.
- The Proponent and the Broome Port Authority ensure all vessel operators avoid impacts on marine mammals as best as possible and consistent with the Wildlife Conservation (Closed Season for Marine Mammals) Notice 1998.
- The Proponent seeks agreement from the Broome Port Authority, Department of Transport and the Australian Maritime Safety Authority for the designation of vessel corridors that avoid critical habitat for dugongs, cetaceans that are specially protected under the Wildlife Conservation Act and marine turtles.
- The Proponent seeks agreement from the Broome Port Authority that all operational and support vessels log marine mammal information as required by the OEPA on the advice of DEC and submit it to DEC annually through the Broome Port Authority:
- The underwater acoustic model is verified using actual field measurements to determine site specific marine fauna management zones (i.e. zones of potential physical injury, zones of potential behavioural disturbance). This investigation should be undertaken by a suitably qualified marine acoustic professional.
- The Proponent develops noise management procedures for pile driving and blasting to the requirements of the OEPA on the advice of DEC.

Discussion: The Proponent has provided insufficient information in regard to the presence/absence of Australian snubfin and Indo-Pacific humpback dolphins (both are priority 4 fauna taxa) in and around the proposed port development area. The breadth of vessel and aerial transects, and height of aerial surveys, did not allow proper identification of dolphins seen, and may have resulted in a significant number of animals being missed. The development area was also not targeted for more intensive survey work, limiting confidence in the information provided regarding impacts associated with the port development.
It will be important for the Proponent, the Broome Port Authority, Department of Transport, Australian Maritime Safety Authority, OEPA and DEC to have a high level of understanding of important habitats and key migration corridors for marine mammals, turtles and dugongs. This work will better inform contingency planning for hydrocarbon and chemical spills, management of declines in water and sediment quality and the management of vessel navigation.

DEC recognises that the risk of vessels striking marine mammals can be relatively low in Western Australia in comparison to other parts of the world. Nevertheless, the provision of information about marine mammal sightings and interactions by operational and support vessels using the port can help to reduce community concern and build public information regarding marine mammal presence/absence and vessel interaction in what will be a significant port in the Kimberley region.

DEC would like to have a high degree of confidence in the designation of zones of potential physical injury and potential behavioural disturbance to mitigate the impacts of noise on marine mammals. Marine fauna acoustic impact assessment is an area of science that is still developing and a precautionary approach should be taken in establishing zones.

Response to DEC Recommendation 28 a): Several studies verify that Australian snubfin and Indo-pacific humpback dolphins (humpback dolphins) mainly occur in protected shallow waters close to the coast, river and creek mouths and are strongly linked to mangrove systems (Parra and Corkeron 2001; Parra et al. 2002; Parra 2006; Parra et al. 2006a and 2006b). A recent study by Parra (2006) on the habitat preferences of snubfin and

humpback dolphins, observed most schools of dolphins were sighted within 10km from the nearest point of land, in waters less than 15m deep and within 20km from the nearest river mouth. This result conforms to reviews of the distribution of both species along the Queensland coast (Corkeron et al. 1997; Parra et al. 2002; 2004) and throughout their range (Stacey and Arnold 1999; Jefferson and Karczmarski 2001).

Taking into account the extensive survey effort (refer to RPS 2010d; **Appendix C-10**) and available literature, it is concluded that this species is seldom found outside of shallow sheltered bays and inlets. It is known that individuals often travel between areas and therefore it is acknowledged that individuals may occasionally occur within the coastal waters adjacent to James Price Point. However, it is highly unlikely that they utilise the waters offshore from James Price Point for feeding and breeding, given nearby preferential habitats at Roebuck Bay, Barred Creek and Willie Creek (RPS 2010d; Appendix C-10). A lack of dolphin observations from both vessel and aerial surveys in nearshore coastal waters in the vicinity of JPP further supports this. As such, it is considered that the activities associated with the Precinct development and operations are not likely to significantly impact snubfin and humpback dolphins given their low occurrence along the Dampier Peninsula. Nevertheless, the management measures proposed to mitigate potential impacts on other marine mammals more relevant to the BLNG Precinct project area will also benefit this species to reduce the risk of impacts and achieve acceptable outcomes.

Taking into account the distribution and preferential habitat of the snubfin and humpback dolphin, it is submitted that appropriate management of Roebuck Bay, through the Roebuck Bay Management Plan, represents the most beneficial management strategy for this species, primarily relevant to indirect or related (Category B and C) activities. This is consistent with commitments already made in the SAR (**Part 6**) to achieve conservation outcomes for Ramsar wetlands.

Response to DEC Recommendation 28 b): Additional aerial surveys (targeting humpback whales) were conducted in 2010 and will continue as part of an ongoing monitoring program. Dolphin sightings have been rare from all previous surveys in nearshore coastal waters in the vicinity of JPP indicating the likely absence of any critical dolphin habitat. Refer response to item a) above in regard to dolphin species. A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on marine mammals. Refer SAR **Part 3**, **Section 2.6.4** (Management Measures) and also **Part 6** (**Table 3-5**) for a complete summary. It is reasonable to expect that, as part of planning and implementation of appropriate management responses, future proponents will define forward monitoring requirements in consultation with DEC and other relevant agencies.

Response to DEC Recommendation 28 c): As outlined in **Part 7** of the SAR, key environmental values including localised and regional critical habitats for marine fauna will be included in relevant management plans, including the hydrocarbon and chemical spill contingency plan. In addition, DSD will establish the BLNG Precinct Control Group (**PCG**) with role of environmental governance. As part of this role the PCG will have a responsibility of ensuring commitments described in the SAR are implemented. Further information on the role of the BLNG Precinct Control Group is outlined in **Part 6**, **Section 3.8.4** of the SAR.

Response to DEC Recommendation 28 d): The Proponent acknowledges and agrees that marine megafauna monitoring will be continued, prior to, during and after construction.

Response to DEC Recommendation 28 e): Vessel impacts on marine megafauna will be managed in accordance with management arrangements outlined in **Part 6** of the SAR. A key focus for management will include, but not be limited to the following:

- avoiding impacts on regionally significant aggregation areas and identifying areas of particular value for calving and foraging;
- establishment of marine conservation areas including means to manage shipping in these areas;
- speed restrictions within nominated areas; and
- implementation of proponent management plans.

In addition, vessel interactions with marine mammals will be managed in accordance with the intent of Part 8 of the EPBC Regulations 2000.
Response to DEC Recommendation 28 f): Refer to response to Recommendation 28 e).

Response to DEC Recommendation 28 g): Under current legislation there is no requirement to log individual marine mammal sightings as part of routine marine vessel operations. However, any direct impact with marine mammals as a result of vessel movements will be recorded and reported to relevant authorities (DEC and SEWPaC) in accordance with the *Wildlife Conservation Act 1950* and EPBC Act 1999.

Response to DEC Recommendation 28 h): It is correct to note that the noise model (**Appendix C-12**) used to inform the impact assessment did not utilise actual field validated sound speed profiles from James Price Point. Equivalent data from the Pilbara region was used instead. However, other local physical (i.e. bathymetry, tidal

regime and substrate type) data inputs were used to inform the model. Since the submission of the SAR, supplementary sound propagation studies were carried out to determine local sound/speed profiles. This data will be utilised to inform further noise modelling studies to be undertaken to support the Derived Proposal of the Foundation Proponent.

Response to DEC Recommendation 28 i): As stated in **Part 3**, **Section 2.6**, measures to mitigate and manage noise related impacts associated with the nearshore construction activities (i.e. blasting and piling) will be outlined within the Port Facilities Construction Environmental Management Plan. This plan will be submitted for consideration and approval to the Office of the Environmental Protection Authority prior to the commencement of construction activities.

Generic Question ID: 28 Sub ID [2, 149] Raised by [S2 Q28]

In 2005 the National Heritage Trust implemented a humpback whale recovery plan with an undertaking to protect habitat that is critical to the survival of humpback whales. These areas include areas known to support significant aggregations of whales, and those ecosystem processes on which humpback whales rely. In particular, known calving, resting and feeding areas and certain sections of the migratory pathways. Currently known calving areas identified by the National Heritage trust include the Southern Kimberley between Broome and the northern end of Camden Sound. The proposed Industrial Precinct at James Price Point is being assessed under Section 146 of the EPBC Act. Under Section 146 (2) the Minister must not act inconsistently with:

- Australia's obligation under:
    - The Biodiversity Convention
    - The Apia Convention
    - Cites Convention
- A recovery plan for the species or community or threat abatement plan.

The uncertainty around actual population numbers still points to the need for a precautionary approach to the management of Breeding Stock D under the 2005 - 2010 Humpback Whale Recovery Plan.

It has been noted in the Strategic Assessment that the North West Marine Region is of regional significance for humpback whales, in particular recognising they utilise areas such as Camden Sound (approximately 344km north of James Price Point) and Pender Bay (approximately 103km northeast of James Price Point) as calving, staging and resting areas.

It should be noted that, since cessation of commercial whaling in the Southern Ocean, the 'Group IV' population has increased by approximately 10% per annum and was estimated to total 21,750 (95% CI:17,550-43,000) during the northward migration in 2008 (Hedley *et al.*, 2009). Data collected over recent years has demonstrated that humpback whale population is steadily increasing (*Hedley et al.*, 2009) despite the recent increased development of oil and gas facilities off the northwest Australian coast. Taking into account the mitigation and management measures as outlined in **Part 3, Section 2.6.4**, the proposed development activities are not anticipated to result in adverse impact on humpback whales at a population level.

The Strategic Assessment Report (**Part 3, Section 2.6.3**) details the potential impacts of the Precinct development on humpback whales. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of humpback whales off the Dampier Peninsula and humpback whales at an individual level, although adverse impacts are not anticipated on humpback whales at a species or population level.

In October 2010 the Western Australian Government announced the formation of the Kimberley Wilderness Parks, as a key component of the State Government's Kimberley Science and Conservation Strategy. As part of this initiative, the Camden Sound and North Kimberley marine parks are proposed to be managed together as the Great Kimberley Marine Park, recognising the importance of protecting regionally important aggregation and calving areas for the Group IV humpback population.

Generic Question ID: 364 Sub ID [161, 120] Raised by [S161 Q796]

ACE Submission: ACE maintains that the impact of residual air toxics and mercury and other processing wastes on the health and safety of whales, their calves and other marine species has not been adequately assessed.

With regard to risks to whales associated with exposure to air emissions, the Air Quality Assessment of the proposed Precinct, conducted as part of the SAR, investigated impacts on air quality. Migrating whales offshore

from the Precinct facilities were not considered a credible sensitive receptor. Predicted concentrations of the pollutant emissions identified in the study were not large compared to national and international air quality criteria, and air quality standards for the protection of human health and well-being were not exceeded at the nearest population centres. The results of modelling confirmed that the Precinct is predicted to make a relatively small contribution to air emissions, with cumulative regional concentrations dominated by the impacts of fires.

The potential impact of wastewater discharges on marine fauna was investigated and assessed (**Part 3, Section 2**). The SAR concluded that, considering the wastewater treatment methodologies to be utilised and the commitment to achieving the relevant ANZECC/ARMCANZ 2000 water quality guidelines outside the active mixing zone of approximately 300m, the risk to marine fauna was minimal.

Generic Question ID: 555 Sub ID [70, 170] Raised by [S170 Q1446]

Part 3, **Section 2.6.3.1** of the SAR outlines an assessment of predicted impacts to marine mammals, including humpback whales, to noise and vibration. This section states that large shipping vessels will likely cross the migration path of humpback whales during the migration season (June to September). These vessels emit a low intensity continuous noise, from which migrating whales may exhibit short term avoidance but is highly unlikely to effect the migration or abundance of whales within the James Price Point area. This is evidenced by the fact that no change in humpback migration patterns has been noted resulting from the increased shipping traffic and noise associated with port developments along the Pilbara coast. In fact the 'Group IV' population is increasing by approximately 10% per annum (Hedley et al. 2009) in spite of the increased development and shipping movements along their migration pathway (refer **Part 3**, **Figure 2.6-5**).

Part 3 Section 2.6.3.1 of the SAR outlines an assessment of predicted impacts to marine mammals, including humpback whales, to noise and vibration. This section states that large shipping vessels will likely cross the migration path of humpback whales during the migration season (June to September). These vessels emit a low intensity continuous noise, from which migrating whales may exhibit short term avoidance but is highly unlikely to effect the migration or abundance of whales within the James Price Point area. This is evidenced by the fact that no change in humpback migration patterns has been noted resulting from the increased shipping traffic and noise associated with port developments along the Pilbara coast. In fact the 'Group IV' population is increasing by approximately 10% per annum (Hedley et al. 2009) in spite of the increased development and shipping movements along their migration pathway (refer **Part 3**, **Figure 2.6-5**).

The number of annual vessel movements (approximately 1,300 during operations) to and from the Precinct represents a small increase in the current vessel movements to and from Western Australian ports. In addition, humpback breeding and calving grounds are primarily located between the Lacepede Islands and Camden Sound, well to the north of James Price Point. Shipping traffic to and from the Precinct are therefore not expected to cross through these breeding or calving areas.

It should be noted that the available data does not converge on specific noise exposure conditions that result in particular behavioural reactions and therefore it is difficult to identify quantitative criteria for assessing behavioural impacts to whales from pulse and non-pulse sounds (Southall et al. 2007). Nevertheless, given the existing shipping traffic through which humpback whales migrate, the small expected increase in this traffic and the distance of likely shipping lanes to known breeding and calving grounds, the expected behavioural impacts to humpback whales is predicted to be low.

Generic Question ID: 708 Sub ID [120, 72] Raised by [S120 Q1483]

ENGO Submission: There was no straightforward study of the area surrounding James Price Point that surveyed the complete distribution of humpback whales from shore to offshore over the whale migration period. The studies never examined the entire distribute of humpback whales offshore. "Whales were sighted at the very western end of transacts, suggesting that some whales also migrated further offshore." [RPS Group, 2009]. Surveys were not extensive as claimed (see above quote), but rather were used to make inferences about the distribution and abundance of whales in the James Price Point vicinity.

It has been acknowledged within the Strategic Assessment Report that the North West Marine Region is of regional significance for humpback whales. As part of the Strategic Assessment process, a range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009 to characterise the distribution and abundance of humpback whales off the Dampier Peninsula (refer SAR **Part 3, Section 1.4.4.4** for details). Additional surveys have also been undertaken during 2010 and will continue into 2011 to further define humpback whale distribution and abundance off the west coast of the Kimberley.

The design of the surveys was not to determine the entire distribution of the humpback whale migration within the Kimberley, but to determine the proportion of individuals that transit through the James Price Point coastal area and surrounding regional marine environment as relevant to the strategic proposal for the BLNG Precinct. This objective was effectively achieved through the robust sampling design and extensive survey effort. This

consolidated survey program is, to the knowledge of the Proponent, the most comprehensive study undertaken on Western Australia's humpback whales.

Generic Question ID: 889 Sub ID [169] Raised by [S169 Q1746]

Environs Kimberley Submission: Cumulative impact studies should include other major onshore, nearshore and offshore activities and developments in the vicinity and along the WA coastline. For example, the activities and developments associated with the Precinct (and their timing and possible overlap with critical migratory periods) are likely to affect migratory whales, which are then in turn affected further down the coast at the Burrup which are then in turn affected by oil and gas development offshore Exmouth which have also been located directly in migratory pathways and so on. In the absence of this information, the success and adequacy of any proposed management and mitigation measures and demonstration of proper due diligence by the Proponent is questionable and cannot be substantiated.

A consideration of cumulative impacts (i.e. Category B and C activities) was undertaken for each of the marine environmental factors in **Part 3**, though the focus of the SAR was on Category A activities directly associated with the Precinct development. With regards specifically to humpback whales, knowledge of the humpback whales along the Kimberley region has increased considerably since the mid-1990s. Since cessation of commercial whaling in the Southern Ocean, the 'Group IV' population has increased by approximately 10% per annum and was estimated to total 21,750 (95% CI:17,550-43,000) during the northward migration in 2008 (Hedley *et al*., 2009). Data collected over recent years has demonstrated that humpback whale population is steadily increasing (Hedley *et al.,* 2009) despite the recent increased development of oil and gas facilities off the North-West Australian coast. There is no evidence that such industrial developments are significantly impacting the humpback whale migration or population.

Refer also **Section 5** of the Response to Submissions Summary Report with regard to additional context of cumulative impacts of Category A activities for key environmental factors.

Generic Question ID: 23 Sub ID [2] Raised by [S2 Q24]

The RPS report (aerial and vessel surveys between Gourdon Bay and Pender Bay (**Appendix C8** of the SAR)) stated that less than 5% of the Humpback whales were recorded within 8km of the shoreline and "therefore they are only found in low numbers in the JPP Marine Management Area". The report fails to acknowledge the influence of Clipper Pearls' pearl lines between Quandong Point and JPP in excluding whales from areas of the proposed management area.

Extensive surveys were undertaken in 2008 and 2009, to understand the distribution and abundance of marine mammals, with particular focus on humpback whales. As correctly noted, analysis of survey data presented in the SAR (RPS, 2010a; **Appendix C-8**) concluded that less than 5% of migrating humpback whales (throughout the migratory period i.e. July to October) were travelling at a distance within 8km of the coastline, with the mean distance for adults being 27km from the coastline and the mean distance for calves being slightly closer to shore (24km) (refer to SAR **Part 3, Section 2.6.1.2** and **Figure 2.6−3**).

Pearling lines situated along the James Price Point coastal area are not likely to significantly impact on whale movements and the Proponent is not aware of any scientific evidence to indicate that the pearling lines significantly inhibit or exclude humpbacks whales from nearshore coastal areas. Therefore, the relatively low density of migrating humpbacks within the nearshore coastal area (i.e.<8km) is unlikely to be attributed to pearling infrastructure and more likely to be linked to oceanographic (i.e. currents, tides and water depth) or ecological (i.e. food availability) factors.

Generic Question ID: 24 Sub ID [2] Raised by [S2 Q25]

RPS estimated that 13,115 humpback whales passed through the JPP migration corridor survey area on their migration north to Camden Sound. RPS assumed that the whales that were recorded travelling north on one day continued travelling north on the next day. This may not have been the case. RPS also assumed that all the whales "migrated north to Camden Sound". Neither assumption was tested with photo-identification comparisons or satellite tagging. The survey also failed to test the influence of tidal currents or vessel interaction on the daily movement patterns of the whales. The report acknowledged the importance of the JPP Survey area for cows and calves with 20% of all whales in early September being cow/calf pairs.

During the northward migration a conservative estimate of approximately 13,000 (95% CI: 3,138–36,729) humpback whales were considered to pass through the survey area. It is agreed that the RPS report (RPS 2010a; **Appendix C-8**) assumed that all humpback whales were travelling north during their northward migration. This was considered a fair assumption, supported by a broad range of studies which indicate that whales on their northward migration continue to travel north of the Dampier Peninsula to calve and rest (refer

DEC, 2009b; Jenner *et al*., 2001 and Jenner and Jenner, 2009; **Appendix C-11**).

This assumption that the northward migrating whales travel to Camden Sound to calve, is based on comprehensive data collected over a 10 year period, which identifies important calving and resting areas between the Lacepede Islands and Beagle Bay in the south and Camden Sound in the north (DEC, 2009b; Jenner *et al*., 2001 and Jenner and Jenner, 2009; **Appendix C-11**). The significantly higher numbers of calves recorded at Pender Bay than either James Price Point or Gourdon Bay throughout the 2009 survey supports the assertion that the calving grounds lie to the north of Lacepede Islands and Beagle Bay (RPS, 2010a; **Appendix C-8**).

A range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula, and in particular the James Price Point coastal area. The surveys did not identify the area offshore from the James Price Point coastal area to be significant for feeding, calving or socialising of whales (Jenner and Jenner 2009; **Appendix C-11**), higher aggregations of whale cow-calf pairs were observed north of the Lacepede Island Group (approximately 65km north of James Price Point). Subsequently, James Price Point was chosen as the preferred option for the onshore BLNG Precinct as this area satisfied several criteria, including avoiding environmentally sensitive areas such as key humpback whale aggregation and calving areas such as Pender Bay and Camden Sound.

Taking into account published literature (refer, for example, Chenoweth, 2008) it is expected that humpback whale behaviour has adapted to exploit the changing oceanic conditions associated with natural tidal regimes. The development of the BLNG Precinct is not considered to adversely impact on the tidal regime within the James Price Point coastal area, which is a natural variable characteristic of the nearshore environment across the region. Therefore no impacts on humpback whales from changes in tidal regimes as a result of the proposed development are reasonably anticipated.

With regards to the impact of survey vessel interactions on humpback whale movement patterns, the RPS marine megafauna surveys followed stringent protocols in determining the migratory direction of humpback whales. Specifically, the vessel approach distance was limited to a minimum of 100 metres from the whale(s) to limit any behavioural response to the vessel. The whales were followed at this minimum distance for a restricted time to determine their direction of travel. These follows were aborted if the whale(s) exhibited any avoidance behaviour to the survey vessel, or other vessels nearby.

Generic Question ID: 25 Sub ID [2] Raised by [S2 Q26]

Kimberley Whales conducted independent Cetacean surveys from Broome to Camden Sound in 2008, 2009 and 2010. (Survey results for 2008 are summarised in Table 1 of Submission 2). The results of the 2009/2010 survey demonstrate the importance of the Kimberley Coast between Broome and Camden Sound for migrating humpback whales.

During the northward migration a conservative estimate of approximately 13,000 (95% CI: 3,138–36,729) humpback whales were considered to pass through the survey area. It is agreed that the RPS report (RPS 2010a; **Appendix C-8**) assumed that all humpback whales were travelling north during their northward migration. This was considered a fair assumption, supported by a broad range of studies which indicate that whales on their northward migration continue to travel north of the Dampier Peninsula to calve and rest (refer DEC, 2009b; Jenner *et al*., 2001 and Jenner and Jenner, 2009; **Appendix C-11**).

This assumption that the northward migrating whales travel to Camden Sound to calve, is based on comprehensive data collected over a 10 year period, which identifies important calving and resting areas between the Lacepede Islands and Beagle Bay in the south and Camden Sound in the north (DEC, 2009b; Jenner *et al*., 2001 and Jenner and Jenner, 2009; **Appendix C-11**). The significantly higher numbers of calves recorded at Pender Bay than either James Price Point or Gourdon Bay throughout the 2009 survey supports the assertion that the calving grounds lie to the north of Lacepede Islands and Beagle Bay (RPS, 2010a; **Appendix C-8**).

A range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula, and in particular the James Price Point coastal area. The surveys did not identify the area offshore from the James Price Point coastal area to be significant for feeding, calving or socialising of whales (Jenner and Jenner 2009; **Appendix C-11**), higher aggregations of whale cow-calf pairs were observed north of the Lacepede Island Group (approximately 65km north of James Price Point). Subsequently, James Price Point was chosen as the preferred option for the onshore BLNG Precinct as this area satisfied several criteria, including avoiding environmentally sensitive areas such as key humpback whale aggregation and calving areas such as Pender Bay and Camden Sound.

Taking into account published literature (Chenoweth, 2008) it is expected that humpback whale behaviour has adapted to exploit the changing oceanic conditions associated with natural tidal regimes. The development of the BLNG Precinct is not considered to adversely impact on the tidal regime within the James Price Point

coastal area, which is a natural variable characteristic of the nearshore environment across the region. Therefore no impacts on humpback whales from changes in tidal regimes as a result of the proposed development are reasonably anticipated.

With regards to the impact of survey vessel interactions on humpback whale movement patterns, the RPS marine megafauna surveys followed stringent protocols in determining the migratory direction of humpback whales. Specifically, the vessel approach distance was limited to a minimum of 100 metres from the whale(s) to limit any behavioural response to the vessel. The whales were followed at this minimum distance for a restricted time to determine their direction of travel. These follows were aborted if the whale(s) exhibited any avoidance behaviour to the survey vessel, or other vessels nearby.

Generic Question ID: 27 Sub ID [2] Raised by [S2 Q27]

The potential threat to humpback whales from the Precinct needs to be considered in a broader context. Consideration needs to be given to the current status of the population, threats to humpbacks in the southern ocean, recent mortality events and the cumulative impacts of a massive increase in the development of the offshore Oil and Gas industry along the northwest coast of Western Australia. A reintroduction of commercial whaling of humpback whales in the Southern Ocean should also be viewed as a major threat to Breeding Stock D.

Knowledge of the humpback whales along the Kimberley region has increased considerably since the mid-1990s. Since cessation of commercial whaling in the Southern Ocean, the 'Group IV' population has increased by approximately 10% per annum and was estimated to total 21,750 (95% CI:17,550-43,000) during the northward migration in 2008 (Hedley et al., 2009). Data collected over recent years has demonstrated that humpback whale population is steadily increasing (Hedley et al., 2009) despite the recent increased development of oil and gas facilities off the northwest Australian coast. There is no evidence that such industrial developments are significantly impacting on the humpback whale migration or population.

Commercial whaling of humpback whales is currently banned under the International Whaling Commission (**IWC**) moratorium in the Southern Ocean and is therefore not considered a current major threat to the 'Group IV' population. The risk of reintroduction of commercial whaling is outside the scope of this proposal and has therefore not been considered in further detail by the Proponent.

Generic Question ID: 29 Sub ID [2] Raised by [S2 Q29]

Humpback whales are known to be opportunistic feeders that may target baitfish along the Western Australian coast. Anecdotal reports from several local sources have confirmed that whales are feeding in Kimberley waters. Whales have been observed skim feeding, lunge feeding and herding baitfish along fringing reefs and headlands. In 2009, high concentrations of whales were recorded between Broome and the Lacepede Islands, in areas with high concentrations of baitfish which were schooling in huge bait balls. In 2010 the highest concentrations of whales was recorded between Adele Island and the Lacepede Islands through the outer shoals where there was a high concentration of baitfish. The feeding behaviour of Humpback whales in the Kimberley is still poorly understood. However, there is enough evidence to suggest that it may be an important feeding area for the Breeding Stock D. The availability of suitable prey in the Kimberley for opportunity feeding may have contributed to a reported 10-12% increase in this population over the past 10 years. The Western Australian Government and the Federal Government should be adopting a precautionary approach to protecting critical habitat in known baitfish and whale aggregation areas along the Kimberley Coast.

A range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula, and in particular the James Price Point coastal area (refer SAR **Part 3, Section 1.4.4.4**). It is acknowledged that the broader regional marine environment, in particular the calving grounds north of the Lacepede Islands and Beagle Bay (**RPS, 2010a; Appendix C-8**), are of significant regional significance.

In 2008, surveys were conducted by the Centre for Whale Research (**CWR**) for Woodside and the Department of State Development (WA) (**DSD**) to support the Northern Development Taskforce (**NDT**) Precinct site selection process (see **Part 2**, **Section 3**). Information from these surveys was used to support the site evaluation process, which led to the selection of James Price Point as a suitable location for the Precinct. James Price Point was chosen as the preferred option as this area satisfied several criteria, including avoiding environmentally sensitive areas such as key humpback whale aggregation and calving areas. Additional marine megafauna surveys that were undertaken in 2009 (summarised in the SAR, and included in their entirety as technical appendices), provide additional information to inform the impact conclusions presented in the SAR.

It was noted in the SAR (**Part 3, Section 1.1.1**) that the Commonwealth waters (i.e. >3nm from the coast) adjacent to Quondong Point were identified as one of the key ecological features of the North West Marine Region (DEWHA, 2009a). These waters are considered to be an area that possibly supports enhanced

biological productivity, which may support larger numbers of baitfish that in turn, may attract aggregations of seabirds and other marine life.

The SAR considers a range of potential impacts associated with fish (**Part 3, Section 2.5.4**) and concludes that the significance of impacts to fish is very low, given the localised nature of the marine aspects such as site disturbance and excavation, noise and vibration and marine discharges associated with the BLNG Precinct. Subsequently, it is likely that there will be no detectable impacts to fish communities or populations as a result of the BLNG Precinct.

Generic Question ID: 31 Sub ID [2] Raised by [S2 Q30]

The mortality rate of the Breeding Stock D is inherently difficult to determine but a recent spike in reported deaths and strandings is cause for concern.

Figures released by Dr. Nick Gales and Doug Coughran in a paper to the IWC (an "unusual mortality event") reported 46 humpback whale deaths along the WA coast in 2009. The majority of the deaths were reported in the mid-west of the state, to the south of the heavy industrial region of the Pilbara Coast and post Montara. One dead whale was recorded in the Montara Oil spill zone (Montara Report). However, no autopsies or biopsies were conducted to determine the cause of these deaths. The report states that whale deaths in 2010 were much lower. The figures only included reported deaths up to June 2010. Subsequent enquiries (D.E.C. pers. comm.) have revealed that as many as 60 deaths may have occurred in 2010 but these figures are still under review. The majority of the deaths were reported to be calves and juveniles.

Marine scientists from the Humpback Whale Institute in Brazil recorded 75 deaths along the Brazilian coast between July and November in 2010. They were concerned that the deaths reflect a higher mortality rate in that population (Breeding Stock A). The highest concentration on the Brazil Coast is found around the Abrolhos Archipelago, which is located in the middle of Brazil's massive offshore oil and gas development area.

The Strategic Assessment Report (**SAR**) acknowledges the significant potential impact associated with a major spill of hydrocarbon liquids. Whilst the likelihood of a major spill was considered remote, the consequence was noted as potentially severe if appropriate response measures were not effectively implemented. Hydrocarbon spill modelling undertaken as part of the SAR (**Part 7**), identified the significant risk associated with a large scale spill. Preventative measures and contingency plans to minimise the risk associated with such an event are detailed in **Part 7, Section 4.4.2**.

In terms of potential vessel strikes on whales, although there is the potential to impact individuals given the numbers of Humpback whales migrating along the Western Australian coast, there have only been five reported vessel collisions (only one incident involved a Humpback whale, IWC 2008) in Western Australia between 2006 and 2008. Records from other ports along the WA coastline have been considered in the context of the assessment, and it is evident that Humpback whales successfully cross major shipping corridors and continue their migration (**Part 3, Figure 2.6.5**), with little evidence of mortality from vessel strikes. The number of vessels movements during operations (approximately 1,300/annum) represents a small increase in current vessel movements along the Western Australian coastline.

Despite recent 'unusual mortality events', data collected over recent years has demonstrated that Humpback whale population is steadily increasing (Hedley et al., 2009) despite the recent increased development of oil and gas facilities off the North-west Australian coast. Therefore the proposed development activities (including vessel movements) are not anticipated to result in an adverse impact on the 'Group IV' Humpback whale population.

Generic Question ID: 74 Sub ID [2] Raised by [S2 Q31]

The humpback whale recovery plan 2008 to 2010 states that "Humpback whales use habitat seasonally and can typically be found along various parts of the Australian coastline for up to nine months of the year (April to December). Anthropogenic activities have the potential to degrade habitat important to the species. These activities may degrade habitat by operating at times that coincide with the presence of whales, or they may occur when whales are absent, but degrade habitat suitability on a permanent or semi-permanent basis.

These activities may include:

- Acoustic pollution (e.g. commercial and recreational vessel noise and seismic survey activity);
- Entanglement (e.g. in marine debris, fishing and aquaculture equipment);
- Build structures that impact on habitat availability and/or use. (e.g. marinas, wharves, aquaculture installations, mining and drilling infrastructure);
- Changing water quality and pollution (e.g. runoff from land based agriculture, oil spills and outputs from aquaculture); and

- Changes to water flow regimes causing extensive sedimentation or erosion or altering currents in near shore habitat (e.g. canals and dredging).

The species dependence on inshore areas means that individual animals may be subject to the impacts from any or all of these activities. Habitat degradation may result in reduced occupancy and/or exclusion of individual whales from suitable habitat, compromised reproductive success and mortality. It is possible that impacts on a sufficient number of individual whales could lead to broader impacts at a population level, e.g. by reducing recruitment to such an extent that species recovery is impeded". The Strategic Assessment Report lists some of the anthropogenic activities that will have an impact on the whales in the area adjacent to the proposed development (**Appendix C-12**; SVT 2010).

The Strategic Assessment Report (**SAR**) (specifically **Part 3, Section 2.4.3)** acknowledges the predicted impacts on benthic habitats, demonstrating that permanent impacts will be restricted to the footprint of the 'indicative port area' (**Figure 2.4-1**). Whilst removal of benthic habitats is expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of this habitat type within the wider Canning Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay).

Part 3, Section 2.6.3 of the SAR discusses the predicted impact of the Precinct development on humpback whales. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of humpback whales off the Dampier Peninsula as described in **Part 3, Section 2.6.1.2.** As concluded in **Part 3, Section 2.6.5.1,** potential impacts from the proposed development may impact on humpback whales at an individual level, although adverse impacts are not anticipated on humpback whales at a species or population level.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on marine mammals. Refer to the SAR **Part 3, Section 2.6.4** (Management Measures) for a complete summary.

Generic Question ID: 78 Sub ID [2] Raised by [S2 Q35]

The submission highlights that the zone of influence for marine blasting is expected to be at least 5km from the blast source (**Figure 6-8, Appendix C12**). Sound is very important to both dolphins and whales for communication and navigation. The high daily fluctuations of tides during Spring Tide periods can stir up the bottom sediments in the water column. Visibility can be reduced significantly at these times. Humpback whales and their calves rely on sound to communicate and possibly to navigate under these conditions.

It is acknowledged and agreed that cetaceans are known to have an acute acoustic sense. Sound is a prime mechanism for communication, navigation and foraging (refer SAR **Part 3, Section 2.6.2.3**).

The reference to **Appendix C-12** is correct. As cited, a noise modelling study of the underwater noise associated with the construction activities for the proposed Precinct was undertaken to support this assessment (**Appendix C-12**). It was noted that there is the potential for impacts to marine megafauna in proximity to construction related activities. The plots in this report (including **Figure 6-8**) are presented to give an indication of the sound exposure level with distance from source for these selected activities. **Table 6-5** summarises the maximum distances to zones of possible behavioural disturbance and possible physical injury. This shows that, for blasting or pile driving activities, behavioural impacts may be predicted to occur for a maximum of 200m and 250m respectively from the source location.

Taking into consideration all relevant literature and studies to quantify these potential effects, underwater noise and vibration generated during construction has the potential to cause physiological injuries, but is more likely to elicit a behavioural response (e.g. avoidance) from cetaceans. Additionally, the peak noise levels from construction activities such as pile driving or blasting would be temporary in nature (for the duration of the works only) in the immediate vicinity of the BLNG Precinct port area.

It is proposed that potential impacts can be successfully mitigated by application of management and mitigation measures through a Port Facilities Construction Environmental Management Plan, including measures to minimise noise impacts on marine mammals during construction.

Generic Question ID: 624 Sub ID [120] Raised by [S120 Q1258]

ENGO Submission: "There is lack of scientific data specific to sirenians (i.e. dugongs) for determining injury and behavioural disturbance as a result of underwater noise, therefore the criteria for cetaceans were applied to dugongs in this assessment study." (SVT, 2010). Amanda Hodgson's work is the only specific dugong research on their responses to underwater noise, and shows the animals clearly to respond to underwater noise. Although there is very little on dugong's hearing ability some assumptions can be made about their hearing based on their vocalisations. Dugong hearing is almost certainly different to dolphins as they would hear a smaller proportion of the frequency range than dolphins. Manatee, however, are another group of sirenians and there is more scientific data on manatees. Thus saying "there is a lack of data specific to sirenians" is not strictly true. More importantly, the manatee data rather than dolphin data should have been used to apply to dugongs.

It is clear that there is limited credible scientific data on the auditory sensitivity of dugongs for determining potential injury and behavioural disturbance as a result of underwater noise. It was noted that dugongs are mid-frequency marine species, as are dolphins. Therefore, the approach taken to utilise the noise threshold criteria of cetaceans for dugongs was deemed appropriate considering the lack of data to support distinctive thresholds specific to dugongs. That said, the Proponent notes the recommendation presented in this submission, and will encourage future proponents to consider the relevance of information on the auditory sensitivity of manatees as a suitable proxy for dugongs for future underwater noise assessments for derived proposals.

Generic Question ID: 625 Sub ID [120] Raised by [S120 Q1259]

ENGO Submission: The Downstream Browse Underwater Noise Assessment 65 (SVT, 2010) lacks discussion on humpback whale calves and the impact of noise on under-developed auditory organs in the young. It also omits important reports on the reaction of humpback whales to noise pollution. This is an oversight given that the Kimberley coast from Broome to north of Camden Sound is an internationally important humpback whale calving area.

It is acknowledged that the broader Dampier Peninsula is of regional significance for humpback whales, as they utilise areas such as Camden Sound (approximately 344km north of James Price Point), and Pender Bay (approximately 103km northeast of James Price Point) as calving, staging and resting areas.

The best possible data available has been used to assess the auditory sensitivity of humpback whales. It is acknowledged that currently available data is insufficient to determine the true range of calf auditory sensitivity and susceptibility to noise pollution. However, information available on auditory sensitivity provides the maximum known audible spectrum of humpback whales. Auditory sensitivity is highly variable between individuals and therefore many whales will have auditory sensitivities below the maximum range of sensitivity of the species (Mooney et al. 2009).

Practical, ethical, and legal considerations limit the level of scientific information that is available for deriving criteria applicable to marine mammals. However, the noise exposure criteria used in the impact assessment are based on those proposed by Southall et al. (2007) which used “the full body of scientific data on marine mammal hearing and the effects of noise on hearing and behaviour, augmented where appropriate by interpretations of terrestrial mammal (including human) data, to develop proposed exposure criteria that are as comprehensive, defensible, and precise as is currently possible”. The method used by Southall et al. (2007) to develop noise exposure criteria for marine mammals was precautionary in approach and the criteria are therefore considered conservative enough to apply to humpback whale calves in the absence of further data.

In terms of the assessment of humpback whale reactions to noise, it is acknowledged that noise pollution can cause displacement from an area and behavioural changes. An extensive review of the literature on noise related impacts on cetaceans has been undertaken and a number of relevant reports have been cited in the SAR. It is not practical for the SAR to comprehensively cite all literature related to humpback whale responses to noise. It is noted that there is limited scientific data available to predict responses to levels of noise from different activities. Again the proposed noise exposure criteria defined by Southall et al. (2007) have been used to assess potential disturbance to humpback whales from development related noise as these are considered to be conservative based on the precautionary method adopted.

As expressed in the SAR, "The available data on behavioural responses do not converge on specific exposure conditions resulting in particular reactions, nor do they point to a common behavioural mechanism. Even data obtained with substantial controls, precision, and standardised metrics indicate high variance both in behavioural responses and in exposure conditions required to elicit a given response. The inability to identify broadly applicable, quantitative criteria for behavioural disturbance in response to multiple-pulse and non-pulse sounds is an acknowledged limitation".

Generic Question ID: 629 Sub ID [120] Raised by [S120 Q1263]

ENGO Submission: Ship strike (cetaceans) is addressed in the SAR in a superficial and perfunctory manner. The SAR makes many assumptions and provides unfounded opinions based on poor data. It lacks objective and rigorous scientific conclusions and it does not provide a complete literature review (see **p. 50-51** for context). Humpbacks are susceptible to ship strike - the second highest reported species struck [44 records, Jensen & Silber, 2003). Humpbacks do not have fast bursts of speed (Boebel et al, 2009(. Pregnant mothers are less agile. Newborn calves are vulnerable to ship strike.

The SAR also outlines the severe impacts of ship strike on other fauna (i.e. dugong), yet fails to address any of the issues raised. Dugongs are highly susceptible to ship strike and are known to feed in the vicinity of the proposed BLNG site.

The Snubfin dolphin is endemic to northern Australia and is also susceptible to ship strike as it forages in shallow waters. Thiele (2010) found that 62% of 124 animals observed in Roebuck Bay, near Broome, had scars from injuries from propellers or fishing gear. She concluded that the high incidence of injuries and the severe scarring indicated that in some cases ship strike would be fatal for Snubfin dolphins and this mortality may impact the population because of its small size and geographical isolation.

It is understood that humpback whales, like other large cetaceans which exhibit significant surface activity, are vulnerable to ship strikes. However, the Strategic Assessment Report undertook a risk based approach to the impact assessment process and therefore the probability of such an event occurring was the determining factor for the assessment of this risk. It was concluded that, based on the predicted vessel movements (1,300/annum) and management measures to be implemented (e.g. vessel speed restrictions), the likelihood of ship strikes was low. This conclusion is supported by the weight of historical evidence which demonstrates that there have only been five reported vessel collisions (only one incident involved a humpback whale, IWC 2008) in Western Australia between 2006 and 2008. It is evident that humpback whales successfully cross major shipping corridors along the Western Australian coastline and continue their migration (**Part 3, Figure 2.6.5**), with little evidence of mortality from vessel strikes.

It is acknowledged that vessel strikes on smaller marine mammals (including dugongs and dolphins) are more common in areas where smaller, faster, recreational type vessels operate. However, vessel movements associated with the construction and operation of the Precinct development will be dominated by large, slower construction vessels and hydrocarbon tankers, which pose a significantly lower risk to faster, more agile marine mammals.

Therefore it is considered unlikely that the additional vessel traffic associated with the BLNG Precinct development would have a significant impact on marine mammal populations. Although the relative risk of vessel strikes on marine mammals is proportionally increased by the Precinct development, the mitigation measures that will be implemented (e.g. through vessel management plans) are intended to ensure that such incidents are minimised and an appropriate adaptive management response by the Port Authority and future proponents is in place.

Generic Question ID: 630 Sub ID [120] Raised by [S120 Q1267]

ENGO Submission: The SAR fails to address the growth of this population and thus fails to consider the future impacts on the whales as well as shipping movements. The Kimberley Humpback whale population is growing at 10% per year and if it continues at this rate it will double its population by 2019 and by 2030 will have increased 16 fold.

The SAR acknowledges the fact that knowledge of humpback whales along the Kimberley region has increased considerably since the mid-1990s. It has been noted that since the cessation of commercial whaling in the Southern Ocean, the 'Group IV' population has increased by approximately 10% per annum and was estimated to total 21,750 (95% CI:17,550-43,000) during the northward migration in 2008 (Hedley et al., 2009). Data collected over recent years has demonstrated that the humpback whale population is steadily increasing (Hedley et al., 2009) despite the recent increased development of oil and gas facilities off the North-West Australian coast, including an increase in shipping movements. There is no evidence that such industrial developments and associated activities are significantly impacting the humpback whale migration or population.

Generic Question ID: 631 Sub ID [120] Raised by [S120 Q1269]

ENGO Submission: In Q&As for Broome Fishing Club, the Proponent said that up to 40 vessels could be active in the area at any one time, but many would be stationary or slow moving. Vessel moving at higher speeds (e.g. greater than 10 knots) however, would mostly occur during vessel transits between areas (e.g. between the Browse LNG Precinct, marine supply base, other regional ports and /or spoil disposal grounds). This lack of restriction on vessel speed of ships using the facility shows that the Proponent either: has not really considered the problems of ship strike and speed; or is not prepared to modify shipping movement because of the location

of the Precinct in a whale nursery and calving area.

The risk of ship strikes on marine mammals was discussed in **Part 3, Section 2.6.3.4**. It was acknowledged that, although the relative risk of vessel strikes on marine mammals is proportionally increased by the Precinct development, there have only been five reported vessel collisions in Western Australian waters between 2006 and 2008. Experience at other ports along the north-west WA coast where whales seasonally migrate has been considered in the context of the assessment, and it is evident that whales successfully cross major shipping corridors (i.e. Port Hedland and Dampier Ports) and continue their migration south (**Part 3, Figure 2.6.5**), with little evidence of vessel strike incidents. Therefore it is considered unlikely that the additional vessel traffic associated with the development would have a significant impact on marine mammal populations.

Mitigation measures (including vessel speed restrictions within the Precinct port area) will be implemented (e.g. through vessel management plans) and are intended to ensure that an appropriate adaptive management response by the Port Authority and future proponents is in place.

Generic Question ID: 633 Sub ID [120] Raised by [S120 Q1271]

ENGO Submission: The level of noise from the construction and operation of a port is unacceptable in or close to a humpback whale calving ground. Noise has the potential to interfere with communication and mating behaviour of adults and important communication and learning between mother and calf. Even at greater distances the effect of "masking" would impact on humpback whales and their calves in the nursery grounds because mothers train their newborns in survival skills in this area.

It was considered that the high intensity impulsive noise emitted during blasting and piling may overlap the frequency range of hearing in humpback whales and therefore has the potential to cause physiological injuries (**PTS**) or behavioural disturbance at close ranges. However, it should be noted that the majority of animals (95%) were noted migrating at a distance of at least 8km off the coast, with adults and calves travelling a mean distance of 27km and 24km from the coast line respectively. Therefore at this distance, noise emitted from blasting and piling activities would be significantly less than that considered to cause any physiological impacts. Consequently, construction and operational activities are unlikely to have a significant impact on humpback whales.

Generic Question ID: 709 Sub ID [120] Raised by [S120 Q1485]

ENGO Submission: Despite the large amount of data collated on the distribution of the humpback whales, the SAR:

- fails to provide a comprehensive understanding of the use of the area surrounding James Price Point during migration and calving;
- fails to address the growth of the population and its consequences on the future expansion of the calving ground and maternal behaviour of humpback whales;
- fails to begin to assess the impacts of this large development on the Kimberley humpback whale population, particularly impacts on vulnerable calves, including physical obstruction; shipping; chemical pollution - both marine and air; noise pollution; sedimentation.

A range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula, and in particular the James Price Point coastal area (refer SAR **Part 3**, **Section 1.4.4.4** for details). The following bullet points specifically address the issues raised in this submission.

- It has been acknowledged in the SAR that the broader regional marine environment is of regional significance for humpback whales, as they utilise areas such as Camden Sound (approximately 344km north of James Price Point), and Pender Bay (approximately 103km north east of James Price Point) as calving, staging and resting areas. From the survey efforts to date and reviewed literature, there is no evidence to suggest that James Price Point is a calving ground. The significantly higher numbers of calves recorded at Pender Bay than either James Price Point or Gourdon Bay throughout the 2009 survey supports the assertion that their calving grounds lie to the north of Lacepede Islands and Beagle Bay and not at James Price Point (**RPS, 2010a; Appendix C-8**).
- Knowledge of humpback whales along the Kimberley region has increased considerably since the mid-1990s. Since cessation of commercial whaling in the Southern Ocean, the 'Group IV' population has increased by approximately 10% per annum and was estimated to total 21,750 (95% CI:17,550-43,000) during the northward migration in 2008 (Hedley *et al.,* 2009). Data collected over recent years has demonstrated that humpback whale population is steadily increasing (Hedley *et al*., 2009) despite the recent increased development of oil and gas facilities off the North-West Australian coast. There is no

evidence that such industrial developments are significantly impacting the humpback whale migration or population.

Part 3, **Section 2.6.3** discusses the predicted impact of the Precinct development on humpback whales. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat);routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of humpback whales off the Dampier Peninsula as described in **Part 3, Section 2.6.1.2**. As concluded in **Part 3, Section 2.6.5.1**, potential impacts from the proposed development may impact on humpback whales at an individual level, although adverse impacts are not anticipated to impact on humpback whales at a species or population level.

Generic Question ID: 785 Sub ID [75] Raised by [S75 Q837]

The SAR (**Part 1**, p. ES-47) notes that marine noise and vibration have the potential to impact on marine mammals, particularly during the construction phase. Despite evidence that the Dampier Peninsula coast is the migration route taken by whales moving to and from the breeding grounds, and the Commonwealth's Humpback Whale Recovery Plan (2005 - 2010), identifying critical habitat for whales in Australia as including 'The southern Kimberley between Broome and the northern end of Camden Sound' the SAR asserts that 'no .....lasting effects on populations are likely to occur'. There are no credible long-term studies or evidence provided to back this assertion or to suggest that the mitigation measures proposed in **Part 1**, **Table 7.8** will be effective.

The marine megafauna studies undertaken to support the Strategic Assessment Report were extensive in terms of scale and highly credible in terms of scientific rigour and robustness. A range of comprehensive aerial and vessel based surveys were undertaken in 2008 and 2009, to characterise the distribution and abundance of humpback whales off the Dampier Peninsula, and in particular the James Price Point coastal area (refer SAR **Part 3, Section 1.4.4.4** for details). It is acknowledged that the broader regional marine environment is of regional significance for humpback whales, as they utilise areas such as Camden Sound (approximately 344km north of James Price Point), and Pender Bay (approximately 103km northeast of James Price Point) as calving, staging and resting areas. In October 2010 the Western Australian Government announced the formation of the Kimberley Wilderness Parks, as a key component of the State Government's Kimberley Science and Conservation Strategy. As part of this initiative, the Camden Sound and North Kimberley marine parks are proposed to be managed together as the Great Kimberley Marine Park, recognising the importance of protecting regionally important aggregation and calving areas for the Group IV humpback population. However, from all survey efforts to date, there is no evidence to suggest that James Price Point specifically is a calving ground or resting area. The significantly higher numbers of calves recorded at Pender Bay than either James Price Point or Gourdon Bay throughout the 2009 survey supports the assertion that their sensitive calving grounds lie to the north of Lacepede Islands and Beagle Bay and not at James Price Point (RPS, 2010a; **Appendix C-8**).

The underwater noise assessment (**Part 3, Section 2.6.3.1** and described in detail in **Appendix C-12**) took into account the understanding of regional occurrence and distribution of marine mammals to inform the impact predictions presented in the SAR.

Part 3, Section 2.6.3 discusses the predicted impacts anticipated to arise from the Precinct development on humpback whales and other marine megafauna. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of humpback whales off the Dampier Peninsula as described in **Part 3, Section 2.6.1.2**. As concluded in **Part 3, Section 2.6.5.1**, potential impacts from the proposed development may impact on humpback whales at an individual level, although adverse impacts are not anticipated humpback whales at a species or population level.

Generic Question ID: 786 Sub ID [75] Raised by [S75 Q838]

Appendix C-12 notes the difficulty of predicting a behavioural response to underwater noise: "The available data on behavioural responses do not converge on specific exposure conditions resulting in particular reactions, nor do they point to a common behavioural mechanism. Even data obtained with substantial controls, precision, and standardised metrics indicate high variance both in behavioural responses and in exposure conditions required to elicit a given response. The inability to identify broadly applicable, quantitative criteria for behavioural disturbance in response to multiple-pulse and non pulse sounds is an acknowledged limitation" (**Appendix C-12**, **p. 8**). The Figure in **Appendix C- 12** (**p. V**), which states that the underwater noise from pile driving will only spread 250m, is particularly unbelievable.

The underwater noise study was defined to provide an assessment on the predicted impacts of the Precinct construction on marine megafauna at this strategic proposal stage. The limitations, specifically in terms of

threshold criteria for disturbance and injury, have been acknowledged and stated in the SAR and the corresponding technical report (**Appendix C-12**).

The results presented in **Appendix C-12** for pile driving summarise the maximum distances between noise sources and the zones of possible behavioural disturbance and possible physical injury for whales, dolphins and dugongs. The underwater noise tabular results and contours presented in the SAR and this technical appendix, showing the zone of behavioural disturbance of 250m from pile driving, are a transparent representation of the outcomes of the modelling of this scenario. As can be seen from the results presented in the SAR, sound exposure levels are time based and therefore the range changes with the length of exposure.

Generic Question ID: 1126 Sub ID [84] Raised by [S84 Q2610]

The clean, sheltered waters of the Kimberley coast are home to the World's largest humpback population and it is here that they calve and mate. The impacts and risks of industrialisation are enormous. According to the Commonwealth's Humpback Whale Recovery Plan (2005 —2010), critical habitat for the whales in Australia includes, "The southern Kimberley between Broome and the northern end of Camden Sound". This critical habitat zone includes James Price Point. According to the Humpback whale recovery plan, the most serious threats to whales in Australian waters are:

- acoustic pollution (e.g. shipping; seismic surveys);
- physical injury and death from ship strike;
- built structures (e.g. ports, marinas and wharves);
- changing water quality and pollution (e.g. oil or chemical spills); and
- dredging (e.g. sedimentation, turbidity).

(Ref. 'Matters of National Environmental Significance at James Price Point', Commonwealth Department of Environment, 2009)

It is noted that the North West Marine Region is of regional significance for humpback whales, in particular recognising they utilise areas such as Camden Sound (approximately 344km north of James Price Point), and Pender Bay (approximately 103km northeast of James Price Point) as calving, staging and resting areas. However, there is no evidence to suggest that James Price Point is a calving ground. The significantly higher numbers of calves recorded at Pender Bay than either James Price Point or Gourdon Bay throughout the 2009 surveys supports the assertion that their calving grounds lie to the north of Lacepede Islands and Beagle Bay and not at James Price Point (RPS, 2010a; **Appendix C-8**).

Part 3, **Section 2.6.3** discusses the predicted impact of the Precinct development on humpback whales. A number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts was considered in detail and assessed against the temporal and spatial occurrence of humpback whales off the Dampier Peninsula as described in **Part 3**, **Section 2.6.1.2**. As concluded in **Part 3**, **Section 2.6.5.1**, potential impacts from the proposed development may impact on humpback whales at an individual level, although adverse impacts are not anticipated on humpback whales at a species or population level.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on marine mammals. Refer SAR **Part 3**, **Section 2.6.4** (Management Measures) for a complete summary.

In October 2010 the Western Australian Government announced the formation of the Kimberley Wilderness Parks, as a key component of the State Government's Kimberley Science and Conservation Strategy. As part of this initiative, the Camden Sound and North Kimberley marine parks are proposed to be managed together as the Great Kimberley Marine Park, recognising the importance of protecting regionally important aggregation and calving areas for the Group IV humpback population.

Generic Question ID: 1162 Sub ID [70] Raised by [S70 Q1668]

Part 1 Table 7-8 Significance of Potential Impacts to Marine Mammals: It is unbelievable that "no significant impact to population viability is anticipated from vessel movements" given the number of active vessels, particularly in construction phase of 4-6 years. The submitter cannot find any studies or research to support this claim.

The number of vessel movements (approximately 1,300 per annum during operations) to and from the BLNG Precinct represents a small increase in the current vessel movements to and from existing Western Australian ports. There have only been five reported vessel collisions in Western Australian waters between 2006 and 2008. Of these only one incident involved a humpback whale (IWC, 2008). Experience at other ports along the

north-west WA coast where humpback whales seasonally migrate have been considered in the context of the assessment and it is evident that humpback whales successfully cross major shipping corridors (i.e. Port Hedland and Dampier Ports) and continue their migration south (**Part 3, Figure 2.6.5**), with little evidence of vessel strike incidents.

Large cetaceans including humpback whales demonstrate a variety of behaviours in response to approaching vessels (attributed to vessel noise), including longer dive times and moving away from the vessel's path with increased speed (Baker and Herman, 1989 and Scheidat *et al*. 2004). These behavioural characteristics, in addition to the implementation of management and mitigation measures (**Part 3, Section 2.6.4**), will significantly reduce the likelihood of a vessel strike on humpback whales.

Considering the relatively small increase in vessel movements associated with the proposed development and the proposed management measures, it is considered unlikely that the additional vessel traffic associated with the Precinct development will have a significant impact on the Group IV humpback whale population.

Generic Question ID: 1357 Sub ID [123] Raised by [S123 Q2340]

More scientific long term extensive studies are required to fully assess the marine biota of the site and potential impacts of the proposed industrial development on dugong populations. Dugongs are threatened vulnerable species under IUCN, their habitats are under extreme pressure and the importance of the JPP seagrass grounds is not fully understood. The annual incidence of algal blooms (*Lyngbya* sp.) at Roebuck Bay has increased in distribution and abundance since 2005, further threatening local dugong habitat.

Several extensive and long-term benthic and marine fauna studies, characterising the James Price Point area and the wider regional marine environment, were undertaken to support the site selection process and Strategic Assessment Report (**Part 3**, **Section 1.4**). In many instances these studies have been carried out by independent specialist governmental agencies such as CSIRO, AIMS, WA Department of Environment and Conservation, and the Museum of Western Australia. These studies have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment.

The SAR assessed the primary impact of the Precinct development in relation to dugongs regarding the potential loss of foraging habitat. **Part 3, Section 2.4.3** acknowledges the predicted impacts on seagrass and macroalgal communities, demonstrating that permanent impacts on benthic flora will be restricted to the footprint of the 'indicative port area' (**Part 3**, **Figure 2.4-1**). Whilst the removal of macroalgal and seagrass habitat is expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of this habitat type within the wider Canning Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay). Dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range (Gales et al. 2004; Preen and Marsh 1995). Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay. Management arrangements to avoid Precinct-related activities in these regionally important areas have been proposed in the Strategic Assessment Report.

Whilst not directly within the scope of the SAR, the issue of annual algal blooms in Roebuck Bay is noted, recognising that increased urban run-off and wastewater disposal from Category B activities could increase the risk of blue-green algae. The management arrangements by the State Government to support the Roebuck Bay Management Plan (**Part 6, Section 2.4**) as proposed are expected to address this potential indirect impact.

Generic Question ID: 1365 Sub ID [147] Raised by [S147 Q2349]

There are a number of differences in the methods used to survey dugongs for the **Appendix C9** - Nearshore Regional Survey Dugong Report, compared to those used for other dugong surveys in Australia. These include altitude of aerial survey, type of plane used, strip width, co-conducting of whale survey during the dugong survey, and the influence of tides. The methodological differences mean that observers in the report dugong surveys had less chance of sighting dugongs than they do during 'normal' dugong surveys. The combination of these limitations may explain the low resight rate reported for these dugongs surveys.

Trials were conducted in Shark Bay by SKM (2009) to demonstrate the detectability of dugongs between 500 and 900 feet were similar. Furthermore, Marsh and Sinclair (1989) conducted dugong aerial survey trials at 450 and 900 feet, and demonstrated that no significant difference existed in the detectability of dugongs between the two altitudes. An independent trial conducted by Bayliss (1986) also found no difference in the detectability and recording of dugongs (H. Marsh pers. comm.). Therefore, it is concluded that the flight height of 900 feet is a suitable altitude for conducting systematic and robust aerial surveys for dugongs.

The aircraft used for the trial was the same as that used in the subsequent RPS surveys reported on in the SAR. It was concluded that the aircraft was suitable and provided adequate time for the observers to spot and identify fauna. During the trial, it was determined that the detection probability for dugongs was high, and therefore the aircraft is considered to be very suitable for conducting surveys for dugongs and other marine megafauna.

The strip width of 400m at 900 feet offers virtually twice the potential for recording dugongs for the subsequent analysis than a strip width of 200m at 450 or 500 feet. However, SKM (2009) found that at 500 feet there was only a 25% reduction in the number of dugongs detected than numbers detected at 900 feet. Even this lower increase in numbers will result in lower variance between flights and therefore provide more robust and precise results. A strip width of 400m also has the potential to record more uncommon events such as large groups which can affect the final population estimate significantly. The strip width of 400m is therefore considered suitable for a dugong survey.

The March 2009 survey estimated 930 (±301 s.e.) dugongs present within the survey area. This fell outside the humpback whale period and the observers focused only within the pre-defined strip width. In July and September 2009 when humpback whales were present, the observers still focused only within the strip width, and recorded humpback whales as a secondary priority. The number of dugongs sampled and the dugong population estimates were substantially larger and were detected over a wider area in July and September than in March. Whilst it is acknowledged that this does not represent results from a systematic trial between sampling methods, it demonstrates that the inclusion of humpback whales as a low priority target species, did not result in fewer dugongs being detected.

The surveys were conducted during neap tides when tidal conditions were fairly consistent between transects, flights and surveys. Furthermore, the analytical procedures take into account turbidity in deriving a population estimate. It is therefore considered that tidal processes are unlikely to significantly affect the results or conclusions given in the RPS 2010c Report (**Appendix C-9**).

It is concluded that dugong surveys conducted to inform the strategic assessment are robust, and provide a comparable estimate of dugongs to other areas such as Shark Bay and the Exmouth Gulf. In addition, no systematic surveys have previously been conducted in this area prior to the comprehensive survey effort to inform the SAR, and therefore there is no benchmark to compare and determine whether the dugong numbers are low, as asserted in the submission.

Generic Question ID: 1366 Sub ID [147] Raised by [S147 Q2354]

In relation to density comparisons presented in **Appendix C9** - Nearshore Regional Survey Dugong Report, it would be appropriate to provide comparisons in densities within the five blocks that the survey area is divided into. The proportions of animals seem quite different in each, with Block 2 (which includes JPP) having a seemingly high proportion of animals.

Whilst densities vary between blocks, it should be noted that the block area, survey effort and habitat characteristics of each block are different. A direct comparison of the blocks would be further complicated by the differences in environmental conditions at the different blocks and during the survey flights. Therefore, a comparison of raw data or abundance estimates between each block was not deemed appropriate or necessary for the purposes of the impact assessment in the SAR.

Generic Question ID: 1367 Sub ID [147] Raised by [S147 Q2355]

In relation to spatial distribution presented in **Appendix C8** - Humpback Whale Survey Report, the report states that: "It is not yet known whether particular whales show fidelity to Scott Reef, or what influences whales to visit Scott Reef, but it is only used by a few humpback whales." This statement is based on three transects flown over Scott Reef during three surveys, one in July and two in September. It is suggested that more data are required before drawing these conclusions.

It is incorrect to state that the three Scott Reef transects were only sampled three times. As demonstrated in Table 4 of RPS 2010a (**Appendix C-8**), the three Scott Reef transects were surveyed five times in total. Figures presented in the report only included flights on which humpback whales (or unidentified whales) were recorded, of which there were three. No whales were sighted on the two other surveys.

Nevertheless, the fact remains that the proportion of whales sighted at Scott Reef in relation to those sighted within the nearshore coastal area is very small. Though it is evident that a few whales make the journey to Scott Reef during their migration, their reasons for doing so remain largely unknown.

Generic Question ID: 1368 Sub ID [147] Raised by [S147 Q2356]

In relation to **Appendix C9** - Nearshore Regional Survey Dugong Report, the report provides confidence intervals calculated using Monte Carlo analysis, but does not provide enough detail about this analysis for us to understand how this was conducted. There is no way of comparing whether the population size estimated for the July and September surveys are statistically different to the March survey, because the latter provides standard errors calculated differently.

The confidence intervals around the population estimate were estimated using the following process:

- using POPTOOLS, half of the dataset for each survey was re-sampled by random selection;
- for each re-sampling, the authors estimated the population as described by Pollock *et al.* (2006), but then multiplied the end result by 2 to account for the smaller dataset;
- the Monte Carlo function in POPTOOLS was used to determine the variance for 1000 random combinations of the raw data;
- upper and lower confidence intervals were taken from POPTOOLS output for lower 2.5 percentile and 97.5 percentile of the resultant distribution of 1000 bootstrap samples; and
- the standard error applied to the final calculations was based on n = 103 observations in the original data set.

The dugong data collected in March 2009 were treated differently to those collected in July and September 2009 reflecting different teams and scientific approach. It was not considered necessary or relevant to conduct comparative analyses between these datasets, for the purposes of the SAR. The confidence intervals for the March survey would otherwise have been re-calculated using the same method as that employed during the July and September surveys.

Generic Question ID: 1369 Sub ID [147] Raised by [S147 Q2357]

Part 3 Section 2.6.3.4: "During the nearshore regional survey (i.e. Cape Bossut near Lagrange Bay in the south to Cape Leveque in the north), the highest number of individual dugongs sighted within the James Price Point coastal area (i.e. Coulomb Point to Quondong Point) was 16 recorded during July 2009 (RPS, 2010c; **Appendix C-9**). This represents less than 1% of the total population (approximately 1,774 animals) estimated to occur between Cape Leveque and Cape Bossut. Therefore, it is likely that a small number of individuals may be affected by vessel activity associated with the BLNG Precinct Port area (**Part 3**, **Figure 2.6-7**). However, no significant impact to population viability is anticipated."

The above statement provides an inaccurate assessment of the potential effects of boats on dugongs. It is inappropriate to compare raw sightings (16 dugongs) to a population estimate (1774 dugongs). The above statement suggests that only the 16 dugongs actually sighted during the aerial surveys are vulnerable to boating impacts around the JPP area, which is obviously incorrect. The changes in dugong density over time (between the March, July and September surveys), together with satellite tagging results, suggest that dugongs could be transiting through the JPP area and all those in or passing through the area are vulnerable to boat impacts.

Boats can interrupt dugongs' feeding when they pass by dugong herds (Hodgson and Marsh, 2007). Although dugongs are more likely to respond to boats passing within 50m, they have been observed responding to boats over 500m away (Hodgson and Marsh, 2007). What determines dugongs' detection distance and response to boats, and the effects of interrupting their feeding, have not been quantified (Hodgson and Marsh, 2007). Potential costs of disturbance include reduced energy intake, increased energy expenditure while fleeing from boats, and exclusion from preferred seagrass patches (Hodgson and Marsh, 2007). By effectively reducing dugong habitat quality disturbance from boats could cause emigration, reduced fecundity or even starvation in dugongs.

Similarly, disruptions of the behavioural activities of dolphins leads to displacement from their preferred habitat and reduced fitness and fecundity, which can potentially result in population declines (Bejder et al., 2006a; Bejder et al., 2006b; Williams et al., 2006; Stensland and Berggren, 2007). Boats can prevent dolphins from accessing particular areas within their home range (Allen and Read, 2000) and alter their behaviour (Lusseau, 2003; Constantine et al., 2004): Acoustic communication between humpback dolphins and their ability to maintain cohesive groups is also impaired by boat traffic and noise (Van Parijs and Corkeron, 2001).

Boat strikes are a significant cause of dugong mortality in Australia (Greenland and Limpus, 2006), and can also cause serious injuries and mortalities to coastal dolphins (Wells and Scott, 1997; Parsons and Jefferson, 2000). The delayed response of dugongs to boats makes them particularly vulnerable to large and/or high speed vessels (Groom et al., 2004; Hodgson, 2004). Shallow waters represent particularly high risk areas for dugongs as they cannot dive deep to avoid vessels (Hodgson, 2004) and in Australia they have been crushed between boats and the seabed (Veates and Limpus, 2003).

Responses to the specific comments raised by the submitter are provided below.

Part 3, Section 2.6.3.4*: "During the nearshore regional survey (i.e. Cape Bossut near Lagrange Bay in the south to Cape Leveque in the north), the highest number of individual dugongs sighted within the James Price Point coastal area (i.e. Coulomb Point to Quondong Point) was 16 recorded during July 2009 (RPS; 2010c;* ***Appendix C-9****). This represents less than 1% of the total population (approximately 1,774 animals) estimated to occur between Cape Leveque and Cape Bossut. Therefore, it is likely that a small number of individuals may be affected by vessel activity associated with the BLNG Precinct Port area (****Part 3****,* ***Figure 2.6-7****). However, no significant impact to population viability is anticipated."*

The above statement provides an inaccurate assessment of the potential effects of boats on dugongs. It is inappropriate to compare raw sightings (16 dugongs) to a population estimate (1774 dugongs). The above statement suggests that only the 16 dugongs actually sighted during the aerial surveys are vulnerable to boating impacts around the JPP area which is obviously incorrect. The changes in dugong density over time (between the March, July and September surveys), together with satellite tagging results, suggest that dugongs could be transiting through the JPP area and all those in or passing through the area are vulnerable to boat impacts.

It is accepted that the wording in the SAR on this issue may be open to a variety of interpretations in regard to boat strikes or the potential impacts of vessels. The statement is intended to indicate a probability assessment of boat strikes in the James Price Point (JPP) area, in comparison to dugong aggregation areas. For example, a boat travelling erratically and at speed, much the same way as recreational boating traffic does, in an aggregation area such as Roebuck or Carnot Bay, has a high probability of striking an individual (much the same as with dolphins e.g. WWF, 2010) because there are more individuals at a higher density for more of the time.

Accepting that all the dugongs in the population (as quoted here, 1774) might eventually move past the JPP area, the aforementioned factors need to be taken into account when considering the probability of boat strike. That is, firstly their density (at any one time) is much less, so there are less available to be struck by a boat. Secondly, they are transiting the area in a matter of a dozen hours, so there is less time, for the fewer individuals, in which to have a boat interaction. The final and important factor to consider is the difference in the characteristics of the hazard (i.e. boat traffic) between a transit area like JPP and an aggregation area such as Roebuck Bay, along with differing anthropogenic characteristics within each area. That difference focuses on speed and direction.

Firstly, commercial boat traffic around the JPP area, both when construction is taking place and afterward during normal operations, will be comparatively slow (= 5 knots). LNG tankers are large and incoming vessels would be expected to be manoeuvred by tugs around the port environs. When departing, LNG tankers would not be expected to even reach their top speed (approximately 10-13 knots) until at some distance offshore. This contrasts markedly with the speed of recreational boat traffic (on average 20 knots but often much higher, DSS, 2007). Secondly the direction of travel of commercial vessels will be largely linear and quite predictable. It is not possible to rapidly change direction in commercial vessels (e.g. tugs or dredges) and particularly large LNG tankers. Contrast this with the often erratic direction of travel for recreational boat traffic. Thus while dugongs will be vulnerable to boat impacts while transiting the JPP area, the characteristics of the boat speed and direction (i.e. slow and linear) will markedly reduce the probability of impact in comparison to Roebuck Bay.

Boats can interrupt dugongs' feeding when they pass by dugong herds (Hodgson and Marsh, 2007). Although dugongs are more likely to respond to boats passing within 50m, they have been observed responding to boats over 500m away (Hodgson and Marsh, 2007). What determines dugongs' detection distance and response to boats, and the effects of interrupting their feeding, have not been quantified (Hodgson and Marsh, 2007). Potential costs of disturbance include reduced energy intake, increased energy expenditure while fleeing from boats, and exclusion from preferred seagrass patches (Hodgson and Marsh, 2007). By effectively reducing dugong habitat quality, disturbance from boats could cause emigration, reduced fecundity or even starvation in dugongs.

Hodgson and Marsh (2007) concluded that “the percentage of time focal dugongs spent feeding and travelling was unaffected by boat presence, the number of boat passes and whether a pass included a stop and restart (pass continuity). The duration, distance and direction of a focal dugong's subsurface behaviour were unaffected by number, continuity or distance of boat passes.” They added to their conclusions that “the levels of boat traffic we observed may reduce dugongs' feeding time budget by a maximum of 0.8–6%. Thus at present boats appear unlikely to be having a substantive effect on the energy intake of dugong populations at our study site on the Moreton Banks near Brisbane, Australia.“ (Page 50, Hodgson and Marsh, 2007).

Similarly, disruptions of the behavioural activities of dolphins leads to displacement from their preferred habitat and reduced fitness and fecundity, which can potentially result in population declines (Bejder et al., 2006a; Bejder et al., 2006b; Williams et al., 2006; Stensland and Berggren, 2007). Boats can prevent dolphins from accessing particular areas within their home range (Allen and Read, 2000) and alter their behaviour (Lusseau, 2003; Constantine et al., 2004): Acoustic communication between humpback dolphins and their ability to

maintain cohesive groups is also impaired by boat traffic and noise (Van Parijs and Corkeron, 2001).

The arguments given above for dugongs transiting the JPP area can also be applied, in part, to coastal dolphins, noting that a dolphin's average swimming speed and agility is higher (3-6 knots when cruising, 15-18 knots at 'burst') compared to a dugong. Dolphins regularly interact with boat traffic moving at speed in ways that are not to their detriment. It is therefore unlikely that boat activity associated with the proposed BLNG Precinct will significantly impact on population viability of dolphins occurring in the JPP coastal area.

In addition, both Stensland and Berggren (2007), and Christiansen *et al.* (2010) report data from the effects of dolphin tourist operations on dolphin behaviour, in other words, operations actively pursuing dolphins. Similarly, *Bejder et al.* (2006a and 2006b) discuss results from dolphin tourism. These studies (and others) may not be very applicable to the activities that will be taking place in the JPP area. For example, Ribeiro *et al.* (2005) noted that the relatively shy Chilean dolphins changed their behaviour in relation to boats in southern Chile. Unsurprising given that "Although a protective regulation has been implemented, Chilean dolphins still may be threatened by hunting both for use as bait in local fisheries, as well as for human consumption (Goodall, 1994)." (Page 235, Ribeiro *et al.*, 2005). As noted above, the primary vessels at JPP will be slow, large tugs or tankers neither of which will be pursuing dolphins or dugongs. Van Parijs and Corkeron's (2001) evidence, only suggests that group cohesion may be affected by boat traffic noise and this is supported by an increase in the recorded rate of whistling.

Boat strikes are a significant cause of dugong mortality in Australia (Greenland and Limpus, 2006), and can also cause serious injuries and mortalities to coastal dolphins (Wells and Scott, 1997; Parsons and Jefferson, 2000). The delayed response of dugongs to boats makes them particularly vulnerable to large and/or high speed vessels (Groom et al., 2004; Hodgson, 2004). Shallow waters represent particularly high risk areas for dugongs as they cannot dive deep to avoid vessels (Hodgson, 2004) and in Australia they have been crushed between boats and the seabed (Veates and Limpus, 2003).

It is accepted that a significant and largely preventable cause of dugong mortality in Australia has been boat strikes. They are indeed vulnerable, particularly in aggregation areas to fast moving, erratic craft such as small recreational vessels in Roebuck Bay. However, as noted above, the sparse density of the transiting animals at JPP, along with the slow moving and predictable vessels present should ensure that very few, if any, strikes will occur. The majority of boat operations will take place in depths sufficient for substrate clearance in defined areas that will remain constant. In addition, all commercial vessels will be operating under the guidance of a Marine Fauna and Vessel Interaction Management and Monitoring Strategy and a Vessel Management Plan to ensure minimal impact to marine mammals. Control of vessel speeds within the Port area is expected to be a key measure to minimise the risk of collision.

Generic Question ID: 1371 Sub ID [147] Raised by [S147 Q2358]

Part 3 Section 2.6.1.2 states that "The potential for environmental impacts associated with the development of the BLNG Precinct Port area on the bottlenose and spinner dolphin is considered slight, given these species are widespread, highly mobile and are likely to exhibit behavioural and avoidance responses, such as fast flight response time, faster dive times and high speed swimming" and "It is considered that activities associated with the development and operation of the BLNG Precinct Port area, are not likely to impact these species, it is also assumed that mitigation measures of impacts for key marine mammal species (i.e. humpback whale and dugong), will also provide a level of impact minimisation for those species that have been identified as less common within the James Price Point coastal area."

There are no supporting data for the above assessments and we find it unacceptable that the smaller cetaceans (delphinids) have not been considered within the SAR. These species have completely different habitat requirements to humpback whales and dugongs, and will likely be impacted in different ways by the Browse LNG development. The first statement above, for example, implies that the development will result in the flight of bottlenose and spinner dolphins. Being able to exhibit avoidance responses does not equate to a species not being impacted at a population level (Bejder et al. 2006b). Furthermore, are the 'bottlenose dolphins' being referred to common bottlenose dolphins Tursiops truncotus or Indo-Pacific bottlenose dolphins Tursiops aduncus? Are they from the same population that is subject to injury and death in the Pilbara trawl fishery (see Allen & Loneragan 2010)? Are the spinner dolphins Stenella longirostris or one of the other species/subspecies that might occur in the area? These clarifications would seem crucial when making broad statements and assumptions about abundance, distribution and level of impacts, or lack there-of, on various species protected under the EPBC Act.

The above statements assume that moving away from disturbance is the optimal response for an animal, however, Bejder et al. (2006a) note the following: "Studies to detect and mitigate threats of human activity on wildlife usually need to produce time-sensitive information in crisis situations. With insufficient resources, time, and background information, these investigations typically emphasise readily obtainable, short-term behavioural measures that can be directly related to disturbance factors (e.g., de la Torre et al. 2000; Duchesne et al. 2000;

Lacy & Martins 2003). Unfortunately, it is seldom possible to infer biological significance based on short-term behavioural change. It is rarely known whether, and in what ways, short-term responses translate to longer-term change in reproduction, survival, or population size (e.g., Gill et al. 2001; Beale & Monaghan 2004a). Moreover, traditional interpretations of behavioural change in response to disturbance have been questioned recently (e.g., Nisbet 2000; Gill et al. 2001; Beale & Monaghan 2004b; Bejder et al. In press). For example, animals demonstrating the strongest responses are not necessarily those most vulnerable to disturbance (e.g., Creel et al. 2002; Stillman & Goss-Custard 2002; Beale & Monaghan 2004b). These uncertainties challenge the utility of conventional impact assessment research to identify valid indicators of disturbance and accurately inform wildlife management." (note: references are from original source and not included in our list).

As noted in various peer-reviewed papers, studies evaluating effects of human activity on wildlife typically emphasise short-term behavioural responses from which it is difficult to infer biological significance or formulate plans to mitigate harmful impacts (Bejder et al. 2009). There is an exception to this: based on some 15 years of detailed behavioural records. Bejder et al. (2006b) evaluated long-term impacts of vessel activity on bottlenose dolphins (Tursiops sp.) in Shark Bay, Australia. This study showed a significant decline in relative dolphin abundance within an area of low vessel activity, during a period of increased exposure to vessels. Thus, vessel activity certainly has the potential to cause long-term effects on the distribution of coastal dolphins (snubfin, humpback and bottlenose dolphins). Research over a significant temporal scale would be needed to make any conclusion on possible effects on distribution and abundance of the coastal delphinid species in the proposed development area. Also, how is 'identified as less common within the JPP coastal area' defined?

The specific comments within the submission are addressed below.

Part 3,Section 2.6.1.2*: "The potential for environmental impacts associated with the development of the BLNG Precinct Port area on the bottlenose and spinner dolphin is considered slight, given these species are widespread, highly mobile and are likely to exhibit behavioural and avoidance responses, such as fast flight response time, faster dive times and high speed swimming" and "It is considered that activities associated with the development and operation of the BLNG Precinct Port area, are not likely to impact these species, it is also assumed that mitigation measures of impacts for key marine mammal species (i.e. humpback whale and dugong), will also provide a level of impact minimisation for those species that have been identified as less common within the James Price Point coastal area."*

There are no supporting data for the above assessments and we find it unacceptable that the smaller cetaceans (delphinids) have not been considered within the SAR. These species have completely different habitat requirements to humpback whales and dugongs, and will likely be impacted in different ways by the Browse LNG development. The first statement above, for example, implies that the development will result in the flight of bottlenose and spinner dolphins. Being able to exhibit avoidance responses does not equate to a species not being impacted at a population level (Bejder et al. 2006b). Furthermore, are the 'bottlenose dolphins' being referred to common bottlenose dolphins Tursiops truncotus or Indo-Pacific bottlenose dolphins Tursiops aduncus? Are they from the same population that is subject to injury and death in the Pilbara trawl fishery (see Allen & Loneragan 2010)? Are the spinner dolphins Stenella longirostris or one of the other species/subspecies that might occur in the area? These clarifications would seem crucial when making broad statements and assumptions about abundance, distribution and level of impacts, or lack there-of, on various species protected under the EPBC Act.

The spinner dolphins were considered to be *Stenella longirostris* (as detailed in **Appendix C-10**). As noted in the same document it was not possible to confidently differentiate between *T. truncatus* (often referred to as *T. truncotus* in US publications) and *T. aduncus* with the survey method used. The Pilbara trawl fishery is located from 114 to 120 degrees longitude off the coast of WA (west of Onslow to east of Port Hedland), approximately 400km from James Price Point. Initial reports, based on genetic comparisons (DoF, 2010) indicated that most dolphin interactions with the trawl fishery were 'thought' to be *T. truncatus* with only a few (i.e. four) individuals genetically related to *T. aduncus*. Home ranges of *T. truncatus* in the literature vary from 50 to 470km (Defran *et al.*, 2006); it would therefore be possible, but quite unlikely, that a member of JPP dolphin population would be impacted by the Pilbara Trawl Fishery.

The SAR comment quoted in the submission above should not be interpreted to imply that the development will cause the mass migration of dolphins from the local area. The statements are focused on explaining the minimal risk associated with any vessel movements. Bjeder and colleagues (2006) predominantly base their comments upon boats actively pursuing dolphins (i.e. dolphin tourism). As quoted in their publication, "Given the substantially greater presence and proximity of tour vessels to dolphins relative to research vessels, tour-vessel activity contributed more to declining dolphin numbers within the tourism site than research vessels. Although this trend may not jeopardise the large, genetically diverse dolphin population of Shark Bay, the decline is unlikely to be sustainable for local dolphin tourism." Most, if not all, boat operations will take place in depths sufficient for substrate clearance in defined areas that will remain constant. In addition, all commercial vessels will be operating under the guidance of a Marine Fauna and Vessel Interaction Management and Monitoring

Strategy and a Vessel Management Plan to ensure minimal impact to marine mammals.

The above statements assume that moving away from disturbance is the optimal response for an animal, however, Bejder et al. (2006a) note the following: "Studies to detect and mitigate threats of human activity on wildlife usually need to produce time-sensitive information in crisis situations. With insufficient resources, time, and background information, these investigations typically emphasize readily obtainable, short-term behavioural measures that can be directly related to disturbance factors (e.g., de la Torre et al. 2000; Duchesne et al. 2000; Lacy & Martins 2003). Unfortunately, it is seldom possible to infer biological significance based on short-term behavioural change. It is rarely known whether, and in what ways, short-term responses translate to longer-term change in reproduction, survival, or population size (e.g., Gill et al. 2001; Beale & Monaghan 2004a). Moreover, traditional interpretations of behavioural change in response to disturbance have been questioned recently (e.g., Nisbet 2000; Gill et al. 2001; Beale & Monaghan 2004b; Bejder et al. In press). For example, animals demonstrating the strongest responses are not necessarily those most vulnerable to disturbance (e.g., Creel et al. 2002; Stillman & Goss-Custard 2002; Beale & Monaghan 2004b). These uncertainties challenge the utility of conventional impact assessment research to identify valid indicators of disturbance and accurately inform wildlife management." (note: references are from original source and not included in our list)

As noted in various peer-reviewed papers, studies evaluating effects of human activity on wildlife typically emphasise short-term behavioural responses from which it is difficult to infer biological significance or formulate plans to mitigate harmful impacts (Bejder et al. 2009). There is an exception to this: based on some 15 years of detailed behavioural records. Bejder et al. (2006b) evaluated long-term impacts of vessel activity on bottlenose dolphins (Tursiops sp.) in Shark Bay, Australia. This study showed a significant decline in relative dolphin abundance within an area of low vessel activity, during a period of increased exposure to vessels. Thus, vessel activity certainly has the potential to cause long-term effects on the distribution of coastal dolphins (snubfin, humpback and bottlenose dolphins). Research over a significant temporal scale would be needed to make any conclusion on possible effects on distribution and abundance of the coastal delphinid species in the proposed development area.

Both Stensland and Berggren (2007), and Christiansen *et al.* (2010) (and others) report data from the effects of dolphin tourist operations on dolphin behaviour, in other words, operations actively pursuing dolphins. Similarly, Bejder *et al.* 2006a and Bejder et al. *2*006b discuss results from dolphin tourism. These studies (and others) may not be very applicable to the activities that will be taking place relevant to the Precinct development. For example, Ribeiro et al. (2005) noted that the relatively shy Chilean dolphins changed their behaviour in relation to boats in southern Chile. Unsurprising given that “Although a protective regulation has been implemented, Chilean dolphins still may be threatened by hunting both for use as bait in local fisheries, as well as for human consumption (Goodall, 1994).” (p. 235, Ribeiro et al., 2005). In relation to some of the supporting references in the submission, it is not thought relevant to reference studies related to human activity on wild pygmy marmosets (de la Torre et al., 2000) or woodland caribou (Duchesne et al., 2000) to infer behavioural responses in marine mammals. As noted above, the primary vessels relevant to the BLNG Precinct will be slow large vessels (e.g. tugs) or tankers, neither of which will be pursuing dolphins.

The marine megafauna studies undertaken for the SAR have contributed significantly to the characterisation of the marine environment within the James Price Point coastal area and wider Canning Bioregion, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment. All evidence to date suggests that the activities associated with the construction and operation of the development will not significantly impact the delphinid population within the James Price Point coastal area.

Also, how is 'identified as less common within the JPP coastal area' defined?

It is unclear what species this statement is particularly referring to; however when comparing species densities or abundances along the Kimberley coast, comparisons are made between the survey transects or block (refer to F**igure 2, Appendix C-10**). It is therefore interpreted that a 'species identified as less common' was not observed to be as prolific (i.e. had a lower proportion of individual animals or densities) within the block or transect survey area along the JPP coastal area (i.e. between Quondong Point to Coulomb Point) (as outlined Figure 2, RPS 2010d) compared with other block or transect areas along the Dampier Peninsula.

Generic Question ID: 1372 Sub ID [147] Raised by [S147 Q2365]

Part 3 Section 2.6.1.2: it is important to note the Australian snubfin dolphin (Orcaella heinshoni) and the Indo-Pacific humpback dolphin (Sousa chinensis) are classified "data deficient" species in Western Australian state waters (WA DEC 2009). Internationally, they are considered "data deficient" and "near threatened" (IUCN Redlist). The federally funded Tropical Inshore Dolphin Workshop held in May 2010 identified coastal zone development as "the major threat" to tropical inshore dolphins and recommended the following actions; "...establish the distribution of tropical inshore dolphins... Through spatial modelling"; "...identify "hotspots" of inshore dolphin distribution"; "identify population structure ... (local and large scale)... using genetics to

determine the degree of isolation amongst areas" (DEWHA, 2010).

There has been no targeted effort to identify and to quantify the abundance of coastal delphinid species in the area, and no effort to use "genetics to determine the degree of isolation amongst areas". These are glaring omissions in the EIA. Thus, the conclusion that "It is considered that activities associated with the development and operation of the BLNG Precinct Port area, are not likely to impact these species (Indo-Pacific humpback dolphin, snubfin dolphin).....", is unsubstantiated and based on field efforts that were aimed at quantifying humpback whale and dugong numbers only.

At a bare minimum, we would have expected the supporting documents about the aerial and vessel-based surveys to provide data about incidental cetacean sightings other than humpback whales. Unfortunately, none of the supporting documents include any information about other cetaceans other than a single sentence: "only five individual whales (0.2% of all whales recorded) were thought to be other species of large cetacean, these being mirike whale (Balaenoptera acutorostrata), killer whale (Orcinus orca) and three sightings of unidentified beaked whales" (**Appendix C-8**, **Section 5.1.1**). This is a misleading statement, however, because 14% of whale groups seen during the aerial surveys were unidentified (**Appendix C-8**, **Section 5.1.1**). An assessment of the potential impacts of the Browse LNG Precinct on coastal delphinids would require surveys (vessel-based at the least, possibly also aerial) focusing on these species using dedicated survey methodology.

Extensive marine megafauna baseline surveys (aerial and vessel surveys) were undertaken to inform the Strategic Assessment. Although these surveys were designed primarily to target key species (humpback whales and dugongs), data was also obtained for other marine megafauna including dolphins. The inshore aerial and vessel based surveys identified several dolphin pods (including Indo-Pacific humpback dolphins), most to species level. This data has provided an adequate level of detail to support the impact conclusions of the Strategic Assessment.

No snubfin dolphins were recorded during any of the aerial surveys in 2009; however some were observed from vessels in Roebuck Bay on several occasions. Aerial surveys undertaken between June and October 2010, observed one group of snubfin dolphins (comprising of six individuals) in shallow water (less 10m), approximately 1.6km from the mouth of Barred Creek (~ 20km south of James Price Point). Further observations, from a permanently moored accommodation vessel, during supervision of nearshore geotechnical activities within the JPP coastal area in 2010 also confirmed no sightings of snubfin dolphins over a full 20 day period, though two groups of Indo-Pacific humpback dolphins were noted.

Several studies verify that snubfin dolphins primarily occur in protected shallow waters close to the coast, river and creek mouths and are strongly linked to mangrove systems (Parra and Corkeron 2001; Parra et al. 2002; Parra 2006; Parra et al. 2006a and 2006b). It is acknowledged that transient individuals may occur within the coastal waters adjacent to James Price Point. However, it is highly unlikely that they utilise the waters offshore from James Price Point for feeding and breeding, given nearby preferential habitats at Roebuck Bay, Barred Creek and Willie Creek.

Thus, it is considered that the activities associated with the Precinct development and operations are not likely to significantly impact snubfin dolphins. Nevertheless, the management measures proposed to mitigate potential impacts on other marine mammals more relevant to the BLNG Precinct project area will also benefit such species to reduce the risk of impacts and achieve acceptable environmental outcomes.

Generic Question ID: 1373 Sub ID [147] Raised by [S147 Q2367]

Part 3 Section 2.3.6.2: The SAR states that "... dugongs are not likely to be impacted by a reduction in water quality associated with increased suspended sediments or sediment deposition. Such species are well adopted to low visibility turbid environments, reflected by their occurrence in Roebuck Bay, which has frequent occurrence of turbid waters.

Site disturbance and excavation would result in the direct removal of benthic habitat within the footprint of the BLNG Precinct nearshore marine facilities. This may indirectly impact dugongs through a subsequent loss of foraging habitat. In addition, the reduction in benthic light availability is predicted to result in more wide-scale temporary impacts on sea grass. However, this temporary loss of seagrass is not expected to significantly impact on the food resource availability for dugongs given the occurrence of seagrass within the wider Canning Bioregion. As discussed earlier, dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range. This ability was demonstrated through studies in Hervey Bay in Queensland, where dugongs migrated in search of suitable seagrass habitat following the loss of 1,000km2 of feeding habitat caused by a cyclone (Preen & Marsh 1995; Marsh & Lawler 2001). It is reasonable to infer that, if dugongs do sporadically forage within the James Price Point coastal area and are not dependent or restricted to seagrass patches within this area, they would readily adapt to both seasonal and abrupt changes in available habitat by relocating to nearby areas in the Canning Marine Bioregion or surrounding bioregions."

Comment: Dugongs are directly affected by dredging as it destroys seagrass in the dredged area and the

resulting increase in sedimentation is known to cause long-term smothering and destruction of seagrass beds (Price et al. 1983). The physical scouring caused by dredging can make seagrass growth impossible for many years. The effect of habitat loss on dugongs was indeed exemplified in Hervey Bay as stated above. However the widespread loss of seagrass beds during the cyclone resulted in the death and emigration of many dugongs from this important habitat area (Preen and Marsh 1995). In addition, when their access to forage is limited, dugongs also respond by delaying breeding, which can significantly reduce population growth (Marsh and Kwan 2008).

As referenced by the submitter, it has been noted in the SAR that the loss of seagrass (both permanent and temporary) has the potential to impact some dugongs which forage on the seagrass beds within the James Price Point area. However, whilst the removal of macroalgal and seagrass habitat is expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area. Whilst it is known that dugongs are likely to be present around James Price Point, it is noted that this presence is in relatively low numbers compared to other areas along the West Kimberley coastline. Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay. Management arrangements to avoid Precinct-related activities in these regionally important areas have been proposed in the SAR.

Within the Project area and typically throughout tropical Australia, seagrass meadows are predominantly ephemeral and comprised of structurally small species of low biomass (i.e. *Halophila spp.*). These tropical seagrass beds are known to be resilient habitats able to recover rapidly after disturbance (Coles *et al*. 2007). Halophila, the most common seagrass genus within the area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott *et al*. 2004 and Waycott *et al*. 2005). Additionally, *Halophila ovalis* is the fastest growing tropical seagrass species and prefers slightly more exposed conditions than other Halophila species (Vermaat *et al*. 1995). Several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredge plume impacts to seagrass habitat within the Project area (Coles *et al*. 2007; Unsworth *et al*. 2009). Given that the underlying physical sediment characteristics within this zone are not predicted to be altered, it can be expected that seagrass and other BPPH will recover well within five years.

Generic Question ID: 1374 Sub ID [147] Raised by [S147 Q2368]

Appendix C9: Nearshore Regional Survey Dugong Report - We note the background information provided in this report is poorly reviewed and refers mostly to reports and websites rather than peer reviewed articles that are widely accessible. There are some statements within the background information that are not supported by the existing literature, and as such, some of the information provided is misleading. The review does highlight the paucity in data about the seagrass in the region, and little has been done to address this issue.

The dugong surveys undertaken to inform the SAR were the most comprehensive surveys on dugong distribution outside of Shark Bay. This study has provided a good snapshot of the seasonal distribution of dugongs along the Dampier Peninsula and has contributed significantly to the knowledge on dugongs within the Dampier Peninsula, while providing an adequate level of detail to support the impact conclusions of the Strategic Assessment. Appropriate literature was used to inform the study; however, in the absence of peer-reviewed literature, other credible sources of information and data were used to inform the study.

The SAR assessed the potential for temporary loss of seagrass to indirectly impact dugongs through a subsequent loss of foraging habitat. The temporary loss of seagrass is not expected to significantly impact the overall food resource availability for dugongs given the prevalence and natural variability of seagrass within the wider Canning Bioregion. Dugongs have been known to relocate to adjacent areas in search of seagrass beds following losses within their home range. In addition, the *Nearshore Regional Dugong Survey Report* (RPS 2010c; **Appendix C-9**) concluded that dugong presence is sporadic along much of the West Kimberley coast. Whilst it is known that dugongs are likely to be present around James Price Point, it is noted that this presence is in relatively low numbers compared to other areas along the West Kimberley coastline. Therefore there is little likelihood that any temporary loss of seagrass will be within the primary foraging ranges of the known dugong aggregations in Roebuck Bay, Carnot Bay and Beagle Bay. Management arrangements to avoid Precinct-related activities in these regionally important areas have been proposed in the SAR.

Generic Question ID: 1378 Sub ID [147] Raised by [S147 Q2370]

Whale Report Review: Approximately 13,000 humpback whales are estimated to pass through the 6,500 km James Price Point Migration Corridor Survey area on the migration north. This indicates that almost half (40%) of the Group IV population do not travel this far up the coast or bypass the James Price Point survey area.

The estimation of humpback whale abundance on the Western Australian coastline has been a subject of

debate and is a difficult task. The authors have compared their estimate of 13,115 animals (95% CI: 3,138-36,729) with that of Hedley et al. (2009) who gave a population estimate of 21,750 (95% CI: 17,550-43,000) whales. The confidence intervals from both estimates are extremely large and overlapping. The large error in both exemplify the difficulty in estimating humpback whale population sizes using aerial surveys and the fact that estimates should be quoted with caution. It is not accurate or reasonable to suggest that "almost half (40%) of the Group IV population do not travel this far up the coast or bypass the James Price Point survey area" considering the error involved in both estimates.

To obtain these population estimates one must correct for:

(1) the rate of whale migration through the survey area (and therefore be able to assess which of the whales sighted were actually migrating);

(2) the whales that were missed because they were too deep in the water column to be seen (availability); and

(3) the whales that were simply missed due to observer error (perception).

The first point is acknowledged and agreed with; it is inappropriate to compare two such values when the confidence intervals overlap.

The issue of whale migration is indeed a difficult task and in all estimates that have been calculated for humpback whales along the WA coast, some very substantial assumptions have been made that may or may not be correct, and may differ between locations. The Mark Recapture Distance Sampling (**MRDS**) used to obtain the humpback whale population travelling north through the Migration Corridor Survey area, has attempted to remove availability and observer biases through the inclusion of an estimated value of *g*(0), and a dual platform arrangement respectively. The value of *g*(0) was based on data acquired through specifically designed and conducted vessel surveys offshore of James Price Point.

Generic Question ID: 1380 Sub ID [147] Raised by [S147 Q2373]

It is disappointing that the Whale Report does not provide any information about cetacean species other than humpback whales sighted during surveys. All whales were reported as either humpback whales or unidentified whales, and were assumed to be humpbacks in all analysis. Other cetacean species are known to inhabit the area and the effects of the development on those species are equally important as the effects on humpback whales. The surveys presented in these reports could have been a good opportunity to identify other medium and large cetacean species utilising the area.

A series of marine megafauna baseline surveys were undertaken to inform the Strategic Assessment. Although these surveys were designed with specific focus on target key species (humpback whales and dugongs), data was also obtained for other marine megafauna including toothed whales, dolphins, sperm whales and beaked whales, baleen whales, sharks and rays. Results from all of these surveys are summarised in the Humpback Whale Survey Report (**Appendix C-8**); Nearshore Regional Survey Dugong Report (**Appendix C-9**); and Marine Megafauna Report (**Appendix C-10**).

Generic Question ID: 1383 Sub ID [147] Raised by [S147 Q2378]

In relation to the Vessel-based survey presented in **Appendix C8** - Humpback Whale Survey Report, there are no data on the residency times of whales in any of the areas surveyed. However, previous studies have suggested that Pender Bay is a resting area important for females with calves (S. McKay, unpublished data). This suggests that vessel-based surveys in Pender Bay could be biased according to the residency time and behaviour of whales in the area. If, for example, the two transects surveyed on any one day were 10km apart, and the vessel was travelling at the highest speed reported which was 8knots, in the time it would have taken to do one transect (20nm long, so approximately 2.5hrs), the whales surveyed in that transect could have moved to the next one. Therefore we suggest that behaviour of whales in Pender Bay could have lead to double counting during the vessel-based survey. As previously stated, the behavioural observations are biased because, as stated in the report, observers selectively chose mother-calf pairs, resting individuals and small groups of individuals for focal follows. There has subsequently been no adjustment in the assessment of time budgets to account for these biases. Therefore the behavioural observations probably do not accurately represent the behaviour of most individuals.

In 2008 a photo identification and mark-release-recapture trial was conducted by the Centre for Whale Research. Photo identification was also investigated during the design phase of the 2009 survey program, with the objective of establishing residency times of whales in these two areas. Results of the trial and investigation led to the conclusion that estimation of residency times was not feasible using photo identification. It was also concluded that no other method for residence time estimation was feasible other than that used in building a population estimate (RPS 2010a; **Appendix C-8, Section 5.3**).

It is possible that double counting individual groups of whales on two (or more) transects could have occurred

during the vessel surveys at either James Price Point or Pender Bay. The effects of this was minimised during design by implementing random selection of transects on any one day of survey. Therefore, it is doubtful whether bias from double counting during the vessel transect survey would have been incorporated in the results. “Medium capture” behaviours acquired in the vessel transect surveys were not used in any analyses and therefore would not have resulted in bias in any of the results.

Generic Question ID: 1384 Sub ID [147] Raised by [S147 Q2379]

In relation to behavioural data collected in the **Appendix C8** - Humpback Whale Survey Report, the limitations presented are not addressed or referred to in the analysis or reporting of the results. The comparisons in behavioural observations are biased towards small resting groups including cow-calf pairs, and are therefore not representative of all whales in the area. The results need to be interpreted with this in mind.

This point is acknowledged and agreed with however, it must be emphasised that cow-calf pairs have previously been identified as the most sensitive humpback whale group composition in relation to disturbance effects of underwater noise (McCauley *et al.,* 2000). It was therefore concluded during the design of the behavioural study that this group would also be the most vulnerable when considering potential effects relevant to the BLNG Precinct development. This information, and the location of the James Price Point coastal area relative to the main calving grounds to the north, drove the focus of the behavioural study towards groups containing calves.

Generic Question ID: 1385 Sub ID [147] Raised by [S147 Q2380]

The majority of humpback whales passing through the James Price Point Migration Corridor Survey area follow a migration corridor that extends from approximately 8 to 42km from the shore (10 and 50m isobaths). The mean distance from shore that adult humpback and unidentified whales were recorded was 27.5km. The mean distance from shore that humpback calves were recorded was 24.3km. 95% of the humpback whales and calves recorded in the James Price Point Migration Corridor Survey area were more than 8km from shore. The effect of tides on the distribution of whale sightings is not addressed in this report. Surveying different areas at different tides could have affected the results as the region experiences a tidal range of 8m minimum. The distance of Whales from the coast therefore needs to take the tidal range into account. Again the comparisons in spatial distribution of the whales used raw data only and therefore do not take into account the effects of covariates such as environmental conditions and observer bias. The report states that: "Less than 5% of humpback whales were recorded within 8km of the shoreline and therefore they are found only in low numbers in the James Price Point Marine Management Area, where the majority of the proposed development activities would occur." Five percent actually equates to quite a large number of animals (if you use the population estimate presented in the report of 13,000, that is 650 whales) passing through the area where development activities would occur. Stating that these are "only ... low numbers" is misleading.

It is true that the analytical treatment of the humpback whale data did not account for tidal differences. However, the surveys were conducted across a range of tidal conditions and the final results are likely to be a reasonable representation of the distribution of whales in this area. Furthermore, the bathymetry along the coast provides a tidal movement of water of between 500m and 1km (refer SAR **Appendix C-3**). Therefore the effects of tides on the figures quoted in the question are unlikely to be that substantial.

It is also acknowledged that the spatial distribution of whales did not take into account the environmental conditions which were generally worse offshore than in the nearshore area. However, given that the BLNG Precinct is located on the coast, inclusion of the environmental conditions would have moved the defined migration corridor further offshore. The conclusions as stated in RPS 2010a (**Appendix C-8**), are considered to be a precautionary approach and provide a worst case scenario for the location of the migration corridor in relation to the coast.

The assertion that 650 whales are likely to pass within the James Price Point Marine Management Area (as shown in **Appendix C-8**) through the season as an estimate, is correct. This is considered to be a relatively low proportion of the overall numbers estimated to occur in this area through the season.

Generic Question ID: 1388 Sub ID [147] Raised by [S147 Q3396]

The SAR states that "It is unlikely that the complex range of habitat factors influencing distribution on feeding grounds come into play in migratory areas, and habitat models are less useful for more generalist species." However, the report also suggests that although whales migrate north past James Price Point, a large proportion of whales migrate south around the Lacepede Islands, suggesting there are different preferred habitat characteristics according to whether the whales are heading north or south. Spatial habitat modelling has successfully been conducted for humpback whales within the Great Barrier Reef Marine Park to determine the likely breeding areas for whales in the region (Smith et al., 2010). Globally, breeding grounds for humpback whales are found to exhibit relatively narrow ranges in environmental parameters such as sea surface

temperature and water depth (Whitehead & Moore, 1982; Ersts & Rosenbaum, 2003; Rasmussen et-al., 2007). There also appears to be differential utilisation of habitat, depending on the social organisation and reproductive status of whales (Craig & Herman, 2000; Ersts & Rosenbaum, 2003). In relation to the migration of humpback whales, on both the east and west coast of Australia, humpback whales exhibit very predictable paths of migration annually indicating a reliance on particular environmental attributes (Jenner et al., 2001; Noad et al., 2008). Spatial modelling could help determine the relative importance of different habitat characteristics around James Price Point and determine the likely preferred migration paths and resting areas within the region.

Specific responses to the comments made in the submission are provided below.

"It is unlikely that the complex range of habitat factors influencing distribution on feeding grounds comes into play in migratory areas, and habitat models are less useful for more generalist species." However, the report also suggests that although whales migrate north past James Price Point, a large proportion of whales migrate south around the Lacepede Islands, suggesting there are different preferred habitat characteristics according to whether the whales are heading north or south.

Data collected by Jenner et al. (2001) indicate that whales migrate both northward and southward past the Lacepede Islands. In all areas of the coast they examined, there are often differing northward and southward routes with a mild trend for the southward route to be slightly inshore of the northern pathway. It should not be inferred, without evidence, that because whales are travelling through different areas in different directions that the spatial characteristic of the habitat (such as that generated by habitat modelling) is somehow causally related to the route chosen. Rather it is more likely that 'environmental characteristics' such as coarse topographical features and current characteristics (see below) play a more important role.

Spatial habitat modelling has successfully been conducted for humpback whales within the Great Barrier Reef Marine Park to determine the likely breeding areas for whales in the region (Smith et al., 2010). Globally, breeding grounds for humpback whales are found to exhibit relatively narrow ranges in environmental parameters such as sea surface temperature and water depth (Whitehead & Moore, 1982; Ersts & Rosenbaum, 2003; Rasmussen et-al., 2007). There also appears to be differential utilisation of habitat, depending on the social organization and reproductive status of whales (Craig & Herman, 2000; Ersts & Rosenbaurh, 2003).

It is not disputed (as mentioned in the 'Supporting Documents, General Comments' above) and as supported by the extract from this submission that the choice of feeding, resting or calving grounds is influenced by a complex range of factors. The original statement in the SAR document acknowledges this but emphasises that it is likely that habitat models will not be as useful in indicating preferred migration routes.

In relation to the migration of humpback whales, on both the east and west coast of Australia, humpback whales exhibit very predictable paths of migration annually indicating a reliance on particular environmental attributes (Jenner et al., 2001; Noad et al., 2008). Spatial modelling could help determine the relative importance of different habitat characteristics around James Price Point and determine the likely preferred migration paths and resting areas within the region.

The Proponent queries why the submission cites Jenner *et al.* (2001) as an example to substantiate the use of a habitat model for a migratory pathway, unless some confusion has arisen between the interpretation of the term 'habitat model' and that of 'environmental characteristic'. As Jenner and colleagues (2001) note, although there was an element of heterogeneity in migratory paths (for the Group IV or WA whale population) over time, "the majority of northbound whales in this region must pass to the west of the Lacepede Islands" (p. 760, Jenner et al, 2001). Their data also indicate that the southbound migratory pathway is probably similar. The only specific mention of either 'habitat' or 'environmental characteristic', in terms of migration, is their comment that "having crossed King Sound, northbound whales tend to congregate at Frost and Tasmanian Shoals. We hypothesise that these are perhaps staging areas used by the whales to rest or to wait for favourable tidal conditions on their way to Camden Sound. Strong currents, consistently varying in direction every 6 hours, could either greatly assist or greatly hinder a whale's forward progress." (*ibid*, Jenner et al., 2001). 'Habitat models' *per se* do not often incorporate a hydrological component, it usually being assumed that any particular habitat has resulted from particular hydrodynamic characteristics. Thus an 'environmental attribute' or characteristic (e.g. current) does not often form an input into a habit model or a habitat modelling process (such as that described in the SAR document). Noad et al. (2008) also do not specifically mention habitat migration preferences for the Group V (east Australian) humpback whales, save for the general observation that most of the whales they sighted passed within 10km of Point Lookout, an eastward jutting area of land that topographically influences the migratory path. In their words; "As expected, the majority of the whales are inshore, effectively bottle-necking as the migratory path passes Point lookout" (p. 6, Noad et al., 2008).

Generic Question ID: 1408 Sub ID [106] Raised by [S106 Q2259]

This development will impact on marine mammals' ability to: follow ancient migration routes, avoid beaching themselves through confusing sonar signals, forage for food that has been affected by shipping traffic and the subsequent pollution that will occur.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment, including dugongs, whales and other marine mammals. **Part 3, Sections 2.6.3** discusses the predicted impact of the Precinct development on these marine mammals. As noted, a number of potential sources of impact were identified including: noise and vibration; dredging related impacts (i.e. a reduction in water quality and loss of benthic habitat); routine or non-routine discharges; and vessel movements. Each of these potential impacts were considered in detail and assessed against the temporal and spatial occurrence of these factors off the Dampier Peninsula as described in **Part 3**. As concluded in **Part 3**, potential impacts from the proposed development may result in impacts at an individual level, although adverse impacts are not anticipated on these factors at a species or population level.

Generic Question ID: 1419 Sub ID [147] Raised by [S147 Q3394]

There are limited data on the movements of dugongs within the area but they do appear to be seasonal and probably move between important seagrass habitat. Therefore dugongs likely at least transit through the James Price Point area, as shown by the satellite tagged dugong that stopped at James Price Point for a number of days. Dugong movements throughout the region need further assessment, preferably by conducting more satellite tagging studies. This would provide critical information for assessments of the potential boating strike and disturbance impacts on dugongs.

The SAR **Part 3, Section 1.4.4** provides a summary of the known population trends and transitory movements of dugongs in a local and regional context. Resident populations are known to occur at Beagle Bay and the Montgomery Islands (Mustoe and Edmunds, 2008 and RPS, 2010c; **Appendix C-9**) and large numbers of dugongs have been recorded in Roebuck Bay (RPS 2010c; **Appendix C-9**). However, the extent to which such individuals travel along the coast to the James Price Point area is not well understood. A study undertaken in collaboration with the Department of Environment and Conservation, Edith Cowan University and the Bardi Jarwi rangers at Beagle Bay (Campbell et al. 2010), provides some evidence for the ability of resident Beagle Bay dugongs to travel to the waters offshore from Coulomb Point. It is known that dugongs may range over comparatively large areas but preferentially forage over relatively small ones.

Considering the well established resident populations at both Beagle Bay and Roebuck Bay and the apparent lack of consistent seagrass meadows within the James Price Point area, it is considered unlikely that James Price Point supports a residential dugong population. This conclusion is supported by the data from the dugong surveys, in which dugong numbers at James Price Point varied considerably during the year, presumably linked to the availability of ephemeral seagrass beds.

2.7 Key Factor: Marine Reptiles

Generic Question ID: 199 Sub ID [24, 27, 32, 34, 45, 84, 85, 94, 97, 98, 105, 118, 120, 134, 135, 151, 226, 229, 235] Raised by [S34 Q315]

The stretch of beach between Quondong and Flat Rock, north of James Price Point, is annually utilised for turtle nesting, between November and March. The recent stated intention by Woodside and the State Government to host their surveys of turtle activity in the coming months (late March onwards) displays a lack of knowledge of nesting cycles, and a reluctance to document environmental matters that could jeopardise the go ahead for the Precinct. A thorough survey of beaches at the right time of year (between November and end of February) should be undertaken to determine the importance of James Price Point and surrounds as turtle nesting grounds.

As part of the Strategic Assessment process, surveys were undertaken to understand the distribution, abundance and seasonality of marine turtles, with a particular focus on the James Price Point coastal area. As part of these surveys, beach studies were conducted along the James Price Point coastal area in November 2009, January 2010 and February 2010 to cover the entire breeding season for green and flatback turtles (**Appendix C-2**). Additional beach surveys along the James Price Point coastal area were also undertaken during the 2010/2011 nesting season (i.e. November 2010 to January 2011) (RPS 2010, unpublished report).

Marine turtles have been known to nest consistently throughout the year within the Western Northern Territory region (Blamires and Guinea 2000). As information on turtles which nest around the James Price Point region was relatively limited, a conservative approach was applied to monitoring during the dry season where beaches were surveyed during non-peak nesting periods to ensure no turtle nesting activity was missed and to account for inter annual nesting variability of turtle species. Beaches targeted within the James Price Point coastal area

were surveyed from March – November 2010 and surveys are will continue in 2011.

The key findings from these surveys to date concluded that there are no significant green or flatback turtle nesting areas within the James Price Point coastal area, which differs substantially to the significant green and flatback turtle rookeries at the Lacepede Islands. Many of the characteristics of the James Price Point coastal area are considered unsuitable for nesting, largely as a result of periods of inundation during spring high tides, incline of the beach, rocky substrate around the coastal zone and limited space for nesting between the aeolian sands and the intertidal platform (**Appendix C-2**).

The James Price Point coastal area is largely considered to be used by inter-nesting turtles from nearby rookeries or post-nesting turtles migrating north or south to foraging areas and does not support consistently high densities of turtles. Probable turtle foraging habitats have been identified off Carnot Bay (approximately 41km north of James Price Point), Cape Latreille (approximately 39km south of James Price Point), Roebuck Bay (approximately 66km south of James Price Point) and Lagrange Bay (approximately 134km south of James Price Point), based on high turtle densities in these areas during the non-breeding period (July-October 2009). Satellite tracking identified that the majority of post-nesting turtles (green and flatback turtles) nesting at the Lacepede Islands migrated in a north-easterly direction to foraging grounds as far as Coburg Peninsula in the Northern Territory (approximately 1,281km northeast of James Price Point). These areas will not be affected by the BLNG Precinct development.

Generic Question ID: 332 Sub ID [93, 120, 170, 73, 42, 89] Raised by [S93 Q663]

TRIN submission: The SAR has not adequately assessed marine turtle densities, populations, life cycles or the importance of marine and beach habitat in the James Price Point coastal area. Because sea turtles are long-lived, any conclusions about their populations, life cycle, and behaviours would require long-term studies over numerous nesting seasons. Basing the entire SAR on extremely limited data from a couple of seasons is completely erroneous and without scientific basis. The SAR claims an apparent low density of turtle nesting along the Kimberley coast, though there is little if any data to support this finding. Since no baseline studies exist, it is unclear whether James Price Point or adjacent beaches do, or ever did, support large numbers of marine turtle nests. On-water and beach surveys in the SAR were limited to one season and the number of days of monitoring was insufficient. The in-water and aerial surveys were not even focused on marine turtles, but on marine mammals. So any conclusions about marine turtle densities based on this data is suspect. Even if the James Price Point region supports low density of nesting turtles, the SAR has not determined how important these nests may be to marine turtle populations and how the loss of these nests might harm a given population. It simply dismisses the importance of these nests and nesting turtles wholesale.

The Strategic Assessment Report (**SAR**) undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on marine turtles. This assessment included the collection of data using dedicated turtle vessel surveys, beach surveys, satellite telemetry and aerial surveys (**Appendix C-2**). At the time of the SAR submission monitoring had been conducted over a single nesting season. Subsequently, beach monitoring and aerial surveys were conducted during 2010 (RPS, unpublished report) and will continue in 2011. The frequency of turtles observed during these subsequent surveys remained low around the James Price Point coastal area compared to other locations along the coast (e.g. Carnot Bay, Cape Latreille, the Lacepede Islands and Roebuck Bay). Consequently the relative impacts of the Browse LNG Precinct development on nesting females compared to other sites along the Western Australian coast are still considered low.

This response addresses each point (numbered and italicised below) within the submission separately.

1) "The SAR has not adequately assessed marine turtle densities, populations, life cycles or the importance of marine and beach habitat in the James Price Point coastal area"

Part 3, **Section 1.4.4.1** of the SAR assessed the existing environment at James Price Point (**JPP**) with respect to marine turtles based on a number of existing literature and specific surveys focusing on the JPP area. The turtle report (**Appendix C-2**) looked at:

- density and relative abundance of marine turtles along the Dampier Peninsula and Lacepede Islands;
- population dynamics of nesting turtle populations near JPP;
- spatial dynamics of inter-nesting habitat;
- nesting beach fidelity; and
- post-nesting turtle migrations.

This study used a number of different techniques including aerial surveys, vessel surveys, beach studies and satellite tracking, together with a desktop study to support conclusions on the ecology of marine turtles in the JPP area.

2) "Because sea turtles are long-lived, any conclusions about their populations, life cycle, and behaviours would require long-term studies over numerous nesting seasons. Basing the entire SAR on extremely limited data from a couple of seasons is completely erroneous and without scientific basis."

Research into turtle populations, life cycle, and behaviour has been conducted in the north-west of Australia since the mid 1980s (e.g. Prince 1994), and the SAR turtle report (**Appendix C-2**) utilises this and other relevant historical studies to inform the impact assessment. Further to this, marine turtles typically show strong site fidelity to nesting beaches among seasons (e.g. green turtles, see Limpus 2006; Moritz et al. 2002; Dethmers et al. 2006) and thus nesting locations are likely to remain relatively consistent over time.

3) "The SAR claims an apparent low density of turtle nesting along the Kimberley coast, though there is little if any data to support this finding".

The SAR does not claim a low density of turtle nesting along the Kimberley coast. **Part 3, Section 1.4.4.1** states that the Kimberley region is characterised by a number of coastal beaches and offshore islands that support marine turtle rookeries, including the Lacepede Islands, which have been recognised as a significant breeding location for green turtles. The SAR does however state that there is a relatively low density of nesting turtles in the vicinity of James Price Point.

4) "Since no baseline studies exist, it is unclear whether James Price Point or adjacent beaches do, or ever did, support large numbers of marine turtle nests".

A baseline study does exist. The RPS report (**Appendix C-2**) includes the results of a baseline study of six nesting beaches in the JPP area during November 2009 and January-March 2010.

5) "On-water and beach surveys in the SAR were limited to one season and the number of days of monitoring was insufficient. The in-water and aerial surveys were not even focused on marine turtles, but on marine mammals. So any conclusions about marine turtle densities based on this data is suspect."

Surveys conducted by RPS were sufficiently replicated. The beach surveys intensively monitored turtle tracks for up to seven days during each of November 2009, January 2010, February 2010 and March 2010, therefore spanning the entire nesting season for green and flatback turtles and providing sufficient replication on which to base conclusions. Analysis of beach geomorphology, and relationship to turtle nesting, was also undertaken. On-water surveys were conducted over 31 days between July 2009 and February 2010 and covered non-breeding and breeding periods. Since marine turtles typically show strong site fidelity to nesting beaches among seasons (e.g. green turtles, see Limpus 2006; Moritz et al. 2002; Dethmers et al. 2006), conducting nesting surveys over one season is likely sufficient for informing a strategic assessment. The RPS report references the results of both in-water (vessel) surveys and aerial surveys that targeted marine megafauna. Marine megafauna includes turtles, other reptiles, sharks and marine mammals and therefore to say that these surveys focused on marine mammals and not marine turtles is incorrect. In addition to these surveys, specific vessel surveys which targeted marine turtles were conducted during December 2009 and February 2010.

6) "Even if the James Price Point region supports low density of nesting turtles, the SAR has not determined how important these nests may be to marine turtle populations and how the loss of these nests might harm a given population. It simply dismisses the importance of these nests and nesting turtles wholesale."

There is a strong 'weight of evidence' to indicate that the beach at JPP is not important to populations of nesting green and flatback turtles. Only one potential nest and three tracks were encountered on beaches adjacent to JPP. In contrast approximately 431 green turtles per night and 36 flatback turtles per night were encountered at Lacepede Island group (see **Appendix C-2**). The difference in nesting numbers between the JPP area and Lacepede Island Group strongly suggests that the beaches adjacent to JPP contribute relatively few juveniles to the populations of these turtles in the Kimberley.

Generic Question ID: 339 Sub ID [93, 120, 31] Raised by [S93 Q683]

TRIN submission: The SAR appears to overlook satellite tracking data that documents the ongoing concentrations of marine turtles in Western Australia James Price Point and the Kimberley. Satellite tracking of as many as 60 or more Australian flatback sea turtles conducted in Western Australia over the past five years has mapped a marine turtle highway along the Pilbara and Kimberley coasts. Most if not all the flatbacks that nest along the coast swim north to Kimberley and beyond to feed after nesting. This and other turtle tracking can be viewed at www.seaturtle.org. So far, satellite tracking shows that the JPP coastal area and adjacent marine waters are consistently inhabited by significant densities of breeding, migrating and foraging marine turtles.

The Strategic Assessment Report (**Part 3**, **Section 1.4.4.1**) and the technical **Appendix C-2** specifically reference the satellite tracking data referred to in this submission. It has been acknowledged that the marine waters off James Price Point (**JPP**), are likely to contain some foraging marine turtles and support migrating turtles from southern rookeries (RPS 2010b; **Appendix C-2**). However, the broad distribution of turtles

throughout the waters of the Dampier Peninsula demonstrate that JPP is not of particular importance to foraging turtles. Additionally, beach surveys to date have demonstrated that JPP is not important to populations of nesting green and flatback turtles. Only one potential nest and three tracks were encountered on beaches adjacent to JPP. In contrast approximately 431 green turtles per night and 36 flatback turtles per night were encountered at Lacepede Island group (see **Appendix C-2**). The difference in nesting numbers between the JPP area and Lacepede Island Group strongly suggests that the beaches adjacent to JPP contribute relatively few juveniles to the populations of these turtles in the Kimberley.

The impact conclusions and management framework presented in the SAR take into account the distribution and movements of marine turtles from this collective baseline information.

Generic Question ID: 636 Sub ID [120, 116] Raised by [S120 Q1274]

ENGO Submission: Internationally, the World Conservation Union lists the Hawksbill and Leatherback as critically endangered and the Green, Loggerhead and Olive Ridley as "endangered". The Australian Flatback has not yet been assigned a status due to lack of scientific information and is listed as "data deficient." For this reason alone, the Australian Flatback sea turtle should be given high priority for protection and research and no further disturbance of its nesting or foraging habitat allowed until more science is available.

Australia's commitment to protect sea turtles is also contained in two international conventions to which Australia is a signatory: The Convention on the Conservation of Migratory Wild Animals (**CMS**) and the Convention on International Trade in Endangered Species of Flora and Fauna (**CITES**), which prohibits trade in marine turtles. Nevertheless, today, Australia's sea turtles remain at risk of extinction from human activities, with oil and gas development a major and growing threat.

The current conservation status of the marine turtles and significance of regional rookeries in the vicinity of the Dampier Peninsula was noted in the **SAR Part 3 Section 2.7**, with the EPBC Act listing flatback turtles as vulnerable. Surveys were undertaken (**Appendix C-2**) to determine the distribution and abundance of marine turtles (including flatbacks) within the Dampier Peninsula and have added significantly to the scientific knowledge and literature for these species.

The key findings from these surveys were that there are no significant green or flatback turtle nesting areas within the James Price Point coastal area, with potential impacts from the Precinct to marine turtles considered to be minimal. The nearest significant turtle nesting habitat to the proposed Precinct is located over 60km away at the Lacepede Islands.

Generic Question ID: 334 Sub ID [93] Raised by [S93 Q664]

TRIN submission: The SAR limits the scope of harm and mitigations to green and flatback sea turtles. While the SAR acknowledges that loggerheads and hawksbills nest in the Pilbara and Kimberley and forage and migrate through the region of James Price Point, it dismisses the need to address impacts to those species with little if any scientific data to support that decision. The SAR overlooks that rare leatherbacks are sighted and captured as bycatch in fisheries along the coast, and that olive ridleys are occasionally seen and have been known to nest.

In addition to flatbacks and greens, the SAR must include loggerhead, hawksbill and leatherback turtles in its analysis of marine turtle populations, potential harm and protection measures. While densities of leatherbacks are low, they are more vulnerable to extinction than other species. Every one that is harmed or killed is likely to have a direct impact on the survival and recovery of the species (Spotila, 1996). For these reasons the leatherback must be more fully considered in the SAR.

Part 3, Section 1.4.4.1 of the Strategic Assessment Report (**SAR**) presents the baseline conditions within the James Price Point area, with respect to marine turtles, based on published literature and surveys undertaken to date (**Appendix C-2**). An evaluation of this data concluded that the James Price Point area is not understood to be of particular importance for loggerhead, hawksbill and leatherback turtles and therefore these species are not the core focus of the impact assessment. It is also noted that at a DEC turtle workshop (DEC 2009a cited in the SAR), it was concluded that leatherbacks may occur in, but are not likely to frequent, WA waters. Indeed, there were no confirmed sightings of leatherbacks during the surveys undertaken to inform the SAR (RPS, 2010b; **Appendix C-2**). Rather, the SAR has focused on those species of most relevance to the project area (i.e. green and flatback turtles).

Loggerhead, hawksbill and leatherback turtles are not known to nest in the James Price Point area. Loggerhead turtles are known to have important nesting areas further south (Dirk Hartog to Varanus Island). Similarly, key hawksbill nesting sites have been identified at Lowendal Island and the Dampier Archipelago, with no known breeding areas for leatherback turtles in Western Australia. Whilst these species may transit through and forage in the James Price Point area, the relatively low densities of turtles in this area compared to other areas of the Kimberley and Pilbara during the non-breeding season (July-October 2009) suggests that it is not an important

foraging ground for such turtle populations. Key foraging grounds for marine turtles are believed to include Carnot Bay (41km north of James Price Point), Cape Latreille (39km south of James Price Point), Roebuck Bay (66km south of James Price Point) and Lagrange Bay (134km south of James Price Point).

Notwithstanding, the management arrangements and measures proposed in the SAR (refer to **Part 3, Section 2.7.4** and **Part 6, Table 3-6**) would be reasonably expected to benefit other species of marine turtle, such as leatherbacks, hawksbill and loggerhead, should they occur.

Generic Question ID: 389 Sub ID [93, 170] Raised by [S93 Q695]

TRIN Submission: The potential impacts to marine turtles, habitat and prey species from ship spread of invasive species needs to be evaluated and prevented.

WWF & ACF Query: Is the potential to alter the "marine ecosystem balance in the Canning Region" implying that such an alteration would be widespread? Are there any examples, in the world and WA, of ports with a similar predicted number of annual vessel movements that have avoided marine pest introduction? What threshold of acceptability is being applied to the decision criteria for this risk?

The Strategic Assessment Report has assessed the potential for Invasive Marine Species (**IMS**) to impact benthic communities through competition for food and habitat, introduction of pathogens, increased predation pressure on native species and a general reduction in biodiversity (see **Part 3, Section 2.4.3.4** and **Section 2.8.3.6**). It is acknowledged that impacts to benthic habitats could potentially lead to consequential impacts to marine fauna, including turtles, through a reduction in food availability.

In relation to the historical evidence for IMS establishment in Western Australia, Wells et al. 2009 note that sixty species are known to have been introduced and established into Western Australia. However, the majority (37 species) are cool water, temperate species that occur from Geraldton south. Six are tropical species that occur from Shark Bay north, with a further seventeen species occurring in both the southern and northern halves of Western Australia. It is acknowledged that incursions of introduced species are concentrated in port areas (Wells et al. 2009), with ports with fewer vessel movements (e.g. Esperance) demonstrating lower levels of IMS (15 introduced species). Though, it should be noted that Wells et al. (2009) submit that different types of vessels provide very different risks for the introduction of marine species, with LNG tankers at the low end of the risk spectrum, considering their high maintenance and the strong compliance with local regulations.

It was determined that the introduction and establishment of IMS, as a result of the Precinct development, is unlikely, due to the low endemism, high biodiversity and competitive exclusion exhibited by existing local biota. Nevertheless, it is expected that potential impacts can be successfully mitigated by the application of management measures.

The focus of the IMS management strategy will to be to avoid the introduction of IMS to Australian waters by assessing the risk posed by each vessel proposing to enter and operate within the Precinct. Details of specific management measures will be included in an Invasive Marine Species Management Plan (**IMSMP**) to be developed in consultation with the Department of Fisheries and the Australian Quarantine Inspection Service (**AQIS**). This management plan will be consistent with the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry and will adhere to the AQIS Australian Ballast Water Management Requirements under the *Quarantine Act 1908*. Please refer to **Part 3, Section 2.4** (**Table 2.4-5**) and **Section 2.8** (**Table 2.8-3**) for a complete summary of proposed measures to manage IMS.

Generic Question ID: 548 Sub ID [170] Raised by [S170 Q1430]

WWF & ACF Submission: Impacts on turtles from loss of benthic habitat is considered temporary and localised. What evidence is there for recovery rates of < 5 years? Will the recovered habitat be altered? Will the biodiversity value of recovered habitat be less or more?

It is assumed that this comment relates to **Part 3**, **Section 2.4.3** of the Strategic Assessment Report (**SAR**) which states that within the Zone of Moderate Impact, the recovery of benthic communities (in particular seagrass) is likely to occur within five years from the initial impact.

Within the Project area and typically throughout tropical Australia, seagrass meadows are predominantly ephemeral and comprised of structurally small species of low biomass (i.e. *Halophila spp.*). These tropical seagrass beds are known to be resilient habitats able to recover rapidly after disturbance (Coles et al. 2007). Halophila, the most common seagrass genus within the area, is known to be a pioneering coloniser of bare substrates, particularly following disturbances (Birch and Birch 1984; Huisman 2000; Waycott et al. 2004; and Waycott et al. 2005). Additionally, *Halophila ovalis* is the fastest growing tropical seagrass species and prefers slightly more exposed conditions than other Halophila species (Vermaat et al. 1995). Several studies verify the resilience and ability for recovery of tropical seagrasses after impacts similar to those expected from dredge plume impacts to seagrass habitat within the Project area (Coles et al. 2007; Unsworth et al. 2009). Given that

the underlying physical sediment characteristics within this zone are not predicted to be altered, it can be expected that seagrass and other BPPH will recover well within five years. In general, turf and macroalgae are more tolerant to reduced light climate than seagrass and exhibit much faster growth rates. Thus it is expected that algae will be more tolerant than seagrasses and any losses will similarly be recovered within five years.

Given that the natural meteorological and hydrodynamic conditions in nearshore Kimberley waters (i.e. frequent high turbid conditions and mortality events), benthic communities exhibit an adaptation to a cycle of disturbance and recovery. Local evidence supports this pattern, given that hard coral colonies observed along the benthic video transects were often small, singular colonies in low densities; suggesting that they are frequently subjected to natural disturbances and subsequent recruitment. The persistence of corals on these reefs therefore appears to be dependent at least in part on recruitment of new hard corals into the area by the arrival of larvae from distant reefs. Experience from other recent dredging projects has confirmed that sponges are able to regenerate after nine months of loss during a dredging project.

Therefore, taking into consideration the predicted temporary loss associated with the nearshore construction activities, the functional ecological impact of the predicted losses is determined to be low, considering the extent of similar habitat outside of predicted impact zones and the noted ability of such habitats to demonstrate recovery post-disturbance.

Generic Question ID: 553 Sub ID [170] Raised by [S170 Q1443]

WWF & ACF Submission: On moonless nights, would the risk to turtles be greater? If so, does this alter the assessment at all? And does the estimate of light impact related to moonlight account for the gas flare?

On moonless nights it can reasonably be expected that the potential for artificial light to impact turtles may be incrementally increased as the relative intensity of artificial light spill over ambient light levels would be greater. However, given that the level of artificial light spill predicted 400m from the proposed Project boundary is very low (0.04 - 0.08 lux) in comparison to natural moonlight (0.2 lux) (refer **Part 3**, **Section 2.7.3.4** of the SAR), the environmental outcome of the impact assessment of light impacts to marine turtles remains valid.

Generic Question ID: 637 Sub ID [120] Raised by [S120 Q1277]

ENGO Submission: The SAR's review of the potential harm to marine turtles and their habitat is inadequate and not based on sound science. The SAR has failed to adequately assess, and significantly underestimates, the potential harm to marine turtles and their habitat from the construction and operations of the proposed Brown Basin gas hub at James Price as "low and very low." The proposed measures to protect marine turtles during construction, operations and oil spills are neither comprehensive nor mandated (almost all management and mitigation measures are conditioned with "may" and "where practicable"). Prevention and protection measures are mostly relegated to non-specific plans that will be developed in the future by the Broome Port Authority.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on marine turtles. This assessment included the collection of data using dedicated turtle vessel surveys, beach surveys, satellite telemetry and aerial surveys (**Appendix C-2** of the SAR). At the time of submission, monitoring had been conducted over a single nesting season. Subsequently beach monitoring and aerial surveys were conducted during 2010 (RPS, unpublished report) and will continue in 2011. The frequency of turtles observed during these subsequent surveys remained low around the James Price Point coastal area compared to other locations along the coast (e.g. Carnot Bay, Cape Latreille, the Lacepede Islands and Roebuck Bay).

The relative impacts of the Precinct development on marine turtles is considered low due to the relatively low abundance of marine turtles identified near James Price Point compared to other sites along the Western Australian and Kimberley coast. Similarly, the impact assessment and corresponding management framework presented in the SAR is considered commensurate with the level of risk of impact relevant to the proposed Precinct.

Generic Question ID: 240 Sub ID [64] Raised by [S64 Q662]

DEC Recommendation 29: To limit impacts on marine turtles to acceptable levels it is recommended that:

- the proponent ensures that commercial vessels associated with the proposed development do not anchor in close proximity to the Lacepede Islands, or mainland turtle nesting beaches;
- the proponent implements best practice light mitigation/management measures to reduce potential impact on marine turtles;
- the proponent ensures a zero light horizon at all nesting beaches, particularly the Lacepede Islands;
- the proponent ensures dredges:

  - are fitted with tickler chains;
  - do not pump water while manoeuvring or during transit;
  - stop pumping when the drag head is less than 0.5 metres from the seafloor;
  - are fitted with overflow screens for the detection of marine fauna entrainment on all trailer hopper suction dredges; and
- the proponent ensures that all accessible dredge machinery (e.g. drag head and hopper) is inspected after each dredge cycle for the remains of entrained marine fauna.

Discussion: Anecdotal evidence from some pre-dredging turtle mitigation trials associated with the Gorgon project indicates tickler chains can be considered effective in preventing marine turtle entrainment. However, monitoring using overflow screens and frequent draghead inspections is necessary to verify the effectiveness of proposed mitigation measures. Furthermore, DEC has obtained advice from the US Army Corps of Engineers in designing turtle entrainment mitigation measures. Based on this advice, ensuring pumps are switched off when the draghead is within several metres of the seabed is not an effective mitigation measure as turtles can be entrained even when the draghead is 0.5 metres or less from the seafloor. Therefore, pumps should be switched off within 0.5 metres of the seafloor as a standard practice.

DEC Recommendation 29a:. Vessels associated with the construction or operations of the precinct development will be required to adhere to a vessel management plan that will outline appropriate measures to mitigate for the potential impacts associated with anchorage. The use of safe anchorages (potentially including the Lacepede islands) during times of poor weather conditions may be unavoidable. However, it is expected that during routine construction and operations, vessels will avoid areas of particular ecological sensitivity (including the Lacepede islands). The SAR (**Part 6, Table 3-6** - Management Arrangements for Dugongs and Turtles) has defined a management objective to avoid impacts to known significant turtle nesting beaches as a result of the BLNG Precinct development.

DEC Recommendation 29b and c: Mapping of predicted light emissions from the Precinct development has been presented in the Strategic Assessment Report (refer **Part 3, Section 2.7.3**). The results demonstrated that light spill from the development will be localised, to an area within approximately 400m from the infrastructure boundary. Direct lighting and light spill (potentially + 1lux), largely emanating from taller elements of terrestrial infrastructure (such as fin fans and storage tanks and marine infrastructure) may potentially be visible from sections of James Price Point beach. However, this beach has had very low level nesting use (two tracks and one potential nest) recorded in previous surveys (RPS 2010b; **Appendix C-2**). Therefore potential disruption to this nesting activity at James Price Point is considered to be remote. Similarly, light levels at known nesting beaches such those at the Lacepede Islands (approximately 65km north-west of James Price Point) and Eighty Mile Beach (approximately 197km south of James Price Point) are likely to be less than natural moonlight levels (i.e. 0 lux) as they are located outside the area of predicted light overspill. Lighting visible at these beaches is only likely to be a distant sky glow and therefore there are no predicted impacts on these rookeries.

Given the predicted low impact of light emissions on turtle nesting beaches it is considered disproportionate to implement the measures outlined in this recommendation (No. 29) for marine turtles as a receptor. Notwithstanding this, the Proponent proposes that future proponents prepare and implement a Visual Amenity Management Plan that addresses (among other items) "...a lighting strategy to reduce light spill, sky glow and direct light from the BLNG Precinct infrastructure", recognising that lighting management is of particular relevance to off-site visual amenity and social factors. It is reasonable to expect that this lighting strategy would provide commensurate benefits for other environmental factors in the local area of influence.

DEC Recommendation 29d: The SAR (**Part 3, Table 2.7-4**) proposes environmental conditions for the strategic proposal that will require proponents of derived proposals to prepare and implement a Dredging and Dredge Spoil Disposal Management Plan (**DSDMP**), demonstrating the application of best practice management techniques and technologies to minimise potential dredging impacts. This condition will allow proponents of derived proposals to apply best practice techniques and technologies, with respect to managing impacts on marine reptiles, based on the proposed dredging program and dredging methodology once confirmed.

With respect to the above recommended measures relating to dredging, it should be noted that:

- Tickler chains are only suitable for use on trailing suction hopper dredgers (**TSHD**). The operational methodology of other dredger types precludes the use of tickler chains. Tickler chains can also only be safely utilised when there is sufficient under keel clearance.
- A TSHD is required to pump water at certain times as part of its usual operation (in addition to during dredging). An example of this is during disposal operations, where water is pumped into the hopper to assist in the removal of all dredged material.
- There are safety constraints (relating to safe access) with respect to utilising overflow screens, therefore their use needs to be fully justified. In addition, extensive surveys have confirmed that James Price

Point is not a significant turtle breeding/aggregation area. The installation of overflow screens on dredges in more significant turtle aggregation areas (e.g. Barrow Island) have reported very low catch rates. Thus the installation of similar equipment for dredging operations at this site is not commensurate with the potential risk of such an occurrence.

Appropriate management techniques and technologies to minimise potential dredging impacts will be detailed within the DSDMP, which will be submitted for consideration and assessment by the State and Commonwealth regulatory authorities.

DEC Recommendation 29e: WEL routinely inspects drag heads at the completion of each dredging cycle as standard practice. This was completed for every load on the Pluto Project and no evidence of turtle strike was noted. Though, given the early stages of the engineering design of the project and the subsequent limitation on not being able to be prescriptive on types of dredging equipment and techniques to be utilised at this strategic proposal stage; specific techniques and technologies, including potential equipment inspection requirements to mitigate impacts on marine fauna, will be further described as part of the Dredging and Spoil Disposal Management Plan (**DSDMP**) to be submitted and assessed to support the derived proposal process.

Generic Question ID: 333 Sub ID [93] Raised by [S93 Q668]

TRIN submission: Given that loggerheads comprised 25 percent of the turtle sightings recorded in the SAR, compared to 30 percent with greens, it is not clear why the species was eliminated from analysis for impacts and protection

It is correct that loggerheads comprised 25% of total turtle sightings during vessel surveys conducted during the non-breeding season. However, green and flatback turtles, consistently recorded in higher abundance, were observed in State waters closer to James Price Point and are known to nest on Kimberley beaches (see **Part 3**, **Section 2.7.3** and **Appendix C-2** of the SAR). Therefore, the focus of the impact assessment in the SAR with regard to turtles was on those species of most relevance to the project area (i.e. green and flatback turtles). Notwithstanding, the management arrangements and measures proposed in the SAR (refer to **Part 3**, **Section 2.7.4** and **Part 6**, **Table 3-6**) would be reasonably expected to benefit other species of marine turtle, such as loggerheads, should they occur.

Generic Question ID: 335 Sub ID [93] Raised by [S93 Q670]

TRIN submission: The SAR fails to provide the latest data on the loggerhead population and its utilisation of Kimberley coastal habitats around James Price Point.

The Strategic Assessment Report incorporated all available relevant data on marine turtles in a local and regional context. A specialist study was undertaken by RPS (**Appendix C-2**) which, as well as incorporating the results of marine turtle surveys around James Price Point, presented the findings from a desktop review of all relevant literature. The impact conclusions and management framework presented in the SAR take into account the distribution and movements of marine turtles from this collective baseline information. Without knowing the specific details of this 'latest data' on loggerhead turtles referred to in this submission, the Proponent cannot comment on whether this has been incorporated or not.

Generic Question ID: 337 Sub ID [93] Raised by [S93 Q679]

TRIN submission: The flatback routinely nests on Western Australian beaches and islands including the Kimberley region. Dutton (2002) reports that "genetic analysis has identified that there is a low level of genetic variability in the species and there is limited gene flow between the rookeries." The significance of this for the Browse Basin project is that flatback populations reduced by human activity may not be repopulated by sea turtles from other regions. Losses could be permanent. This is in the context of a predicted 30 to 50 percent decline of flatbacks in the future due to new threats due to loss of habitat and disturbance of nesting beaches and coastal waters.

It is unclear on what data the quoted figure of “30 to 50 percent decline of flatbacks in the future” is based on. It has been acknowledged in the SAR that flatback turtles are known to nest in significant numbers in the Kimberley and Canning Bioregions (Prince 1994), with significant flatback turtle rookeries located at the Lacepede Islands (an A-class nature reserve) and Cape Domett (735km from James Price Point). Turtle surveys have demonstrated that there are no significant flatback turtle nesting areas within the James Price Point coastal area, which differs substantially to the significant green and flatback turtle rookeries at the Lacepede Islands. Many of the characteristics of the James Price Point coastal area are considered unsuitable for nesting, largely as a result of periods of inundation during spring high tides, incline of the beach, rocky substrate around the coastal zone and limited space for nesting between the aeolian sands and the intertidal

platform.

The SAR undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine turtles (**Part 3, Section 2.7.3**). Though some localised disturbance to potential foraging habitats (i.e. sessile invertebrates) have been predicted as a result of the Precinct marine construction activities, no impacts to flatbacks at a population level have been predicted or are expected as a result of the Precinct development.

Generic Question ID: 338 Sub ID [93] Raised by [S93 Q681]

TRIN submission: While green turtles appear to be abundant, they are in decline and threatened with extinction. Today, in Western Australia, populations are decreasing by about 6 percent per year, according to a paper presented by the DEC at the International Symposium on Sea Turtle Conservation and Biology in Brisbane in February 2009. That same presenter also stated that 20 years worth of green sea turtle tagging data had not yet been analysed or released into the public domain. The information should be released and considered in the development of a sea turtle protection plan in Western Australia.

It is noted and acknowledged in **Part 3**, **Section 1.4.4.1** that green turtles are listed as 'Endangered' according to the IUCN Red List. Dethmers *et al*. (2006) estimated the population size of female green turtles in the North West Shelf area to be approximately 125,300 individuals, which is considered one of the largest green turtle populations in the world (Limpus, 2008b). In a regional context, the Lacepede Islands are known to be important nesting and inter-nesting habitat for green turtles, supporting a total population of 5,000-10,000 individuals (Environment Australia, 2003; Dethmers *et al*., 2006; DEWHA, 2008a and Masini *et al*., 2009).

As of 2008, at a WA policy level, the Marine Turtle Recovery Plan for Western Australia is still in draft form. The DEC is responsible for the development and implementation of their policy. The reader is encouraged to communicate with the DEC as to the current status of their document and if the data in question is informing this policy. The proponent has been liaising closely with the DEC in the development of the SAR and will continue to through the derived proposal process and development.

The SAR drew on all available and credible data on marine turtles (including green turtles) to assess the potential for the Precinct development to impact marine turtle populations in the James Price Point area. Given the data cited in the submission has yet to be analysed, peer-reviewed or published in the public domain, it is not possible that it could have been incorporated into the SAR. However, it is agreed that if and when such data is publicly available it will be considered, along with other relevant scientific literature, to inform management and monitoring strategies as relevant to the project area. The Proponent actively encourages knowledge sharing to further inform conservation initiatives.

Generic Question ID: 382 Sub ID [93] Raised by [S93 Q686]

TRIN submission: The SAR's review of the potential harm to marine turtles and their habitat inadequate is based on flawed science about marine turtle density and life cycles.

A comprehensive range of baseline studies were undertaken to inform the environmental impact assessment process of the Strategic Assessment Report (**SAR**). Specifically with regards to marine turtles, RPS were engaged to undertake a range of baseline surveys including field and desktop research into the distribution, abundance and habitat use of marine turtles along the Dampier Peninsula and the Lacepede Island Group. Methodologies adopted to conduct these surveys were developed by experienced and qualified RPS scientists. The surveys undertaken included aerial surveys (nearshore, regional and offshore), vessel surveys, beach studies (track counts, nearshore surveys and sand temperature analysis) and satellite tracking (inter-nesting and post-nesting migration). Refer SAR **Appendix C-2** for full details.

Prior to these surveys, only a few previous studies have sought to quantify the distribution, abundance and habitat use of marine turtles in the West Kimberley. The findings outlined in **Appendix C-2** are considered the most comprehensive marine turtle surveys undertaken for the Dampier Peninsula and Lacepede Island Group. The key findings from these surveys concluded that there are no significant green or flatback turtle nesting areas within the James Price Point coastal area, which differs substantially to the significant green and flatback turtle rookeries at the Lacepede Islands. Many of the characteristics of the James Price Point coastal area are considered unsuitable for nesting, largely as a result of periods of inundation during spring high tides, incline of the beach, rocky substrate around the coastal zone and limited space for nesting between the aeolian sands and the intertidal platform

Generic Question ID: 383 Sub ID [93] Raised by [S93 Q693]

TRIN submission: In relation to the potential for harm from vessel movements, the SAR fails to adequately or correctly assess the potential for harm to marine turtles by vessel movements, particularly ship strikes, nor to

mitigate the harm. The SAR does not describe in detail the number or types of vessels that will transit through the region. It does not estimate vessel transits per day. It does not quantify the numbers or transits of the full range of vessels that will be utilised, which will include not only LNG ships and dredgers, but also service vessels that carry workers and supplies, barges, drillships (dynamically positioned drilling vessels), and tugs.

The potential impact of vessel movements on marine turtles has been assessed within the Strategic Assessment Report (SAR) relative to the potential risk and in the context of the local and regional environmental values. **Part 2, Section 5** of the SAR quantifies preliminary estimates of shipping frequency per annum for each of the development scenarios, as appropriate at this stage of engineering definition for a strategic proposal, which are also summarised in **Part 3, Section 2.6.2.2** and **Part 3, Section 2.7.2.2**. Please refer also **Part 3, Table 2.6-3** (Approximate Number and Types of Vessels Likely During Construction of the Nearshore Marine Facilities). This information informed the impact assessment and management framework presented in the SAR.

It is not anticipated that routine vessel movements associated with the construction or operation of the Precinct will have a significant impact on marine turtle populations. The number of vessel movements (estimated at approximately 1,300 per year during operations) to and from the BLNG Precinct represents a small increase in the current vessel movements to and from existing Western Australian ports. By comparison, Broome and Dampier Ports recorded 1,194 and 4,657 vessel movements in 2009/2010 (Department of Transport 2010) with no reported turtle strikes or impacts evident on local turtle populations in the area.

Therefore it is considered unlikely that the additional vessel traffic associated with the development would have a significant impact on the turtle population in a local or regional context.

Generic Question ID: 391 Sub ID [93] Raised by [S93 Q696]

TRIN submission: The SAR fails to adequately assess or mitigate the volumes of solid waste including plastic, litter, and other garbage released from oil rigs and associated infrastructure, vessels, and ports that have the potential to jeopardise the health and survival of marine turtles. The incidental ingestion of marine debris and entanglement continue to adversely affect marine turtles, but it has not been considered in the SAR.

It should be noted that the scope of the detailed assessment reported in the Strategic Assessment Report is focused on Category A related activities (i.e. the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons in State waters), with commentary provided on Category B and Category C activities in the context of cumulative impacts. Therefore potential impacts associated with the 'upstream' development (i.e. offshore platforms and vessels) is subject to assessment as part of a separate Commonwealth environmental approval process (refer **Part 1, Section 5**, and also **Part 2, Section 6.2**). The management of waste on board vessels or offshore infrastructure is regulated by State law (*Environmental Protection Act 1986*), Commonwealth law (*Protection of the Sea (Prevention of Pollution from Ships) Act 1983*) and international conventions (*International Convention for the Prevention of Pollution from Ships 1973, as modified by the 1978 Protocol (MARPOL 73/78*)). The *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* regulates the disposal of operational garbage from Australian Flag vessels (irrespective of location) and to all vessels within Australian territorial waters.

While it is acknowledged that the dumping of solid waste (in particular non-degradable plastics) is a real threat for turtles, it should be noted that there will be no planned releases of solid wastes (>25 millimetres square) to the marine environment within Australian territorial waters (i.e. within 12 nm from nearest land) during any phase of the Precinct development in accordance with MARPOL requirements. In addition, the disposal of all forms of solid waste is prohibited within State waters (<3nm from nearest land). Solid wastes on vessels or offshore infrastructure will be stored, managed and disposed of according to the waste management system in compliance with State, Commonwealth and international regulations. Such measures and regulations are expected to effectively manage the risk of ingestion or entanglement from waste from vessels or infrastructure associated with the Precinct development.

Generic Question ID: 394 Sub ID [93] Raised by [S93 Q697]

TRIN submission: The SAR fails to fully address the impact of marine turtles becoming entrained and killed during dredging during construction and maintenance, nor does it provide preventive measures that will ensure that marine turtles are not harmed

Part 3, Section 2.7.3.5 of the Strategic Assessment Report (**SAR**) addresses the potential for entrainment of turtles within the dredging equipment during dredging operations. Due to the relatively low density and occurrence in the James Price Point coastal area, and the lack of unique or abundant foraging habitat in the area, it is considered that the significance of impacts to marine turtles is low. The implementation of management techniques and technologies to manage the potential impacts to marine turtles via entrainment in the dredging equipment will be detailed in a Dredging and Dredged Spoil Disposal Environmental Management

Plan (to be prepared by future Precinct proponents undertaking dredging). This plan will require regulatory approval prior to implementation to ensure that suitable techniques and technologies are implemented to mitigate for such potential impacts.

Generic Question ID: 405 Sub ID [93] Raised by [S93 Q699]

TRIN submission: The SAR fails to address the harm to marine turtles from climate change and the major increases in carbon emissions from the natural gas Precinct or ships. Also, whether or not marine turtle nesting at JPP is significant or not, greenhouse gas emissions from the project are likely to indirectly impact nesting sea turtles throughout Western Australia and beyond as increased emission contribute to climate change.

The impact of climate change on marine turtles will be relevant to current, historical and future global emissions of greenhouse gases. In this context the change on global greenhouse gas emissions from the emissions generated by the Browse LNG Precinct would be extremely small (approximately 0.1%). However the potential global emissions saving due to the development of Browse are large. The global context is also important because of the role LNG plays as a transition fuel to a lower carbon future. This role is due to LNG being a less carbon intensive source for generating electricity compared to traditional coal fired stations.

This is recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008) which identifies LNG as having a role to play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). The Strategy contains a range of actions to reduce greenhouse gas emissions. These actions recognise the global nature of climate change and therefore the need to consider the management of greenhouse gas emissions at a global scale. Specifically in relation to LNG, the State has recognised that the most useful way to consider its associated emissions is in a global context. As such the State has an action within the Greenhouse Gas Reduction Strategy to encourage the long term export of relatively cleaner fossil fuels such as LNG (Action 4.4 p.90).

Generic Question ID: 409 Sub ID [93] Raised by [S93 Q703]

TRIN submission: The SAR as written does not provide any assurance that marine turtles or other marine life will be rescued or rehabilitated during or after a major oil spill. TIRN recommends that the EPA require that detailed oil spills response and recovery plans for marine turtles and other wildlife be produced and incorporated contained in the SAR.

The Strategic Assessment Report acknowledges the significant potential impact associated with a major hydrocarbon spill. Whilst the likelihood of a major spill is considered remote, the consequence was noted as potentially severe if appropriate response measures were not effectively implemented. The SAR specifically discusses the potential for marine fauna, including marine turtles, to be impacted spills (**Part 3, Section 2.7.3.3**) and includes management measures to mitigate potential impacts (**Part 3, Section 2.7.4**). Given the SAR is a strategic assessment, detailed response planning to potential oil spills will be included and assessed as part of a future proponent's derived approval proposals (including supporting environmental management plans). The SAR does outline the need for appropriate environmental management plans, including an Emergency Response Plan, Hydrocarbon and Chemical Spill Contingency Plan (**HCSCP**) and a Shipboard Oil Pollution Response Plan (**SOPEP**).

The Proponent confirms the importance for a comprehensive planning and management process to ensure an effective and coordinated response should a significant hydrocarbon spill occur. Taking into account the impact conclusions in the SAR, **Part 7** outlines the commitment by the State Government to ensure resourcing and maintenance of hydrocarbon spill response equipment, and effective training for personnel, as part of the Broome Port Authority's functions. Refer **Part 7, Section 4.4.2.2** (**Table 4-3**) for full details. Further discussion about management plans is provided in **Section 2.4** of the Proponent's Response to Submissions Summary Report.

Generic Question ID: 410 Sub ID [93] Raised by [S93 Q704]

TRIN submission: The State Government Measures for Marine Reptiles are inadequate because they rely on non-specific and voluntary measures in future plans that will be developed by the Broome Port Authority and other agencies. The proposed BLNG Precinct Environmental Management Plan (**BPEMP**) must be developed before the SAR is approved and the project moves forward and the EPA should be designated the statutory authority for the BPEMP, its development and enforcement.

As discussed in the SAR (**Part 1, Section 3.4**), the implementation of derived proposals under the BLNG Precinct Plan will require coordinated interaction between government authorities and commercial proponents. To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. For further details and clarification of the

governance structure, please refer to **Section 2.3** of the Response to Submissions Summary Report.

Based on the conclusions of the impact assessment, appropriate environmental management and impact mitigation measures have been developed to ensure that the identified environmental objectives can be achieved for marine reptiles and other relevant factors. DSD will be responsible for overseeing and coordinating the management arrangements and safeguards described in the Strategic Assessment Report, through the governance arrangements of the Precinct Control Group. Key roles have been identified for the Broome Port Authority which would be responsible for management of the Port under the *Port Authority Act 1999*. In this context, the Proponent maintains that the responsibility for the Port Authority to prepare a BLNG Precinct Environmental Management Plan (**BPEMP**) for the port area in consultation with DEC and other relevant agencies is appropriate.

Commercial proponents of derived proposals under this Precinct Plan will need to comply with conditions determined during this Strategic Assessment process. The EMPs proposed in the SAR are non-voluntary and will be subject to regulatory review and assessment as part of the derived approval process for future Precinct proponents wishing to operate within the Precinct.

Generic Question ID: 415 Sub ID [93] Raised by [S93 Q701]

TRIN submission: Heavy metals released during construction and on-going operations combined with debris, pathogens and other toxic chemicals may impact on sea turtle health and habitat quality. The SAR has not fully considered these impacts from all sources on marine turtles and their habitat.

The potential impact on water quality from contaminants (including heavy metals) within wastewater discharge streams was considered as part of the Strategic Assessment Report (refer **Part 3, Section 2.3.4**), and potential impacts to marine reptiles further assessed in **Part 3, Section 2.7.3**. Wastewater discharge modelling presented in **Part 7, Section 2** demonstrated that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point and the required treatment prior to discharge, discharged effluent would be rapidly mixed within the water column (with the aid of diffusers) such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300 m from the discharge point). It is predicted that wastewater would meet a 95% level of species protection outside the BLNG Precinct port area according to the definitions of the ANZECC/ARMCANZ 2000 water quality guidelines. In general, marine discharges will be managed as part of a Marine Wastewater Discharge Management Plan, to be submitted and assessed by the relevant State environmental authorities as part of the derived approval process of any future proponents.

Generic Question ID: 422 Sub ID [93] Raised by [S93 Q883]

TRIN submission: To protect marine turtles from oil and gas drilling, exploration, construction, extraction, operations, distribution, accidents, cleanup, restoration, and decommissioning operations, regulations must be developed and incorporated into the SAR.

The Proponent is aware that a range of legislative requirements and specific regulatory guidelines aimed at protecting the marine environment (including marine fauna) are already in existence at the State, Commonwealth and international levels. The development or modification of legislation to secure the protection of marine fauna in general terms, while not within the scope of the Strategic Assessment Report, is encouraged to the extent that tangible conservation benefits are delivered. The SAR is focused on assessing the predicted environmental, social and cultural impacts associated with the Precinct development and has been prepared reflecting the current legislative and regulatory framework. The Proponent submits that it is the role of the appropriate environmental and industry regulators (e.g. SEWPaC, Department of Environment and Conservation, Department of Mines and Petroleum) to determine if existing legislation is appropriate for the protection of marine fauna. In the meantime, the SAR proposes a range of management and monitoring measures to minimise the risk of adverse impacts relevant to activities within the BLNG Precinct development.

Generic Question ID: 453 Sub ID [93] Raised by [S93 Q694]

TRIN submission: The SAR fails to fully assess or adequately mitigate potential harm to marine turtles and habitat from marine discharges, particularly from marine vessels. The SAR fails to address the full scope of marine discharges from ships on the marine environment particularly in the context of potential impacts from ship discharges typically being greater for inshore waters and around port areas where complex ecosystems exist and there is a low water exchange rate. Further, the SAR relies on compliance with the International Maritime Organisation MARPOL 73/78 Annex IV to address marine discharges from vessels. This mitigation is inadequate because the standards for ship pollution contained in MARPOL 73/78 (Annexes I - VII) are generally weak. Protection of Kimberley waters at James Price Point should be given at least the level protection given

the Great Barrier Reef Marine Park and be designated a Particularly Sensitive Sea Area.

Vessel discharges to the marine environment and marine fauna have been adequately assessed within the Strategic Assessment Report (**SAR**) relative to their potential environmental impact significance and in the context of the local and regional environmental values. It is not anticipated that routine vessel discharges will have a significant impact on marine turtles. As noted, vessel discharges are generally regulated as part of Commonwealth legislation (i.e. the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and *Navigation Act 1912*) in accordance with international treaties and obligations (i.e. MARPOL 73/78 and the IMO Ballast Water Convention). Additional State legislation and regulatory guidelines provide an additional tier of regulation of marine discharges. Discharges from vessels associated with the Precinct construction or operation will be managed in accordance with such international, Commonwealth and State legislation, which clearly stipulates the type and quality of discharge allowed.

Wastewater discharge modelling presented in **Part 7, Section 2** demonstrated that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point). Additionally, the SAR commits future Precinct proponents to achieving ANZECC/ARMCANZ 2000 water quality guidelines for 95% species protection outside the BLNG Precinct port area.

While it is possible that routine discharges may result in a localised impact on marine water and sediment quality, the SAR concludes that acceptable environmental outcomes are achievable as potential impacts would be localised and the quality of discharged water would be managed and monitored to ensure compliance with the ANZECC/ARMCANZ 2000 guidelines.

Generic Question ID: 454 Sub ID [93] Raised by [S93 Q698]

TRIN submission: The SAR completely discounts the potential for lighting from the gas hub, port operations, vessels, drilling rigs and other light sources from disturbing or harming nesting, hatchling or foraging sea turtles. The SAR has offered "no specific measures" for managing light emissions on marine turtles "given the lack of significance of the James Price Point coastal area for these species". TRIN would like to state again that this assumption is in itself not scientifically supported. The SAR seems to have overlooked EPA's own warnings and guidelines about lighting impacts on marine turtles in Western Australia, including James Price Point, which were described in the lighting guidelines issued in March 2010 (EPA, 2010).

The Proponent is confident that the Strategic Assessment Report does not discount the potential impacts from light spill on marine turtles. Such potential impacts were considered in detail in **Part 3, Sections 2.7.2** (Sensitivity and Resilience) **and 2.7.3.4** (Potential Impacts to Marine Reptiles due to Light Emissions). The significance of potential impacts on marine turtles due to light emission was assessed to be very low, given the lack of established turtle nesting within the James Price Point coastal area.

Mapping of predicted light emissions from the operational Precinct development demonstrated that light spill will be localised, approximately 400m from the infrastructure boundary. Direct lighting and light spill (potentially + 1lux), largely emanating from taller elements of terrestrial infrastructure, such as fin fans and storage tanks and marine infrastructure, may potentially be visible from sections of James Price Point beach. However, this beach has no established turtle nesting activity (RPS 2010b; **Appendix C-2**). Similarly, light levels at known nesting beaches such those at the Lacepede Islands (approximately 65km north-west of James Price Point) and Eighty Mile Beach (approximately 197km south of James Price Point) are likely to be less than natural moonlight levels (i.e. 0 lux) as they are located outside the area of predicted light overspill. Lighting visible at these beaches is only likely to be a distant sky glow and therefore there are no predicted impacts on these rookeries.

Notwithstanding this, the Proponent proposes that proponents of Derived Proposals shall prepare and implement a Visual Amenity Management Plan that addresses (among other items) "...a lighting strategy to reduce light spill, sky glow and direct light from the BLNG Precinct infrastructure", recognising that lighting management is of particular relevance to off-site visual amenity and social factors. It is reasonable to expect that this lighting strategy would provide commensurate benefits for other environmental factors in the local area of influence.

Generic Question ID: 552 Sub ID [170] Raised by [S170 Q1442]

WWF & ACF Query: Is there evidence that turtles historically used these beaches? Would the result of developing here impinge on the recovery of either green or flatback turtles?

Historical information on green turtle nesting in the Kimberley indicates that the Lacepede Islands are the most regionally important rookery for green turtles with other regionally important rookeries occurring on Scott Reef, Ashmore Reef and Browse Island. Nesting has also been reported from Cape Leveque, Maret Islands, East

Montalivet Island, Cartier Island and Cassini Island. Relatively low numbers of tracks have been observed on mainland Kimberley beaches, including those near James Price Point (**Appendix C-2** and **Part 3**, **Section 3.2.1.3**). Historical information on flatback turtle nesting in the Kimberley indicates that the Lacepede Island group and Cape Dormett are the most regionally important rookeries with lesser important rookeries occurring at North Helpman Island, Lamarck Island, Maret Islands and East Montalivet Island. Nesting has been observed at Eco Beach and Cable Beach, 55km south of James Price Point. Within the James Price Point area, very low levels of historical nesting have been observed with a few body pits and tracks of flatback turtles having been observed at beaches south of Quondong Point and James Price Point (**Appendix C-2**). Recent surveys in 2009/2010 confirm this pattern, with only one nest and three false crawls being recorded near James Price Point (**Appendix C-2**). Surveys of the beach north and south of James Price Point indicate that these beaches are generally unsuitable for nesting as they have rocky shorelines and are subject to tidal inundation.

Given that the beach in the vicinity of James Price Point was not identified to be an important nesting area and the nearshore waters around James Price Point do not contain significant foraging areas that are unique or appear to be regionally significant to marine turtles, the Precinct development is not predicted to significantly impact on populations of green or flatback turtles. Taking into account the above conclusions, the proposed BLNG Precinct is therefore not predicted to impinge on the recovery of either green or flatback turtles.

Generic Question ID: 622 Sub ID [120] Raised by [S120 Q1256]

ENGO Submission: Aerial surveys were used to estimate abundance of marine turtles in the Woodside Browse Turtle Technical Report Ecology of Marine Turtles of Dampier Peninsula and Lacepede Island Group study [RPS Group, 2009-2010], but they are useless at determining distribution and abundance of marine turtles because:

- no correction factors can be employed;
- small turtles are often missed;
- species can't be determined; and
- the correction factors are likely to vary between species because they dive for different lengths.

It is acknowledged that aerial surveys have limitations in their ability to fully characterise the distribution and abundance of marine turtles, and this was a consideration in the survey design and planning process. Consequently these surveys were conducted in conjunction with dedicated vessel and nearshore observation surveys to understand the marine turtle population in the James Price Point coastal area. Aerial surveys were useful for monitoring large areas using a cost-effective method which identified regions of potentially high in-water turtle densities. These areas then became the focus of dedicated vessel surveys during late 2009 and 2010.

Generic Question ID: 623 Sub ID [120] Raised by [S120 Q1257]

ENGO Submission: In the RPS Group 2009-2010 study, sand temperature data was collected for one year. The conclusions drawn from this work are incorrect. Firstly, assumptions that thermal properties of WA turtles are the same as in Queensland may not be true. Secondly, the report does not consider the complex mechanisms occurring with temperature and development. The proportion of days above the Transitional Range of Temperatures is irrelevant because turtles spread nesting out over the season and the incubation period decreases as temperatures increase.

Sand temperature information collected during the nesting season of 2009/2010 was only intended to provide a preliminary examination of temperatures that hatchlings may experience during incubation periods. The absence of nesting activity recorded at beaches within the James Price Point coastal area prevented sex ratio / nest temperature comparisons from being made. Consequently pivotal temperatures and transitional temperature ranges for green and flatback turtles based on Queensland data were used in the absence of data for Western Australian turtle populations.

Generic Question ID: 626 Sub ID [120] Raised by [S120 Q1260]

ENGO Submission: The turtle survey omitted key habitats for young turtles. The Marine Vessel Survey avoided shallow waters, but this is where larger numbers of young turtles are often found, especially around mangroves and shallow water algae and seagrass habitat. [RPS Group, 2009-2010).

Dedicated vessel surveys were conducted around the James Price Point coastal area to examine the mating and foraging activities of turtles. During these surveys both adult and juveniles were recorded. Transects were unable to approach the coastline in waters less then 10m due to risk of grounding; however the sites surveyed did incorporate algae habitats which were identified in nearshore benthic habitat surveys and James Price Point

nearshore mapping studies. It should also be noted that these marine habitat mapping studies of the James Price Point nearshore region found that seagrass was mainly sparse and patchily distributed across the study area, and no mangrove habitat was present (refer to **Part 3**, **Table 1-13**). As boat based surveys were unable to cover shallow water habitats within 10 metre water depths, vessel surveys were conducted in parallel with intense aerial surveys during 2009 and 2010 (refer to **Appendix C-2** of the SAR) to ensure all nearshore areas were sufficiently surveyed. These aerial surveys will be repeated again in 2011 with a particular focus on dugong and turtle observations.

Generic Question ID: 635 Sub ID [120] Raised by [S120 Q1273]

ENGO Submission: The marine waters and coastlines of Western Australia provide internationally significant nesting, foraging and migrating habitat for distinct populations of rare and endangered sea turtles. Six species of marine turtles occur the Western Australia and all are listed as specially protected species under W.A. and Commonwealth legislation. All are listed as "rare or likely to become extinct" under *WA's Wildlife Conservation Act*. However, the state government has never finalised, publicly released or implemented its recovery plan for marine turtles, leaving this species vulnerable to a broad range of threats with little, if any, protection. (DEC 2009-2016). These same species are also listed as "threatened" by the SEWPaC. A recovery plan for Australian marine turtles was adopted in 2003; it is not clear to conservation groups whether the 2003 version is being implemented or whether marine turtles in Australia are being managed for protection around the country.

The Proponent notes the items raised in this submission. The key item relevant to this submission is the current status of the recovery plan for marine turtles in Western Australia. The relevant State and Commonwealth environmental agencies are best positioned to advise on the current status of the recovery plans at a State and Commonwealth level respectively.

As of 2008, at a WA policy level, the Marine Turtle Recovery Plan for Western Australia is still in draft form. The DEC is responsible for the development and implementation of their policy. The reader is encouraged to communicate with the DEC as to the current status of their document and if the data in question is informing this policy. The proponent has been liaising closely with the DEC in the development of the SAR and will continue to through the derived proposal process and development.

Generic Question ID: 1134 Sub ID [89] Raised by [S89 Q2636]

It is stated in **Part 1,Table 7-9** of the Executive Summary that "Significant turtle nesting habitat is located at distance (over 60km) from the Precinct". The use of the word "significant" when the species is defined by the WA Department of Environment and Conservation as "rare or likely to become extinct" is highly contentious.

The use of the word 'significant' in this context is not in reference to the conservation status or vulnerability of turtles species to impacts. There statement is stating the fact that the Precinct development is a distance, in this case over 60km, from the extensive turtle rookeries at the Lacepede Islands.

There is a strong 'weight of evidence' to indicate that the beach at JPP is not important to populations of nesting green and flatback turtles. Only one potential nest and three tracks were encountered on beaches adjacent to JPP. In contrast approximately 431 green turtles per night and 36 flatback turtles per night were encountered at the Lacepede Island group (see **Appendix C-2**). The difference in nesting numbers between the JPP area and Lacepede Island Group strongly suggests that the beaches adjacent to JPP contribute relatively few juveniles to the populations of these turtles in the Kimberley.

Generic Question ID: 1418 Sub ID [89] Raised by [S89 Q2640]

It is well-known that reasonable numbers of flatback turtles nest along Cable Beach, which is considerably closer than 60km to the proposed Precinct. The statement in **Table 7-9**, "There are no significant turtle nesting beaches in the James Price Point coastal area", would appear to be drawn from the Appendix C Technical Report on turtle activity. This report claims to have counted, over the course of a four month turtle nesting season, only two unidentified turtle nests on the James Price Point beaches. That this is so self-evidently nonsense and is perhaps one reason why Woodside has recently announced weekly turtle surveys on these beaches; however these surveys are being conducted outside of turtle nesting season.

Historical information on green turtle nesting in the Kimberley indicates that the Lacepede Islands are the most regionally important rookery for green turtles with other regionally important rookeries occurring on Scott Reef, Ashmore Reef and Browse Island. Nesting has also been reported from Cape Leveque, Maret Islands, East Montalivet Island, Cartier Island and Cassini Island. Relatively low numbers of tracks have been observed on mainland Kimberley beaches, including those near James Price Point (**Appendix C-2** and **Part 3, Section 3.2.1.3**).

Similarly, historical information on flatback turtle nesting in the Kimberley indicates that the Lacepede Island

group and Cape Dormett are the most regionally important rookeries with lesser important rookeries occurring at North Helpman Island, Lamarck Island, Maret Islands and East Montalivet Island. It is also acknowledged that nesting has been observed at Eco Beach and Cable Beach (55km south of James Price Point). Within the James Price Point area, very low levels of historical nesting have been observed with a few body pits and tracks of flatback turtles having been observed at beaches south of Quondong Point and James Price Point (**Appendix C-2**). Recent surveys in 2009/2010 confirm this pattern, with only one potential nest and three false crawls being recorded near James Price Point (**Appendix C-2**). Surveys of the beach north and south of James Price Point indicate that these beaches are generally unsuitable for nesting as they have rocky shorelines and are subject to tidal inundation.

At the time of submission monitoring had been conducted over a single nesting season (November 2009, January 2010 and February 2010) to cover the entire breeding season for green and flatback turtles (refer to **Appendix C-2** of the SAR). Subsequently additional beach monitoring along the James Price Point coastal area was also undertaken during the 2010/2011 nesting season (RPS, unpublished report) and will continue throughout 2011. The frequency of turtles observed during these subsequent surveys remained low around the James Price Point Region compared to other locations along the coast (i.e. Lacepede Islands). Based on these findings and historical data, the relative impacts of the Browse LNG Precinct development on nesting turtles compared to other sites along the Western Australian coast are considered low.

2.8 Relevant Factor: Marine Ecosystem Integrity

Generic Question ID: 82 Sub ID [2, 93, 75, 170, 222, 148] Raised by [S2 Q38]

It is considered that the real threat to the coastal environment along the Dampier Peninsula including James Price Point is a major oil spill (similar to the Montara disaster). The Strategic Assessment Report (**SAR**) downplays the threats posed by the offshore oil and gas industry and does not provide any details on an oil spill plan sufficient to deal with another Montara scale disaster. The report does not consider the impacts of the use of dispersants. The huge tidal range (up to 9 metres on spring tides), and tidal currents along the Dampier Peninsula, would mean that containment of a major spill using current technologies would be virtually impossible. The report downplays the long term impacts and bioaccumulation of oil in the marine environment. The effects of the Exxon Valdez spill in Alaska are still evident twenty years after the event. Some populations of killer whales in Alaska were reduced by 40% after the Exxon Valdez spill. Twenty years on these populations still haven't recovered (North Gulf Oceanic Society).

The Strategic Assessment Report (**SAR**) acknowledges the significant potential impact associated with a major hydrocarbon spill. Whilst the likelihood of a major spill is considered remote, the consequence is noted as potentially severe if appropriate response measures are not effectively implemented. Hydrocarbon spill modelling undertaken as part of the Strategic Assessment Report (**Part 7**) identifies the significant risk associated with a large scale spill. The findings of the study (**Part 7, Section 4.3.3**) show that coastal impacts from hydrocarbon spills are likely to be limited to the James Price Point coastal area during calm periods or onshore winds associated with the wet season, moving offshore with prevailing south-easterly winds in the dry season. The likelihood of a hydrocarbon spill impacting on regionally significant environmental receptors is low, ranging from 1 in every 2,000 years for the Lacepede Islands to less than 1 in every 10,000 years for Roebuck Bay (**Figure 4-4, Part 7**). Preventative measures and contingency plans to minimise the risk associated with such an event are detailed in **Part 7, Section 4.4.2**.

The Proponent confirms the importance for a comprehensive planning and management process to ensure an effective and coordinated response should a significant hydrocarbon spill occur. Taking into account the impact conclusions in the SAR, **Part 7** outlines the commitment by the State government to ensure resourcing and maintenance of hydrocarbon spill response equipment, and effective training for personnel, as part of the Broome Port Authority's functions. Refer to SAR **Part 7, Section 4.4.2.2** (**Table 4-3**) for full details.

Generic Question ID: 452 Sub ID [93, 157] Raised by [S93 Q692]

TRIN submission: With respect to marine noise and vibration (**Section 2.7-2**, **Table 7-9**), the SAR limits its scope of analysis to blasting during construction and from vessel operations and determines the impact to be "very low". It does not consider the full range of potential noise impacts including seismic testing, drilling and construction noise, offshore rig operations noise, vessel and helicopter noise. It also does not consider the findings of the IMO vessel noise working group. Mitigation measures need to address the full range of impacts

Within the Strategic Assessment Report (**SAR**) it is acknowledged that the construction and operation of the LNG Precinct will include a range of activities that will result in underwater noise and vibration above background (ambient) levels. As part of the supporting underwater noise modelling study (**Appendix C-12**), piling, blasting, dredging and vessel movements were modelled and assessed. From this study it was determined that the construction or operational activities with the highest potential to cause impacts to marine

fauna are the high intensity impulsive noises emitted during construction activities such as blasting and piling. Management measures have been proposed to mitigate for impacts deemed to be of most significance and relevance, and will not necessarily address the full range of impacts.

Potential environmental impacts associated with the 'upstream' Browse Development (e.g. noise impacts from offshore rigs or helicopters) will be investigated and assessed as part of a separate Commonwealth environmental approval process and are outside the scope of the SAR.

It has been noted that an IMO Correspondence Group was tasked to "identify and address ways to minimise the introduction of incidental noise into the marine environment from commercial shipping...". However, as detailed in the SAR and evident from **Appendix C-12**, noise sources with the highest potential to cause impacts are high intensity impulsive noises emitted during construction. Noise sources during operations, consisting primarily of continuous and lower intensity noise emitted from vessels, have a considerably lower potential to cause impacts on marine fauna. Therefore, the impact assessment and corresponding management framework presented in the SAR is commensurate with the level of risk of impact relevant to the project context.

Generic Question ID: 1175 Sub ID [122] Raised by [S122 Q2322]

Suggested studies at Roebuck Bay to improve the necessary baseline information for managing a Ramsar site and for assessment of impacts from developments such as BLNG are: (a) Longitudinal quantitative monitoring of all drains discharging into Roebuck Bay is put into place in consultation with DEC, and in particular Dr Ryan Vogwill, who completed his PhD on the hydrology of southern end of the Dampier Peninsula. (b) Undertake ocean circulation modelling for the entirety of Roebuck Bay to gain an understanding of water flows which are necessary for management and in the case of a pollution spill, or for the dredging that would occur. (c) Complete a Ramsar site Management Plan for Roebuck Bay that is acceptable to Yawuru, DEC and the community that includes an on ground management plan and limits of acceptable change. (d) Identify gaps in the ecological and cultural knowledge necessary for management of the Ramsar site and wider Roebuck Bay.

It should be noted that the scope of the detailed assessment reported in the Strategic Assessment Report is focused on Category A related activities (i.e. the core elements of the BLNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons in State waters), with commentary provided on Category B and Category C activities in the context of cumulative impacts. No direct impacts from the Precinct development (Category A activities) are predicted at Roebuck Bay.

It is recognised that, in the context of the management of Roebuck Bay, the Department of Environment and Conservation is the statutory authority with primary management jurisdiction. The Department of State Development will work with DEC, relevant stakeholders and community groups (including the Roebuck Bay Working Group and Traditional Owners) to ensure a framework for the management of the area. It is within this forum that appropriate studies can be proposed to further the baseline information of the bay.

In addition to the existing initiatives through the Roebuck Bay Working Group and Interim Management Guidelines, the formation of the Kimberley Wilderness Parks, as a key component of the State Government's Kimberley Science and Conservation Strategy, will also strengthen protection of the key ecological values of Roebuck Bay as a declared marine park.

Generic Question ID: 91 Sub ID [2] Raised by [S2 Q47]

The recent Montara oil spill in the Timor Sea highlighted the dangers posed by the expansion of the oil and gas industry in the Kimberley. The report from the Montara enquiry questioned the ability of the State designated authorities to adequately regulate the offshore oil and gas industry and recommended the establishment of a single national regulatory authority. The ability of the Department of Environment and Conservation to provide the necessary oversight in WA should be questioned when consideration is given to their strong corporate relationship with the oil and gas industry. The Federal Minister for Resources, Marin Fergusson, announced his intention to establish an independent national regulatory body to regulate safety, integrity and environmental plans in Commonwealth waters (Ministerial statement Montara Commission of Enquiry, Wednesday 24th November 2010). That regulation should be extended to oil and gas developments in State waters.

The Browse LNG Precinct will adhere to rigorous standards and procedures to ensure safe operations within the Precinct and the surrounding State waters. Hydrocarbon spill modelling and response mechanisms are discussed in **Part 7, Section 4** of the SAR.

The State is the most efficient and reliable body to regulate the oil and gas industry of Western Australia's shores. A national offshore petroleum regulator will not provide any safety or environmental benefit to the offshore petroleum sector, while it brings with it the threat of delays, gaps or duplication in regulatory processes. The Western Australian oil and gas sector is the nation's largest and the State has the largest skills base and the necessary level of current local knowledge to effectively regulate the industry in Western Australia.

The Montara Commission of Inquiry Report found that, while there were some opportunities for improvement within the State system, it considered the Western Australian regulatory regime to be effective. The Report noted that the State's standard of regulation is much more rigorous than that administered by the Northern Territory which applied to Montara.

Generic Question ID: 413 Sub ID [93] Raised by [S93 Q700]

TRIN Submission: The SAR has not considered or quantified the impacts to the marine habitat from increases in local ozone due to nitrogen oxide and sulphur oxide emissions from the refinery or the vessels that service it. In addition, the SAR should consider and mandate the establishment of an Emissions Control Area in Western Australian waters, which could be beneficial to water and air quality in marine habitat. In addition to seeking an ECA to reduce air pollution from the project, the SAR should require the use of shoreside electrical power where feasible to allow LNG ships to turn off auxiliary and main engines while port to reduce air emissions.

Ozone is a reactive gas with a natural background concentration varying between about 15 and 40ppb on a daily basis. Exchanges across the ocean-atmosphere interface at the marine surface are accordingly highly variable. The expected variation in surface ozone concentrations due to emissions from the LNG Precinct are of a similar magnitude to the background daily variation, and less than the variation due to existing sources such as bushfires. Consequently it is unlikely that the nett transfer of ozone to or from the ocean will be substantially different due to emissions from the BLNG Precinct. This is an area of ongoing basic research.

Emission Control Areas (**ECA**s) have been established in Europe and North America to control air emissions from shipping. Under international law, regulations are prescribed for the ECAs that mandate, among other things, the reduction of the sulphur content of marine fuel oil so as manage the risk of acid deposition to the land and sea surface. An ECA is not needed in the Kimberley region because the standard of Australian fuels in many cases already meets the requirements that are being phased in elsewhere in the world. In addition LNG carriers primarily operate on natural gas (i.e. gas boiled off from the LNG storage tanks) which is clean burning and as such run on low sulphur fuel. In port the LNG ship are mostly shutdown with the balance of the power requirements met from either small gas or diesel fired generation. Switching these engines off and supplying electricity from the LNG facility would not reduce emissions, just change the source.

Appendix C-25 of the SAR summarises air emissions from shipping associated with the LNG Precinct and **Section 3.4** provides details of the assumptions made in calculating these emissions for the air quality study. The majority of LNG shipping uses boil-off gas from the LNG tanks as a fuel. Natural gas is a very clean fuel that leads to much lower emissions than other engines using traditional heavy fuel oil. Other shipping emissions come from the fleet of tugs servicing the LNG tankers. These will most likely use marine fuel oil, with a sulphur content of approximately 1%, which meets the standards currently being introduced for European ECAs.

Generic Question ID: 1264 Sub ID [123] Raised by [S123 Q2338]

The resilience of biota to IMS under tropical marine conditions is premised on a healthy biodiverse ecosystem. However as Hutchings et al. (2002) concludes correctly, these ecosystems become more susceptible to IMS when disturbed, polluted or become less biodiverse. Moreover, the rich marine biodiversity of the proposed site is threatened by this proposal and exposes the marine area to degeneration into a depauperate ecosystem with species imbalance, potential for IMS and loss of habitat for marine vertebrates.

The Strategic Assessment Report undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine environment. Whilst it was noted that impacts to marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the ecosystem integrity of the area, with appropriate management measures and controls in place. The SAR drew on all available literature, including Hutchings *et al.* (2002), to inform the impact assessment of Introduced Marine Species (**IMS**) on marine ecosystem integrity (refer **Part 3, Section 2.8**).

In the context of the concern raised by this submission, the focus of the IMS management strategy will be on the early detection of incursions as this is the most practicable and effective way to avoid IMS establishment. Details of specific management measures will be included in an Invasive Marine Species Management Plan (**IMSMP**) to be developed in consultation with the Department of Fisheries and the Australian Quarantine Inspection Service (**AQIS**). This management plan will be consistent with the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry and will adhere to the AQIS Australian Ballast Water Management Requirements under the *Quarantine Act 1908*. Please refer to **Part 3, Section 2.4** (**Table 2.4-5**) for a complete summary of proposed measures to manage IMS.

Part 4: Terrestrial

1 Environmental Overview

Generic Question ID: 66 Sub ID [7, 28, 93] Raised by [S7 Q80]

The impact on the flora and fauna will result in a high degree of extinction. As usual, the major problem is that we don't know what is actually found in this high biodiversity hotspot. Surely we have learnt from the mistakes of development in the Pilbara and in the south-west. We are unable to effectively manage both the environment and industry in a sustainable manner. The environment loses out every time. No amount of management plans will alter the fact that these plans are basically put in place so that companies can appear to be doing something positive for the environment and can be used to defend their position when the detrimental impacts of their activities are highlighted such as weed invasions, loss of species, increase in feral animal activities, increased pollution, increased stress of animals such as whales - all leading to a loss of biodiversity.

The Western Australian Government believes that there are many social, economic and environmental benefits for the region which would arise as a direct result of the Browse LNG Precinct. Furthermore, it considers that any negative impacts can be adequately managed. Impacts from the Precinct will be monitored and responded to through appropriate mitigation measures or management plans.

Environmental benefits of the Precinct include the creation of new conservation reserves and support for their management, providing greater capacity to manage issues ranging from bushfires to feral animals and weed incursion. As bushfire is the major contributor to air pollution on the Peninsula, an improved fire management regime around the Precinct can also reduce this impact.

The location is not within the nationally recognised north Kimberley biodiversity hotspot and surveys indicate the location is not generally considered a regionally significant habitat. Extensive wet and dry season flora and fauna studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR. No flora species listed under the *Environment Protection and Biodiversity Conservation (**EPBC**) Act* or species listed as Declared Rare Flora (**DRF**) were recorded in the James Price Point coastal area (**Part 4, Section 1.4.3.4**). A detailed summary of conservation significant fauna species that may occur in the area are outlined in detail in the SAR (**Part 4, Section 1.4.5.5**). The majority of conservation significant fauna species under consideration have broad habitat requirements and are expected to occur elsewhere on the Dampier Peninsula. Therefore, the BLNG Precinct is not predicted to result in significant impacts on populations of rare or endangered flora and fauna, with appropriate measures in place to minimise disturbance where practicable.

The conservation significance of the vine thicket, as a State listed TEC, is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance and a range of proposed measures have been outlined to manage any potential impacts.

A number of measures such as having trained observers on vessels are proposed to minimise disturbances to whales that migrate past the precinct.

Generic Question ID: 186 Sub ID [64] Raised by [S64 Q632]

DEC Recommendation 3: That the discussions with DEC regarding the proposed creation of new reserves on the Dampier Peninsula, as a possible mitigation measure for the development of the Precinct, continue with the objective of having the outcomes identified by the time of proposed environmental approval of the Precinct; and that DEC be consulted in the finalisation of the Dampier Peninsula Land Use and Infrastructure Plan.

Discussion: Currently less than two per cent of the area of the Dampierland Interim Biogeographic Regionalisation of Australia (**IBRA**) region is in conservation reserves. The achievement of agreed targets for comprehensive and adequate representation of vegetation communities in the reserve system is considered a priority issue for the Kimberley (DEC, 2009).

In keeping with the intent of the State Government/Woodside Heads of Agreement signed by the Kimberley Land Council on behalf of the Goolarabooloo Jabirr Jabirr claimants in April 2009 involving " ... strengthening environmental and heritage protection on the Dampier Peninsula, including creating new conservation reserves ... " (**p. ES-13**), DEC has been involved in discussions on proposed reserves. These discussions should continue with a view to reaching resolution at the time the Precinct is subject to a final decision on environmental approval.

The SAR indicates that establishment of additional reserves on the Dampier Peninsula will be implemented by the Precinct Proponent through the implementation of the Dampier Peninsula Land Use and Infrastructure Plan.

However, if this plan is not finalised and approved prior to the completion of the SAR, it will be necessary for DSD to identify the reserve proposals to come forward through this plan so that the outcomes of Precinct establishment for conservation and indigenous traditional use on the Dampier Peninsula are clear when the environmental approval decision for the Precinct is made. DEC is the key Government agency stakeholder in relation to the establishment of conservation reserves on the Dampier Peninsula and should continue to be involved in decisions relating to new reserves.

As the Minister for State Development is the Precinct Proponent, DSD is committed to continuing to facilitate the process of strengthening environmental and heritage protection on the Dampier Peninsula, including creating new conservation reserves as required under the Heads of Agreement. At this stage it is not possible to set a definite timeframe for the conclusion of the discussions and negotiation required to finalise proposals for the establishment of new conservation reserves. However it is the objective of DSD that resolution is reached prior to a final decision on environmental approval. If this is not the case then a clear process for resolution will be identified.

The advice of DEC in relation to the timing of the development of the Dampier Peninsula Planning Strategy (previous known as the Dampier Peninsula Land Use and Infrastructure Plan) is acknowledged. DSD will ensure that the Department of Planning is aware of any conservation reserve proposals and that it is aware of the role of DEC in relation to the establishment of conservation reserves on the Dampier Peninsula and that DEC should continue to be involved in decisions relating to new reserves.

Generic Question ID: 526 Sub ID [170] Raised by [S170 Q1408]

WWF & ACF Submission Section 4: The delineation between marine and terrestrial environments reflects a poor understanding of the ecological processes that drive the region's biodiversity (which include significant connection between the marine and terrestrial environment) and, as such, the SAR appears to fail to adequately address the risks associated with this proposal. Although there is discussion in the SAR of biodiversity structure and function in the existing condition sections of the ecological studies, the cumulative landscape-scale and seascape-scale predictions appear to be inadequate.

The SAR was nominally delineated between marine and terrestrial environments to enable a logical structure and grouping of relevant factors, however it is important to note that they are not standalone parts. **Part 3** (Environmental Assessment – Marine Impacts) and **Part 4** (Environmental Assessment – Terrestrial Impacts) provide an understanding of the key marine and terrestrial values relevant to the project area in a local and regional context. The Parts collectively provide a detailed discussion of the impacts and mitigation measures for the key marine and terrestrial values, with focus on ecosystem level considerations to achieve acceptable outcomes.

The objective of the Strategic Assessment Report was to determine and document the existing environmental values in a local and regional context, and to predict the potential impacts associated with the construction and operations of the Precinct in order to inform a management framework appropriate for this strategic proposal. Numerous comprehensive marine and terrestrial ecological studies have been undertaken in the James Price Point coastal area and are listed in **Part 3**, **Section 1.2** and **Part 4**, **Section 1.2** of the SAR respectively. These studies provide an informed understanding of the ecological processes in the James Price Point coastal area and in a regional context, appropriate to inform the impact assessment and management framework proposed for the Precinct.

Generic Question ID: 1065 Sub ID [100] Raised by [S100 Q2442]

The wildlife in this region is diverse and should be protected. Common species to James Prices Point include: The White Bellied Sea Eagle, Osprey, Nail Tail and Agile Wallaby, Black Headed Python, Sand Goanna, Humpback Whales, Dugong, Salt Water Crocodiles, Hawksbill and Green Turtles, Manta and Eagle Rays.

As part of the site selection process and scoping phase for the Precinct development, an extensive range of marine and terrestrial fauna studies have been completed (**Parts 3** and **4, Section 1.2**) in order to inform the baseline understanding and impact assessments presented in the Strategic Assessment Report (**SAR**). These studies sought to build on historical knowledge of the area and were provided as Appendices to the SAR.

The SAR undertook a robust impact assessment process to determine the predicted impacts of the Precinct development on the marine and terrestrial environment, including the relevant fauna occurring or expected to occur in the context of the proposed development's area of influence. Whilst it was noted that impacts to terrestrial and marine environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the population viability of fauna or the broader ecosystem integrity of the area, with appropriate management measures and controls in place.

It is recognised and acknowledged in the SAR that in a regional terrestrial context relevant to northern WA, two

particular areas are considered to be highly biodiverse. This includes the North Kimberley hotspot, which is approximately 250km to the north of James Price Point, and the Hamersley-Pilbara hotspot, approximately 350km to the south. The James Price Point coastal area does not consist of the same assemblages of ecological features and landforms as either of the hotspots. Similarly, the marine environment of the JPP area does not represent the same biodiverse characteristics or regionally important habitats identified more broadly in the Kimberley region.

1.1 Existing Terrestrial Environment

Generic Question ID: 772 Sub ID [75] Raised by [S75 Q824]

There is cause for concern about the capacity of LandCorp to undertake terrestrial land management in a tropical environment. Examination of the current (March 2011) state of the environment at the Broome North development undertaken by LandCorp indicates that this organisation does not have the capacity to design and manage drainage development in ways that minimises soil erosion and runoff. Examination of the Januburu LandCorp development shows their drainage mechanisms have not worked as planned and publicly promoted - there is excessive siltation of the retention ponds which is leading to mosquito breeding and the encouragement of weed growth, and the water runoff into Minyirr Park is spreading weeds and killing native species. With this record, how can this agency be relied upon to deliver environmental outcomes for the proposed project?

The Strategic Assessment Report sets out the broad social and environmental impacts of the Precinct, as well as the means to manage those impacts to meet the rigorous requirements of the State *Environmental Protection Act 1986* (**EP Act**) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Given the strategic nature of this proposal this provides an additional level of protection and oversight with respect to achieving environmental outcomes.

Commercial operators will need to refer development proposals, including environmental management plans, to the EPA and, as noted in **Section 2.2** of the Response to Submissions Summary Report, may request that their proposal be declared a derived proposal. This does not preclude any of the usual powers of the EPA, nor does it void the requirement to seek Part V licences which are monitored and overseen by DEC.

In addition to the usual oversights, environmental performance will be a contractual requirement of leaseholders to the Precinct. Browse LNG Precinct environmental management plans will be monitored by the Browse Precinct Control Group, comprising the Department of State Development, LandCorp, Broome Port Authority and Traditional Owners, to ensure that overall conditions are met.

The State is confident that, through this comprehensive management and oversight process, the environmental outcomes identified will be more rigorously applied than through a typical project-specific environmental assessment.

1.3 Physical Terrestrial Environment

Generic Question ID: 105 Sub ID [13, 211, 195] Raised by [S13 Q119]

DoW Submission: As previously advised, the significant issues for the Department of Water (**DoW**) are the identification of:

- Sustainable water supplies for the construction and operation phases of the project.
- Further investigations that are required to provide supporting information for the licensing application process under the *Rights in Water and Irrigation Act 1914* (**RIWI Act**).

In general, the second issue has been addressed. With respect to the first issue, some sections of the report focus on groundwater as the sole water supply for the development. The report does not acknowledge DoW's requirement for proponents to undertake an options analysis to investigate a diverse range of water supplies. Possible options include groundwater from the deeper Wallal and Grant aquifers, water reuse, water recycling and desalination of seawater.

It is acknowledged in the SAR that a number of water supply options are subject to investigation (**Part 2, Section 5)** which formed the basis of the impact assessment in **Part 4, Section 2.3.2.2.** The water source options include groundwater abstraction, desalination of saline groundwater and desalination of seawater, or a combination of these options. The SAR identified that it is proposed to use groundwater to supply construction water requirements and to also use groundwater as the preferred primary water supply for operation water requirements, however this is subject to further investigation. Groundwater demand will likely be influenced by the reuse of stormwater and/or treated water. Stormwater stored in holding basins may be reused (for dust

suppression etc.) and there is also potential for treated wastewater to be reused for construction and operation purposes (**Part 4, Section 2.3.3.4**). The options for groundwater abstraction are not yet finalised as further investigations are required to provide supporting information for the licensing application process under the Rights in Water Irrigation Act 1914 (**RIWI Act**).

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with Department of Water (**DoW**). As part of this process, an operating strategy containing a water conservation and efficiency plan, will be prepared by the proponents of derived proposals and submitted as part of the groundwater licence applications to DoW. The Proponent acknowledges that, as part of this forward process, water supply options analysis is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations.

Generic Question ID: 222 Sub ID [64, 120] Raised by [S64 Q645]

DEC Recommendation 15a: That a condition is placed on the approval requiring that prior to ground disturbance and referral of derived proposals, hydrological investigations are conducted to determine the potential impact of the proposal on significant conservation values (particularly the monsoon vine thicket TEC). The results of these investigations should be used to inform monitoring, management and the design, construction and operation of the precinct.

DEC Recommendation 15b: That the scope of the hydrological investigations and a subsequent monitoring program are designed in collaboration with DEC.

DEC Recommendation 15c: That the results of the hydrological investigations, proposed monitoring and management strategies and design of the precinct are provided to DEC for review.

Discussion: There is the potential for significant impacts on the flow, connectivity, quality and quantity of surface water and groundwater from the proposal. The major sources of potential hydrological impact include:

- sand dune crossings;
- physical presence of the development; and
- water abstraction (at the borefield and development site).

The conservation values most at risk from altered hydrology include:

- groundwater dependent ecosystems (e.g. monsoon vine thicket TEC, drainage basin vegetation community, subterranean fauna);
- conservation values adjacent to the proposed sand dune crossing(s) (e.g. monsoon vine thicket TEC, drainage basin community, coastal vegetation communities);
- riparian vegetation; and
- restricted flora and fauna associated with groundwater dependent ecosystems, adjacent to sand dunes and riparian areas.

Site-specific hydrological data on which to base an assessment of altered groundwater and surface water hydrology from the development on conservation values have not been provided. The hydrological reports (**Appendix C-22**, **C-23** and **C-24**) are based on desktop studies.

Without adequate hydrological information, an assessment of the impact of the proposal on important conservation values and the likelihood of success of proposed management activities cannot be conducted. As stated in the **SAR** (**Part 4**, **p. 2-31**) "There is little information regarding the hydrogeological regime of the area within or adjacent to the BLNG Precinct". It is further stated, in relation to groundwater recharge, that "local variations induced by the construction and operation of the BLNG Precinct may be significant and alter the potentially delicate hydrological cycle upon which vegetation communities, such as the monsoon vine thicket and drainage basin, may depend'.

Response to DEC Recommendation 15: To date, hydrological and hydrogeological investigations have been restricted to desktop studies due to site access constraints. A number of studies by proponents of derived proposals are identified to provide supplementary information of the surface and groundwater regimes in the area to inform derived proposal management plans, and as part of the forward licensing process under RIWI Act arrangements (detailed further below). Completion of these proposed studies (including the plant ecophysiology study – see DEC Recommendation 1) would provide further information regarding the relationship between vegetation communities, surface water flow and groundwater requirements, and the relationship of surface

water to shallow groundwater resources. This information would be used by proponents of derived proposals to identify opportunities to manage flows to sensitive vegetation types such as monsoon vine thicket and the drainage basin community.

The results of these studies would also be used to inform a proposed Ecological Surface Water Requirements Management Plan (**ESWRMP**) (**SAR Part 4, Section 2.2.4, Table 2.2-2**), to be developed by proponents of derived proposals in consultation with DEC. This proposed ESWRMP would include:

- Drainage measures to manage surface water flows and minimise environmental impacts as far as practicable on monsoon vine thicket and drainage basin vegetation communities within the affected catchments.
- A vegetation composition, health and condition monitoring program for areas of vegetation determined likely to be dependent on surface water flows, including the superficial aquifer, for seasonal water requirements.
- Process to be implemented if monitoring indicates declining vegetation condition or changing composition as a result of changes in surface water flows.

It is proposed that impacts from groundwater abstraction by proponents of derived proposals be assessed through a licensing process under the *Rights in Water and Irrigation Act 1914*. A Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) is also proposed. This plan would be developed and implemented by proponents of derived proposals in consultation with the Department of Water (**DoW**) to address management and monitoring of groundwater resources, with reference to potential impacts on stygofauna and groundwater dependent ecosystems.

Generic Question ID: 225 Sub ID [64, 120] Raised by [S64 Q650]

DEC Recommendation 18: That a condition of approval is applied to the Proponent requiring assessment and management of potential impact(s) of sand dune crossings, including:

- investigation into the presence of acid sulphate soils;
- investigation into the potential impact of oxidation of acid sulphate soils resulting in acidification and release of heavy metals on the environment (including flora, fauna and ecological communities);
- monitoring and management of activities to ensure acid sulphate soils do not have an impact on the surrounding environment;
- investigations into the hydrological functioning and connection between the sand dunes, saltwater interface and freshwater aquifer, and environment;
- monitoring and management of activities to ensure the hydrology is not altered and that the crossing of sand dunes does not have an impact on the surrounding environment;
- measures to reconstruct sand dune(s); and
- consultation with the appropriate agencies to ensure the risk to values from sand dune crossings is adequately investigated, monitored and managed.

Discussion: There is the potential for indirect as well as direct impacts on flora, fauna and communities of conservation significance including the monsoon vine thicket TEC and drainage basin vegetation communities, from sand dune crossing(s). The sources of these potential impacts include the potential for acid sulphate soils to be present under the sand dune and likely alteration of hydrology. The proposed dune reconstruction is not without risk and the likelihood of failure of reconstruction efforts is increased without appropriate planning and management.

The SAR notes (**Part** 4, p. 2-8) that "Although the final construction method has not been identified, preliminary design indicates that the excavation and contouring of a 110m section of dune would be required for the southern pipelines and a corridor of between 1 and 1.5km for the shore crossing approach".

The SAR (**Part 4, Section 2.3.3**) discusses that indirect impacts to groundwater quality may result from excavation below the water table in areas with potential acid sulphate soils. If Potential Acid Sulphate Soils (**PASS**) are dewatered and exposed to the atmosphere, the material can be oxidised which causes acidification and subsequent release of naturally occurring heavy metals.

While the possible presence of Acid Sulphate Soils (**ASS**) in the vicinity of the BLNG Precinct is considered to be low, proposed geotechnical investigations by proponents of derived proposals may identify areas of PASS. If identified, the excavation and management of ASS material would be addressed through a proposed Construction Environmental Management Plan (**CEMP**) which would be expected to be effective in managing

potential impacts to the surrounding environment. If excavation below the water table of PASS materials was required, then proponents of derived proposals would need to demonstrate that any acid generating potential would be neutralised. This information would be provided in a Construction Environment Management Plan as part of the derived proposal process.

A proposed Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**), would include design and location of the borefield to minimise impacts on groundwater drawdown and saltwater intrusion. The monitoring program to be developed under this plan would include monitoring for impacts on saltwater interfaces, water quality (including potential acidification) and groundwater dependent ecosystems. The proposed Ecological Surface Water Management Plan (**Part 4, Section 2.2.4, Table 2.2-2**) would include drainage measures to manage surface water flows and minimise environmental impacts as far as practicable on monsoon vine thicket and drainage basin vegetation communities within the affected catchments. This would include impacts from changes in the dunal structure associated with the shore crossing.

The SAR proposes that proponents of derived proposals develop and implement a Construction Environmental Management Plan (**Part 4, Section 2.1.4, Table 2.1-4**) which would include measures to manage impacts to the dunal systems using ground stabilisation techniques. In addition, following construction, proponents of derived proposals would be required to develop a Rehabilitation Plan (**Part 4, Section 2.1.4, Table 2.1-4**), which would include stabilisation of disturbed landforms and rehabilitation of areas that are not required post-construction. These plans would be developed to the satisfaction of the Western Australian Minister for Environment.

Generic Question ID: 106 Sub ID [13] Raised by [S13 Q120]

DoW Comment - **PART 1**, **Section 8**: Environmental Assessment - Terrestrial, **Table 8-1**: Terrestrial Physical Characteristics Under Groundwater Use, it is stated that the Dampier Peninsula is located within the Canning-Kimberley Groundwater Area. The peninsula, and the proposed Browse LNG Precinct, is actually located within both the Canning-Kimberley and Broome groundwater areas. Additionally, reference to the Broome Groundwater Area needs to be made (**Part 1**, **Table 5-1**).

It is acknowledged that the Dampier Peninsula and the Browse LNG Precinct are located within both the Canning-Kimberley and Broome Groundwater Areas. While this has no material effect on the impact assessment conclusions or management framework presented in the SAR, this is noted by the Proponent for future reference.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan in consultation with the Department of Water (**DoW**) (**Part 4, Section 2.3.4, Table 2.3-3**). As part of this process, reference to both Groundwater Areas will be made as part of the groundwater licence applications to DoW.

Generic Question ID: 117 Sub ID [13] Raised by [S13 Q131]

DoW Comment - The main points raised by DoW are as follows:

- Proponents need to undertake an options analysis to investigate a range of water supplies for the development to minimise reliance on groundwater (**Section 8.2.3**).
- Environmental management plan(s) need to: identify techniques for water reuse and recycling (**Part 1**, **Section 8.2.2**); and cover water management issues associated with the operational phase of the project, such as stormwater management (**Part 1**, **Section 8.2.2**; **Part 4**, **Table 2.2-3** & **Table 2.2-4**).

Refer also specific responses to DoW comments provided.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, it is proposed that future precinct proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with the Department of Water (**DoW**). Proponents will also be required to develop and implement a Construction Environmental Management Plan (**CEMP**), which addresses environmental management of both groundwater and surface water, to the satisfaction of the Western Australian Minister for Environment (**Part 4, Section 2.2.4, Table 2.3-3**). It is expected that the CEMP will be developed in consultation with the DoW as relevant to DoW's agency functions.

As part of the RIWI Act licensing process, an operating strategy containing a water conservation and efficiency plan will be prepared by the proponents of derived proposals and submitted as part of the groundwater licence applications to DoW. The Proponent acknowledges that, as part of this forward process, water supply options analysis of all potential water supplies is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations. The Proponent also acknowledges that techniques for water reuse and recycling (including stormwater capture and reuse) will be identified and implemented where practicable in order to reduce reliance on groundwater. It is

acknowledged that the scope of the CEMP must address water-related issues, such as stormwater management, not associated with future groundwater licences under the RIWI Act.

It is proposed that operational impacts (including surface water and groundwater impacts post-construction) will be managed and monitored, to the satisfaction of OEPA and in accordance with the Ecological Surface Water Requirements Management Plan, Groundwater Abstraction Management Plan, other such Environmental Management Plans described throughout the SAR and other existing regulatory processes such as Part V works approvals and licensing arrangements for prescribed premises under the EP Act.

1.4 Ecological Terrestrial Environment

Generic Question ID: 638 Sub ID [24, 27, 38, 42, 45, 46, 85, 94, 95, 97, 98, 105, 118, 120, 144, 151, 195] Raised by [S120 Q1280]

ENGO Submission: The AECOM report describes the Bilby as: "If the Greater Bilby ... is present at James Price Point it would only occur as a few vagrant individuals within the area rather than a resident colony". Vagrancy is a phenomenon in biology whereby individual animals appear well outside their normal range. The term 'vagrant individuals' used to describe Bilbies by AECOM is incorrect as James Price Point is known to be within the range of Bilbies

Other submissions also raised the above point:

- The fauna survey undertaken was inadequate for providing conclusive evidence of an absence of a Bilby population in the area.
- A targeted search for Bilbies should be undertaken in the area of the Precinct.

Extensive wet and dry season ecological studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR.

Although as mentioned earlier no *EPBC Act* listed threatened fauna species have been directly recorded in the James Price Point coastal area, there is indirect evidence (possible foraging holes) of possible Greater Bilby (Macrotis lagotis) (Endangered – EPBC Act (Commonwealth), Schedule 1 *Wildlife Conservation Act* (**WC Act**)) activity in the vicinity of the project area and south towards Quondong Point (**Part 4, Section 2.6.1.2**). The number of foraging holes recorded suggests they would be likely belong to a small number of transient individuals present in the area, rather than a resident colony (**Part 4, Section 2.6.3.1**). In recognition of this inconclusive evidence, the Proponent has proposed further targeted survey effort, in particular south towards Quondong Point (refer Part 6, Table 3-3) as management commitments. It is proposed that this survey effort would also include targeted searches for Bilbies in the vicinity of the BLNG Precinct area.

Other EPBC Act listed threatened species that may occur in the area are outlined in detail in the SAR (**Part 4, Section 2.6.1.2**). The majority of conservation significant fauna species under consideration have broad habitat requirements and are expected to occur elsewhere on the Dampier Peninsula. Therefore, the BLNG Precinct is not predicted to result in significant impacts on populations of rare or endangered fauna. The SAR proposes a range of management measures, including requirement for future proponents to implement a Fauna Management Plan, in consultation with the Department of Environment and Conservation.

The SAR (**Part 4, Section 2.6**) summarises the results of the fauna surveys to date in relation to the Greater Bilby. While there is no conclusive evidence of Greater Bilby presence during the fauna surveys to date, some foraging holes were observed in recent surveys that may be indicative of this species, or could be varanid lizard holes. The SAR reflects the wording 'vagrant' as presented in the AECOM report as a transparent translation of the technical appendix. Irrespective, the presence/absence of this species was identified to be inconclusive at the time of the SAR submission.

In recognition of this inconclusive evidence and the presence of suitable habitat, the Proponent has proposed a further targeted survey effort, in particular south towards Quondong Point (refer **Part 6, Table 3-3**) as management commitments. It is proposed that this survey effort would also include targeted searches for Bilbies in the vicinity of the BLNG Precinct area. If a viable Bilby population is identified during these surveys, the Proponent has committed to develop a management plan to address ongoing monitoring of Bilby populations including Quondong Point and established conservation areas.

Generic Question ID: 218 Sub ID [64, 224, 123, 236] Raised by [S64 Q641]

A number of submissions raised similar points:

- DEC Recommendation 11: That to address specific risks to fauna, it is made a condition of approval that the potential impact of: open trenches; and vehicle strike on fauna is addressed through appropriate monitoring and management actions.
- KLC Submission: **Part 4_2.6.3.2** Potential Impacts to Terrestrial Fauna due to Vehicle Traffic - No discussion on the impacts of increased vehicle traffic as a result of the development on the road to and from Broome is provided in the DSAR. If vehicle traffic increases on this road it is highly likely that fauna deaths due to vehicles will increase significantly.

DEC Recommendation 11: DSD will advise proponents of derived proposals that the impact of open trenches and vehicle strike on fauna should be addressed as management and monitoring actions in the proposed Fauna Management Plan (**Part 4, Section 2.6.4, Table 2.6-7**) to be developed as part of a derived proposal, in consultation with DEC.

Generic Question ID: 187 Sub ID [64, 120, 73] Raised by [S64 Q633]

DEC Recommendation 4a: That further scientific investigations are conducted to confirm statements in the SAR that the different patches of monsoon vine thicket on the Dampier Peninsula are unlikely to be floristically distinct, and that DEC is provided with the opportunity to review the results.

DEC Recommendation 4b: That the indirect impacts of the proposal on the James Price Point monsoon vine thicket threatened ecological community (**TEC**) occurrence are identified to inform the impact assessment, and that provision is made in the approval for these impacts on the TEC to be limited for derived proposals and subject to monitoring and management requirements developed in consultation with DEC.

Discussion: The proposed direct impact of the Precinct on the James Price Point monsoon vine thicket TEC occurrence is the clearing of 132 hectares of the largest patch of monsoon vine thicket (508 hectares) on the Dampier Peninsula. The next largest monsoon vine thicket patch known to DEC is at One Arm Point and has an estimated size of approximately 198 hectares. It is unknown whether the large James Price Point monsoon vine thicket TEC occurrence is ecologically linked with other occurrences of the TEC and therefore has any particular importance in maintaining these occurrences as a connected ecological system. The current state of knowledge of composition and condition of this and other occurrences of the TEC is also limited, noting that the original TEC surveys were conducted in the early 2000s.

The SAR identifies that the direct clearing of 132 hectares of the James Price Point monsoon vine thicket TEC occurrence " ... would not represent a significant impact or detrimentally affect the viability and representation of this community on the Dampier Peninsula as more than 90% of the known extent of monsoon vine thickets will remain" (**Part 4**, **p.2-57**). This statement does not recognise the possibility of significant indirect impacts.

DEC considers there is the potential for significant indirect impact(s) from the LNG precinct including:

- alteration of surface and groundwater hydrology on which vine thickets are dependent;
- flora and fauna (including species of conservation significance) that may be co-dependent with other species on the TEC habitat;
- fragmentation and loss of ecological connectivity between nearby patches; and
- edge effects such as changes in light, humidity, weeds, atmospheric contaminants.

As a result of these impacts, there is the potential for decline of the occurrence of the TEC at James Price Point and other nearby monsoon vine thicket patches from indirect impacts such as changed hydrology and the loss of frugivorous fauna, essential to maintaining the flora of the monsoon vine thicket (including being essential for regeneration) and connections/linkages between patches of TEC. These impacts have not been adequately addressed in the SAR.

The impacts of the Precinct on the TEC could be further reduced through planning, monitoring and management. Examples could include moving the pipeline crossing(s) away from the widest extent of the TEC, orientation of the pipeline crossing(s), methods to minimise the direct impact footprint within the TEC, and engineering design or other methods to manage the predicted increased sunlight and decreased humidity along the edge of cleared areas.

Response to DEC Recommendation 4a: A recent study (Biota 2011a, unpublished) found that evergreen monsoon vine thicket vegetation at James Price Point had some similarity to vine thickets at Packer Island to the north. This supported earlier assessments of vegetation data collected by Biota (2009c) at James Price

Point and ENV (2008a) at Packer Island, which also showed some similarity between monsoon vine thickets in these two locations (refer SAR **Part 4 Section 1.4.2.5**). Although it is likely that species composition of the monsoon vine thicket will vary significantly over the Damper Peninsula (Biota 2011a, unpublished), this finding may indicate that the evergreen monsoon vine thicket at James Price Point is not a highly restricted element of this vegetation type.

Analysis of monsoon vine thicket vegetation undertaken as part of an analysis of data from sites within the deciduous and evergreen monsoon vine thicket established for a Vegetation Monitoring Program (**VMP**) found that there was no significant difference between monsoon vine thicket (evergreen) vegetation community reference transects adjacent to the proposed BLNG Precinct and those to the north or south of the Precinct (Astron 2011, unpublished). This finding was repeated for deciduous monsoon vine thicket vegetation. The Proponent will provide the Department of Environment and Conservation (**DEC**) with the opportunity to review these results as part of ongoing consultation in development of derived proposals.

Response to DEC Recommendation 4b: The SAR identifies sources of potential indirect impacts to the monsoon vine thicket TEC, which include altered surface and groundwater flows and quality, fragmentation and edge effects, weed invasion and altered fire regimes (refer **Part 4, Section 2.7.4**). The Proponent has committed to minimise indirect impacts throughout the development and will work with proponents of derived proposals to achieve this through all phases of project development as far as practicable, and this is reflected in the management framework identified in the SAR.

The Proponent recognises that monitoring and management of indirect impacts on the monsoon vine thicket TEC is of primary importance. The proposed Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**) to be developed in consultation with DEC will provide a management framework for proponents of derived proposals. The effectiveness of this strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones. Annual reporting on the success of this program is to be made publicly available, providing transparency of the process.

To inform this strategy, a Vegetation Monitoring Program (**VMP**) has been initiated to collect baseline data at selected sites considered to be at risk of indirect impacts from the proposed Browse LNG development. This program is expected to continue throughout the planning, construction and operational period of this project. Further development of the VMP will be undertaken in consultation with DEC.

The SAR recognised that development of the Browse LNG Precinct may lead to alteration of hydrological and hydrogeological regimes that may result in indirect impacts on vegetation of high conservation significance, specifically monsoon vine thicket and drainage basin vegetation. To assist in managing and monitoring these impacts, it is proposed that proponents of derived proposals undertake a plant ecophysiology study to further define the relationships between monsoon vine thicket and drainage basin communities and groundwater and surface water regimes.

It is possible that the development of the BLNG Precinct may have indirect impacts on frugivorous fauna supporting the monsoon vine thicket vegetation community. It is proposed that the Foundation Proponent undertakes a frugivorous fauna census to establish the presence of this fauna within monsoon vine thicket at James Price Point and to identify the requirement for establishment of a long term monitoring program.

Management and monitoring of impacts from fragmentation and edge effects will be included as part of the proposed Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance to be developed for the Precinct area.

Generic Question ID: 230 Sub ID [64, 82] Raised by [S64 Q655]

DEC Recommendation 23: That the Proponent and EPA note that references to the monsoon vine thicket TEC being protected by legislation require further explanation identifying the limits of this protection.

Discussion: Western Australia does not have legislation that directly protects threatened ecological communities per se. TECs are identified as Environmentally Sensitive Areas (**ESA**) under the clearing provisions of the *Environmental Protection Act 1986* and associated regulations. The 'monsoon vine thickets on coastal sand dunes of Dampier Peninsula' have been identified as an ESA.

The monsoon vine thicket TEC has not been protected under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

In Western Australia, legislation for the preservation and conservation of flora and vegetation communities is covered primarily by the *Wildlife Conservation Act 1950*. This Act provides for taxa (species, subspecies and varieties) of native flora to be specially protected because they are under identifiable threat of extinction, are rare, or otherwise in need of special protection. Such specially protected flora are considered to be "threatened" and may be listed as such by the Minister for the Environment. The Minister may also list ecological

communities which are at risk of becoming destroyed (**Part 4, Section 2.4.1.1**).

The monsoon vine thickets in the James Price Point coastal area are representative of the State listed Threatened Ecological Community (**TEC**) '*Vine thickets on coastal sand dunes of the Dampier Peninsula'* which is currently assessed as Vulnerable by the Department of Environment and Conservation (**DEC**) (**Part 4, Section 1.4.2.5.1**). TECs listed by DEC are endorsed by the Minister for the Environment (DEC, 2011), and are listed as Environmentally Sensitive Areas (**ESA**), which provides some protection under the clearing provisions of the *Environmental Protection Act 1986* and associated Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

At a Commonwealth level, vegetation assessed as at risk may receive protection as a TEC under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). The monsoon vine thicket TEC on the Dampier Peninsula has recently been listed on the Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**) priority assessment list and is currently being assessed to determine if it should be listed as a Commonwealth TEC protected under the EPBC Act. The Threatened Species Scientific Committee (**TSSC**) will assess the vegetation community against a set of criteria and, at the completion of the assessment, provide a "listing advice" to the Minister for decision, as well as a 'conservation advice' that outlines immediate conservation priorities. The review process for the monsoon vine thickets of the Dampier Peninsula is expected to be completed by September 2012.

Generic Question ID: 699 Sub ID [120, 132] Raised by [S120 Q1471]

ENGO Submission: Distinct floristic assemblage and conservation significance - The assumption that the James Price point vine thicket assemblage is floristically similar to those occurring elsewhere on the peninsula **Part 4** (**p. 1-47**) is seriously challenged by work completed last year by the Broome Botanical Society.

A recent study (Biota 2011a, unpublished) found that evergreen monsoon vine thicket vegetation at James Price Point had some similarity to vine thickets at Packer Island to the north. This supported earlier assessments of vegetation data collected by Biota (2009c) at James Price Point and ENV (2008a) at Packer Island, which also showed some similarity between monsoon vine thickets in these two locations (SAR, **Part 4 Section 1.4.2.5**). Although it is likely that species composition of the monsoon vine thicket will vary significantly over the Damper Peninsula (Biota 2011a, unpublished), this finding may indicate that the evergreen monsoon vine thicket at James Price Point is not a highly restricted element of this vegetation type.

Assessment of monsoon vine thicket vegetation undertaken as part of an analysis of data from sites within the deciduous and evergreen monsoon vine thicket established for the Vegetation Monitoring Program found that there was no significant difference between Monsoon Vine Thicket (evergreen) vegetation community reference transects adjacent to the proposed BLNG Precinct and those to the north or south of the Precinct (Astron 2011, unpublished). This finding was repeated for deciduous monsoon vine thicket. The Proponent will provide the Department of Environment and Conservation (**DEC**) with the opportunity to review these results as part of ongoing consultation in development of derived proposals.

Generic Question ID: 188 Sub ID [64] Raised by [S64 Q634]

DEC Recommendation 5: That the Proponent and/or proponents of derived proposals address the question of conservation of the TEC in the presence of potential residual impacts of the development, by contributing resources to assist in finalising and implementing the monsoon vine thicket TEC recovery plan.

Discussion: The significance of the TEC has been emphasised by comments in the SAR such as:

- "The high conservation significance of the monsoon vine thickets is based on a number of factors including:
    - its restricted area of representation along the Dampier Peninsula coastline;
    - its value as an important fauna habitat type, particularly fruit eating birds, terrestrial invertebrates and mammal species;
    - the unique vegetation assemblage that it contains; and
    - the high vulnerability of this vegetation to disturbance such as weed invasion, inappropriate fire regimes and cattle grazing" (**Part 4**, **p.1-46**);
- "Monsoon vine thickets are a restricted habitat type in the region that supports unique flora and fauna ... " (**Part 4**, **p.1-61**);
- "Monsoon vine thicket communities have very high biodiversity (ENV, 2008a; **Appendix C-14**) and support endemic species ... " (**Part 4**, **p.1-61**); and
- " ... primarily it is the monsoon vine thicket that is of local and regional conservation significance ... " and also " ... may provide localised shelter for mammals, reptiles, and short-range endemic (**SRE**) fauna

with specific habitat requirements not exhibited by surrounding Pindan woodland." (**Part 4**, **p.1-61**).

To address the residual impact of the proposal on flora and vegetation, the SAR proposes " ... increased protection and improved management of the vegetation on the Dampier Peninsula, in particular monsoon vine thicket" (**Part 4**, **p.1-2**). Specifically the proposal includes an intention to secure representation of the TEC and other vegetation communities of conservation significance in reserves on the Dampier Peninsula and assist in the development and implementation of a fire management strategy for the Dampier Peninsula. While these undertakings are of significant value to conservation on the Peninsula, consideration should also be given to resourcing the finalisation and implementation of the monsoon vine thicket TEC recovery plan.

The Proponent actively encourages collaborative support and knowledge sharing between all parties involved in the development. This includes support of initiatives by Government agencies to develop overarching management programs for conservation significant assets, such as monsoon vine thicket, on the Dampier Peninsula.

It is also noted that funding has been earmarked under the Heads of Agreement between DSD, the Kimberley Land Council and Woodside for establishment and management of conservation reserves and that this is likely, in consultation between DEC and Traditional Owners, to include measures directly related to monsoon vine thicket management.

Furthermore it is noted that the development of a State Offsets Policy is currently close to finalisation and may be relevant to determining any future requirements for offsets.

Generic Question ID: 189 Sub ID [64] Raised by [S64 Q636]

DEC Recommendation 6: That a condition of approval is applied that requires flora and vegetation investigations of the Precinct area to be conducted consistent with EPA Guidance Statement 51 prior to ground disturbance and referral of derived proposals. The results of these investigations should be used to inform the design, construction and operation of developments within the Precinct. Survey reports should include quantitative data and an impact assessment table identifying the proportion of each taxon and vegetation community of conservation significance in a local and regional context that is proposed to be impacted.

Discussion: The objective of the flora and vegetation surveys used for impact assessment should include adequately identifying, describing and mapping flora and vegetation of conservation significance in the proposed disturbance area to determine the likely impact and inform the proposal design to minimise these impacts.

The extent to which flora species of conservation significance (as defined in EPA Guidance Statement 51) will be impacted by the proposal is currently unknown, as detailed surveys of the Precinct site and impact tables have not been presented in the SAR. As the Precinct is located in a transition zone between the subtropical Northern Botanical Province and the arid Eremaean Botanical Province, species richness for flora (and fauna) is expected to be high and there is the potential for a range of species of conservation significance to occur.

Pittosporum moluccanum was listed as threatened flora in 1989 due to it being only known from a single location at James Price Point as well as the very small number of plants recorded. In 1998 the species was removed from the threatened flora list as it was found to be common in the Northern Territory, and to also be known from several islands off the north Kimberley coast. Due to the species' rarity in Western Australia, it was added to DEC's priority flora list for monitoring purposes. Given no other individuals of P. moluccanum were found in the survey area, the development at James Price Point could result in the loss of possibly the only mainland population in Western Australia (a collection south of Coulomb Point has been made, however, the current status of this population is unknown). While the SAR states that there will be sufficient suitable habitat (monsoon vine thicket TEC) to support this species locally and regionally, further survey is recommended to confirm the existence of this species outside the proposal area. The conservation significance of P. moluccanum at James Price Point should be established by the proposed further surveys.

The Proponent acknowledges that flora and vegetation investigations should be consistent with EPA Guidance Statement No. 51, as far as is practicable. This has been reflected in studies conducted to date, summarised in the SAR. To date, there have been a range of consecutive wet-season / dry-season ecological surveys of the JPP coastal area. The combined results of the above survey effort has informed the impact assessment and management response proposed by the State Government as part of the SAR, with a focus on conservation significant flora and vegetation values.

The Proponent recognises the importance of understanding the presence of *Pittosporum moluccannum* in the James Price Point coastal area. The Biota (2011a, unpublished) study in March 2010 included further assessment of the status of priority flora within the BLNG Precinct area, coastal vine thicket between James Price Point and Coulomb Point, and additional sampling at representative locations in the broader James Price Point coastal area. This Biota (2011a, unpublished) study confirmed the findings of previous surveys that two

individual specimens of *Pittosporum molucannum* were located at 1.25km and 2.15km south of James Price Point. Both of these specimens were located in evergreen monsoon vine thicket with no further individuals found within approximately 300m of either location. Two other historical records have been made from this locality, one 900m south of James Price Point (DEC Rare Flora database) and another 3.15km south (WA Herbarium voucher specimen). However, it is not confirmed whether these records are duplicates of the two confirmed locations (Biota 2011a, unpublished). One or possibly two (historical record) of these records of *Pittosporum moluccanum* are located within the northern half of the BLNG Precinct shore crossing area.

The Proponent has proposed to conduct further targeted searches for *Pittosporum moluccanum* in the monsoon vine thicket at the James Price Point coastal area to inform the management planning framework to support derived proposals. The results of these will be discussed with DEC as part of this forward process.

Generic Question ID: 190 Sub ID [64] Raised by [S64 Q637]

DEC Recommendation 7: That, in regard to indirect impacts on moderate and high flora and vegetation conservation values:

- A monitored buffer, in which the vegetation condition and population health may decline to pre-defined limits, be delineated around areas approved for disturbance.
- A condition of approval be applied that stipulates trigger levels, which specify the level of decline in vegetation condition and population health within the predetermined monitored buffer area, at which point contingency measures be applied to avert further vegetation condition and health decline.
- A condition of approval be applied that stipulates limits of acceptable decline in vegetation condition and population health within the monitored buffer area.
- The Proponent develops a vegetation condition and population health monitoring program applicable to the monitored buffer area. This program to also include reference sites against which to compare data, and provide for adaptive management where the measurable change has reached the identified trigger levels, to be developed on the advice of and in agreement with DEC.
- A condition of approval be developed that requires the Proponent to report annually on the findings of the monitoring program.

Discussion: Based on the risk of indirect impacts on significant conservation values, outcome-based conditions that monitor and manage indirect impacts are warranted. This monitoring program should:

- identify the location and size of 'impact' and 'control' sites;
- define monitoring frequency, timing, intensity and replication;
- define 'health or abundance or condition';
- identify how and what parameters will be used to measure 'decline' or 'rate of decline' in 'health or abundance or condition';
- define trigger levels and responses;
- identify reporting requirements in respect of monitoring results; and
- be reviewed for effectiveness and revised if required at prescribed intervals.

The Proponent recognises the importance of monitoring and managing indirect impacts on vegetation of conservation significance. The SAR identifies that the key threats of indirect impacts to these vegetation types at James Price Point are:

- changes in surface and ground water quality and quantity;
- introduced flora pests;
- altered fire regime; and
- edge effects and fragmentation caused by vegetation clearing (**Part 4, Section 2.7.2.3**).

The SAR proposes that DSD, in its role as part of the Precinct Control Group, develop a Terrestrial Ecological Management Strategy. This proposed strategy would inform all proponents of derived proposals of requirements for detailed management plans to address potential impacts to this vegetation and include a framework in which these management plans will be implemented (**Part 4, Section 2.4**). Vegetation to be managed and monitored under the strategy includes evergreen and deciduous monsoon vine thicket, drainage basin, coastal heath and coastal communities. Monitoring programs to be defined under the Strategy would be developed in consultation with DEC, and are proposed to include the following:

- Measurement of vegetation condition and health to indicate change over time by appropriate statistical methods.
- Replicated monitoring sites in reference locations and locations considered as at risk of indirect impacts.
- Trigger levels to determine levels of acceptable change.
- Contingency measures to address unacceptable changes in vegetation condition and health over time.
- A feedback process into the management controls, based on the results of the monitoring programs, to provide for adaptive management of those controls.
- Annual reporting on the success of the strategy.

As described in the response to DEC Recommendation 4b, a Vegetation Monitoring Program (**VMP**) has been initiated, which is expected to further develop over time to fit specific management and monitoring frameworks defined in the Terrestrial Ecological Management Strategy to provide clear management targets in pressure-state-response models to meet compliance requirements and provide a robust monitoring program.
Prior to construction and operation of facilities within the BLNG Precinct, it is proposed that derived proponents develop and implement an Ecological Surface Water Requirements Management Plan, to the satisfaction of the Minister for Environment on advice of DEC (**Part 4, Section 2.7.5, Table 2.7-2**). This proposed management plan would address drainage measures to manage surface water flows and minimise impacts as far as practicable to monsoon vine thicket and drainage basin vegetation communities. To support this forward process, it is proposed that a vegetation composition, health and condition monitoring program will be established (**Part 4, Section 2.7.5, Table 2.7-2**).

Generic Question ID: 191 Sub ID [64] Raised by [S64 Q638]

DEC Recommendation 8: That an outcome-based condition is applied that ensures that the proposal does not have a direct impact on the drainage basin vegetation community and that, where possible, good examples of Pindan vegetation are avoided.

Discussion: The direct impact on vegetation communities with medium to high conservation significance, such as the drainage basin and high quality Pindan vegetation, should be avoided or minimised as far as practicable.

The drainage basin vegetation community has been identified in the SAR as having high conservation significance and, while it is understood the proposal can be managed to avoid impacting directly on this community, indirect impacts will require monitoring and management. The proposed 'Management and Monitoring Strategy for Vegetation of Medium to High Significance' (to be developed and implemented by DSD via the Browse Liquefied Natural Gas Precinct Control Group, in consultation with DEC) will aid in this regard.

As indicated in the SAR document (**Part 4**, **p. 2-71**) Pindan vegetation *"... is currently in advanced decline due to excessive fire frequency over most of its range"*. It is also further stated that *"... it is important to ensure good examples of this vegetation type are avoided. Pindan vegetation has been altered structurally (loss of large trees that provide important habitat and natural resources for fauna, including the bilby and golden backed tree rat) and floristically simplified (generally a reduced abundance of fire sensitive obligate seeders). With improved representation in conservation reserve(s), improved resources for management and targeted avoidance on intact Pindan, there is potential for improvement to the conservation of Pindan vegetation."*

The Proponent acknowledges that direct impact on vegetation communities with medium to high conservation significance, such as drainage basin and high quality Pindan vegetation, should be avoided or minimised as far as reasonably practicable.

As discussed in the response to DEC Recommendation 7, it is proposed that drainage basin vegetation would be included as a vegetation type in the proposed Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**). Whilst no direct impacts on drainage basin vegetation are expected from development of the BLNG Precinct, there is potential for indirect impacts as a result of changes in surface or groundwater regimes.

The SAR proposes that proponents of derived proposals develop an Ecological Surface Water Requirements Management Plan (**Part 4, Section 2.4.4, Table 2.4-7**) to minimise, as far as practicable, impacts to surface water dependant vegetation and habitat types. This would be used to identify opportunities to manage flows to sensitive vegetation types such as monsoon vine thicket and the drainage basin community.

There are limited opportunities for preservation of good quality Pindan vegetation within the BLNG Precinct footprint due to the scale of the development required within the area. However, there are opportunities to minimise impacts on this vegetation by optimising the placement of associated infrastructure where possible. The proposed Construction Environmental Management Plans to be developed and implemented by proponents of derived proposals, are expected to indirectly address this issue as they will likely include environmental

management measures such as minimising disturbance and maintaining linkages where possible (**Part 4, Section 2.4.4, Table 2.4-9**). The SAR also provides for minimising impacts to vegetation in regard to the potential presence of, and preservation of habitat for the Masked Owl (northern) *(Tyto novaehollandiae kimberli)* and Greater Bilby (*Macrotis lagotis*), both of which are listed as Vulnerable under the EPBC Act (**Part 6, Section 3.7**).

To minimise impacts on higher quality Pindan vegetation where possible, and recognising that final footprints and layouts of infrastructure within the Precinct are not yet finalised at this strategic assessment stage, it is proposed that proponents of derived proposals submit a design rationale demonstrating that the location of ancillary infrastructure has prioritised areas of more degraded pindan habitat over that in relatively better condition (refer **Part 6, Table 3-3**).

Generic Question ID: 192 Sub ID [64] Raised by [S64 Q639]

DEC Recommendation 9: That spatial information (preferably in ARC GIS 9 format) and quadrate based floristic sampling data are provided to identify the distribution of the dwarf Pindan vegetation priority ecological community (**PEC**) within and in the vicinity of the Precinct area. Ideally, further information on community distribution to be provided to give local and regional context for identified impacts.

Discussion: The SAR indicates that up to 8.9 hectares of the PEC will be cleared for the development, although information and data on the survey effort and regional distribution of the PEC are not provided. This information is required to support the SAR conclusion that the impact of the proposal on the PEC is not significant.

Spatial information in regard to the various flora and fauna studies was provided to DEC's Environmental Management Branch on 24/02/2011. The data included priority flora locations, vegetation mapping and fauna and flora quadrate locations, as requested by DEC.

In regard to quadrate data, DSD advises that the floristic data (taxa and percentage foliar coverage) can be extracted from the species matrix contained within the appendices of the ENV and Biota flora and vegetation reports included within the Appendices of the SAR (**Appendix C-15** and **C-18** respectively). In addition to quadrate information, both ENV and Biota have mapped the distribution of the coastal heath community using a combination of ground-truthing and aerial photography. DSD requests DEC to advise if this data is required in a different format.

Impacts on coastal heath vegetation are discussed in the SAR. **Part 4, Section 2.4.3** discusses that the 114ha of coastal heath mapped in the James Price Point coastal area may correspond to the DEC listed PEC (Priority 1) described as the dwarf pindan heath community and hence is considered to be of moderate conservation significance. Up to 8.9ha of this vegetation may be cleared for construction of the northern pipeline of the BLNG Precinct representing a local loss of approximately 7.8% of the coastal heath. Regionally, 705ha of coastal heath was mapped by ENV (2008a) at four sites on the Dampier Peninsula. The proposed clearing of 8.9ha represents only 1.3% of the mapped extent of this vegetation type on the Dampier Peninsula. The known regional extent of coastal heath on the Dampier Peninsula (705ha) is likely to be an underestimate as mapping has only been conducted at four sites.

The findings of a recent study (Biota 2011a, unpublished) concluded that, although coastal heath vegetation in the James Price Point area appears to be common, floristic analysis found it to be distinct from comparable coastal heath and mixed shrubland thickets surveyed in other areas by ENV (2008a). The results of these latest findings will be considered in the context of ecological impact assessments for derived proposals, in consultation with DEC.

Generic Question ID: 217 Sub ID [64] Raised by [S64 Q640]

DEC Recommendation 10: That a condition of approval is applied that requires terrestrial fauna investigations to be conducted consistent with EPA Guidance Statement 56 prior to ground disturbance and referral of derived proposals. The results of these investigations should be used to inform the design, construction and operation of developments within the Precinct. Following the provision of this information, DEC should be provided with the opportunity to review and comment on the results.

Discussion: The SAR has listed a number of fauna of conservation significance known or likely to be present within the proposal area.

Further survey is recommended prior to ground-disturbing activity to confirm the existence of 'conservation significant fauna' (as defined in EPA Guidance Statement 56) within the proposal area and to assist in minimising the level of impact of the proposed activities on these fauna. Given that there is usually a degree of flexibility in locating infrastructure, attention should be given to the appropriateness of the proposed location and design of derived proposal infrastructure relative to conservation values.

For the monsoon vine thicket TEC, frugivorous fauna (including bats) may rely on the habitat and be sensitive to

direct (clearing) and indirect (change in the TEC condition or light emissions from the development) impact(s).

The Proponent acknowledges that terrestrial fauna investigations should be consistent with the EPA Guidance Statement No. 56, as far as reasonably practicable. The terrestrial fauna surveys conducted to date to inform the Strategic Assessment reflect this approach.

Extensive wet and dry season flora and fauna studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR. These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework appropriate for this strategic proposal.

In addition, targeted fauna investigations in the BLNG Precinct development area, including targeted searches for conservation significant fauna, are proposed. This information will be used to assist in the definition of detailed management and monitoring objectives and targets for future BLNG Precinct proponents, in addition to providing additional input to the design of Precinct infrastructure.

It is expected that proponents of derived proposals would undertake additional studies to inform the development of future proposals. These studies are listed in the response to DEC Recommendation 1 and include a frugivorous fauna census, genetic study of potential SRE camaenid snails and surveys of previously unsurveyed areas, such as the proposed accommodation camp, Light Industrial Area (**LIA**) and southern pipeline corridor.

Consideration is made in the SAR with regard to the proposed location and design of derived proposal infrastructure relative to conservation values. As discussed in the response to DEC Recommendation 8, there are limited opportunities for preservation of good quality Pindan vegetation within the BLNG Precinct footprint due to the scale of the development required within the area. However, there are opportunities to minimise impacts on this vegetation by optimising the placement of associated infrastructure. The SAR provides for this in regard to the potential presence of, and preservation of habitat for, the Masked Owl (northern) (*Tyto novaehollandiae kimberli*) and Greater Bilby (*Macrotis lagotis*), both of which are listed as Vulnerable under the EPBC Act (**Part 6, Section 3.7**).

Proposals to protect potential habitat for the Golden bandicoot *(Isoodon auratus auratus)* and Golden-backed tree rat *(Mesembriomys macrurus)* include the realignment of Manari Road away from its existing route through monsoon vine thickets between Quondong Point and James Price Point and the old road rehabilitated to restore monsoon vine thicket (**Part 6, Section 3.7**). It is proposed that proponents of derived proposals also develop and implement Construction Environmental Management Plans, which may include environmental management measures such as minimising disturbance and maintaining linkages where possible and avoidance of clearing in sensitive areas are far as practicable (**Part 4, Section 2.4.4, Table 2.4-9**).

Generic Question ID: 221 Sub ID [64] Raised by [S64 Q644]

DEC Recommendation 14: That a condition of approval is applied requiring subterranean fauna investigations to be conducted consistent with EPA Guidance Statement 54 and draft EPA Guidance Statement 54a prior to ground disturbance and prior to referral of derived proposals. The results of these investigations should be used to inform the design, construction and operation of the Precinct. DEC should be provided with the opportunity to review the results.

Discussion: The SAR acknowledges (**Part 4**, **p. 1-70**) "There is no published work on subterranean fauna surveys within the Dampier Peninsula (Biota 2009b; **Appendix 17**)". The SAR goes on with the statement that "The James Price Point coastal area may contain subterranean fauna habitats, based on the known sandstone geology of the area". No subterranean fauna surveys were conducted to inform the SAR or are proposed to occur prior to the submission of a derived proposal. An assessment of the significance of any subterranean communities present and the likely impacts cannot be determined until the results of subterranean fauna survey(s) are provided.

Biota (2009b; A**ppendix C-17**) completed an initial risk assessment for presence of stygofauna and troglofauna in a local context. This assessment found that the majority of the James Price Point coastal area is dominated by clays and sands strata in Pindan sandplain, meaning there may be limited saturated habitat space beneath the watertable. Based on this, it was concluded that it is unlikely that there will be significant stygofauna values associated with the James Price Point coastal due to the absence of supporting habitat; in this case, appropriate geological formations. It is possible that some stygal taxa, particularly smaller and vermiform types like oligochaetes and copepods, may still occur in sand aquifers, but in these habitat settings individual species are usually not restricted at small spatial scales.

Since submission of the SAR, no targeted sampling for subterranean fauna has been possible to date due to site access constraints. Biota (2011b, unpublished) has further considered that the James Price Point study area has a relatively low risk of having significant stygofauna or troglofauna values. In accordance with EPA Guidance Statement 54 and draft Guidance Statement 54a, preliminary stygofauna sampling and geological

investigations are proposed and the requirement for further sampling or investigations would be based on the results of these preliminary studies. DEC will be provided with these results through the development of the derived proposal.

Generic Question ID: 231 Sub ID [64] Raised by [S64 Q656]

DEC Recommendation 24: That the potential impact of roads associated with the precinct, particularly the realignment of Manari Road, is assessed and the roads designed to avoid, minimise, manage and mitigate impact(s) to surrounding conservation reserves and conservation values, including the monsoon vine thicket TEC which is likely to be impacted.

Response to DEC Recommendation 24: A number of provisions have been proposed in the SAR to minimise impacts to conservation values from roads and other infrastructure external to the BLNG Precinct. These include:

- An offset provision to realign Manari Road away from its existing route through monsoon vine thicket between Quondong Point and James Price Point and rehabilitate the old road by restoring the monsoon vine thicket (**Part 6, Section 3.7**), to the extent practicable.
- A requirement for proponents of derived proposals to submit a design rationale demonstrating (to the extent possible) that the location of the Light Industrial Area, workers' accommodation, plant and infrastructure design and layout, and alignment of onshore pipelines and ancillary infrastructure has prioritised areas of more degraded pindan habitat over that in relatively better condition (**Part 6, Section 3.7**).

The conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests).

Generic Question ID: 586 Sub ID [120] Raised by [S120 Q1239]

ENGO Submission: A lack of knowledge of taxonomy causes further problems in surveys and understanding distribution ranges. "The taxonomy of many plant groups in the Kimberley is poorly understood, and distribution data often only reflects limited collecting effort for the region. In addition, comparable wet season data for the Kimberley is virtually non-existent. The precautionary principle should therefore be applied to interpretation of the results of this flora survey." (Biota 2009c).

he Proponent acknowledges that, in the context of the wider Kimberley region, there is relatively limited knowledge of the taxonomy of plant groups within the region. To inform the understanding of regional ecological values, the NDT site selection process involved flora and vegetation surveys undertaken at a number of locations on the Dampier Peninsula, including the James Price Point coastal area (**Part 4, Section 1.2.2**).

While limited survey effort has been undertaken in the context of the Kimberley region, numerous comprehensive flora and vegetation studies have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the SAR. These studies provide an informed understanding of the flora and vegetation values in the area and have informed the impact assessment and management response proposed by the State Government as part of the SAR, with a focus on conservation significant flora and vegetation values.

Flora and vegetation investigations have been undertaken consistent with Environmental Protection Authority Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*, as far as is practicable. The Proponent recognises that Guidance Statement No. 51 makes reference to the precautionary principle, and this has been considered in the studies and impact conclusions presented in the SAR.

In addition, proponents of derived proposals will be required to undertake additional studies to inform the development of future proposals, building on the body of knowledge available to inform the strategic assessment. This information will be used to assist in the definition of detailed management and monitoring objectives and targets for those future proponents, in addition to providing input to the design of Precinct infrastructure.

Generic Question ID: 588 Sub ID [120] Raised by [S120 Q1242]

ENGO Submission: The Wet and Dry Season Flora and Fauna Surveys were done by two different consultants and a third consultant was used for further supplementary studies. Using three different consultants over three years on the same topic creates many unnecessary issues with the data and its reliability.

The Proponent recognises the potential for issues with data and its reliability in the use of a number of consultants to undertake studies relating to the initial site selection and subsequent Strategic Assessment of the Precinct. However, where the scope of works is effectively managed, with subsequent studies being used to confirm previous findings, as well as refining and building on previous results, this is not expected to affect the overall accuracy of the findings. All studies have been undertaken consistent with the relevant Environmental Protection Authority (**EPA**) Guidance Statements to maintain consistency of approach, and data from previous studies has been available to subsequent consultants. Some examples of where subsequent studies have confirmed or built on previous findings include:

- Biota (2009c): The scope for this study included refining the description and mapping of the vegetation units recorded from the area by ENV (2008a and 2008b) in addition to supplementing floristic data.
- AECOM (2010a): The primary aim of the survey was to refine and further map the extent of monsoon vine thickets (as defined by ENV 2008a and 20008b, and Biota 2009c) within and beyond the Precinct footprint, collect additional dry season data, undertake a targeted search for known priority species and map the extent of significant weeds. This was to ensure completeness of the data (including data collected in previous surveys), and to determine spatial locations of significant vegetation communities, priority species and weed infestations.
- AECOM (2010b): The intention of the survey was to resolve uncertainty surrounding: what was known from previous studies about fauna habitat present at the Precinct site; to undertake a targeted search of coastal limestone and watercourse habitat areas for species of conservation significance, including migratory birds; and to produce a fauna habitat map of sufficient resolution to manage on-ground environmental impacts and provide predictive ability for species that may occur there.

It is therefore submitted that, although the flora and fauna surveys have been undertaken by different consultants, the data collected is reliable and consistent with the relevant EPA Guidance Statements.

Generic Question ID: 589 Sub ID [120] Raised by [S120 Q1243]

ENGO Submission: One of four components of the desk top study on migratory birds (Galaxia, 2010) was a regional assessment. This section comprised of a qualitative assessment of the relative importance of the James Price Point coastal area as a habitat for migratory bird species compared to other sites on, and adjacent to, the Dampier Peninsula (e.g. Eighty Mile Beach, Roebuck Bay, Perpendicular Head-North Head; Packer Island; Lacepede Islands). This regional comparison was a subjective comparison based on third party reports to another area. There was no hard data collected on these birds even though, with the exception of the Osprey, all of these birds are protected under the *WA Wildlife Conservation Act*.

The migratory bird study undertaken by Galaxia (2010; **Appendix C-1**) comprised four key elements being a literature review, database searches, habitat analysis and regional assessment. The regional assessment used avifauna survey data collected from two other locations on the Dampier Peninsula that were surveyed by ENV (2008c; **Appendix C-16**) as part of the site selection process undertaken by the Department of State Development (**DSD**). Tables 4 and 5 within the Galaxia (2010) report provide sightings records for the migratory bird species recorded at these two locations. The regional assessment utilised this survey data to draw conclusions in regard to the regional importance of the James Price Point coastal area. The Strategic Assessment Report (**SAR**) acknowledges that, with the exception of the Osprey, all of the migratory bird species recorded in the James Price Point coastal area are protected under the WA *Wildlife Conservation Act 1950*.

AECOM (2010b; **Appendix C-20**) was also commissioned to undertake aerial migratory bird surveys along the coastline in the James Price Point coastal area at both low and high tide. The aim of the survey was to provide general information on the diversity, abundance and spatial distribution of coastal birds and how they utilised the area (for example for roosting, foraging and breeding).

In addition to the Galaxia (2010) and AECOM (2010b) migratory bird surveys, other available database information and literature sources were drawn on to develop a listing of possible species occurring in the area, and the conservation status of each species. An analysis of the habitat available in the area was then undertaken to assess the probable utilisation of each of these habitats by migratory birds.

Synthesis of all available information indicates that, although the James Price Point area does provide habitat for a range of migratory shorebird species, the area supports relatively low numbers of migratory shorebirds in comparison to other sites in the vicinity of the Dampier Peninsula, such as Roebuck Bay and Eighty Mile Beach

(Galaxia 2010; AECOM 2010b). Regionally, the James Price Point coastal area is considered to have relatively low significance as a summer feeding site for migratory shorebirds compared to Eighty Mile Beach and Roebuck Bay, two locations of international significance given the numbers of birds that feed in these areas (**Part 4, Section 1.4.5.6).** In addition, the habitat types in the James Price Point coastal area are well represented on the Dampier Peninsula and as such, it is unlikely that the area includes any regionally significant habitat for migratory bird species. Hence, the area is unlikely to host any regionally significant populations of migratory birds showing a preference for these habitats.

Generic Question ID: 600 Sub ID [120] Raised by [S120 Q1250]

ENGO Submission: There is a huge problem with surveying vegetation at only one time of the year due to the extreme climatic changes in this area. Indigenous people in the Kimberley recognise six distinct seasons with distinct changes in flora and fauna. Certain plants lie dormant until climatic changes occur and fauna migrate through these areas depending on the temporal availability of flora (see p. 38 of submission for context).

In relation to survey timing for the collection of ecological data for the environmental assessment of the Browse LNG (**BLNG**) Precinct, the Proponent has followed the advice provided by the Environmental Protection Authority (**EPA**) in the form of Guidance Statements. Those Guidance Statements relevant to assessment of terrestrial flora and fauna are:

- Guidance Statement No. 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia.
- Guidance Statement No. 56: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia.

As part of the site selection process and scoping phase for the Precinct Strategic Assessment (**SA**), a range of flora and fauna studies in both wet and dry seasons were undertaken to inform the environmental assessment process and support decision-making. These studies sought to build on historical botanical and zoological knowledge of the area (**Part 4, Section 1.2**) and were provided as Appendices to the SAR.
In summary, comprehensive studies have been undertaken, and further studies are committed, to refine the understanding of flora and fauna within the James Price Point coastal area and proposed BLNG Development footprint area.

Generic Question ID: 609 Sub ID [120] Raised by [S120 Q1251]

ENGO Submission: The fauna field surveys were short in duration and prevented some areas from being sampled. "The fauna field surveys were undertaken from 22-31 May 2008 at Perpendicular Head-North Head, from 5-14 June at Packer Island, from 22-26 August at Coulomb- Quondong, and from 19-26 June at Gourdon Bay". (See **p. 38-39** for context).

Numerous comprehensive fauna studies have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the Strategic Assessment Report (**SAR**). These studies have built on the existing zoological knowledge of the area and provide an informed understanding of the fauna values of the James Price Point coastal area.

The ENV fauna report (2008c; **Appendix C-16**) acknowledges that the survey effort in the James Price Point coastal area was limited due to access constraints. At the time of the survey, most of the Coulomb-Quondong project area was inaccessible under instruction from the Traditional Owners. The area surveyed was a 200m wide corridor extending from Quondong Point to approximately 1km north of James Price Point. A section of this area was also inaccessible because it was a site of Aboriginal cultural significance. Therefore, a large portion of the project area was unable to be fully surveyed. In addition, the survey was terminated early on request by the Traditional Owners and consequently the fauna trapping program was restricted to only four nights.

In recognition of the limitations of the ENV survey the Department of State Development (**DSD**) commissioned a wet-season survey (Biota 2009b; **Appendix C-17**). The scope of the survey was to provide further information on the fauna, with a particular focus on conservation significant fauna, and habitats present within the James Price Point coastal area. They key components of the fauna survey included a systematic census of terrestrial fauna assemblages, including avifauna, mammals (including bats) and herpetofauna, at 15 trapping sites located within the seven primary habitat types characteristic of the survey area. The survey also documented the Short Range Endemic (**SRE**) invertebrate fauna assemblage within the study area.

A further supplementary fauna survey was undertaken by AECOM (2010b; **Appendix C-20**) to complement previous wet and dry season surveys undertaken by ENV (2008c) and Biota (2009b). The key components of the fauna survey included fauna transects, migratory bird surveys and opportunistic observations.

In addition, targeted fauna investigations in the BLNG Precinct development area, including targeted searches

for conservation significant fauna, are proposed. This information will be used to assist in the definition of detailed management and monitoring objectives and targets for future BLNG Precinct proponents, in addition to providing additional input to the design of Precinct infrastructure.

It is expected that proponents of derived proposals would undertake additional studies to inform the development of future proposals. These studies include a frugivorous fauna census, genetic study of potential SRE camaenid snails and surveys of previously unsurveyed areas, such as the proposed accommodation camp, Light Industrial Area (**LIA**) and southern pipeline corridor.

In summary, a range of comprehensive fauna surveys have been conducted and additional studies are proposed in the James Price Point coastal area. These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework appropriate for this strategic proposal.

Generic Question ID: 628 Sub ID [120] Raised by [S120 Q1262]

ENGO Submission: Problems with SAR studies - Special restrictions on JPPS reference area - Parts of the JPPS reference area were inaccessible because they were sites of Aboriginal cultural significance and therefore unable to be adequately surveyed.

Numerous comprehensive flora and fauna studies have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the Strategic Assessment Report (**SAR**). These studies have built on the existing botanical and zoological knowledge of the area and provide an informed understanding of the flora, fauna and ecological values of the James Price Point coastal area.

The ENV flora, vegetation and fauna reports (2008a, b, c; **Appendix C-14, C-15, C-16**) acknowledge that the survey effort in the James Price Point coastal area was limited due to access constraints. At the time of the survey, most of the Coulomb-Quondong project area was inaccessible under instruction from the Traditional Owners. The area surveyed was a 200m wide corridor extending from Quondong Point to approximately 1km north of James Price Point. A section of this area was also inaccessible because it was a site of Aboriginal cultural significance. Therefore, a portion of the project area was unable to be fully surveyed.

In recognition of the limitations of the ENV surveys, the Department of State Development (**DSD**) commissioned a wet-season flora and fauna survey which were undertaken by Biota (2009b, c; **Appendix C-17, C-18**). The intention of the flora survey was to supplement the floristic data and refine the description and mapping of the vegetation units recorded from the area. The scope of the fauna survey was to provide further information on fauna species, with a particular focus on conservation significant fauna, and habitats present within the James Price Point coastal area.

A further supplementary flora and fauna survey was undertaken by AECOM (2010a, b; **Appendix C-19, C-20**) to complement previous dry and wet season surveys undertaken by ENV (2008c) and Biota (2009b).

The Proponent is also currently progressing additional flora and fauna studies to further inform the Precinct design and derived proposal impact assessment process. It is expected that proponents of derived proposals will be required to undertake surveys, including targeted searches for conservation significant species, in previously unsurveyed areas including the proposed accommodation camp, Light Industrial Area (LIA) and pipeline corridors.

In summary, various flora and fauna surveys have been conducted and in combination are comprehensive, and additional studies are proposed in the James Price Point coastal area.

Generic Question ID: 691 Sub ID [120] Raised by [S120 Q1339]

ENGO Submission: The lack of permanent water in the area stated by the proponent as a factor that will prevent the presence of breeding Gouldian Finches cannot be considered relevant, as the species is known to breed in the wet season in the Kimberley when temporary sources of water are available.

Research throughout the Kimberley has revealed that Gouldian Finches use very different habitats during the breeding and non-breeding seasons. Gouldian Finch counts conducted by the Australian Wildlife Conservancy and Save The Gouldian Fund confirm that the species is highly mobile, probably over a large range of country.

The Gouldian Finch is a global icon of nature. It is also one Australia's most threatened bird species. Given that this proposed development is situated within, prime Gouldian finch habitat, a proper systematic survey needs to be undertaken. (See **p. 69** for context).

A range of comprehensive fauna studies, inclusive of systematic survey effort for bird species, have been undertaken in the James Price Point coastal area and are listed in **Part 4**, **Section 1.2** of the SAR. The studies undertaken include desktop, ground-truthing and aerial helicopter searches, with the reports noting species recorded and potentially occurring. The potential occurrence of bird species was based on the presence of

suitable habitats within the James Price Point coastal area. On review of all available information, Galaxia (2010) concluded that it is very unlikely that the Gouldian Finch occurs in the James Price Point area, as records of this species on the Dampier Peninsula are restricted to the extreme north of the Peninsula, south to Lombadina. While the species is known from the northern Dampier Peninsula it is unlikely that the James Price Point would represent an important area of habitat owing to the absence of breeding habitat and permanent freshwater for much of the dry season (AECOM, 2010b). Furthermore, as recognised in the ENGO submission, the species is highly mobile and utilises a broad range of habitats. The loss of fauna habitat associated with the BLNG Precinct is considered unlikely to have a significant impact of the populations within the area as the potential habitat to be retained within the James Price Point coastal areas would be sufficient to continue to support local populations (**Part 4, Section 2.6.3.1**).

Generic Question ID: 696 Sub ID [120] Raised by [S120 Q1468]

ENGO Submission: Vine thicket species are an important traditional resource for Indigenous people, containing an abundance and variety of plant products that provide revered nutrition, medicines, tools and other significant items (McGillivray, 2008; Kenneally et al. 1996; Lands, 1997).

The Proponent acknowledges the importance of traditional resources to Indigenous populations in the James Price Point area and has included species of ethno-biological significance as a relevant factor in the assessment of terrestrial impacts in the SAR **(Part 4, Section 2.5).**

Studies conducted for the SAR found that the James Price Point coastal area supports 77 plant species documented as having some type of use for Aboriginal people such as for food, medicine, shelter, hunting and gathering or as artefacts (**Appendix E-6)**. In addition, some 27 terrestrial fauna species with ethno-biological uses have been identified as occurring within the area (**Appendix E-6**).

A combined total of 202 direct ethno-biological uses of terrestrial flora and fauna were identified based on existing public sources and limited Traditional Owner oral recording undertaken to support the assessment (**Appendix E-6**). Of the vegetation types in the James Price Point coastal area, the monsoon vine thicket behind coastal sand dunes was identified as being of particular significance as a location providing water and shelter from harsh weather as well as being rich in ethno-biological values.

It is expected that potential impacts to species of ethno-biological significance can be minimised through measures such as working with Traditional Owners to identify important ethno-biological species (including gubinge) harvest areas within the BLNG Precinct, and ensuring Traditional Owners are involved in the management of areas containing ethno-biologically significant species.

Generic Question ID: 700 Sub ID [120] Raised by [S120 Q1474]

ENGO Submission: There has been a substantial increase and disparity in the estimated area of monsoon vine thicket within the vicinity of James Price Point. Over-estimating the coverage of monsoon vine thicket is potentially deceptive and may have disastrous consequences for the survival of the frugivore network that maintains and balances the ecosystem. (see **p. 79** for context).

The Proponent recognises that the assessment of the area of monsoon vine thicket in the vicinity of James Price Point is of primary importance to allow for an accurate impact assessment on this Threatened Ecological Community (**TEC**), and substantial survey work has been undertaken in order to achieve this. Through this process knowledge of this TEC has been substantially increased.

The monsoon vine thicket at James Price Point has been initially mapped and further refined during three separate survey events, with the results presented in the Strategic Assessment Report (**SAR**) **Appendix C-14** (ENV 2008a), **Appendix C-18** (Biota 2009c) and **Appendix C-19** (AECOM 2010a).

Mapping in these surveys was undertaken using a combination of low-level helicopter transects with ground-truthing, ground surveys, and interpretation of aerial photography signatures combined with the site data and field mapping notes recorded during field surveys. All surveys have been conducted in accordance with Environment Protection Authority (**EPA**) Guidance Statement Number 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia. It is expected that the level of mapping undertaken during these surveys is sufficient to delineate the area of monsoon vine thicket in the area defined by the Proponent at James Price Point.

The surveys conducted in relation to the BLNG Precinct found a total of 572ha of monsoon vine thicket vegetation in the James Price Point coastal area. Of this area up to 132.4ha of monsoon vine thicket will be removed as part of the proposal. This loss equates to the removal of up to 23.2% of this community's distribution within the James Price Point coastal area (**Part 4, Section 2.4.3.1, Table 2.4-5).**

Additional analysis of satellite data by the Commonwealth Scientific and Industrial Research Organisation (**CSIRO**) found that the total area of monsoon vine thicket on the Dampier Peninsula is at least 1,479ha (**Part 4,**

Section 1.4.2.5). With reference to this data, the removal of the monsoon vine thicket associated with the Proposal will be up to 9% of regional extent (**Part 4, Section 2.4.3.1, Table 2.4-5**). Recent Department of Environment and Conservation (**DEC**) mapping has indicated that up to 2,710ha of monsoon vine thicket TEC may occur on the Dampier Peninsula (V. English, 2010, pers. comm. DEC, 20 July 2010). Using this data, the removal of the monsoon vine thicket associated with the Proposal will be up to 4.9%.

The conservation significance of the monsoon vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests) which these management measures aim to address.

In relation to the presence of frugivorous fauna within the monsoon vine thicket at James Price Point, it is proposed that proponents of derived proposals undertake a frugivorous fauna census within monsoon vine thicket at James Price Point and to identify the requirement for establishment of a long term monitoring program.

Generic Question ID: 1266 Sub ID [123] Raised by [S123 Q2348]

There is no adequate quantification of the extent of anthropogenic interference and impact on native fauna. For instance there are numerous concerns relating to the Precinct site and disturbance to terrestrial fauna in a radius of 30km that may be affected by land movement, clearing, infrastructure and increased heavy haulage transport. All of these will have severe impact on native fauna in particular increased and sustained mortality of native birds, reptiles and other macrofauna. These impacts are poorly addressed and dismissed as being easily addressed.

The Strategic Assessment Report (**SAR**) identifies the predicted impacts (both direct and indirect) on terrestrial fauna from the construction and operation of the BLNG Precinct and these are discussed in detail in **Part 4, Section 2.6.3**, with a summary provided in **Section 2.6.5**. The cumulative impacts of the BLNG Precinct and associated activities are detailed in **Part 4, Section 2.6.6**. The potential impacts have been quantified, to the extent practical at this strategic proposal stage, taking into account the preferential habitat uses and occurrence of fauna in a local context.

Whilst it was noted that impacts to terrestrial fauna may occur as a result of the Precinct development, it was concluded that impacts are manageable and are unlikely to threaten the continued survival of populations of fauna, in particular conservation significant fauna, or the broader ecosystem integrity of the James Price Point coastal area, with appropriate management measures and controls in place. Furthermore, the majority of conservation significant species listed in the James Price Point coastal area have broad habitat requirements and are likely to occur elsewhere on the Dampier Peninsula where suitable habitats occur.

The mitigation measures and safeguards that have been identified to manage potential impacts to terrestrial fauna are outlined in **Section 2.6.4**. These measures include the requirement that proponents of derived proposals develop and implement a Fauna Management Plan, in consultation with DEC, which may include environmental management measures such as pre-clearing searches for conservation signification species, noise management, speed limits, potential exclusion measures and monitoring (**Part 4, Section 2.6.4, Table 2.6-4**).

Generic Question ID: 1295 Sub ID [149] Raised by [S149 Q3128]

The proposed development is in conflict with EPA Bulletin 434, which highlights the value of monsoon vine thickets. The bulletin rejects exploration in vine thicket areas and clearly maps areas where it believes no mining should occur. 118 ha of this same area are proposed for clearing for Browse. The EPA should have to show why this clearing is acceptable, when it wasn't acceptable in the early 1990s.

The Ministerial Approval for EPA Assessment No. 434 (released 21 May 1992), states the following:

"The Proponent shall not undertake exploration or mining activities within the areas defined as "no mining" by the Environmental Protection Authority (in Figures 2&3, Report and Recommendations of the Environmental Protection Authority, Bulletin 434, June 1990), until the environmentally sensitive components are defined and mapped by the proponent in consultation with the Department of Conservation and Land Management and to the satisfaction of the Environmental Protection Authority. The proponent shall not subsequently undertake any ground-disturbance exploration or mining activities within those areas so defined."

The monsoon vine thicket vegetation community was defined and mapped as part of the Strategic Assessment process. A description of the vegetation community and distribution map is presented in **Part 4, Section 1.4.2.3** of the Strategic Assessment Report (**SAR**), with further detail provided in **Part 4, Section 1.4.2.5**.

The conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests) which these management measures aim to address.

Generic Question ID: 1330 Sub ID [82] Raised by [S82 Q3308]

Part 4 Section 1.4.2.5: Vegetation Communities of Conservation Significance - Table 1.6 identifies two communities of High Conservation Significance, "Monsoon Vine Thickets" 572ha and "Drainage Basins" 395ha within the James Price Point coastal area. Of the 572ha of Monsoon Vine Thicket (**MVT**) at JPP, 260ha has only recently been discovered. Being that there are two distinct types of MVT, evergreen vine thicket (**EVT**) and deciduous vine thicket (**DVT**) there are no figures to show how much is EVT and how much is DVT. Of the 128ha of Monsoon Vine Thicket to be cleared for the BLNG plant, how much is EVT and how much is DVT?

It is correct that the SAR identifies the Monsoon Vine Thicket (MVT) and drainage basin communities as terrestrial values of high significance, and the assessment and management response reflects this focus. While the Strategic Assessment Report (**SAR**) acknowledges that there are two sub-types of monsoon vine thicket (evergreen and deciduous), both are representative of the State TEC '*Vine thickets on coastal sand dunes of Dampier Peninsula'*. The distribution of the monsoon vine thicket (evergreen and deciduous), and the drainage basin community, is presented in **Part 4, Section 1.4.2.3, Figure 1-12**.

As presented in the SAR, approximately 572ha of monsoon vine thicket have been mapped within the James Price Point coastal area with no additional areas being recently identified. While it is acknowledged that there are two sub-types (evergreen and deciduous) of monsoon vine thicket in the James Price Point coastal area, it is the total amount of clearing of this community that forms the basis of the impact assessment conclusions and management response proposed within the SAR. The amount of each sub-type to be cleared will have no material effect on the impact assessment conclusions or management framework presented in the SAR.

Some clearing of a proportion of the monsoon vine thicket TEC will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 132.4ha (9% or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**).

No direct impact on the drainage basin community is expected as a result of clearing activities associated with the BLNG Precinct. The management framework presented in the SAR is defined to manage potential indirect impacts. As a key commitment, the SAR proposes that DSD, in its role as part of the Precinct Control Group, develop a Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance. This proposed strategy would inform all proponents of derived proposals of requirements for detailed management plans to address potential impacts to this vegetation and include a framework in which these management plans will be implemented (**Part 4, Section 2.4**). Vegetation to be managed and monitored under the strategy includes evergreen and deciduous monsoon vine thicket, drainage basin, coastal heath and coastal communities. Monitoring programs to be defined under the Strategy would be developed in consultation with DEC.

Generic Question ID: 1331 Sub ID [82] Raised by [S82 Q3311]

Part 4 Section 1.4.2.5 Vegetation Communities of Conservation Significance: The MVT to be cleared at JPP also contains one of only two populations of Pittosporum moluccam P4 species found in mainland WA. The other population (being only a handful of plants) are also found on the Dampier Peninsula.

The Proponent recognises the importance of understanding the presence of *Pittosporum moluccannum* (Priority 4) in the James Price Point coastal area. The Biota (2011a, unpublished) study in March 2010 included further assessment of the status of priority flora within the BLNG Precinct area, coastal vine thicket between James Price Point and Coulomb Point, and additional sampling at representative locations in the broader James Price Point coastal area. This Biota (2011a, unpublished) study confirmed the findings of previous surveys that two individual specimens of *Pittosporum molucannum* were located at 1.25km and 2.15km south of James Price Point. Both of these specimens were located in evergreen monsoon vine thicket with no further individuals found within approximately 300m of either location. Two other historical records have been made from this locality, one 900m south of James Price Point (Department of Environment and Conservation (DEC) Rare Flora database) and another 3.15km south (WA Herbarium voucher specimen). However, it is not confirmed whether

these records are duplicates of the two confirmed locations (Biota 2011a, unpublished). One or possibly two (historical record) of these records of *Pittosporum moluccanum* are located within the northern half of the BLNG Precinct shore crossing area.

The Proponent has proposed to conduct further targeted searches for *Pittosporum moluccanum* in the monsoon vine thicket at the James Price Point coastal area to inform the management planning framework to support derived proposals. The results of these will be discussed with the DEC as part of this forward process.

Generic Question ID: 1332 Sub ID [82] Raised by [S82 Q3312]

Part 4 Section 1.4.2.5 Vegetation Communities of Conservation Significance: Did ENV and Biota (both contracted by the Department of State Development, Government of Western Australia) contain any independent observers to test the accuracy of their reports? The total amount of MVT found on the Dampier Peninsula almost doubled as result of these surveys.

Numerous comprehensive flora and vegetation studies, including those undertaken by ENV and Biota, have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the Strategic Assessment Report (**SAR**). These studies have built on the existing botanical knowledge of the area and provide an informed understanding of the flora and vegetation values of the James Price Point coastal area. Although both ENV and Biota were contracted by the Department of State Development (**DSD**), the surveys were undertaken independently of the Government department. Furthermore, surveys were undertaken by suitably qualified personnel and in accordance with EPA Guidance Statement No. 51.

The refinement of estimates of monsoon vine thicket represents an increase in the scientific knowledge base gained through consecutive surveys. The original dry season surveys undertaken by ENV to inform the site selection process provided characterisation of the key ecological values in a local and regional context appropriate at that stage of project development.

The subsequent wet-season survey (Biota 2009c; **Appendix C-18**) was commissioned to supplement the floristic data and refine the description and mapping of the vegetation units recorded from the area. As a result of the survey, the mapping of the extent of the monsoon vine thicket vegetation unit was refined along the coastal section of the James Price Point study area. The mapping of the monsoon vine thicket community was undertaken using a combination of aerial imagery and ground-truthing. Biota acknowledge that some difficulty was experienced in ground-truthing vegetation boundaries due to the lack of access. However, it should be noted that this statement is more applicable to the Pindan vegetation communities as the monsoon vine thicket is accessible by Manari Road.

A further supplementary flora and vegetation survey was undertaken by AECOM (2010a; **Appendix C-19**). The vegetation mapping was compiled independent of other vegetation mapping and found that the distribution of monsoon vine thicket communities correlated very well with mapping from aerial photography. Furthermore, monsoon vine thicket communities were ground-truthed from south of the survey area and continued north beyond the survey area to Cygnet Bay.

In summary, various flora and vegetation surveys have been conducted in the James Price Point coastal area and have built on the existing botanical knowledge of the area and further refined the area of the monsoon vine thicket community in the area.

In defining the total amount of monsoon vine thicket on the Dampier Peninsula, CSIRO (2010; **Appendix C-21**) were commissioned to undertake a spatial analysis of the total area of monsoon vine thicket on the Peninsula. This analysis recorded that at least 1,479ha occurs on the Peninsula, with the report noting that while the mapping and results were accurate, they were conservative in area. The Department of Environment and Conservation (**DEC**) undertook a recent independent survey which indicated that up to 2,710ha of monsoon vine thicket may occur on the Dampier Peninsula.

Generic Question ID: 1333 Sub ID [82] Raised by [S82 Q3313]

Part 4 Section 1.4.4.3 Introduced Flora of the James Price Point Coastal Area: "Wild passionfruit, Hairy merremia, Siratro and Leucena all represent a threat to monsoon vine thicket vegetation" . This does not compare to the threat posed by the BLNG plant which shows plans to clear 128ha of MVT in the James Price Point area. With a Australia wide total of only 1479ha (2710ha) should any Dampierland Monsoon Vine Thicket be cleared for a development that could go elsewhere?

A rigorous site selection process was undertaken by the State Government which considered a range of development options including floating LNG and sites in the Pilbara and Darwin, in addition to 43 sites in the Kimberley. Following extensive technical, environmental and social studies, James Price Point was selected as the most suitable location. In recognition of this as a theme comment, further details regarding the process and rationale to inform the site selection process is provided in **Section 4.2** of the Response to Submissions

Summary Report. The reader is encouraged to refer to this section for additional context.

It is correctly noted that invasive weeds represent a threat to monsoon vine thicket vegetation. Indeed, the Strategic Assessment Report (**SAR**) notes that introduced flora pests (weeds), together with altered fire regime, grazing and introduced fauna pests, represent the high priority threatening processes in the Dampierland bioregion, and formed the basis of the impact assessment on terrestrial ecosystem integrity in **Part 4, Section 2.7**.

Some clearing of a proportion of the monsoon vine thicket Threatened Ecological Community (**TEC**) will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 9% (or 4.9% using Department of Environment and Conservation (DEC) estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**).

The conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests).

The SAR **Part 4, Section 2.7.4** identifies sources of potential indirect impacts, including weed invasion, to the monsoon vine thicket TEC. The Proponent has committed to minimise indirect impacts throughout the development and will work with proponents of derived proposals to achieve this through all phases of project development as far as practicable, and this is reflected in the management framework identified in the SAR. Specific to the issues raised in this submission, key management and monitoring measures for weed control are central commitments presented in the SAR.

Generic Question ID: 1335 Sub ID [82] Raised by [S82 Q3309]

Part 4 Section 1.4.2.5 Vegetation Communities of Conservation Significance: The report states that "Monsoon Vine Thicket occurring between JPP and Quondong Point represent the second largest occurrence of this TEC on the Dampier Peninsula. The largest vine thickets on the Dampier Peninsula are believed to be those lying between Cape Borda and Packer Island. The floristic composition of the monsoon vine thickets at James Price Point appears to be similar across the surveyed areas of the Dampier Peninsula." This statement and the following paragraphs on p. 1-46 (**Part 4**) try to downplay the importance of Dampierland MVT (seen as distinct from other MVT found in the Kimberley because it occurs on sand dunes). Sally Black (author of latest report on MVT of the Dampier Peninsula and acknowledged authority) recommends in her report that all large intact MVT have special protection put on them particularly so because all MVT patches are distinct from each all having individual traits, not shared by others.

The Strategic Assessment Report (**SAR**) does not seek to downplay the importance of the monsoon vine thicket community present in the James Price Point coastal area.

The monsoon vine thickets in the James Price Point coastal area are representative of the State Threatened Ecological Community (**TEC**) '*Vine thickets on coastal sand dunes of Dampier Peninsula'* which is currently listed as Vulnerable by the Department of Environment and Conservation (**DEC**) (**Part 4, Section 1.4.2.5.1**). The monsoon vine thicket TEC has recently been listed on Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**) priority assessment list and is currently being assessed to determine if it should be listed as a Commonwealth TEC under the EPBC Act. The review process is expected to be completed by September 2012. Some clearing of a proportion of the monsoon vine thicket TEC will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**).

The conservation significance of the monsoon vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds

and terrestrial introduced pests).

Furthermore, in recognition of its high level of sensitivity, the monsoon vine thicket TEC has been a key focus area in all ecological assessments completed to date by the Department of State Development (**DSD**), as the Proponent for the BLNG Precinct. This focus on the monsoon vine thicket TEC will continue in additional studies likely to be required by future proponents of derived proposals.

In regard to the statement that all patches of monsoon vine thicket are distinct, a recent study (Biota 2011a, unpublished) found that evergreen monsoon vine thicket vegetation at James Price Point had some similarity to vine thickets at Packer Island to the north. This supported earlier assessments of vegetation data collected by Biota (2009c) at James Price Point and ENV (2008a) at Packer Island, which also showed some similarity between monsoon vine thickets in these two locations (**Part 4, Section 1.4.2.5**). Although it is likely that species composition of the monsoon vine thicket will vary significantly over the Dampier Peninsula (Biota 2011a, unpublished), this finding may indicate that the evergreen monsoon vine thicket at James Price Point is not a highly restricted element of this vegetation type.

Analysis of monsoon vine thicket vegetation undertaken as part of an analysis of data from sites within the deciduous and evergreen monsoon vine thicket established for a Vegetation Monitoring Program (**VMP**) found that there was no significant difference between monsoon vine thicket (evergreen) vegetation community reference transects adjacent to the proposed BLNG Precinct and those to the north or south of the Precinct (Astron 2011, unpublished). This finding was repeated for deciduous monsoon vine thicket vegetation. The Proponent will provide the DEC with the opportunity to review these results as part of ongoing consultation in development of derived proposals.

In summary, the SAR acknowledges the significance of the monsoon vine thicket TEC. This recognition is shown through modification of the Precinct design and the comprehensive range of management measures proposed to mitigate direct and indirect impacts to the TEC.

Generic Question ID: 1352 Sub ID [216] Raised by [S216 Q1137]

Part 4 Section 1.4.11 Threatening Processes: Going on about threatening things like cats and weeds is for whose purpose? You think you are saving the environment by stopping these threatening things and putting the gas plant there? Oh yes that will save these threatening things from multiplying. What a joke. The only threat to James Prices Point is the Government. They are the threats to this ancient pristine land. Not a few weeds.

It is correctly noted that invasive weeds and introduced fauna pests represent threats to the James Price Point coastal area environment. Indeed, the Strategic Assessment Report (SAR) notes that introduced flora (i.e. weeds) and fauna pests, together with altered fire regime and grazing, represent the high priority threatening processes in the Dampierland Bioregion, and formed the basis of the impact assessment on terrestrial ecosystem integrity in **Part 4, Section 2.7**.

Whilst it was noted that impacts to terrestrial environmental receptors in the local setting may occur as a result of the Precinct development, it was concluded that impacts are manageable and will not threaten the ecosystem integrity of the area, with appropriate management measures and controls in place. The Proponent has committed to minimise impacts to the terrestrial environment throughout the development and will work with proponents of derived proposals to achieve this through all phases of project development as far as practicable, and this is reflected in the management framework identified in the SAR.

1.5 Atmospheric Environment

Generic Question ID: 728 Sub ID [70, 75, 107, 106] Raised by [S70 Q602]

Atmospheric characteristics are presented in **Part 1**, **Table 8.3** in a misleading way. Residents all know the strongest winds (outside cyclones) are the easterlies in the Dry Season, which normally drop off around lunchtime, following by much lighter sea breezes (westerlies) in the afternoon. This normal daily pattern is ignored in the SAR document, which instead seems to concentrate on seasonal variations.

Part 1,**Table 8-3** (Key Atmospheric Characteristics) in the Executive Summary is only intended to present a high level summary, with more detail presented in the main body of the Strategic Assessment Report and related Appendices. The discussion of the wind climatology, local climate and meteorology in **Part 4**, **Section 2.8.1.2** is more detailed and does discuss sea breeze fumigation, the conditions under which emissions can be blown out to sea under morning easterlies and recirculated inland in the afternoon. The dispersion models used for the SAR air quality assessment has been validated as capable of modelling these processes satisfactorily, as detailed in **Appendix C-25**.

Generic Question ID: 1054 Sub ID [114] Raised by [S114 Q2159]

The Report states "Emissions of greenhouse gas .....the assessment does not draw conclusions on residual impacts of this factor". It is not good enough to say that because it's a problem globally for the earth's weather system no assessment has been done. A precinct producing up to 50Mtpa will likely have a significant impact and add to the global problem. The Government must take responsibility for any increase in impact.

The reader is directed to **Part 4**, **Section 2.9** of the SAR which outline the greenhouse gas aspect in further detail than is outlined in the Executive Summary where the above except is from. The complete quote from the Executive Summary is:

Emissions of greenhouse gas, unlike other common air emissions, affect the earth's weather system globally. Taking into account a range of potential outcomes and also recognising that global warming and associated climate change are the cumulative results of many such sources across the globe, its contribution to climate change is currently unknown. For this reason, the assessment does not draw conclusions on residual impacts for this factor.

The intent of the above paragraph is to acknowledge that greenhouse gas is a global issue and as such the direct environmental impacts from the emission of greenhouse gas from the proposed BLNG Precinct could not be separated from the broader impacts of global greenhouse gas emissions. **Part 4**, **Section 2.9** of the SAR does place the BLNG greenhouse gas emissions in context with Western Australian and Australian greenhouse gas emissions.

The strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35 Mtpa. Maximum respective increases to WA's emissions (relative to 2007) are 15.7%, 26.2% and 35.4% and to Australia's emissions (relative to 2007) are 2.0%, 3.3% and 4.5%. These specific details will not be available until a proponent submits their derived proposals to the EPA for evaluation.

Importantly, these emissions calculations do not take into account potential abatement.

In terms of the global challenge climate change presents, the Proponent notes that the production of natural gas from the Browse LNG Development would contribute in a very positive sense to the efforts to combat climate change. IPCC, Stern, and others agree that natural gas and LNG, which produce substantially less carbon dioxide equivalents (**CO2-e**) than coal or oil, are important bridging fuels on the road to a lower carbon economy. Replacement of coal in particular, is identified as one of the key "stabilisation wedges" required to reduce overall global emissions to a level which will prevent the worst of the predicted impact. This is echoed in WA's Greenhouse Gas Reduction Strategy which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (**p.40**). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emission and commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (**p.90**).

Real-world examples of where LNG has made a positive contribution to overall emissions do exist. For example, the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction to its GHG emissions from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001). Another example also comes from the European Union (**EU**), which is currently subject to an emissions trading scheme. In the summer of 2005, Germany, which is highly reliant on coal for power generation, actively sought to purchase power from the Netherlands, which has a high proportion of gas fired generation. In the EU, data is available to demonstrate that fuel switching from coal to gas is not only occurring, but is a key contributor to emissions reductions in this region.

2 Terrestrial Factors

Generic Question ID: 694 Sub ID [70, 120, 106] Raised by [S120 Q1463]

ENGO Submission: The SAR fails to adequately address water use issues, including:

- lack of knowledge of regional groundwater water systems, sensitivities and usage;
- water over allocation;
- aquifer drawdown;
- loss of water quality;
- impacts on dependent species and ecosystems;
- impacts on surrounding human communities; and
- impacts arising from use of desalination, including impacts on the marine environment.

The SAR presents the impact conclusions and management framework appropriate for this strategic level of assessment relevant to groundwater issues. As a forward process, groundwater abstraction will be managed under licensing arrangements through the *Rights in Water and Irrigation Act 1914*, which is administered by the Department of Water (**DoW**), as detailed further below.

The SAR recognised that development of the Browse LNG Precinct may lead to alteration of hydrological and hydrogeological regimes that may result in indirect impacts on vegetation of high conservation significance, specifically monsoon vine thicket and drainage basin vegetation. To date, these investigations have been restricted to desktop studies due to site access constraints. To assist in managing and monitoring these impacts, it is proposed that proponents of derived proposals undertake a plant ecophysiology study to further define the relationships between monsoon vine thicket and drainage basin communities and groundwater and surface water regimes. This information would be used to identify opportunities to manage flows to sensitive vegetation types such as monsoon vine thicket and the drainage basin community.

It is proposed that impacts from groundwater abstraction by proponents of derived proposals be assessed through a licensing process under the *Rights in Water and Irrigation Act 1914*. A Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) is also proposed. This plan would be developed and implemented by proponents of derived proposals in consultation with the Department of Water (**DoW**) to address management and monitoring of groundwater resources, with reference to potential impacts on local communities, stygofauna and groundwater dependent ecosystems. It is expected that the Proponent and DoW would consult with DEC in assessing the potential impacts from groundwater abstraction on conservation values, as relevant to DEC's agency functions. In addition, a Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**), with particular reference to remnant monsoon vine thicket vegetation, and Ecological Surface Water Requirements Management Plan (**Part 4, Section 2.2.4, Table 2.2-2**) will also be developed and implemented prior to construction.

With specific reference to possible impacts arising from use of desalination, the predicted impacts associated with this ancillary infrastructure were assessed in the relevant assessment sections of the SAR. The discharge of brine (the primary impact on the marine environment associated with desalination) was assessed within **Part 3, Section 2.3.4.2** along with the other likely wastewater streams, and was further investigated as part of the marine wastewater discharge modelling summarised in **Part 7, Section 2** and included in detail as **Appendix G-1.**

Generic Question ID: 585 Sub ID [120] Raised by [S120 Q1237]

ENGO Submission: Many of the SAR studies note the lack of scientific information in the area they are investigating. All three Wet and Dry Season Flora and Fauna Surveys: ENV 2006a (**Appendix C-14**), ENV 2008b (**Appendix C-15**) and ENV 2008c (**Appendix C-16**) include the sentence, "There have been few detailed biological surveys of the Dampier Peninsula'. Fauna surveys concluded that, "The collections made during the current survey have contributed significantly to existing collections of the Dampier Peninsula. New records or range extensions support the notion that the vertebrate fauna assemblages are not fully known, and that more survey work is required."

The SAR (**Part 4**, **Section 1.2**) provides a summary of the historical information and results of ecological studies relevant in a local and regional context. It is acknowledged that in a regional context there have been few detailed biological surveys of the Dampier Peninsula. This was a key consideration in commissioning comprehensive surveys to inform the site selection and strategic assessment process.

Extensive wet and dry season flora and fauna studies have been completed in the James Price Point coastal area (**Part 4**, **Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR. These studies provide a robust understanding of the key ecological values appropriate to inform the

impact conclusions and management framework appropriate for this strategic proposal.

In particular, wet and dry season flora and fauna surveys were completed:

- to inform NDT site selection - ENV 2008a (**Appendix C-14**), ENV 2008b (**Appendix C-15**) and ENV 2008c (**Appendix C-16**);
- for targeted surveys of the JPP area - Biota 2009b (**Appendix C-17**) and Biota 2009c (**Appendix C-18**); and
- for supplementary surveys of the JPP area - AECOM 2010a (**Appendix C-19**) and AECOM 2010b (**Appendix C-20**).

In addition, targeted flora and fauna investigations in the BLNG Precinct development area, including targeted searches for conservation significant fauna, are proposed. This information will be used to assist in the definition of detailed management and monitoring objectives and targets for future BLNG Precinct proponents, in addition to providing additional input to the design of Precinct infrastructure.

While in a regional context there have been few detailed biological surveys of the Dampier Peninsula, comprehensive flora and fauna studies have been undertaken, with future studies committed to, in the James Price Point coastal area and proposed BLNG Development footprint.

Generic Question ID: 560 Sub ID [47] Raised by [S47 Q439]

According to local Indigenous population there are undocumented populations of endangered species existing on the Dampier Peninsula.

A wide range of studies have been undertaken to characterise the flora and fauna of the James Price Point area, with particular focus on the identification of species of conservation significance, at both a State and Federal level. These studies sought to build on historical botanical and zoological knowledge of the area (**Part 4, Section 1.2**) and were provided as Appendices to the SAR.

The Proponent has completed the assessment taking into account a full synthesis of all available and published information of the terrestrial ecological values of the area. The Proponent encourages knowledge sharing of new species or populations to help inform the state-of-knowledge for managing the environmental assets of the area.

From studies to date, no flora species listed under the *Environment Protection and Biodiversity Conservation (***EPBC***) Act* or species listed as Declared Rare Flora (**DRF**) were recorded in the James Price Point coastal area (**Part 4, Section 1.4.3.4**). Two EPBC Act listed species occur in the Dampierland bioregion; *Keraudrenia exastia* and *Pandanus spiralis* var. *flammeus*. Although appropriate habitat for *Keraudrenia exastia* is widespread in the area, the nearest known population is over 33km south of the southern end of the James Price Point coastal area (**Part 4, Section 1.4.3.4, Table 1-8**). This species also has not been identified in the area to date, despite intensive searches for further populations including targeted searches for the species in 2009 (**Part 4, Section 1.4.3.4, Table 1-8**). *Pandanus spiralis* var. *flammeus* is unlikely to occur within the BLNG Precinct due to the absence of preferred habitat and substrate (**Part 4, Section 1.4.3.4, Table 1-8**). *Keraudrenia exastia* and *Pandanus spiralis* var. *flammeus* are considered highly unlikely to occur in the James Price Point coastal area and therefore the BLNG Precinct is not considered to pose a threat to rare and endangered flora.

No EPBC Act listed threatened fauna species have been directly recorded in the James Price Point coastal area, however there is indirect evidence (possible foraging holes) of possible Greater Bilby (*Macrotis lagotis*) (Endangered – EPBC Act (Commonwealth), Schedule 1 *Wildlife Conservation Act* (**WC Act**)*)* activity in the vicinity of the project area and south towards Quondong Point (**Part 4, Section 2.6.1.2**). The number of foraging holes recorded suggests they belong to a small number of transient individuals present in the area, rather than a resident colony (**Part 4, Section 2.6.3.1**). Other EPBC Act listed threatened species that may occur in the area are outlined in detail in the SAR (**Part 4, Section 2.6.1.2**). The majority of conservation significant fauna species under consideration have broad habitat requirements and are expected to occur elsewhere on the Dampier Peninsula. Therefore, the BLNG Precinct is not predicted to result in significant impacts on populations of rare or endangered fauna. The SAR proposes a range of management measures, including requirement for future proponents to implement a Fauna Management Plan, in consultation with the Department of Environment and Conservation.

It is expected that proponents of derived proposals would undertake additional studies to inform the development of future proposals. This information will be used to assist in the definition of detailed management and monitoring objectives and targets for future BLNG Precinct proponents, in addition to providing input to the design of Precinct infrastructure.

Taking into account the localised area of impact from the Precinct, the studies undertaken and future

requirement for studies, it is unlikely that there would be any impacts on undocumented populations of endangered species on the Dampier Peninsula.

Generic Question ID: 627 Sub ID [120] Raised by [S120 Q1261]

ENGO Submission: There are problems with SAR studies in that they didn't survey JPPS reference area or parts of the reference area:

- The intertidal survey was extremely short, done over just three days "6-9 October 2009". (SKM, 2010) and only half of the site was surveyed.
- Parts of the James Price Point study area was not easily accessible and this affected several studies.
- The Coulomb-Quondong survey area includes the JPPS reference area and weren't always sampled.

As noted, a baseline intertidal survey was conducted in October 2009 to describe and map the spatial variability in benthic community composition on intertidal beaches, sand flats, rocky shores and reef platforms at the James Price Point coastal area (between Quondong and Coulomb Points). The sampling plan was designed to provide a broad understanding of the intertidal communities present at James Price Point and the broader coastal area to inform the Strategic Assessment.

The sites surveyed for this study included the JPP North survey area, JPP South survey area and JPP North reference area, covering a total sampled area of 758,149m2. It is noted in the technical report that there were some access restrictions encountered during the field trip, which prevented the field team from sampling the JPP South reference area. It is also acknowledged that the study was undertaken at specific targeted locations. To build on the baseline understanding of the broader area, additional intertidal mapping of the Coulomb-Quondong coastal area was undertaken using remote sensing techniques, and included in the BPPH calculations presented in the SAR (**Part 7, Section 3**). The Proponent considers the intertidal mapping undertaken as part of the SAR to be adequate to inform the strategic impact assessment conclusions of the SAR.

Generic Question ID: 936 Sub ID [227] Raised by [S227 Q2010]

There has been no proper insect studies undertaken as part of the SAR, including the gubinge that is collected in this area every year as organic produce.

Numerous fauna surveys have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the Strategic Assessment Report (**SAR**). These surveys have been undertaken in accordance with the Environmental Protection Authority (**EPA**) Guidance Statement No. 56 (Terrestrial Fauna Surveys for Environmental Impact Assessment in WA) and No. 20 (Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in WA).

Biota (2009b; **Appendix C-17**) undertook a targeted survey and habitat assessment for invertebrate Short Range Endemic (**SRE**) species as part of the wet season fauna survey. The aim of this was to search for evidence of SRE species and to determine the likelihood of SRE species occurring. A summary of the survey findings is presented in **Part 4, Section 1.4.9.2** of the SAR. It is proposed that proponents of derived proposals will undertake additional SRE investigations (**Part 4, Section 2.6, Table 2.6-5**) in the BLNG development area and surrounds to inform derived proposal management plans.

In regard to the plant species gubinge, **Part 4, Section 2.5** of the SAR assessed species of ethno-biological significance, with particular reference to gubinge which is commercially harvested from the Dampier Peninsula. The SAR acknowledges that the highest local impact to species of ethno-biological significance will result from the initial vegetation and habitat clearing associated with construction of LNG facilities and associated infrastructure (**Part 4, Section 2.5.3**). The vegetation types on the site are well represented outside of the area to be cleared and vegetation likely to contain gubinge and large areas of habitat will continue to persist within the local area. Therefore, it is likely that species of ethno-biological significance will continue to be available outside of the immediate clearing area; however, it is possible that harvest pressures of the Traditional Owners on the remaining vegetation communities will be higher.

The State Government has committed to identify important ethno-biological species (including gubinge) harvest areas within the BLNG Precinct in consultation with Traditional Owners. If ethno-biologically important harvest areas are identified, the State government will then prepare a management plan to develop measures to maintain these resources in the surrounding areas, provide access for Traditional Owners as well as involving them in all aspects of the management of these areas (**Part 4, Section 2.5.4, Table 2.5-1)**.

Generic Question ID: 1301 Sub ID [195] Raised by [S195 Q958]

Part 4 Section 1: Dr Anne Poelina is part of a new international network of Indigenous environmental philosophers. They met for the first time in the United States earlier this year, and released a summary of their meeting:

- **Indigenous Environmental Philosophers make a Statement to the World:** On the 1st of May 2010, 22 Indigenous environmental philosophers from around the world signed the Redstone Statement at the Southern Methodist University in Dallas Texas. The Redstone Statement is a watershed in regards to raising an International awareness of the rights of Indigenous people and the environment to not be poisoned, destroyed or diminished. The first International Summit on Indigenous Environmental Philosophy commenced the 26th April in a remote Kiowa Indian community retreat at Redstone Oklahoma. For three days the delegates shared stories of how their environment has changed in recent years and about the new threats that are looming on the horizon. The Summit was the brainchild of Jonathan Hook a Cherokee Indian and Professor in the Department of Philosophy and Religion at the University of North Texas. "I've been working on this for four years" Prof. Hook said "I had no idea of what might come out it … I just wanted to get all these different Indigenous environmental philosophers from Africa, Asia, North, Central and South America, Russia, Australia and New Zealand into the same space and see what magic might come out." The Summit was sponsored by Memnosyne Foundation and other supporters identified on the website: http://indigenousenvirosummit10.unt.edu/ Dr Anne Poelina, a Nyikina woman from the Mardoowarra (Fitzroy River) spoke about the disparate interests competing for water, land and the right to poison the air in the west Kimberley. The Mardoowarra is living water; it is rich with biodiversity in the water, the land, the sky and the spirit. Nyikina people are Yimardoowarra (lower Fitzroy river people). History has not been kind to Nyikina or Mangala people yet we continue to live our culture today and have engaged processes to maintain our language and culture into the future." The Mardoowarra faces many challenges in a rapidly approaching future. There are proposals for large open thermal coal mines and uranium extraction that threatens the network of aquifers and sub-terrarium waterways that feed the river, soaks and springs which give life to the country. Agriculturalists that have drained the south-eastern rivers dry have their sights set on draining the northern aquifers. "There is no way anybody can justify making a profit at the cost of another's life, lifestyle and future existence." Dr Poelina is the Managing Director of Madjulla Inc., an Indigenous not-for-profit non-government community development organisation; Deputy Chair of the Nyikina Mangala Aboriginal Corporation, Member of the Northern Australian Indigenous Land and Sea Management Alliance's Indigenous Water Policy Group and is an inaugural member of the recently formed National First Peoples Water Council. "I am active at a range levels from my remote home community through to the national and now international involvement however when I signed the Redstone agreement I did it for all of those people who have not been born yet, we have a responsibility to leave something for them." Throughout the discussions the delegates made it clear that the Redstone Statement is a document that people from all corners of the globe can understand, identify with and commit to at a personal level. It is up to each and every individual to choose their own ethical path, delegates are just asking for people to broaden their understanding of the need for balance and the need to maintaining a human presence in the natural landscape. There are many unresolved matters in regards to governments of all persuasions and all levels to act ethically towards Indigenous people and the environment. "It is time to stop the politicking and engage good science with traditional ecological knowledge to ground evidenced based ethical sustainable development. We now need other people who share the ethical principles espoused in the Redstone Statement to help make a better future happen. Action oriented community capacity building programs to introduce base learning activities for managing ecologically and economically sustainable enterprises." Dr Poelina said. "We need to build baseline data for ecosystems services by valuing the landscape, cultural assets, and water resources. Baseline data will provide benchmarks for valuing environmental, social, cultural and economic relationships to land and water quality and sustainability.

Smart woman. This may not be the right place for this article, but it is still relevant.

It is agreed that Indigenous people should play a central role in any development proposal that will affect them. The Government of Western Australia established a policy of seeking the consent of Kimberley Traditional Owners in the establishment of the Browse LNG Precinct. Since December 2008, the State Government and Woodside have been negotiating with the Kimberley Land Council (**KLC**) to reach Traditional Owners' consent to access the James Price Point site. On 30 June 2011, an agreement was reached. Although it is recognised that not all Indigenous people support the development of the Precinct, the focus now is on the State Government's commitment to deliver benefits to West Kimberley communities. Should the project be approved, the next stages of planning will be focused on managing the socio-economic and environmental impacts of the

Precinct development are managed (**Part 5, Section 5**). There will be a continued role in this process for the Traditional Owners and other affected Indigenous people. This includes a role in developing management plans, Precinct governance, and in direct and indirect employment opportunities arising from the Precinct development.

In addition to managing the potential impacts, the benefits outlined in the signed Heads of Agreement (**HoA**) must also be delivered to ensure the opportunities of the Precinct are realised by local Indigenous people. The State Government's commitments in this agreement are summarised in **Part 5, Section 3.9.6** of the SAR. Agreement also requires that the Foundation proponent and future commercial proponents deliver a range of employment and training benefits as well as significant contributions to provide for the social and economic development of Traditional Owners and the broader community.

Traditional Owners will play a central role in delivering the benefits to the people of the Dampier Peninsula and Broome. Although the contents of the HoA are confidential, the SAR identifies a number of the benefits included in the Agreement. For example, the HoA provides for measures that will ensure Indigenous heritage is protected, managed and promoted, including development of a Cultural Heritage Management Plan (**CHMP**) to appropriately manage heritage sites in and around the Precinct. The State will also financially support a Cultural Preservation Fund over 16 years in order to sponsor and support the enhancement and protection of Indigenous cultural heritage in the Kimberley region. Other benefits include the establishment of additional nature reserves and/or national parks within the Dampier Peninsula. The State Government has committed funding for 10 years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation (**DEC**) and Traditional Owners.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners will have significant input into the environment and social management associated with the Precinct.

2.1 Relevant Factor: Soils and Geomorphology

Generic Question ID: 214 Sub ID [40] Raised by [S40 Q399]

There is concern about possible increase in seismic activity due to the pounding of seabed and removal of gas.

An increased risk in seismic activity as a result of the nearshore construction (including 'pounding' from piling) is a highly unlikely scenario. The impacts to the seabed from construction activities are far too small to trigger any seismic activity, which typically occur several kilometres below the seabed.

The potential impacts associated with the extraction of hydrocarbons within the 'upstream' Browse Development will be investigated and assessed as part of a separate federal environmental approval process and is outside the scope of the Strategic Assessment Report. The SAR is focused on the 'downstream' processing and export of LNG and associated hydrocarbons. Nevertheless, it is noted that seismic activity associated with hydrocarbon extraction can be caused by a reduction in reservoir pore pressure resulting in adjustments of the reservoir geological structure (Grasso, 1992 and van Eijsa et al., 2006). Therefore, while theoretically it is possible that the removal of hydrocarbons from a reservoir can result in increased seismic activity it should be noted that such events are extremely rare and have not been associated with significant seismic events.

2.2 Relevant Factor: Surface Water

Generic Question ID: 107 Sub ID [13, 198, 212] Raised by [S13 Q121]

DoW Submission: **PART 1**, **Section 8.2.2**: Surface Water. The main surface water issues associated with the Browse LNG precinct will be managed through the requirement for the proponents to develop Ecological Surface Water Requirements Management Plans and Construction Environmental Management Plans. As stated in previous advice by DoW, it is strongly recommended that the Construction Environmental Management Plan identifies techniques for water reuse and recycling (including stormwater capture and reuse), in order to reduce reliance on groundwater. It is also recommended that either the scope of the Construction Environmental Management Plan is broadened, or a separate Operational Environmental Management Plan is developed. This will assist with best-practice management of water-related issues associated with the ongoing operation of the precinct. In particular, issues such as stormwater management, that will not be addressed in the operating strategy associated with a future groundwater licence under the RIWI Act. In the preparation of these management plans, the proponents need to have regard for the principles in Better Urban Water Management (WAPC 2008).

Prior to construction and operation of facilities within the LNG Precinct, future proponents will be required to develop and implement a Construction Environmental Management Plan (**CEMP**) to the satisfaction of the Western Australian Minister for Environment which addresses environmental management (**Part 4, Section 2.2.4, Table 2.3-3**). It is expected that the CEMP will be developed in consultation with the Department of Water (**DoW**) as relevant to DoW's agency functions.

As part of this process, an operating strategy containing a water conservation and efficiency plan, will be prepared by the proponents of derived proposals and submitted. The Proponent acknowledges that, as part of this forward process, techniques for water reuse and recycling (including stormwater capture and reuse) will be identified and implemented where practicable in order to reduce reliance on groundwater. The Proponent also acknowledges that the scope of the CEMP must address water-related issues, such as stormwater management, not associated with future groundwater licences under the *Rights in Water Irrigation Act 1914* (**RIWI Act**).

In order to inform appropriate management practices and procedures relevant to surface water issues within the LNG Precinct, management plans will consider the principles in Better Urban Water Management (WAPC 2008), to the extent that this is of direct relevance to an industrial setting applicable to this proposal.

It is reasonable to expect that issues specific to operational phase developments (including surface water and groundwater management post-construction) will be managed and monitored in accordance with an Operations EMP framework, to the satisfaction of OEPA and other key regulatory agencies, expected to be managed under Part V works approvals and licensing arrangements for prescribed premises.

Generic Question ID: 109 Sub ID [13] Raised by [S13 Q123]

DoW Comment - **Part 4**, **Section 2.2** (Surface Water), **Section 2.2.1**: Current knowledge. The paragraph describing the Kimberley regional water plan is not entirely accurate and should be replaced with the following: "The Department of Water has recently released the Draft Kimberley regional water plan. The plan provides a strategic direction for water management in the Kimberley region to 2030. It addresses the strategic issues around water resource demands and future projections and water services, taking a whole of water cycle approach. The plan will provide decision-makers and proponents with clear understanding of the DoW's position on strategic issues in the Kimberley."

This correction by DoW is acknowledged and appreciated. The submitted text for the paragraph describing the Kimberley regional water plan (**Part 4, Section 2.2.1**) could be more clearly stated. While this has no material effect on the impact assessment conclusions or management framework presented in the SAR, this is noted by the Proponent and will be replaced by the suggested text in future references to the Kimberley regional water plan.

Generic Question ID: 110 Sub ID [13] Raised by [S13 Q124]

DoW Comment - **Part 4**, **Section 2.2** (Surface Water), **Section 2.2.1.1**: Key Statutory Requirements, Environmental Policy and Guidance. The Better Urban Water Management (WAPC 2008) document should be added to the list of guidelines and regulatory frameworks applicable to surface water management. The BUWM framework ensures that the total water cycle is considered at each stage of the planning process.

It is acknowledged that the SAR does not reference the Better Urban Water Management (WAPC 2008) document in the list of guidelines and regulatory frameworks applicable to surface water management (**Part 4, Section 2.2.1.1**). While this has no material effect on the impact assessment conclusions or management framework presented in the SAR, this is noted by the Proponent.

In order to inform appropriate management practices and procedures relevant to surface water issues within the LNG Precinct, relevant management plans, such as the Construction Environmental Management Plan and Ecological Surface Water Requirements Management Plan, will consider the principles in Better Urban Water Management (WAPC 2008), to the extent that this is of direct relevance to an industrial setting applicable to this proposal.

Generic Question ID: 111 Sub ID [13] Raised by [S13 Q125]

DoW Comment - **Part 4**, **Section 2.2** (Surface Water), **Table 2:2-3**: Requirements to be Addressed via Development of a Management Plan to Support a Derived Proposal Potentially Affecting Surface Water. As per the comment in Q ID 110 on **Section 8.2.2**, either the scope of the Construction Environmental Management Plan needs to be broadened or a separate Operational Environmental Management Plan will need to be developed.

Prior to construction and operation of facilities within the LNG Precinct, future proponents will be required to develop and implement a Construction Environmental Management Plan (**CEMP**) to the satisfaction of the

Western Australian Minister for Environment which addresses environmental management (**Part 4, Section 2.2.4, Table 2.3-3**). It is expected that the CEMP will be developed in consultation with the Department of Water (**DoW**) as relevant to DoW's agency functions.

It is proposed that issues specific to operational phase developments, such as surface water management post-construction, will be in accordance with an approved Ecological Surface Water Requirements Management Plan, to be developed by future precinct proponents (SAR **Part 4, Table 2.2-2.**). Forward regulatory processes, such as Part V licensing under the EP Act, will also ensure that ongoing operational discharges and emissions associated with prescribed activities are managed to prevent impacts to surface water.

Generic Question ID: 112 Sub ID [13] Raised by [S13 Q126]

DoW Comment - **Part 4**, **Section 2.2** (Surface Water), **Table 2.2-4**: Impact Assessment Summary for Surface Water As per the above comments on **Section 8.2.2** and **Table 2.2-3**, either the scope of the Construction Environmental Management Plan needs to be broadened or a separate Operational Environmental Management Plan will need to be developed.

Prior to construction and operation of facilities within the LNG Precinct, future proponents will be required to develop and implement a Construction Environmental Management Plan (**CEMP**) to the satisfaction of the Western Australian Minister for Environment which addresses environmental management (**Part 4, Section 2.2.4, Table 2.3-3**). It is expected that the CEMP will be developed in consultation with the Department of Water (**DoW**) as relevant to DoW's agency functions.

It is proposed that issues specific to operational phase developments, such as surface water management post-construction, will be in accordance with an approved Ecological Surface Water Requirements Management Plan, to be developed by future precinct proponents (SAR **Part 4, Table 2.2-2.**). Forward regulatory processes, such as Part V licensing under the EP Act, will also ensure that ongoing operational discharges and emissions associated with prescribed activities are managed to prevent impacts to surface water.

Generic Question ID: 1028 Sub ID [224] Raised by [S224 Q1957]

KLC Submission: **Part 4**, **Section 2.2.2.3** Sensitivity and Resilience - The SAR states that the sensitivity of surface water hydrology to the Precinct is unknown. When is it proposed to fill this information gap as this information is required to inform the assessment process?

To date, detailed desktop hydrological reviews have been undertaken in order to inform the baseline understanding of the surface water hydrology of the James Price Point coastal area, and impact assessments presented in the Strategic Assessment Report (**SAR**). The findings of the hydrological reviews are presented in the SAR **Appendices C-23** and **C-24**. This data has been used to inform the predicted impacts to surface water detailed in SAR **Part 4, Section 2.2.3**.

The SAR acknowledges that detailed hydrological investigations and modelling will be undertaken as engineering details for specific facilities within the BLNG Precinct are progressed at the design phase to confirm the magnitude, frequency and duration of the potential impacts assessed at the Strategic Assessment Stage. This does not change the impact assessment or management framework presented in the SAR at this strategic proposal stage.

Prior to construction and operation of facilities within the BLNG Precinct, future proponents will be required to develop and implement a Construction Environmental Management Plan (**CEMP**) to the satisfaction of the Western Australian Minister for Environment which addresses environmental management of surface water (**Part 4, Section 2.2.4, Table 2.2-3**). In order to inform appropriate management practices and procedures relevant to surface water issues within the BLNG Precinct, management plans will consider the principles in Better Urban Water Management (Western Australian Planning Commission 2008), to the extent that this is of direct relevance to an industrial setting applicable to this proposal.

It is reasonable to expect that issues specific to operational phase developments (including surface water management post-construction) will be managed and monitored in accordance with an Operations Environmental Management Plan framework, to the satisfaction of the Office of Environmental Protection Authority and other key regulatory agencies, expected to be managed under EP Act Part V works approvals and licensing arrangements for prescribed premises.

Generic Question ID: 1413 Sub ID [107] Raised by [S107 Q2291]

In relation to the potential impacts on flora and fauna, of concern is the potential for wet and dry deposition of chemicals. Specifically north-east of the proposed gas precinct lies Wonganut springs which flows into the Yellow River and the Coloumb Point Nature reserve. This system is described as "The best-developed riverine communities in the Peninsula...." (p. 34 Broome and Beyond, CALM). These wetlands provide vital freshwater

refugia for fauna. The susceptibility of these wetlands to wet and dry deposition of chemicals from emissions has been ignored in the SAR. SKM writes that "The SO2 and NO2 gases, their particulate matter derivatives, sulphate and nitrate aerosols; have the potential to contribute to acid deposition. The potential impacts include acidification of lakes and streams..."(SKM, Icthys Gas Field Onshore Air Quality, p.12).

The predicted deposition levels of nitrogen and sulphur are detailed in **Part 4, Section 2.8.3.3** of the Strategic Assessment Report (**SAR**), with the results of the air quality study undertaken by Air Assessments presented in **Appendix C-25**.

As discussed in **Section 4.3** of SAR **Appendix C-25**, the SAR air quality study adopted assessment criteria for deposition of nitrogen and sulphur based on the Air Quality Guidelines for Europe published by the World Health Organisation (WHO, 2000). These are in terms of a "critical load", an annual deposition rate below which harmful effects on sensitive part of the environment are not expected to occur. These criteria are 15 kg/ha/year for nitrogen and 4 kg/ha/year for sulphur. Note that the WHO guidelines are for deposition to land surfaces.

Predictions of deposition rates are presented in **Section 10** of SAR **Appendix C-25**. The highest predicted deposition rates, due to both existing and Precinct emissions were 4.4 kg/ha/year for nitrogen, which is below the assessment criteria of 15 kg/ha/year. The highest predicted deposition for sulphur was 1 kg/ha/year, to the port berth area. This is much less than the criteria of 4 kg/ha/year.

In summary, the results of modelling to inform this assessment demonstrated that deposition rates of nitrogen and sulphur were predicted to be below relevant WHO guidelines. Indirect impacts of wet and dry deposition on surrounding ecosystem values are therefore considered low.

Taking into account the impact conclusions supported by modelling, and with the implementation of appropriate management measures and controls in place to minimise emissions, it is highly unlikely that the wet and dry deposition of chemicals, such as nitrogen and sulphur, from the BLNG Precinct will significantly impact flora and fauna within the area, including that within Wonganut Springs and Coulomb Point Nature Reserve.

2.3 Relevant Factor: Groundwater

Generic Question ID: 380 Sub ID [4, 25, 27, 42, 62, 67, 93, 96, 97, 116, 118, 134, 195, 197, 198, 222, 223, 224, 227] Raised by [S27 Q238]

Up to 24 billion litres of freshwater extraction per year from local groundwater aquifers will cause destruction of the environment (land). The assessment undertaken of groundwater hydrology and its extraction is insufficient.

There is significant concern regarding the volume of water from freshwater aquifers to be used for the construction and operation of the LNG precinct, which may result in mid to long term groundwater drawdown (SAR **Part 4, p2-31**).

It is acknowledged in the SAR that a number of water supply options are subject to investigation (refer SAR **Part 2, Section 5** which formed the basis of the impact assessment in **Part 4, Section 2.3.2.2**).

Preliminary water demand estimates based on potential water supply options for each development scenario of the BLNG Precinct are provided in **Part 2, Section 5.7.4** (refer **Table 5-5**). The proposed freshwater demand for the BLNG Precinct ranges from 0GL/yr to 8GL/yr, while estimated abstraction of saline groundwater ranges from 0GL/yr to 16GL/yr. Whilst preliminary water demand is estimated to total up to 24GL/yr, only up to 8GL/yr of this will be freshwater. The options for groundwater abstraction are not yet finalised as further investigations are required to provide supporting information for the licensing application process under the *Rights in Water Irrigation Act* 1914 (**RIWI Act**).

The SAR considered the potential impacts associated with groundwater abstraction including saltwater intrusion, groundwater level drawdown, impacts on groundwater dependent ecosystems and possible reductions in baseflow to surface water features (e.g. the coastal drainage basin) (refer **Part 4, Section 2.3**).

The use of groundwater is controlled under the RIWI Act, administered by the Department of Water (**DoW**) (**Part 4, Section 2.3.3.4**). The DoW determines the level of groundwater abstraction that may occur without unacceptable environmental, economic or social impacts and this limit is defined as the sustainable yield of the aquifer (**Part 4, Section 2.3.3.4**). This licence process is designed to provide assurance that the environmental impacts of proposed groundwater licence applications will be assessed by the DoW, and that only those applications with acceptable environmental impacts will be approved. The DoW does not approve licence applications for groundwater abstraction beyond the sustainable yield.

The SAR (**Part 4, Section 2.3.3.4**) acknowledges that detailed hydrogeological (groundwater) field investigations, analysis and interpretation, including the installation and testing of investigation bores and wells, and development and calibration of a numerical groundwater model will be undertaken by each proponent of derived proposals applying to take and use groundwater. The studies will be required for future licensing under the RIWI Act.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, future Precinct proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with DoW. The management plan will involve a groundwater monitoring program designed to monitor for potential impacts on groundwater and include a framework for an adaptive management response.

As part of this process, an operating strategy detailing how potential impacts on groundwater will be managed and monitored, and containing a water conservation and efficiency plan, will be prepared by the future precinct proponents and submitted as part of the groundwater licence applications to DoW.

Generic Question ID: 120 Sub ID [16, 49, 60, 63, 90, 294] Raised by [S16 Q108]

The Strategic Assessment fails to adequately consider or prevent the irreversible environmental, social, and economic harm that this fossil fuel project will impose on this unspoiled and sacred corner of Australia.

The Western Australian Government believes that there are many social, economic and environmental benefits for the region which would arise as a direct result of the Browse LNG Precinct. Furthermore, the State considers that any significant negative impacts have been avoided through careful site selection, or can be mitigated or adequately managed.

For example the Browse LNG Precinct will bring significant benefits through long term employment, business opportunities, economic and community development. In particular the development of the Browse LNG Precinct will provide the opportunity to substantially improve the education, health, social and economic well-being of Aboriginal people and significantly reduce disadvantage within the Kimberley community. Environmental benefits include the creation of new environmental reserves and support for their management, providing greater capacity to manage issues ranging from bushfires to feral animals and weed incursion.

The Browse LNG Precinct Strategic Assessment Report (**SAR**) considers the broad social and environmental impacts of the Precinct, as well as the means to manage those impacts to meet the rigorous requirements of the State *Environmental Protection Act 1986* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The project will only proceed if it receives environmental approval from both State and Commonwealth environment Ministers.

Generic Question ID: 224 Sub ID [66, 64, 114, 107, 223] Raised by [S64 Q649]

DEC Recommendation 17: That, as the option of a desalination plant is included in the SAR, appropriate conditions of approval be applied to address the potential impact(s) of this option.

Discussion: The SAR identifies the use of desalination to provide water for the Precinct as a contingency option if groundwater abstraction is not considered acceptable, and indicates (**Part 4**, **p. 2-62**) that 'If the groundwater licence application(s) is considered unacceptable by Department of Water the use of desalination as a contingency water supply has been assessed in this strategic assessment'. However, the potential impacts of desalination plants on marine and coastal conservation values do not appear to have been assessed in detail.

The scope of the Strategic Assessment Report (**SAR**) covered the assessment of the proposed LNG facilities including associated plant utilities (e.g. power generation and potential desalination). Refer to the SAR **Part 2, Section 5.7** for additional detail on these utility requirements, which informed the marine impact assessment presented in **Part 3**. With specific reference to possible desalination, the predicted impacts associated with this ancillary infrastructure were assessed in the relevant impact assessment sections of the SAR. The discharge of brine (the primary impact on the marine environment associated with desalination) was assessed within **Part 3, Section 2.3.4.2** along with the other likely wastewater streams, and was further investigated as part of the marine wastewater discharge modelling summarised in **Part 7, Section 2** and included in detail as **Appendix G-1**.

Generic Question ID: 813 Sub ID [75, 87, 107] Raised by [S75 Q847]

No decision on the SAR should be taken until the information gathered for the report currently being prepared by the Department of Water (Dampier Peninsula groundwater investigation - hydrogeological study and wetland mapping/surveying) is available for scrutiny and incorporated into the SAR assessment.

The SAR incorporated all relevant and available information at the time of publication, including DoW publications, although the Proponent was not able to incorporate results of as yet unpublished or incomplete studies identified in this submission. The use of groundwater is controlled under the *Rights in Water Irrigation Act 1914* (**RIWI Act**), administered by the Department of Water (**DoW**) (**Part 4, Section 2.3.3.4**). The DoW determines the level of groundwater abstraction that may occur without unacceptable environmental impacts and this limit is defined as the sustainable yield of the aquifer (**Part 4, Section 2.3.3.4**). This licence process provides certainty that the environmental impacts of the proposed groundwater licence application will be

assessed by the DoW and that no unacceptable environmental impacts will be approved. The DoW will not approve licence applications for groundwater abstraction beyond the sustainable yield.

Prior to groundwater abstraction for the construction and operation of facilities within the BLNG Precinct, future Precinct proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with DoW. The management plan will also involve a groundwater monitoring program designed to monitor for potential impacts on groundwater and include a framework for an adaptive management response.

Generic Question ID: 226 Sub ID [64, 198] Raised by [S64 Q651]

DEC Recommendation 19: That a condition of approval is applied requiring that the potential impacts of intersecting groundwater during earthworks and construction activities are addressed, including:

- investigation into the potential for intersecting groundwater during earthworks and construction activities;
- investigation into the potential impact of intersecting groundwater on the local environment (including flora, fauna and ecological communities of conservation significance);
- monitoring and management of activities to ensure intersecting groundwater does not have an impact on the surrounding environment; and
- consultation with the appropriate agencies to ensure the risk to values from intersecting groundwater is adequately investigated, monitored and managed.

Discussion: Although it is unclear in the SAR if the earthwork and construction activities will include intersection of the groundwater, it is recommended that adequate investigations, monitoring and management measures, to provide an understanding of the potential impact of these activities on groundwater and associated groundwater dependent conservation values, be made a condition of approval.

For the site levelling and construction earthworks activities (**Part 4**, **p. 2-7**), the SAR identifies that "to reach suitable foundation layers, the excavation and removal of large volumes of Pindan soils are likely to be required. The volume of material removed will be dependent on a number of geotechnical parameters and foundation design. It is possible that excavations to a depth of 20m or greater may be required to reach suitable foundation layers".

As the groundwater levels are unknown, there is the potential for groundwater intersection particularly as identified in the SAR (**Part 4**, **p. 1-26**) "a shallow depth to the watertable near the coast may be present. There is also anecdotal evidence that groundwater may be present at shallow depths within the Pindan soils".

To date, hydrological and hydrogeological investigations within the vicinity of the BLNG Precinct have been restricted to desktop studies due to site access constraints. The SAR presents the impact conclusions and management framework appropriate for this strategic level of assessment.

As discussed in the response to DEC Recommendation 7, it is expected that changes to surface and groundwater have the potential for indirect impacts on both monsoon vine thicket and drainage basin vegetation, however, the dependency of these vegetation types on surface and groundwater is acknowledged to require additional investigation. A plant ecophysiology study to investigate these relationships is proposed to support development of future derived proposals (see DEC Recommendation 1). This study would work in conjunction with future groundwater and vegetation monitoring programs and aim to provide the detailed information required to assist in the management of monsoon vine thicket and drainage basin vegetation communities.

If hydrogeological studies to support future derived proposals show that excavation for Precinct infrastructure will intersect groundwater, it is proposed that any dewatering activities would be managed under licensing arrangements through the *Rights in Water and Irrigation Act 1914*, which is administered by the Department of Water (**DoW**).This would include assessment of impacts on the local environment and appropriate monitoring and management activities. A Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) would also be developed and implemented by proponents of derived proposals in consultation with DoW. This plan would address management and monitoring of groundwater resources, with reference to potential impacts on groundwater (quality and drawdown), stygofauna and groundwater dependent ecosystems.

Generic Question ID: 817 Sub ID [75, 222] Raised by [S75 Q846]

Part 1, Table 8.1 (**p. ES-54**) describes the terrestrial physical characteristics of the area. However, in relation to groundwater hydrology it fails to mention a number of key points:

- the interconnection between the aquifer underlying the town of Broome and that at the proposed BLNG precinct site;
- acknowledgement of the need to ensure that the needs of Indigenous and non-Indigenous residents of the Peninsula can be met into the future, including commercial needs for activities such as nature- and cultural-based tourism and environmental allocations;
- That studies into groundwater around Broome by Vogwill in 2003 found large decreases in groundwater levels and a large increase in TDS content in only two years (1985-1987), suggesting that the amount of groundwater that was abstracted from the aquifer was too large to be sustainable.

It should be noted that the Executive Summary provides a high-level summary, with additional detailed information presented in the main Parts of the SAR. The groundwater resources and hydrogeology of the Dampier Peninsula are described in further detail in **Part 4, Section 1.3.3** of the Strategic Assessment Report (**SAR**), with reference to the groundwater recharge and regional groundwater of the Broome Sandstone aquifer. The unconfined nature of this aquifer system is outlined in **Section 1.3.3.1**.

The Proponent acknowledges that any proposal to abstract groundwater will need to demonstrate that sustainable yield volumes can be maintained while managing effects on environmental, social and heritage values. The potential impacts of groundwater abstraction will be investigated and assessed in future groundwater licence applications under the *Rights in Water and Irrigation* (**RIWI**) *Act 1914*. This licensing process provides a high degree of confidence that the environmental impacts of the proposed groundwater abstraction will be assessed by the Department of Water (DoW) and that no unacceptable environmental or social impacts will be approved.

Prior to groundwater abstraction for the construction and operation of facilities within the BLNG Precinct, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with the Department of Water (**DoW**). As part of this process, DoW will assess the application to take and use water under the RIWI Act 1914, including considering whether the taking and use of groundwater is ecologically sustainable or environmentally acceptable (**Part 4, Section 2.3.3.4**). This process will also incorporate a hydrogeological investigation which will include assessment and identification of necessary mitigation and management measures associated with potential impacts to other groundwater users (**Part 4, Table 2.3-4**).

Generic Question ID: 108 Sub ID [13] Raised by [S13 Q122]

DoW Comment - **Part 1**, **Section 8.2.3**: Groundwater. The Groundwater Management Plan must include an options analysis of all potential water supplies for the development, including groundwater, desalinisation of seawater and water recycling and reuse. This analysis should also be included in any application for a 5C licence under the *Rights in Water Irrigation Act 1914* (**RIWI Act**). In planning the water supply for the development, the DoW's Pilbara water in mining guideline should be followed. While the guideline was developed for the mining industry in the Pilbara, it is highly relevant to the water planning and licensing requirements of any large industrial development.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, it is proposed that future precinct proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with the Department of Water (**DoW**). As part of the groundwater licensing process, an operating strategy containing a water conservation and efficiency plan, will be prepared by the proponents of derived proposals and submitted as part of the groundwater licence applications to DoW. The proponent acknowledges that, as part of this forward process, water supply options analysis of all potential water supplies is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations. It is recognised that the analysis should also be included in any application for a 5C licence under the *Rights in Water Irrigation Act 1914* (**RIWI Act**).

In order to inform appropriate management practices and procedures relevant to water supply for the LNG Precinct, the DoW's Pilbara Water in Mining Guideline will be utilised in the development of management plans, to the extent that this is of relevance to the industrial LNG setting applicable to this proposal.

Generic Question ID: 113 Sub ID [13] Raised by [S13 Q127]

DoW Comment - **Part 4**, **Section 2.3** (Groundwater), **Section 2.3.1.1**: Key Statutory Requirements, Environmental Policy and Guidance. The DoW's policy on water use efficiency, Statewide Policy 16: Policy on water conservation/efficiency plans, has recently been updated and replaced by Operational policy 1.02 Policy on water conservation/efficiency plans: Achieving water use efficiency gains through water licensing.

The Proponent notes the advice that the Department of Water's policy on water use efficiency, Statewide Policy 16: Policy on water conservation/efficiency plans (**Part 4, Section 2.3.1.1**), has recently been updated and replaced by Operational Policy 1.02: Policy on water conservation/efficiency plans: Achieving water use efficiency gains through water licensing. This is noted by the Proponent and will be referenced in the relevant management plans.

Generic Question ID: 114 Sub ID [13] Raised by [S13 Q128]

DoW Comment - **Part 4**, **Section 2.3.6.1**: Category B Activities In reference to the Kimberley regional water plan, see DoW comment on **Section 2.2.1**. The statement on the Kimberley regional plan needs to be replaced (**Part 4**, **Section 2.1.1**; **Section 2.3.6.1**)

This correction by DoW is acknowledged and appreciated. The submitted text for the paragraph describing the Kimberley regional water plan (**Part 4, Section 2.2.1**) is agreed to be more accurate. While this has no material effect on the impact assessment conclusions or management framework presented in the SAR, this is noted by the Proponent and will be replaced by the suggested text in future references to the Kimberley regional water plan.

Generic Question ID: 223 Sub ID [64] Raised by [S64 Q648]

DEC Recommendation 16: That assessment of the potential impacts from groundwater abstraction on conservation values includes consultation with DEC.

Discussion: The potential impacts of groundwater abstraction on groundwater dependent ecosystems are proposed to be assessed and managed through the groundwater licence application process managed by the Department of Water. As there is the potential for impacts on ecosystems of significant conservation value, including the TEC, consultation with DEC is requested.

It is proposed that impacts from groundwater abstraction be assessed through a licensing process under the *Rights in Water and Irrigation Act 1914*. A Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) is also proposed. This plan would be developed and implemented by proponents of derived proposals in consultation with the Department of Water (**DoW**) to address management and monitoring of groundwater resources, with reference to potential impacts on stygofauna and groundwater dependent ecosystems.

The Proponent agrees to consult with DEC in assessing the potential impacts from groundwater abstraction on conservation values, as relevant to DEC's agency functions. It is expected that DoW would likewise consult with DEC as necessary.

Generic Question ID: 1027 Sub ID [224] Raised by [S224 Q1955]

KLC Submission: **Part 4, Section 1.3.3** Groundwater Resources and Hydrogeology - The SAR states that further work is required to characterise existing groundwater conditions. This work is critical to inform what potential impact there may be on groundwater resources. What is the timing of these works and how will the result be used to inform the current assessment process?

The SAR (**Part 4, Section 2.3.3.4**) acknowledges that hydrogeological (groundwater) field investigations, analysis and interpretation including the installation and testing of investigation bores and wells, and development and calibration of a numerical groundwater model will be undertaken by proponents of derived proposals applying to take and use groundwater. The studies will be influenced by the need to build the necessary baseline data, together with the need to establish a groundwater bore network to enable the monitoring of the following potential impacts associated with construction and operation of the BLNG Precinct. A number of studies by proponents of derived proposals are identified to provide supplementary information of the groundwater regimes in the area to inform derived proposal management plans, and as part of the forward licensing process under RIWI Act arrangements.

In addition to further groundwater studies, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with the Department of Water (**DoW**), prior to groundwater abstraction for the construction and operation of facilities within the BLNG Precinct. This management plan will incorporate a groundwater monitoring program designed to monitor for potential impacts on groundwater (e.g. water quality and drawdown), saltwater interfaces,

groundwater dependent ecosystems (if applicable) and other users (if applicable), and include a framework for an adaptive management response.

Generic Question ID: 1030 Sub ID [224] Raised by [S224 Q1960]

KLC Submission: **Part 4**, **Table 2.3-3** - The SAR should prioritise the adoption of water use efficiency methods.

It is acknowledged in the Strategic Assessment Report (**SAR**) that a number of water supply options are subject to investigation (**Part 2, Section 5** which formed the basis of the impact assessment in **Part 4, Section 2.3.2.2**). The water source options include groundwater abstraction, desalination of saline groundwater and desalination of seawater, or a combination of these options. The SAR identified that it is proposed to use groundwater to supply construction water requirements and to also use groundwater as the preferred primary water supply for operation water requirements, however this is subject to further investigation. Groundwater demand will likely be influenced by the reuse of stormwater and/or treated water. Stormwater stored in holding basins may be reused (for dust suppression etc.) and there is also potential for treated wastewater to be reused for construction and operation purposes (**Part 4, Section 2.3.3.4**). The options for groundwater abstraction are not yet finalised as further investigations are required to provide supporting information for the licensing application process under the *Rights in Water Irrigation Act 1914* (**RIWI Act**), administered by the Department of Water (**DoW**).

Prior to groundwater abstraction for the construction and operation of facilities within the BLNG Precinct, future precinct proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with DoW. The management plan will involve a groundwater monitoring program designed to monitor for potential impacts on groundwater and include a framework for an adaptive management response. The Proponent also acknowledges that, as part of this forward process, water supply options analysis of all potential water supplies is required in the context of identifying a sustainable yield of water resources for the construction and operation phases of the project, to address DoW's expectations.

As part of this process, an operating strategy detailing how potential impacts on groundwater will be managed and monitored, and containing a water conservation and efficiency plan, will be prepared by the future precinct proponents and submitted as part of the groundwater licence applications to DoW.

Generic Question ID: 1041 Sub ID [111] Raised by [S111 Q2141]

There is concern that any contamination of the groundwater could have direct impacts on farmers. The submitter has a licence to take water which is monitored by the Department of Water who has water tests dating back to the late 1990s with respect to groundwater quality at their property. Any deterioration in the water quality will be noticed. Being a mango and tropical fruit farm, it is imperative that we have good quality water. The submitter believes that this proposed development has the potential to affect our water considerably.

The Strategic Assessment Report (**SAR**) acknowledges that construction and operation of the BLNG Precinct has the potential to result in unplanned discharges such as spills and leaks, which could cause a pollution event and potentially impact groundwater. The potential impacts to groundwater due to terrestrial wastes and discharges are discussed in detail in **Part 4, Section 2.3.3.3**.

Groundwater users to the north, east and south of the BLNG Precinct are considered to be hydraulically up gradient or cross gradient and are therefore unlikely to be impacted from any unplanned discharges that come into contact with the underlying ground water.

It is expected that potential impacts on groundwater from terrestrial wastes and discharges will be minor following the implementation of appropriate management and mitigation measures such as the storage of chemicals and hydrocarbons in bunded areas, contaminated surface water run-off capture and treatment prior to discharge to the environment, and the implementation of the actions specified in an Emergency Response Plan. A more detailed description of proposed mitigation measures is presented in **Section 2.3.4**. The significance of the residual impact from terrestrial discharges, including non-routine events on groundwater is assessed to be very low as there is a low likelihood of uncontained spills and comprehensive emergency response measures will be in place to minimise impacts in the event of a non-routine spill.

A groundwater monitoring programme is expected to be established to ensure local groundwater quality is characterised and to inform an appropriate management framework, to the satisfaction of regulatory authorities and consistent with operating licences regulated by DEC and DoW.

2.4 Key Factor: Terrestrial Flora and Vegetation

Generic Question ID: 198 Sub ID [24, 27, 31, 34, 42, 45, 85, 94, 95, 97, 98, 105, 118, 123, 132, 134, 151, 235] Raised by [S45 Q429]

A comprehensive scientific study should be undertaken to understand the ecology and groundwater dependency of the monsoon vine thicket ecosystem before any clearing or industrial development takes place.

Numerous comprehensive flora and fauna studies have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the SAR. These studies provide an informed understanding of the ecology, including vegetation assemblage (**Part 4, Section 1.4.2.3, Table 1-5**) and flora and fauna values, of the monsoon vine thicket ecosystem at James Price Point.

The SAR concluded that the monsoon vine thicket vegetation in the James Price Point area appears to be maintained by both surface water and groundwater inflow (Ray Froend, 2010, pers. comm.; Edith Cowan University, 25 June 2010) (**Part 4, Section 1.4.2.7**). Further evaluation of the likely level of groundwater and/or surface water dependence of monsoon vine thicket will be conducted through onsite groundwater investigations and modelling (**Part 4, Section 1.4.2.7**). A Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance, with particular reference to remnant monsoon vine thicket vegetation, will also be developed and implemented (**Part 4, Section 2.4.4, Table 2.4-6**) prior to construction.

In summary, comprehensive scientific studies have been undertaken and further studies are proposed in the monsoon vine thicket ecosystem at James Price Point to understand the ecology and groundwater dependency of the vegetation community.

Generic Question ID: 5 Sub ID [1, 4, 62, 70, 73, 77, 81, 195, 200, 216, 223, 235, 236, 292, 293] Raised by [S1 Q5]

The BLNG Precinct will damage rare and endangered flora and fauna such as the gazetted threatened ecological community of the Monsoon Vine Thicket.

Extensive wet and dry season flora and fauna studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR.

No flora species listed under the Environment Protection and Biodiversity Conservation (**EPBC**) Act or species listed as Declared Rare Flora (**DRF**) were recorded in the James Price Point coastal area (**Part 4, Section 1.4.3.4**). Two EPBC Act listed species occur in the Dampierland bioregion; *Keraudrenia exastia* and *Pandanus spiralis var. flammeus*. Although appropriate habitat for *Keraudrenia exastia* is widespread in the area, the nearest known population is over 33km south of the southern end of the James Price Point coastal area (**Part 4, Section 1.4.3.4, Table 1-8**).

This species also has not been identified in the area to date, despite intensive searches for further populations including targeted searches for the species in 2009 (**Part 4, Section 1.4.3.4, Table 1-8**). *Pandanus spiralis var. flammeus* is unlikely to occur within the BLNG Precinct due to the absence of preferred habitat and substrate (**Part 4, Section 1.4.3.4, Table 1-8**). *Keraudrenia exastia* and *Pandanus spiralis var. flammeus* are considered highly unlikely to occur in the James Price Point coastal area and therefore the BLNG Precinct is not considered to pose a threat to rare and endangered flora.

The monsoon vine thickets in the James Price Point coastal area are representative of the State Threatened Ecological Community (**TEC**) 'Vine thickets on coastal sand dunes of Dampier Peninsula' which is currently listed as Vulnerable by the Department of Environment and Conservation (**DEC**) (**Part 4, Section 1.4.2.5.1**). The monsoon vine thicket TEC has recently been listed on Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**) priority assessment list and is currently being assessed to determine if it should be listed as a Commonwealth TEC under the EPBC Act. The review process is expected to be completed by September 2012. Some clearing of a proportion of the monsoon vine thicket TEC will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**).

The conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of measures are proposed to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced

pests).

Generic Question ID: 52 Sub ID [5, 27, 65, 227, 100] Raised by [S5 Q71]

The BLNG Precinct would result in the destruction of 2,400 hectares of remnant rainforest and woodlands.

The maximum extent of vegetation clearing required for the BLNG Precinct, pipeline corridors, workers accommodation, light industrial area and ancillary infrastructure is described in the SAR as 3,037ha (**Part 4, Section 2.4.2.2, Table 2.4-3**). Whilst the total extent of vegetation loss cannot be accurately quantified at this early stage of BLNG Precinct layout definition, the extent of clearing will be within that defined in **Table 2.4-3** and **Table 2.4-4** (**Part 4, Section 2.4.2.2**) ,while the clearing of the following vegetation communities will have to be undertaken (**Part 4, Section 2.4.1.2, Figure 2.4.1 and Section 2.4.3.1, Table 2.4-5**):

- Pindan vegetation (shrubland, open woodland and open forest) (approximately 2,861ha);
- Monsoon vine thicket (State Threatened Ecological Community) (approximately 132.4ha);
- Coastal heath (Department of Environment and Conservation Priority Ecological Community) (approximately 8.9ha); and
- Coastal communities (approximately 34.5ha).

The majority of vegetation types within the proposal area are of low conservation significance and are likely to be widely distributed and well represented in the wider region (**Part 4, Section 2.4.3.1**). The BLNG Precinct would have a localised impact on these vegetation types but is generally unlikely to have any regional implications due to their broad distribution.

The Proponent recognises that the monsoon vine thicket is an important environment, which the impact assessment and proposed management measures reflect. Some clearing of a proportion of the monsoon vine thicket TEC will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community, as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**).

The conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests) which these management measures aim to address.

The State is also committed to the establishment of conservation reserves on the Dampier Peninsula which will provide protection to the broad range of vegetation types which occur there.

Generic Question ID: 115 Sub ID [13, 120, 224, 111, 107] Raised by [S13 Q129]

DoW Comment - **Part 4**, **Section 2.4** (Terrestrial Flora and Vegetation), **Section 2.4.3.2** Potential Impacts to Terrestrial Flora and Vegetation due to Groundwater Abstraction. In reference to the possible impacts on groundwater-dependent ecosystems, the potential of changes to groundwater water quality resulting from groundwater abstraction (for example through the inland movement of the salt-water interface) also needs to be discussed. The requirement for appropriately placed monitoring bores to monitor changes in water levels and quality, which will be assessed through the licensing process under the RIWI Act, needs to be included. Additionally, the potential impact of water quality changes on groundwater-dependent ecosystems needs to be addressed (**Part 4**, **Section 2.4.3.2**, **Section 2.7.3.2**).

The SAR acknowledges that groundwater abstraction has the potential to impact groundwater quality by altering the natural freshwater/saltwater interface and enable migration of seawater landward, thus increasing groundwater salinity (refer to **Part 4, Section 2.3.3.4**). While this section does not directly reference the possible impacts on groundwater-dependent ecosystems (**GDE**s) through changes to groundwater quality, the issue is addressed indirectly though potential impacts to GDEs associated with groundwater abstraction.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, it is proposed that future proponents will be required to develop and implement a Groundwater Abstraction Management Plan in consultation with the Department of Water (**DoW**) (**Part 4, Section 2.3.4, Table 2.3-3**). This management plan will incorporate a groundwater monitoring program, with appropriately placed bores,

designed to monitor for potential impacts on groundwater (e.g. water quality and drawdown), saltwater interfaces, and GDEs. It is expected that more detailed hydrogeological field investigations, consistent with the requirements of DoW under the RIWI Act licensing process, will inform the Groundwater Abstraction Management Plan and associated groundwater monitoring program to meet DoW's expectations.

Generic Question ID: 259 Sub ID [39, 212] Raised by [S39 Q739]

With 132.4 ha of Monsoon Vine Thicket to be cleared we may never know what the Threatened Ecological Communities (TEC) contain, particularly as the SAR itself states that Monsoon Vine Thicket are a distinct and restricted faunal assemblage.

Some clearing of a proportion of the monsoon vine thicket TEC will be necessary to construct the shore crossing between the Browse LNG (**BLNG**) Precinct and the Port Facility, and potentially the southern pipeline crossing (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**). Therefore, land clearing associated with the BLNG Precinct will not seriously impact on the monsoon vine thicket TEC.

In recognition of its high level of sensitivity, the monsoon vine thicket Threatened Ecological Community (**TEC**) has been a key focus area in all ecological assessments completed to date by the Department of State Development (**DSD**), as the Proponent for the BLNG Precinct. This focus on the monsoon vine thicket TEC will continue in additional studies likely to be required by future proponents of derived proposals.

Extensive wet and dry season flora and fauna studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the SAR. These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework appropriate for this strategic proposal. These studies sought to build on historical botanical and zoological knowledge of the area and were provided as Appendices to the **SAR**.

In addition, targeted fauna investigations in the BLNG Precinct development area, including targeted searches for conservation significant fauna, are proposed (**SAR Part 4 Table 2.6-7**). This information will be used to assist in the definition of detailed management and monitoring objectives and targets for future BLNG Precinct proponents, in addition to providing additional input to the design of Precinct infrastructure.

It is proposed that proponents of derived proposals would undertake additional studies to inform the development of future proposals, including a genetic study of potential SRE camaenid snails (SAR **Part 4**, **Table 2.6-5**). In addition, surveys of previously unsurveyed areas, such as the proposed accommodation camp, Light Industrial Area (**LIA**) and southern pipeline corridor and a frugivorous fauna census are proposed in response to DEC's recommendations.

As described in the response to DEC Recommendation 4b, a Vegetation Monitoring Program (**VMP**) has been initiated, which is expected to further develop over time to fit specific management and monitoring frameworks defined in the Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance to provide clear management targets in pressure-state-response models to meet compliance requirements and provide a robust monitoring program. Data collected from this program is expected to provide baseline data for the proposed Monitoring and Management Strategy for Vegetation of Medium to High Conservation Significance to be developed by DSD with advice from the Department of Environment and Conservation (**DEC**) (**Part 4, Section 2.4, Table 2.4.6.).**

In summary, comprehensive studies have been undertaken, and further studies are proposed, to inform the management and monitoring framework for the key ecological values of the monsoon vine thicket.

The State is also committed to the establishment of conservation reserves on the Dampier Peninsula which will provide protection to the broad range of vegetation types which occur there.

Generic Question ID: 770 Sub ID [75, 106] Raised by [S75 Q821]

Many surveys have been undertaken over short periods of time by people not necessarily familiar with local conditions. For example, initial reports from the company AECOM that performed bird surveys at the proposed site included the presence of two species, a Fairywren and a Pardalote that are only found in the SW of WA and Tasmania, respectively. After this concern was raised with Woodside representatives in 2010, the species were removed from a later version of the report. It is therefore legitimate to ask: if employees of this company can produce a report stating they saw birds that could not possibly exist in the area, which species did they fail to see or fail to identify correctly?

Numerous comprehensive terrestrial wet season and dry season flora and fauna studies have been undertaken

in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the Strategic Assessment Report (**SAR**). These surveys have been undertaken in accordance with the relevant Environmental Protection Authority (**EPA**) Guidance Statements. The studies undertaken have been designed to build on the information gained in earlier studies, provide a cross-check mechanism and focus on any information gaps present. Overall, the suite of studies completed provides an informed understanding of the flora and fauna values and ecological processes in the James Price Point coastal area.

With respect to the point raised in this submission, it is noted that early draft reports of the AECOM report were reviewed and updated taking into account the known distribution of the Fairywren and Pardalote. This correction was appropriately addressed prior to finalisation to inform the SAR.

Generic Question ID: 1116 Sub ID [107, 216] Raised by [S107 Q2287]

Whilst the possible impacts on the monsoonal vine thickets and drainage basin communities are mentioned there is little attention paid to the possible impacts on important wetlands such as the Wonganut Springs which flows into the broader Coloumb Point Nature Reserve riverine system. How will this system be impacted? Of particular concern are impacts from groundwater abstraction. This reserve is important both for natural and recreational values.

As stated in the Strategic Assessment Report (**SAR**) **Part 4, Section 1.3.2.2**, the nearest permanent surface water features occur at Coulomb Point, approximately 20km north of James Price Point and Willie Creek, approximately 30km south. It is acknowledged that the Wonganut Springs are noted to occur in the Coulomb Point area. No major river or creek systems occur within the James Price Point coastal area, however, construction is likely to occur within an area of minor ephemeral drainage lines located between James Price Point and Quondong Point and to the north of James Price Point. Drainage in the James Price Point coastal area occurs from east to west along a slight gradient.

With regard to impact to the Wonganut Springs, the BLNG Precinct development area is located well south of Coulomb Point Nature Reserve and is outside of the catchment of the surface water flows to the riverine system. Furthermore, the BLNG Precinct falls within three surface water catchment drainage flow areas (**Part 4, Section 1.3.2.2, Figure 1-8**), none of which extend into Coulomb Point Nature Reserve. Therefore, it is highly unlikely that the BLNG Precinct will impact surface water flows to the Coloumb Point Nature Reserve riverine system.

The potential impacts of groundwater abstraction will be investigated and assessed in future groundwater licence applications under the *Rights in Water and Irrigation* (**RIWI**) *Act 1914*. This licensing process includes an assessment by the Department of Water (**DoW**) of the potential environmental impacts of the proposed groundwater abstraction to ensure no unacceptable environmental impacts as a result of the proposal.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, future Proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4, Section 2.3.4, Table 2.3-3**) in consultation with the DoW. As part of this process, DoW will assess the application to take and use water under the RIWI Act 1914, including considering whether the taking and use of groundwater is ecologically sustainable or environmentally acceptable (**Part 4, Section 2.3.3.4**). This process will also incorporate a hydrogeological investigation which will include assessment and identification of necessary mitigation and management measures associated with potential impacts to other groundwater users (**Part 4, Table 2.3-4**). In addition, the Groundwater Abstraction Management Plan also will incorporate a groundwater monitoring program designed to monitor for potential impacts on groundwater (e.g. water quality and drawdown), saltwater interfaces, and groundwater dependent ecosystems.

Generic Question ID: 116 Sub ID [13] Raised by [S13 Q130]

DoW Comment - **Part 4**, **Section 2.7.3.2**: Source of Potential Impact

In reference to the possible impacts on groundwater-dependent ecosystems from groundwater abstraction, refer to the comment below on **Section 2.4.3.2**: DoW Comment - **Part 4**, **Section 2.4.3.2** Potential Impacts to Terrestrial Flora and Vegetation due to Groundwater Abstraction.

In reference to the possible impacts on groundwater-dependent ecosystems, the potential of changes to groundwater water quality resulting from groundwater abstraction (for example through the inland movement of the salt-water interface) also needs to be discussed.

The requirement for appropriately placed monitoring bores to monitor changes in water levels and quality, which will be assessed through the licensing process under the RIWI Act, needs to be included.

Additionally, the potential impact of water quality changes on groundwater-dependent ecosystems needs to be addressed (**Part 4**, **Section 2.4.3.2**, **Section 2.7.3.2**).

The SAR acknowledges that groundwater abstraction may potentially impact groundwater quality by altering the

natural freshwater/ saltwater interface and enable migration of seawater landward, thus increasing groundwater salinity(refer **Part 4, Section 2.3.3.4**). While this section does not directly reference the possible impacts on groundwater-dependent ecosystems (**GDE**s) through changes to groundwater quality, this issue is addressed indirectly though potential impacts to GDEs associated with groundwater abstraction.

Prior to groundwater abstraction for the construction and operation of facilities within the LNG Precinct, it is proposed that future proponents will be required to develop and implement a Groundwater Abstraction Management Plan in consultation with the Department of Water (**DoW**) (**Part 4, Section 2.3.4, Table 2.3-3**). This management plan will incorporate a groundwater monitoring program designed to monitor for potential impacts on groundwater (e.g. water quality and drawdown), saltwater interfaces, and GDEs.

Generic Question ID: 532 Sub ID [170] Raised by [S170 Q1414]

WWF & ACF Submission Section 8: If thresholds of acceptability are not set in advance, then one has to question whether survey data is appropriate. Consideration will need to be given as to whether the data can be analysed or whether more objective fieldwork is needed (e.g. surveys that collect information as part of an investigation into the likely level of change and its acceptability). For example, the SAR states "The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community on the Dampier Peninsula as more than 90% of the known extent of monsoon vine thickets will remain." This approach to establishing 'value' is not consistent with best practice. The process of identifying values (e.g. thresholds of acceptable change) should be independent of the assessment process. Monsoonal vine thickets are a rare, geographically isolated and important resource that only occur about as far south as Broome (WWF, 2008). Only about 2,710ha remains in the region. The SAR does not set out the level at which change to this ecosystem is unacceptable. These are the kinds of issues that can be addressed in strategic biodiversity action plans for the region, such as those created under the Australia's Oceans Policy. Furthermore, it is not for the assessment to determine whether something should or should not be sacrificed, which unfortunately has been a focus in the SAR.

The Department of State Development (**DSD**), as Proponent for the Browse LNG (**BLNG**) Precinct, recognises the sensitivity and importance of monsoon vine thicket and drainage basin vegetation in the James Price Point area, and this is reflected in the impact assessment presented in the SAR.

Estimates of percentage loss of conservation significant vegetation communities provided in the SAR **(Part 4, Section 2.4.3.1, Table 2.4-5)** are based on available information to provide an informed context for the regional loss of conservation significant vegetation as a result of the BLNG Precinct development. It is ultimately the regulatory assessment by EPA and SEWPaC, and Ministerial decision-making regarding the Precinct, that will conclude the acceptability of the proposal and the conditions that are considered appropriate to achieve acceptable outcomes.

As part of the site selection process, the location of the BLNG Precinct was moved a minimum of 1km inland of James Price Point to reduce impacts on monsoon vine thickets and avoid the drainage basin community. It is estimated that this set back reduced potential disturbance to monsoon vine thicket by approximately 118ha. Direct impacts on this Threatened Ecological Community (**TEC**) are limited to the required shore crossing area of the BLNG Precinct and southern pipeline shore crossing only **(Part 4, Section 2.4.1.2).**

In the context of the question raised in this submission, there is a clear forward process for measuring and managing acceptable change of key terrestrial values of the local area. A Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**) will be developed by DSD through its involvement in the BLNG Precinct Control Group, in consultation with DEC. Vegetation types to be included in this strategy are monsoon vine thicket, drainage basin, coastal heath and coastal communities. The key objective of this Vegetation Strategy will be to maintain vegetation of medium to high conservation significance in areas defined as at risk of indirect impact from the BLNG development, within defined limits of acceptable change throughout the life of the Precinct. These impacts may be associated with the following factors: surface water/groundwater availability and quality; fragmentation and edge effects; invasive flora and fauna pest species; fire; and dust deposition. The effectiveness of this strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones. Annual reporting on the success of this program is to be made publicly available, providing transparency of the process.

Generic Question ID: 559 Sub ID [170] Raised by [S170 Q1450]

WWF & ACF Submission: Vegetation loss is sometimes accompanied with suggestions that there may be gains associated with changing management (e.g. Fire - s2.4, 3.4). This includes pledges to ameliorate losses with the creation of a new national park (**Table 2.4.6**). With reference to authorities on biodiversity offsets (e.g. Business and Biodiversity Offsets Programme 2009), what impact does this have on the assessment outcome? Are the gains in habitat of a given quality likely to offset losses in a habitat of high quality/scarcity (e.g. vine thickets). If so, how is this going to be monitored?

The response to this question is provided in two parts, addressing the key points raised in turn.

1. Protection of conservation significant vegetation through reserves

The SAR **(Part 4, Section 2.4.4, Table 2.4-6)** proposes that the State Government commits, through the implementation of the Dampier Peninsula Planning Strategy (previously known as the Dampier Peninsula Land Use and Infrastructure Plan), to facilitate the establishment of additional nature reserves and/or National Parks within the Dampier Peninsula to secure representative vegetation of the Peninsula in reserves, protect fauna habitat of rare and specially protected fauna and to protect Aboriginal culture and heritage.

This will deliver important offsets in accord with the EPA's Environmental Offsets - Biodiversity principals (2008, Final guidance No 19). Most notably being "like for like or better" as the areas to be targeted will be in the same local area with similar environmental values, and will be better in terms of security of tenure. Importantly they will also be of an order of magnitude larger than the area of vegetation to be directly affected thus providing a significant environmental benefit.

2. Potential improvement in vegetation quality through improved fire management

As discussed in the SAR **(Part 4**, **Section 2.4.5)**, implementation of fire management associated with the BLNG Precinct development, together with a reduction in informal access within the James Price Point coastal area, are likely to reduce the incidence of late hot, dry season wildfires, which are known to be particularly damaging to vegetation communities. As such, it is considered likely that vegetation may improve over time. Where vegetation types are restricted and currently determined to be under threat, such as the monsoon vine thicket, it is considered that an improvement in vegetation condition is likely to improve habitat availability and local ecosystem function. In the absence of fire it is possible that occurrences of monsoon vine thicket may increase in size.

It is proposed that changes in the condition and health of conservation significant vegetation in the James Price Point area be assessed in line with a Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance to be developed by DSD **(Part 4, Section 2.4.4, Table 2.4-6)**. Vegetation types to be included in this strategy are monsoon vine thicket, drainage basin, coastal heath and coastal communities. The proposed monitoring strategy will provide a basis for detecting change as a result of indirect impacts from Precinct development on these vegetation types. These impacts may be associated with the following factors: dust deposition; surface water/groundwater availability and quality; fragmentation and edge effects; invasive flora and fauna pest species; and fire. It is proposed that the annual reporting from this program will be made publicly available.

Generic Question ID: 1029 Sub ID [224] Raised by [S224 Q1958]

KLC Submission: **Part 4**, **Table 2.2-2** Condition No.T2.1 - Firmer commitments are required to be presented in the SAR regarding the protection of monsoon vine thickets given their ecological value. The phase “where practicable” is not appropriate where impacts on ecological communities of very high value need to be avoided.

The Proponent recognises that the monsoon vine thicket is an important environmental value, which the impact assessment and proposed management measures reflect. Some clearing of a proportion of the monsoon vine thicket Threatened Ecological Community (**TEC**) will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the Strategic Assessment Report (**SAR**) **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes.

The conservation significance of the monsoon vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests) which these management measures aim to address.

The Proponent recognises that monitoring and management of indirect impacts on the monsoon vine thicket TEC is of primary importance. The proposed Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**) to be developed in consultation with DEC

will provide a management framework for proponents of derived proposals. The effectiveness of this strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones. Annual reporting on the success of this program is to be made publicly available, providing transparency of the process.

The term 'practicable' is proposed in the context of minimising direct and indirect impacts, in recognition of consistency with the EPA's interpretation and definition under the *Environmental Protection Act 1986* and relevant guidelines.

Generic Question ID: 1031 Sub ID [224] Raised by [S224 Q1961]

KLC Submission: **Part 4**, **Table 2.4-3** Vegetation Clearing - Details on measures to reduce the amount of vegetation clearing need to be provided in the SAR. If all the vegetation is to be cleared a justification as to why this is necessary should be provided in the SAR.

The maximum limit to vegetation clearing required for the BLNG Precinct, pipeline corridors, workers accommodation, light industrial area and ancillary infrastructure is described in the SAR. Whilst the actual total extent of vegetation loss cannot be accurately quantified at this early stage of BLNG Precinct layout definition, the extent of clearing will be within that defined in **Table 2.4-3** and **Table 2.4-4** (**Part 4, Section 2.4.2.2**). It is expected that future commercial proponents proposing to operate within the Precinct will limit their disturbance footprint where practicable.

The Proponent recognises that the monsoon vine thicket is an important environmental value, which the impact assessment and proposed management measures reflect. Some clearing of a proportion of the monsoon vine thicket Threatened Ecological Community will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes.

The conservation significance of the monsoon vine thicket and other coastal vegetation communities is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests) which these management measures aim to address.

Prior to the construction and operation of the BLNG Precinct, it is proposed that a Construction Environmental Management Plan (**CEMP**) will be prepared and implemented to the satisfaction of the Western Australian Minister for Environment (**Part 4, Section 2.4.4, Table 2.4-9**). The CEMP will include environmental management measures to minimise disturbance and avoid clearing in sensitive areas (e.g. significant ecological communities, species of ethno-biological significance and priority flora species), as far as practicable.

Generic Question ID: 1032 Sub ID [224] Raised by [S224 Q1962]

KLC Submission: **Part 4, Section 2.4.2.2** and **Section 2.4.3.1** Source of Potential Impact - The risk of impacts to vegetation communities from groundwater abstraction need be assessed in more detail and presented in the SAR so that Traditional Owners can understand the level of risk to important vegetation communities.

The potential impacts to vegetation communities, with particular reference to monsoon vine thicket and drainage basin communities, due to groundwater abstraction are detailed in **Part 4, Section 2.4.3.2** of the Strategic Assessment Report (**SAR**).

The Proponent acknowledges that further evaluation of the likely level of groundwater dependence of monsoon vine thickets and drainage basin vegetation communities together with detailed groundwater mapping following field investigations, will be undertaken to inform a groundwater operating strategy for construction and operations. The operating strategy would be designed such that the extent and rate of groundwater drawdown beneath vegetation communities, if confirmed through investigations to have some level of groundwater dependence, does not exceed that determined to likely be tolerable by these vegetation communities.

The potential impacts of groundwater abstraction will be investigated and assessed in future groundwater licence applications under the *Rights in Water and Irrigation* (**RIWI**) *Act 1914*. This licensing process provides a high degree of confidence that the environmental impacts of the proposed groundwater abstraction will be assessed by the Department of Water (**DoW**) and that no unacceptable environmental or social impacts will be approved.

Prior to groundwater abstraction for the construction and operation of facilities within the BLNG Precinct, future proponents will be required to develop and implement a Groundwater Abstraction Management Plan (**Part 4,**

Section 2.3.4, Table 2.3-3) in consultation with the DoW. As part of this process, DoW will assess the application to take and use water under the RIWI Act 1914, including considering whether the taking and use of groundwater is ecologically sustainable or environmentally acceptable (**Part 4, Section 2.3.3.4**). This process will also incorporate a hydrogeological investigation which will include assessment and identification of necessary mitigation and management measures associated with potential impacts to other groundwater users (**Part 4, Table 2.3-4**). In addition, the Groundwater Abstraction Management Plan also will incorporate a groundwater monitoring program designed to monitor for potential impacts on groundwater (e.g. water quality and drawdown), saltwater interfaces, and Groundwater Dependent Ecosystems.

Generic Question ID: 1345 Sub ID [132] Raised by [S132 Q3319]

Monsoon vine thicket is a threatened ecological community and the proposal to clear between 118 and 132.4ha is outrageous particularly given that its classification into Criteria C recognises that the already highly fragmented and complex ecosystem is likely to move to a higher threat category in the medium to long term. The Commonwealth has found the ecosystem to be worthy of further investigation and consideration for EPBC listing and has incorporated the ecosystem into the Finalised priority assessment list for 2010.

The Strategic Assessment Report (**SAR**) acknowledges that the monsoon vine thickets in the James Price Point coastal area are representative of the State Threatened Ecological Community (**TEC**) '*Vine thickets on coastal sand dunes of Dampier Peninsula'* which is currently listed as Vulnerable by the Department of Environment and Conservation (**DEC**) (**Part 4, Section 1.4.2.5.1**). Furthermore, it is acknowledged that the monsoon vine thicket TEC has recently been listed on the Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**) priority assessment list and is currently being assessed to determine if it should be listed as a Commonwealth TEC under the EPBC Act. The review process is expected to be completed by September 2012.

The Proponent recognises that the monsoon vine thicket is an important environmental value, which the impact assessment and proposed management measures reflect. Some clearing of a proportion of the monsoon vine thicket TEC will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 132.4ha (9% or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community, as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**).

The conservation significance of the vine thicket was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket, such as fragmentation. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests).

It is ultimately the regulatory assessment by EPA and SEWPaC, and Ministerial decision-making regarding the Precinct that will conclude the acceptability of the proposal and the conditions that are considered appropriate to achieve acceptable outcomes.

2.5 Relevant Factor: Species of Ethno-biological Significance

Generic Question ID: 1033 Sub ID [224] Raised by [S224 Q1963]

KLC Submission: **Part 4 Section 2.5.3** Predicted Impacts - The loss of monsoon vine thickets will have an impact on the Traditional Owners ability to harvest gubinge. The SAR needs to demonstrate loses to vine thickets have been minimised by optimising the plant layout.

The Strategic Assessment Report (**SAR**) acknowledges that some clearing of a proportion of the monsoon vine thicket will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the SAR **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 9% (or 4.9% using DEC estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**).

The conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise

disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests).

The SAR acknowledges that the highest local impact to species of ethno-biological significance will result from the initial vegetation and habitat clearing associated with construction of LNG facilities and associated infrastructure (**Part 4, Section 2.5.3**). The vegetation types on the site are well represented outside of the area to be cleared and vegetation likely to contain gubinge and large areas of habitat will continue to persist within the local area. Therefore, it is likely that species of ethno-biological significance will continue to be available outside of the immediate clearing area; however, it is possible that harvest pressures of the Traditional Owners on the remaining vegetation communities will be higher.

2.6 Key Factor: Terrestrial Fauna

Generic Question ID: 143 Sub ID [22, 70, 75, 106, 122, 123] Raised by [S22 Q153]

The potential impact of gas flares and other lighting on migrating birds has been inadequately addressed in the SAR.

The SAR focuses on the local environment of James Price Point. It concludes that James Price Point is not a significant habitat for migratory birds and that lighting and gas flares from the proposed LNG Processing Plant will not impact on these species. It also states (**Part 4**: Environmental Assessment - Terrestrial Impacts **Section 2.6.3.4**; **p 2-101**) that:

- "Light emissions from the BLNG Precinct are considered unlikely to impact the nearest significant area for migratory birds, Ramsar wetland at Roebuck Bay, as the site is located greater than 60km away. Lighting from the, town of Broome, which is approximately 10km from Roebuck Bay Ramsar site, is expected to represent a much larger source of light as opposed to light emissions from the BLNG Precinct" (Galaxia, 2010; **Appendix C-1**).

Assessment in the SAR of the impact of light from the proposed development on birds in Roebuck Bay is limited to those already there. The SAR does not include any investigation or assessment of the flight paths of shorebirds migrating to and from Roebuck Bay and Eighty Mile Beach or the potential for the Precinct light emissions to impact on their migratory journeys. We submit that it is essential to also take into account the impact on birds during migration. There is considerable evidence that lighting, including gas flares, can distract migrating birds and interfere with their route, although most studies relate to passerines rather than shorebirds. This has been recognised as a risk by Woodside Petroleum Ltd in relation to its Pluto LNG Project.
Every year migratory shorebirds leave Roebuck Bay and Eighty Mile Beach for the long flight to their breeding grounds in the Arctic. Long-term studies by the Broome Bird Observatory (Migration Watch) reveal that the majority of birds detected leaving from the NE or E shores of Roebuck Bay in the late afternoon/early evening in March and April fly in a NNW direction. An intensive study by Tulp et al found that the majority of departing flocks left in a NW direction and more than 25% flew due north. Those flocks that fly in a NNW direction in particular will fly fairly close to James Price Point. The range limit of the radar used in Tulp's study was 56km, approximately the distance between Roebuck Bay and James Price Point. The average maximum altitude at which flocks were detected by radar at this distance was 800m; a height that may well minimise the risk of interference from lighting. However, this has not been established by direct observation and it is recognised that the impact of lighting on birds varies with the location and weather conditions. Much of the research in relation to flares has been conducted in the context of the offshore oil and gas industry in the North Sea. Unfortunately, there are no data specific to the Dampier Peninsula. Moreover, little is known about the details of the direction and altitude of the shorebirds' return flight, but great numbers are believed to make landfall at Roebuck Bay and Eighty Mile Beach from August to the end of October each year. Some Australian experts believe that many juvenile shorebirds arriving for the first time in Australia may travel down the coast and could pass close by James Price Point. Distraction at the final stages of their migration southwards, when their physiological condition is at its least robust, could have a significant impact on their survival. This is particularly so when the location is, like James Price Point, unsuitable for large numbers to feed and rest. Moreover, the more remote the location, and thus the more isolated the light source, the worse the impact appears to be.

The lack of regional knowledge is noted in the SAR:

- "To date, no attempts appear to have been made to map migratory bird routes at a regional scale within the Kimberley, and hence it is difficult to predict where these routes may lie in relation to the west coast

of the Dampier Peninsula "(**Appendix C-1**; p3).

A risk assessment cannot be made without data. We believe that the proposal should not be approved without further investigation of the shorebirds' behaviour, including a takeoff altitude gain study and a detailed study of how the birds arrive back in Roebuck Bay. We also propose that conditions should be imposed to minimise the impact of lighting.
The submission suggests:

(a) Minimise the impact of lighting.

- Limit the intensity and duration of lighting to that required for operations and safety. If possible minimise gas flaring at night.
- Install lighting so that is directed downwards rather than upwards as much as possible.
- Use bird-friendly lights. Birds react most strongly to the red end of the colour spectrum. Royal Phillips Electronics and NAM (Nederlandse Aardolie Maatschappij) have developed a new type of lighting, which radiates only a limited part of the spectrum and reduces the distraction to mitigating birds. After a successful pilot on an offshore platform in the North Sea, the lighting is now being installed on the pier on the Dutch island of Ameland.

(b) Monitoring of migrating shorebirds at the proposed Precinct. Ideally a pilot study using the level of lighting proposed at the James Price Precinct should be conducted over at least a 12 month period, to examine the effect of lighting on migrating shorebirds.

The Strategic Assessment Report (**SAR**) discusses potential impacts to migratory birds and the management framework proposed by the Proponent. A migratory bird study has been specifically undertaken to understand the distribution and abundance of migratory birds within the James Price Point coastal area and the regional importance of the area to inform the Strategic Assessment (**Appendix C-1**).

The potential impact of gas flares and other lighting on migratory birds is discussed in **Part 4, Section 2.6.3.4.** and **Part 6, Section 2.4.3.1**. The SAR acknowledges that light emissions associated with the BLNG Precinct have the potential to disrupt fauna behaviour (including migratory birds) and place them at risk of vehicle strikes and exhaustion due to the attraction of potential prey items to the light source (**Part 4, Section 2.6.3.4**). Light emissions also have the potential to disturb fauna (including migratory birds) from habitat within the vicinity of the BLNG Precinct site resulting in a local decrease in fauna abundance. Migratory birds can also become disoriented by the strong light of gas flares, which may subsequently disrupt their migratory route (**Part 4, Section 2.6.3.4** and **Part 6, 2.4.3.1)**. The SAR also acknowledges the potential impact of light emissions on the nearest significant area for migratory birds, being the Ramsar wetland at Roebuck Bay (**Part 4, Section 2.6.3.4**).

Potential impacts on migratory birds due to light emissions are expected to be restricted to the BLNG Precinct site and the immediate James Price Point coastal area and are likely to only result in temporary behavioural disruption, if any (**Part 4, Section 2.6.3.4** and **Part 6, Section 2.4.3.1**). Current information suggests the James Price Point coastal area is not considered to provide any regionally significant habitat for migratory bird species, therefore the possible impact to these species from light emissions is considered to be low. Light emissions from the town of Broome are likely to represent a much larger source of light as opposed to light emissions from the BLNG Precinct (**Galaxia, 2010; Appendix C-1**). The advice provided in the submission above in relation to flight pathways having the possibility of passing close by James Price Point is also valid for their proximity to Broome, where birds are also likely to be at a lower altitude. It is also considered unlikely that light emissions will pose a significant threat to migrating birds due to the more significant sources of light emissions such as gas flaring and floodlights during construction being short-lived or temporary in nature.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on fauna, including migratory birds. Refer **SAR Part 4, Section 2.6.4** (Management Measures) for a complete summary. The SAR **Part 6** (in particular **Table 3-3 and 3-4**) also outline management arrangements for terrestrial species including migratory birds.

The lighting designs for individual facilities within the BLNG Precinct are not yet confirmed at this strategic proposal stage. The Proponent proposes that future proponents prepare and implement a Visual Amenity Management Plan that addresses (among other items) "**...**a lighting strategy to reduce light spill, sky glow and direct light from the BLNG Precinct infrastructure", recognising that lighting management is of particular relevance to off-site visual amenity and social factors. It is reasonable to expect that this lighting strategy would provide commensurate benefits for other environmental factors in the local area of influence, including migratory birds. As part of the development of this strategy, options for limited spectrum lighting suggested above will be considered.

Generic Question ID: 703 Sub ID [120, 223] Raised by [S120 Q1477]

ENGO Submission: Of great concern is the placement of the Biota (2009a) fauna trapping transects (**Part 4**, **Figure 1-12**). The placement of the transects seems to have particularly avoided those areas that have been noted as containing a priority flora presence. Priority flora is predominately located within and adjacent to the Threatened Ecological Community monsoon vine thicket.

Extensive wet and dry season flora and fauna studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the Strategic Assessment Report (**SAR**). These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework appropriate for this strategic proposal. These studies sought to build on historical botanical and zoological knowledge of the area and were provided as Appendices to the **SAR**. All flora and fauna surveys were undertaken in accordance with the relevant Environmental Protection Authority (**EPA**) Guidance Statements, as far as is practicable.

In regard to the selection and location of the Biota (2009b; **Appendix C-17**) fauna trapping transects, the survey report states that the "sites were located in habitats considered by the survey zoologists to represent the range of habitats available within the study area. Each survey site was installed within a defined habitat and was selected such that equal weight was given to accessibility of the sites in terms of regular inspection of traps." The selection and location of the transects did not take into account the location of priority flora, and there is certainly no evidence that areas containing priority flora were avoided.

In recognition of its high level of sensitivity, the monsoon vine thicket Threatened Ecological Community (**TEC**) has been a key focus area in all ecological assessments completed to date by the Proponent. This focus on the monsoon vine thicket TEC will continue in the management and monitoring framework proposed to be implemented going forward.

Generic Question ID: 219 Sub ID [64] Raised by [S64 Q642]

DEC Recommendation 12: That a condition of approval is applied requiring that if the monitoring referred to in **Tables 2-6-4** and **2-6-7** (**Part 4**, **p. 2-108** and 2-110 respectively) identifies significant impacts on fauna either during the construction or operation of the precinct, including indirect impacts:

1. An investigation to determine the source of the impact is conducted.

2. A report on the investigations is provided in a set timeframe that:

• describes the impact(s);

• provides information which allows determination of the likely cause of the impact(s);

• if the investigation report concludes that it is likely the impact(s) were caused by activities undertaken in implementing the proposal, action(s) and associated timeline(s) are proposed to remediate the impact(s).

3. The report is provided to DEC for review and comment.

4. The proponent commits to implement the remedial action(s) to the requirements of the Office of the EPA.

DEC Recommendation 12: DSD will advise derived proponents that, where significant impacts on fauna have been identified during monitoring programs, appropriate reporting and contingency measures should be included in the proposed Fauna Management Plan (**Part 4, Section 2.6.4, Table 2.6-7**) to be developed as part of derived proposals. The measures proposed by DEC are reasonable, and will be subject to further definition in consultation with DEC.

Generic Question ID: 220 Sub ID [64] Raised by [S64 Q643]

DEC Recommendation 13: That a condition of approval is applied requiring SRE fauna investigations to be conducted consistent with EPA Guidance Statement 20 prior to ground disturbance and referral of derived proposals. The specimens should be identified by the Western Australian Museum and the results should be used to inform the final design, construction and operation of the Precinct. DEC should be provided with the opportunity to review the results.

Discussion: The amount of SRE fauna material collected in the terrestrial fauna survey (**Appendix C-17**) appears poor considering the size and extent of the monsoon vine thicket TEC in the survey area. Given that the monsoon vine thicket TEC is reasonably likely to represent significant SRE fauna habitat, a SRE fauna survey is warranted.

Material collected from the SRE fauna surveys should be identified or identifications verified by the Western Australian Museum (WAM). In particular, the morphological variation in the Camaenid (known SRE fauna family) snail specimens appears likely to require WAM expertise. The results of the targeted survey(s) and WAM

identification(s) should be used to inform Precinct design (this is not currently proposed in the SAR).

The Proponent acknowledges that SRE fauna investigations should be consistent with the EPA Guidance Statement No. 20, and that material collected should be identified or identifications verified by the Western Australian Museum, as far as reasonably practicable.

It is proposed that proponents of derived proposals will undertake additional SRE investigations in the BLNG development area and surrounds to inform derived proposal management plans. These studies will include a genetic study of both species of potential SRE camaenid snails, *Quistrachia leptogramma* and *Rhagada bulgana*, found at James Price Point to determine if the size difference identified in *Q. Leptogramma* represents a genetic variation or a separate species, and also to determine the SRE status of both camaenid snail species found. This is reflected in the proposed commitment in the SAR (**Part 4**, **Section 2.6**, **Table 2.6-5**) that: 'Prior to commencement of ground disturbance activities, proponents of derived proposals shall undertake further taxonomic work and prepare a report, to the satisfaction of the Minister for Environment, on the endemicity of SRE invertebrates (Camaenidae snails) collected by Biota (2009b) within the BLNG Precinct.'

Generic Question ID: 232 Sub ID [64] Raised by [S64 Q657]

DEC Recommendation 25: That DEC is consulted prior to any fauna relocation(s) attempt.

Discussion: The SAR states (**Part 4**, **p. 2-99**) "Pre-clearance surveys and the identification and mapping of specific habitats such as tree hollows prior to clearing will enable potential habitats to be identified and inspected for fauna prior to clearing, and species relocated". Relocation of fauna has consequences for the relocated fauna and other fauna at the sites of release and any such proposals need to be prepared in consultation with DEC.

Response to DSD Recommendation 25: Whilst it may not always be possible to consult DEC prior to fauna relocation, it is proposed that proponents of derived proposals include a management measure in a Fauna Management Plan (**Part 4, Section 2.6.4, Table 2.6-7**) requiring that DEC is consulted prior to fauna relocation(s) attempt as far as is reasonably practicable and that suitably qualified fauna specialists be used for any fauna relocation.

Generic Question ID: 612 Sub ID [120] Raised by [S120 Q1253]

ENGO Submission: In the fauna survey only 34 vertebrate fauna taxa were recorded at Coulomb- Quondong, but this survey was curtailed by access restrictions [ENV, 2008].

Numerous comprehensive fauna studies have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the Strategic Assessment Report (SAR). These studies have built on the existing zoological knowledge of the area and provide an informed understanding of the fauna values of the James Price Point coastal area.

The ENV fauna report (2008c; **Appendix C-16**) acknowledges that the survey effort in the James Price Point coastal area was limited due to access constraints. At the time of the survey, most of the Coulomb-Quondong project area was inaccessible under instruction from the Traditional Owners. The area surveyed was a 200m wide corridor extending from Quondong Point to approximately 1km north of James Price Point. A section of this area was also inaccessible because it was a site of Aboriginal cultural significance. Therefore, a portion of the project area was unable to be fully surveyed. In addition, the survey was terminated early on request by the Traditional Owners and consequently the fauna trapping program was restricted to only four nights.

In recognition of the limitations of the ENV survey the Department of State Development (**DSD**) commissioned a wet-season survey (Biota 2009b; **Appendix C-17**). The scope of the survey was to provide further information on the fauna, with a particular focus on conservation significant fauna, and habitats present within the James Price Point coastal area. A total of 120 vertebrate fauna taxa were recorded during the survey (**Part 4, Section 1.4.5.4, Table 1-9**).

A further supplementary fauna survey was undertaken by AECOM (2010b; **Appendix C-20**) to complement previous dry and wet season surveys undertaken by ENV (2008c) and Biota (2009b). This survey recorded a total of 111 vertebrate fauna taxa (**Part 4, Section 1.4.5.4, Table 1-9**).

The fauna surveys undertaken in the James Price Point coastal area have been designed to build on the information gained in earlier studies and focus on any information gaps present. Overall, the suite of studies completed provides an informed understanding of the vertebrate fauna occurring in the James Price Point coastal area.

Generic Question ID: 614 Sub ID [120] Raised by [S120 Q1252]

ENGO Submission: Some studies were done at the wrong time. March is the end of the wet season and as noted in previous reports most migratory bird life will not be present at this time. (see p. 38-39 of submission for context)

Numerous comprehensive terrestrial wet season and dry season flora and fauna studies have been undertaken in the James Price Point coastal area and are listed in **Part 4**, **Section 1.2** of the Strategic Assessment Report (**SAR**). These studies provide an informed understanding of the botanical and zoological values and ecological processes in the James Price Point coastal area. The Proponent is currently progressing further terrestrial scientific studies to further inform the Precinct design and planning for derived proposals.

Consistent with good practice, terrestrial fauna investigations to inform the NDT site selection process and strategic assessment have been undertaken consistent with the EPA Guidance Statement No. 56 'Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia', across consecutive wet season and dry season conditions. These studies provide a robust understanding of the key ecological values appropriate to inform the impact conclusions and management framework appropriate for this strategic proposal.

Generic Question ID: 617 Sub ID [62] Raised by [S62 Q527]

With reference to the Golden Bandicoot, the Golden Backed Tree Rat and the Greater Bilby, the SAR states that these fauna could "possibly occur". The survey appears to be rushed and more work needs to be done.

The evaluation of the occurrence of conservation significant fauna species in the James Price Point area, as presented in the Strategic Assessment Report (**SAR**), was determined following a series of comprehensive fauna studies of the area (**Part 4, Section 1.2**). These studies were conducted according to Environmental Protection Authority (**EPA**) Guidance Statement No. 56: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, which provides guidance on standards and protocols for terrestrial fauna surveys, particularly those undertaken for the environmental impact assessment of proposals.

The SAR (**Part 4 Section 2.6.1.2**) presents a consensus summary from the fauna surveys undertaken, and identifies 19 fauna species of conservation significance as either occurring or possibly occurring within the James Price Point coastal area. Eight of these species were recorded during surveys of the area. Where fauna species are identified as having the potential to occur, they have not been directly recorded during survey efforts, but may be present due to historical records in the vicinity, possible indirect evidence or suitable habitat available. Whilst a possible presence is not definitive, it does provide a basis to undertake a robust impact assessment on the species, determine the requirement for further studies prior to development, and develop management plans and commitments appropriate for this strategic assessment stage.

Additional targeted fauna studies are proposed to further expand on information gained in previous studies. For example, the Proponent has proposed additional targeted survey effort for the Greater Bilby, in particular south towards Quondong Point (**Part 6, Table 3-3**) as management commitments to further inform the design of Precinct infrastructure. If a viable Bilby population is identified during these surveys, the Department of State Development (DSD) has committed to develop a management plan to address ongoing monitoring of Bilby populations including Quondong Point and established conservation areas.

To inform the development of future proposals, it is expected that proponents of derived proposals will be required to undertake targeted searches for conservation significant fauna in previously unsurveyed areas, such as the workers accommodation camp and Light Industrial Area (**LIA**). Furthermore, a Fauna Management Plan will be developed and implemented, in consultation with the Department of Environment and Conservation (**DEC**), and will include measures such as pre-clearing searches for conservation significant fauna species (**Part 4, Section 2.6.4, Table 2.6-7**).

Generic Question ID: 640 Sub ID [120] Raised by [S120 Q1284]

ENGO Submission: Impact on Matters of National Environmental Significance - This proposal would threaten the Bilby through: a potential increase in predation through creating a corridor for predators to move along; habitat destruction and degradation resulting from mining and other development; and/or road mortality.

The Greater Bilby is likely to occupy most of the Dampier Peninsula in very low densities (ENV, 2008c; **Appendix C-16**) and potential evidence (foraging holes indicative of this species) of the bilby was recorded at Quondong Point in pindan shrubland during the AECOM (2010b) (**Appendix C-20**) survey; however, it could not be determined whether this was a result of bilby foraging activity or a varanid lizard species. The number of foraging holes recorded suggests they belong to a small number of individuals present in the area, rather than a resident colony (AECOM, 2010b; **Appendix C-20**). Therefore, it is possible that individuals may forage within the Precinct Project area.

While no direct evidence of the species was recorded, pindan vegetation of the James Price Point coastal area

is considered to provide the most likely habitat type for this species. Approximately 2,861ha of pindan habitat will be cleared as a result of the BLNG Precinct and associated clearing requirements. This equates to 11.6% of habitats mapped within the James Price Point coastal area and 5.2% of habitats mapped on the Dampier Peninsula by ENV (2008a; **Appendix C-14**) (see SAR **Part 4, Table 2.6-3).** Approximately 25,000 hectares will remain within the James Price Point coastal area after construction and, as male bilbies have an average home range of approximately three square kilometres (DEWHA, 2010f) and that additional areas of pindan habitat are known to occur to the north, east and south of the BLNG Precinct, this amount of area remaining is considered a sufficiently sized foraging territory to support these individuals.

The key focus for management of the Greater Bilby will be to confirm the species presence in the area and if present to minimise impacts to potential habitat and develop a regional strategy to protect the species. A more targeted search for the Greater Bilby will be undertaken prior to the commencement of construction to establish presence/absence of Greater Bilby population to determine the size and range of the population.

If a Greater Bilby population is identified at Quondong Point following further surveys, a management plan for the species on the Dampier Peninsula shall be prepared to address management of access, feral animal control and monitoring of populations, including at Quondong Point and in established conservation areas. In addition, primary Greater Bilby habitat (pindan dune swale system of Dampier Peninsula) in good condition (based on fire history) will be a key consideration in establishment of future terrestrial conservation areas on the Dampier Peninsula.

The Plans will be prepared in accordance with relevant Threat Abatement Plans and the National Recovery Plan for the Greater Bilby.

Road mortality

Direct loss of, or injury to the Greater Bilby may occur as a result of vehicle strikes when individuals are crossing tracks and roads in the area during the construction and operational phases of the project. The loss of or injury due to vehicle strike is likely to be very infrequent, and therefore is unlikely to affect its conservation status.

Potential impacts to terrestrial fauna from vehicle movements will be minimised through measures such as the setting of appropriate vehicle speed limits during construction and operation phases. Proponents of derived proposals will need to prepare and implement a Fauna Management Plan prior to construction and the Plan will need to be updated for ongoing operational requirements to manage traffic. A Construction Environmental Management Plan will also be required prior to commencement of associated construction activities for management of environmental inductions and training.

Increase in predation

Introduced fauna species currently occur within the James Price Point coastal area. Four introduced vertebrate fauna have been identified within the James Price Point coastal area comprising European cattle (*Bos taurus*), house mouse (*Mus musculus*), feral cat (*Felis catus*) and black rat (*Ratus ratus*). The feral cat is listed as a key threatening process under the EPBC Act (DEWHA, 2008b) and has been thought to have seriously affected populations of the bilby elsewhere in the state.

Quarantine controls and pest management plans will be implemented to avoid further introduction and reduce current populations of introduced fauna species in the James Price Point coastal area. Proponents of derived proposals will be required to prepare and implement a Quarantine Management Plan and a Fauna Management Plan prior to construction and these plans will need to be updated for ongoing operational requirements to prevent the introduction and reduce introduced fauna in the area.

Generic Question ID: 642 Sub ID [120] Raised by [S120 Q1285]

ENGO Submission: The James Price Point is an old pastoral lease that has not run cattle for some 15 years. It is therefore a very important area for the recovery of threatened species such as the Bilby, Golden-backed Tree Rat, Masked Owl, Golden Bandicoot, Dingo and Gouldian Finch. We understand that under the EPBC Act there is an obligation for developers to contribute to the recovery of a species. This proposal would result in a loss of 30km2 it would have a significant impact on the habitat of a number of threatened species including the Bilby.

DSD has committed to conduct further surveys at Quondong Point to establish the presence or otherwise of a greater bilby population and to determine the size and range of any population identified. Should surveys identify a viable established population of greater bilbies, the performance measure will be to:

- ensure the maintenance and protection of a viable bilby population at or better than the pre-development baseline population at Quondong Point, unless attributable to factors outside of the control of the State; and
- implement a management plan for the species which addresses management of access, feral animal

control and monitoring of populations.

The Plans will be prepared in accordance with relevant Threat Abatement Plans and the National Recovery Plan for the greater bilby.

In addition, the State Government has prepared a Kimberley Science and Conservation Strategy which aims to protect the region's natural and cultural heritage while allowing the region to fulfil its economic potential. This strategy identifies high value cultural and natural areas as priorities for protection and develops and implements marine, coastal and terrestrial conservation strategies. Extension of the reserve system on the Dampier Peninsula is being substantially progressed through negotiations with Traditional Owners.

Generic Question ID: 705 Sub ID [120] Raised by [S120 Q1478]

ENGO Submission: The presumption that the impact on local fauna populations will be minimal due to their general mobility (**Part 1** p. ES-72) does not recognise the impact that will be had on endemic, habitat-specific small reptiles including: Simoselaps minimus (Dampierland Burrowing Snake); and Lerista apada; which are known to inhabit areas of strong leaf litter and are only found within monsoon vine thickets on the Dampier Peninsula.

Extensive wet and dry season fauna studies have been completed in the James Price Point coastal area (**Part 4, Section 1.2**), in order to inform the baseline understanding and impact assessments presented in the Strategic Assessment Report (**SAR**).

Potential impacts from the development of the BLNG Precinct on the Priority 2 (Department of Environment and Conservation (**DEC**)) Dampierland Burrowing Snake (*Simoselaps minimus*) and the Priority 2 (**DEC**) Dampierland Plain Slider (*Lerista separanda*) are discussed in the Strategic Assessment Report (**SAR**) (**Part 4, Section 2.6.3**).

The Dampierland Burrowing Snake was recorded on a single occasion within the monsoon vine thicket during the Biota survey (2009b; **Appendix C-17**). The species is only known from the Dampier Peninsula but is likely to occur within a variety of habitat types including monsoon vine thickets, coastal communities and Pindan vegetation. The Dampierland Plain Slider was recorded from a single location within the Pindan vegetation on sandy soil within the James Price Point coastal area (Biota, 2009b; **Appendix C-17**).

The Proponent recognises that these species are of limited mobility and fragmentation of coastal vegetation habitats may isolate some individuals. However, due to the broader availability of these collective habitats and the presence of these species in other habitats outside of the direct area of disturbance, the BLNG Precinct development is not expected to have a significant local impact on populations of these species. It is proposed that proponents of derived proposals develop and implement a Fauna Management Plan, in consultation with DEC, which may include environmental management measures such as pre-clearing searches for conservation signification species (**Part 4, Section 2.6.4, Table 2.6-4**).

Generic Question ID: 806 Sub ID [75] Raised by [S75 Q858]

The SAR (**Part 1, p. E5-79**) states "numerous site management measures are already in place including a program to minimise disturbance to northern shores". There is no such program in place. A few years ago the Broome Bird Observatory undertook a study to identify factors which caused disturbance to birds. Subsequently some community education signs have been erected encouraging people not to disturb birds. Nothing else practical has occurred or is occurring.

It is acknowledged that there may have been limited work done to minimise disturbance to the northern shores. However, the State's commitment to establish a marine park in Roebuck Bay and the Proponents commitment to support the development of a management plan for Roebuck Bay will ensure that future programs will be identified and resourced as necessary.

Generic Question ID: 1174 Sub ID [122] Raised by [S122 Q2318]

In relation to the impacts of lighting, the submitter offers the following suggestions:

- Minimise the impact of lighting by:
    - Limiting the intensity and duration of lighting to that required for operations and safety.
    - If possible minimise gas flaring at night.
    - Install lighting so that it is directed downwards rather than upwards as much as possible.

- Use bird-friendly lights. Birds react most strongly to the red end of the colour spectrum.

Royal Philips Electronics and NAM (Nederlàndse Aardolie Maatschapp ij) have developed a new type of lighting, which radiates only a limited part of the spectrum and reduces the distraction to migrating birds. After a successful pilot on an offshore platform in the North Sea, the lighting is now being installed on the pier on the Dutch island of Ameland.

Monitoring of migrating shorebirds at the proposed Precinct:

Ideally a pilot study using the level of lighting proposed at the James Price Point Precinct should be conducted over at least a 12 month period, to examine the effect of the lighting on migrating shorebirds.

The potential impacts to terrestrial fauna and migratory birds due to light emissions are discussed in **Part 4, Section 2.6.3.4** of the Strategic Assessment Report (**SAR**). The SAR acknowledges that any potential impact on terrestrial fauna species due to light emissions is expected to be restricted to the BLNG Precinct site and immediate area. In a regional context, it is well established that the local area has relatively low significance as a summer feeding site for migratory shorebirds relative to other areas including Eighty Mile Beach and Roebuck Bay. The James Price Point area comprises a suite of species that are widespread and well-represented on the Dampier Peninsula (Galaxia, 2011; **Appendix C-1**), and the area is not regarded as primary habitat in comparison to other coastal areas and offshore islands. Therefore the significance of the residual impact of light emissions to terrestrial fauna including birds is assessed to be very low following the implementation of appropriate management and mitigation measures.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on fauna, including birds. Refer **SAR Part 4, Section 2.6.4** (Management Measures) for a complete summary. The SAR **Part 6** (in particular **Tables 3-3** and **3-4**) also outlines management arrangements for terrestrial species including birds.

The Proponent requires that future proponents of derived proposals prepare and implement a Visual Amenity Management Plan that addresses (among other items) "...*a lighting strategy to reduce light spill, sky glow and direct light from the BLNG Precinct infrastructure*", recognising that lighting management is of particular relevance to off-site visual amenity and social factors. It is reasonable to expect that this lighting strategy would provide commensurate benefits for other environmental factors in the local area of influence, including birds.

Generic Question ID: 1261 Sub ID [195] Raised by [S195 Q950]

Part 6 Section 2.2.3: The submitter is not sure how the study is done but has identified bird species that do not get a mention. Australian Bustard, Bush Stone Curlew, Beach Stone Curlew, Pied Oyster Catcher, Sooty Oyster catcher, Black necked Stork (Manari Lagoon), Grey Crowned Babbler. It is not known why these birds were left off or not seen but they are quite common. This is evidence of a rushed survey once again. Spend more than a couple of days up from the city and you will see even more if you are an expert.

A range of comprehensive fauna studies, inclusive of survey effort for terrestrial and migratory bird species, have been undertaken in the James Price Point coastal area and are listed in **Part 4, Section 1.2** of the Strategic Assessment Report (**SAR**). The studies undertaken include desktop, ground-truthing and aerial helicopter searches, with the reports noting both species recorded and potentially occurring. The potential occurrence of bird species was based on the presence of suitable habitats within the James Price Point coastal area and searches of the following databases:

- *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC**) Protected Matters database;
- Birds Australia (**BA**) Birdata Atlas and database (largely based on the BA Atlas of Australian Birds); and
- WA Museum (**WAM**) and Department of Environment and Conservation (**DEC**) NatureMap biodiversity mapping tool.

In regard to the bird species identified in this submission, a summary is provided below:

- Australian Bustard (DEC Priority 4) – While not recorded in the James Price Point coastal area, the SAR acknowledges that this species may potentially occur due to potential habitat being present (**Part 4, Section 1.4.5.5, Table 1-10**). This species is not a matter of National Environmental Significance (**NES**) as it is not listed under the EPBC Act. While this species was not recorded, the impact assessment conclusions and management framework presented in the SAR for birds remain valid.
- Bush-stone Curlew (DEC Priority 4) – This species was recorded in Pindan bushland habitat (**Appendix C-17**) and is not listed under the EPBC Act.
- Beach Stone-Curlew – One probable bird was recorded during the AECOM 2010b survey (**Appendix C-20**). This species is listed as Marine under the EPBC Act.

- Australian Pied Oyster Catcher – Recorded during the Biota 2009b (**Appendix C-17**) and AECOM 2010b (**Appendix C-20**) surveys. This species is listed as Migratory/ Marine under the EPBC Act.
- Sooty Oyster Catcher – Recorded during the aerial AECOM 2010b survey (**Appendix C-20**) survey. This species is listed as Migratory/ Marine under the EPBC Act.
- Black Necked Stork – This species was not recorded within the James Price Point coastal area and is not listed under the EPBC Act. While this species was not recorded, the impact assessment conclusions and management framework presented in the SAR for birds remain valid.

Grey Crowned Babbler – This terrestrial bird species was recorded during the Biota 2009b (**Appendix C-17**) and AECOM 2010b (**Appendix C-20**) surveys. This species is not listed under the EPBC Act.

Generic Question ID: 1299 Sub ID [195] Raised by [S195 Q955]

Part 6 Section 2 Commonwealth Matters: Up to 45 native species in Western Australia's Kimberley region will die out within 20 years if no action is taken, a CSIRO-led study says. It's called for an immediate cash injection of $95 million to save creatures, including the golden bandicoot, the scaly-tailed possum and the monjon rock wallaby from extinction."We're in the midst of an extinction event in Australia and the north has been the last stronghold for many native species of wildlife," says Dr Tara Martin, a CSIRO ecologist at the University of Queensland and co-author of the report. "Thirty per cent of the threatened species identified in our study are unique to the Kimberley region, while others, like the golden bandicoot, have already disappeared elsewhere in the country," she told Australian Geographic. "The Kimberley is really their last chance on earth". The report states that the golden bandicoot possibly exists in the James Price Point Area, monsoon vine thickets being a preferred and likely habitat. This vegetation makes up a large area around James Price Point, yet they propose to clear 138ha. On the 27th of Jan the Premier made a public undertaking to save the vine thickets. Is this a case of saying anything to get his way, he should be held to it. There are viable alternatives for this factory. Evidence of the Greater Bilby has been found just south of James Price Point, so they propose to clear 200ha for a 8000 man workers camp. Is this world's best practice? This is being driven by greed and the proposal should be rejected.

The SAR acknowledges that the Golden Bandicoot may possibly occur in the James Price Point coastal area, based on the presence of suitable habitat (monsoon vine thicket, drainage basin and Pindan vegetation). While suitable habitat for the Golden Bandicoot is present in the James Price Point coastal area, numerous fauna surveys conducted in the area have not recorded this species (**Part 4, Section 2.6.3.1**). The last DEC record was in 1971 from the Coulomb Point Nature Reserve (Biota, 2009b; **Appendix C-17**) and currently there are no known populations of the species on the Dampier Peninsula. Based on these records it is highly unlikely that a population of this species occurs within the James Price Point coastal area. Furthermore, after the construction of the BLNG Precinct over 88% of the habitat for the Golden Bandicoot within the local area would be retained (**Part 4, Section 2.6.3.1**). It should be noted that habitat clearing is not listed as a threat to the survival of the species, rather the most likely threats are predation by feral cats and changed fire regimes (DEWHA, 2010g).

While there is no conclusive evidence of Greater Bilby presence during the fauna surveys to date, some foraging holes were observed in recent surveys that may be indicative of this species, or could be varanid lizard holes (**Part 4, Section 2.6.3.1**). These foraging holes were recorded in the vicinity of the project area and south towards Quondong Point in Pindan shrubland. In recognition of this inconclusive evidence, the Proponent has proposed further targeted survey effort, in particular south towards Quondong Point (**refer Part 6, Table 3-3**) as management commitments. It is proposed that this survey effort would also include targeted searches for bilbies in the vicinity of the BLNG Precinct area, including within the proposed workers accommodation camp, to inform appropriate management commitments.

Some clearing of a proportion of the monsoon vine thicket Threatened Ecological Community (**TEC**) will be necessary to construct the shore crossing between the BLNG Precinct and the Port Facility, and the southern pipeline (as summarised in the Strategic Assessment Report (**SAR**) **Part 4, Section 2.4.3.1**). Clearing of this vegetation is unavoidable as it runs parallel to the shore line at the BLNG Precinct location behind the fore dunes. The clearing of up to 9% (or 4.9% using Department of Environment and Conservation (**DEC**) estimates) of the known extent of the monsoon vine thickets on the Dampier Peninsula, would not represent a significant impact or detrimentally affect the viability and representation of this community as more than 90% of the known extent of monsoon vine thickets will remain (**Part 4, Section 2.4.3.1**). The conservation significance of the vine thicket is recognised and was considered in the layout and design of the Precinct (including set-back of the majority of the infrastructure behind the coastal fringe) to minimise disturbance. The Proponent recognises the importance of managing direct and indirect impacts on the vine thicket. As such, a range of proposed measures have been outlined to manage these impacts to achieve acceptable outcomes, recognising that the vine thicket is subject to existing pressures (including fires, weeds and terrestrial introduced pests).

In response to the final point raised in this submission, a rigorous site selection process was undertaken by the

State Government which considered a range of development options including floating LNG and sites in the Pilbara and Darwin, in addition to 43 sites in the Kimberley. Following extensive technical, environmental and social studies, James Price Point was selected as the most suitable location. In recognition of this as a theme comment, further details regarding the process and rationale to inform the site selection process is provided in **Section 4.2** of the Response to Submissions Summary Report.

2.7 Relevant Factor: Terrestrial Ecosystem Integrity

Generic Question ID: 695 Sub ID [120, 182] Raised by [S120 Q1466]

ENGO Submission: The area, ecosystems and species remains poorly known and a number of conclusions in the SAR seek to diminish the potential impact of the proposed development upon the threatened ecological community - monsoon vine thicket; the priority ecological community - dwarf pindan heath; the identified community at risk - drainage basin vegetation; as well as threatened terrestrial species and their associated habitat.

As part of the site selection process and assessment phase for the Precinct Strategic Assessment, a range of flora and fauna studies (**Part 4, Section 1.2**) were undertaken to inform the environmental assessment process and support decision-making. These studies sought to build on historical botanical, zoological, hydrological and hydrogeological knowledge of the area (**Part 4, Section 1.2**) and were provided as Appendices to the SAR.

In finalising the BLNG Precinct layout at James Price Point, consideration was given to avoiding impacts to coastal vegetation by setting all processing activities back from the coast with a minimum 1.5km set-back between the industrial blocks and the Port Facility. The coastal set back was designed to minimise the impact on monsoon vine thicket that exists along the coast, minimise impacts on the coastal dune system and avoid direct impacts on James Price Point itself which has environmental, landscape, recreation and heritage values **(Part 6, Section 3.4).**

The Proponent recognises the importance of conservation significant vegetation communities within the James Price Point area and has committed to minimise indirect impacts of the development and will work with proponents of derived proposals to achieve this through all phases of project development. The SAR identifies sources of potential indirect impacts to the monsoon vine thicket TEC, which include altered surface and groundwater flows and quality, fragmentation and edge effects, weed invasion and altered fire regimes (**Part 4, Section 2.7.4**). The Proponent recognises that monitoring and management of these impacts on conservation significant vegetation types, particularly the monsoon vine thicket TEC and drainage basin, together with coastal heath and coastal communities, is of primary importance.

The proposed Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**) to be developed in consultation with DEC will provide a management framework for proponents of derived proposals. The effectiveness of this strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones. Annual reporting on the success of this program is to be made publicly available, providing transparency of the process. In addition, a Vegetation Monitoring Program (**VMP**) has been initiated to collect baseline data at selected sites considered to be at risk of indirect impacts from the proposed Browse LNG development. This program is expected to continue throughout the planning, construction and operational period of this project. Further development of the VMP will be undertaken in consultation with DEC.

Generic Question ID: 250 Sub ID [64] Raised by [S64 Q672]

DEC Recommendation 35 (4): That the Proponent provides further details and information on all prescribed activities that may produce emissions which are discharged to the terrestrial environment.

Discussion: **Section 8.2** references a range of management measures that would be applied to mitigate potential impacts on soils and geomorphology and includes provision of a Waste Management Plan and a Construction Environmental Management Plan (**CEMP**) that may include management measures for presence or absence of acid sulphate soils and dust suppression techniques. **Table 8-4** indicates Terrestrial Wastes and Discharges with examples of mitigation measures such as impermeable bunding and capture of emergency discharges.

Contaminated soils occurring on site generally require remediation at a dedicated facility which can be constructed and then operated on site but will require a works approval for construction. A Waste Management Plan may indicate a requirement for a landfill on site which will need both a works approval and licence. Any acid sulphate soils would need to be assessed by DEC.

These **Part 2** and **Part 4** sections note that the proposal has the potential to impact the marine environment and **Part 1**, **Tables 8-5** to **8-10** identify the significance of potential terrestrial impacts and mitigation measures.

Limited information is provided on mitigating measures and DEC cannot provide an assessment of likely

environmental impacts from emissions.

The information presented in the SAR is relevant to a strategic proposal of the LNG Precinct, to inform the impact assessment and management framework relevant at this stage of project development. The Proponent acknowledges that, subsequent to the environmental approvals process under Part IV of the EP Act, there remains a requirement for works approvals and environmental licences under Part V of the Act. This is a future process during which proponents of derived proposals will be expected to engage with DEC as final details on emissions, discharges and wastes are characterised appropriate at that stage of project development.

In relation to Acid Sulphate Soils (**ASS**), while the likelihood of their presence in the vicinity of the BLNG Precinct is considered to be low, proposed geotechnical investigations by proponents of derived proposals may identify areas of Potential Acid Sulphate Soils (**PASS**). If identified, the excavation and management of ASS material would be addressed through a proposed Construction Environmental Management Plan (**CEMP**) which would be expected to be effective in managing potential impacts to the surrounding environment. If excavation below the water table of PASS materials was required, then proponents of derived proposals would need to demonstrate that any acid generating potential would be neutralised. This information would be provided in a CEMP as part of the derived proposal process. Management of ASS/PASS would be undertaken in consultation with DEC.

Proponents of derived proposals will be required to seek appropriate licences and permits through the relevant authorities for management of waste on and off site, including works approvals and licensing provisions under Part V of the EP Act. Further consideration of waste and ASS/PASS requirements will be undertaken by proponents of derived proposals during development of their specific proposals within the BLNG Precinct.

Generic Question ID: 867 Sub ID [120] Raised by [S120 Q1475]

ENGO Submission: Given that monsoon vine thickets close to human use areas have already exhibited a high susceptibility to weed invasion, despite the Kimberley region being relatively free of many introduced weeds (in comparison to other areas of Australia), it is highly probable that the clearance and compromised ecosystem integrity will provide sufficient opportunity for the invasion of new weeds and an increased extent of existing weeds.

It is recognised that introduced flora species pose a significant threat to the vegetation communities of the Kimberley region. Refer to **Part 4, Section 1.4** for a complete summary of introduced flora and threats at a regional and local context.

The Strategic Assessment Report (**SAR**) identifies sources of potential indirect impacts to the monsoon vine thicket Threatened Ecological Community (**TEC**), which include weed invasion in addition to altered surface and groundwater flows and quality, fragmentation and edge effects, and altered fire regimes (**Part 4, Section 2.7.4**).

The Proponent recognises that monitoring and management of indirect impacts on the monsoon vine thicket TEC is of primary importance. The proposed Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance (**Part 4, Section 2.4.4, Table 2.4-6**), to be developed in consultation with DEC, will provide a management framework for proponents of derived proposals which will include the development of a Terrestrial Weed Management Plan. The effectiveness of this strategy will be measured via condition and health monitoring of a defined area within and surrounding the BLNG Precinct area and associated buffer zones.

2.8 Relevant Factor: Air Quality

Generic Question ID: 203 Sub ID [24, 28, 32, 36, 42, 45, 48, 62, 77, 85, 91, 94, 95, 96, 97, 98, 105, 118, 132, 134, 141, 159, 211] Raised by [S211 Q1019]

No baseline studies have been undertaken into air quality at James Price Point. Predicted benzene levels are in exceedance of NSW modelling guidelines.

Baseline monitoring is currently being undertaken at James Price Point for surface meteorology and airborne particulate matter and passive sampling for VOCs. Baseline monitoring is limited by the remote nature of the site and the lack of infrastructure such as electrical power at the site. More comprehensive monitoring studies will become possible as the Precinct and ancillary facilities are developed.

The SAR Air Quality Study identified a risk that ambient benzene concentrations may exceed guidelines, especially during condensate ship-loading. As this risk has been identified at the strategic assessment stage, assessments of future Derived Proposals will be required to develop specific measures to ensure that benzene emissions are managed and minimised.

Generic Question ID: 133 Sub ID [21, 28, 47, 54, 75, 95, 100, 114, 130, 133, 136, 142, 144, 148, 222, 294] Raised by [S21 Q145]

Air pollution will be significant, including the emission of toxic and carcinogenic gases such as benzene and toluene polluting the environment. Coastal winds at certain times of year will carry them over Broome.

The purpose of the SAR is to identify these emissions at a strategic level and show, where possible, that they will not result in or contribute to unacceptable impacts on local and regional air quality. The modelling undertaken for the SAR was based on a full 12 months of historic winds that include coastal winds. This work has shown that the Browse LNG Precinct will not contribute to any exceedances of air quality standards including carcinogenic gases such as toluene at Broome. Furthermore the modelling shows that the Browse LNG Precinct won't contribute to the exceedance of air quality anywhere, except for benzene and toluene adjacent to the buffer zone and hydrogen sulphide from an odour (not health) perspective. It should be noted that, although the PM2.5 criteria was exceeded this was due to bushfires, with the Precinct contributing no more than 2% of the criteria.

For some emissions, such as benzene in particular, ground-level concentrations outside the Precinct buffer zones do have potential to be significant unless particular management measures are developed. Any and all derived proposals under the SAR will be required to show how these issues will be addressed by the particular engineering design.

The presentation of air quality study results in **Part 4**, **Section 2.8** and **Appendix C-25** concentrates on the locations of predicted maximum concentrations and the conditions that lead to them. The study also showed that ground-level concentrations of air toxic species are much lower at greater distances from the Precinct and, in particular, predicted concentrations at Broome due to emissions from the Precinct would be very much smaller than the contributions from common domestic and commercial sources.

Generic Question ID: 37 Sub ID [4, 16, 27, 55, 56, 211, 49, 120, 160, 292, 293] Raised by [S4 Q55]

Over its lifetime, the Precinct will result in the production of millions of tonnes of toxic and noxious airborne and marine pollutants (in addition to greenhouse gas) with far-reaching impacts for surrounding communities and ecosystems. These impacts are not adequately addressed in the Strategic Assessment report.

Table 5-12 in **Part 2** of the SAR outlines the predicted maximum emissions from the full 50Mtpa LNG precinct. An excerpt of that table is produced below:

Emissions CO (tpa)	**NOx(tpa)**	**SO2(tpa)**	**VOC tpa)**	**BTEX (tpa)**	**PM (tpa)**	**NO2(tpa)**	**CH4(tpa)**
Total emissions (tpa) 6,400	**18,000**	**4,600**	**4,000**	**1,600**	**2,060**	**18,000**	**9,600**

The SAR addresses the impacts of those emissions believed to be of most significance, whether by the volume of emissions (such as airborne particulate matter and NOX) or by toxicity (such as benzene, being representative of air toxic species).

The SAR studies have shown that impacts on air quality generally meet the relevant assessment criteria (SAR **Part 4, Section 2.8.3.3, Table 2.8-7**), with the exception of benzene, H2S and toluene, which slightly exceeded the assessment criteria as described in the SAR **Part 4, Section 2.8.3.4**. However, all the assessment criteria are met at sensitive receptors. The SAR did identify that derived proposals will need to incorporate specific measures to monitor, manage and minimise benzene emissions, from condensate ship-loading in particular.

A large emission does not automatically lead to a large impact on the environment and air quality. In the environment, substances break down and do not remain indefinitely. For example, benzene is a carcinogen and has exposure standards set accordingly but it also breaks down within days in soil (cf NPI fact sheet). Benzene is also a precursor for photochemical smog, yet that also means that it does not remain indefinitely in the environment.

Generic Question ID: 164 Sub ID [27, 161, 216, 120, 87, 96, 235] Raised by [S27 Q225]

The Australian government does not have air quality standards for the protection of public health. Benzene and VOCs and many of the chemicals used in LNG processing have not been assessed for long term human health or environmental impacts.

Air quality criteria are discussed in the SAR **Part 4**, **Section 2.8.1.1**, and in more detail in **Section 4.2**. The Australian National Environmental Protection Measure (**NEPM**) for Air Toxics prescribes an “investigation level” for benzene of 3ppb (annual average) but this is intended to facilitate gathering of information and is not directly related to any health criteria. As such, the SAR adopted the European limit value for benzene of 5µg/m3 or approximately 1.5ppb (annual average), which is defined as the “limit value for protection of human health”.

Although operations at an industrial facility may include handling and use of a large number of chemicals, in practice very few are handled or released in such a manner that they will be dispersed widely and present a

hazard to the surrounding environment and population. Some emissions are likely to be transported off-site in significant concentrations, in particular combustion emissions from plant such as gas turbines, flares and other plant such as thermal oxidisers. These sources are identified and emissions addressed explicitly in the SAR air quality assessment. For other substances, routine observance of safe working practice with reference to Materials Safety Data Sheets (MSDSs) ensure that the working environment is kept safe, and effective land-use planning with application of buffer zones ensure that industrial activities are kept separate from the general population. In addition, the relatively remote location of the BLNG Precinct at James Price Point serves to protect the local population centres and residences.

Generic Question ID: 534 Sub ID [27, 65, 212, 198, 164, 123] Raised by [S27 Q224]

A major concern is the air pollution threat and whether regulatory measures to monitor pollution levels will be complied and enforced. If it goes ahead, the Kimberley gas hub will be by far the largest source of industrial emissions in Australia and widespread Kimberley communities (Broome to Beagle Bay) will be exposed to massive amounts of air pollution - noxious and toxic gas emissions that include volatile organic compounds (**V0C**s), benzene, toluene, ethylbenzene and xylenes. This, combined with annual dry season bush-fire events and huge wet seasons occurring across northern Australia, will create an extremely hazardous toxic cocktail for the people who live in the region, many of whom are already vulnerable with compromised health.

As outlined in the SAR (**Section 2.8** in **Part 4** and **Appendix C-25**) no air quality standards are predicted to be exceeded for any identified sensitive receptors (due to emissions from the proposed Browse LNG Precinct). In fact, existing emission sources (both natural and anthropogenic) are far more significant than any contribution from the proposed Precinct (refer to **Table 8.1** and **Table 8.5** in **Appendix C-25**). The largest single increase is for ozone which is predicted to increase by 8% at the assumed site for the Browse LNG Precinct workers accommodation.

Operators of facilities within the Browse LNG Precinct will be required by law to comply with all environmental licence conditions, as determined by secondary approvals under Part V of the *Environmental Protection Act 1986*. Monitoring of industrial air emissions is a common feature of contemporary environmental licence conditions and compliance is routine for both operators and regulators. Cooperative efforts to monitor ambient air quality have also been successful for many years at industrial estates in Western Australia, and a similar or better standard of environmental performance will be expected at the Browse LNG Precinct.

In accordance with Western Australian environmental legislation, and consistent with a commitment to best practise in design, derived proposals under the SAR will be required to minimise emissions to the greatest extent practicable. Nevertheless, the SAR has identified a risk that emissions of benzene, as representative air toxic substances, may lead to increased ambient concentrations outside, but immediately adjacent to the Precinct buffer zones, especially during condensate ship-loading. Any and all derived proposals under the SAR will be required to incorporate specific measures to monitor, manage and minimise emissions of benzene and other air toxics.

However, the air quality modelling study presented in **Appendix C-25** also showed that ground-level concentrations of air toxic species are much lower at greater distances from the Precinct and, in particular, predicted concentrations at Broome due to emissions from the Precinct would be very much smaller than the contributions from common domestic and commercial sources.

The primary means of protecting vulnerable members of the population, such as children and the elderly, from chronic effects of industrial emissions is land-use planning. Buffer zones around heavy industrial zones protect the local population, including the workforce while off-duty, from more than occasional and short-term exposures. In addition to the two and three kilometre buffer zones around the LNG Precinct, James Price Point is relatively remote from local population centres, lying more than 25 kilometres from the nearest residences at Willy Creek and 50 and 75 kilometres respectively from the larger centres of Broome and Beagle Bay.

Generic Question ID: 365 Sub ID [70, 161, 106] Raised by [S161 Q797]

ACE is concerned that the impacts of toxic chemical emissions on children, the elderly and Indigenous communities have not been adequately accounted for or assessed in the SAR.

The SAR incorporates a high level discussion of human health impacts as part of the Social Impact Assessment, **Part 5, Section 4.9**. Toxic chemical and other air emissions from industrial sources such as those at the BLNG Precinct are one set of factors that would be considered in a full health impact study, which would also include exposure to pollutants through other pathways, such as ingestion and contact, and for the full range of physical and social factors that can impact human health. Health impacts are discussed further **Section 4.7.7** of the Response to Submissions Summary Report.

The primary means of protecting the most vulnerable sectors of the population, such as children, the elderly and others with already compromised health, from being further affected by industrial emissions is by moving the

industrial emissions away from the population centres where the most vulnerable people are. This is achieved by establishing buffer zones around industrial precincts through land-use planning and also, as for the BLNG Precinct near James Price Point, by establishing industrial precincts in relatively remote locations many kilometres from residences.

Generic Question ID: 361 Sub ID [161, 120, 78] Raised by [S161 Q793]

ACE Submission: ACE suggests that it is unacceptable to impose a further burden on a regional air-shed that is already close to being compromised. The BLNG Precinct Proposal should not proceed until a reliable baseline ambient air study is undertaken, and specific pollution control measures to reduce air toxics are addressed.

In the absence of relevant local air quality monitoring data, the SAR air quality assessment utilised a modelling study to provide estimates of concentrations of pollutant species in the existing environment. These results are summarised in the SAR **Part 4**, **Section 2.8.3** and **Table 2.8-5**. While these results suggest that elevated concentrations of some pollutant species can occur (specifically nitrogen dioxide and ozone) due to existing sources, this does not imply that the regional air-shed is "close to being compromised".

By far the greatest source of air emissions in the existing air quality environment is bushfires. The incidence of bushfires is largely random, short term, and at varying locations. Baseline monitoring air quality studies are currently severely hampered by the lack of power and infrastructure at James Price Point. Better data will be able to be collected as the site is developed.

While this strategic level assessment can identify relevant environmental issues, specific pollution control measures to eliminate or otherwise minimise emissions of air toxics will be developed as part of the detailed design of derived proposals under the SAR.

Generic Question ID: 711 Sub ID [70, 120, 222] Raised by [S120 Q1495]

ENGO Submission: One of the major concerns that emerge from very large energy producing/consuming proposals is the release of ozone/photochemical smog precursors, total volatile organic compounds and oxides of nitrogen.

The SAR identifies oxides of nitrogen (**NOX**), volatile organic compounds (**VOC**s) and some air toxic species as emissions of concern for local and regional air quality. The Air Quality Assessment (**Part 4**, **Section 2.8**) has shown that air emissions from the full 50Mtpa capacity BLNG Precinct will make only a very small contribution to cumulative maximum concentrations of photochemical smog and nitrogen dioxide across the region.

The assessment is based on an air pollution modelling study (**Appendix C-25**), which used conservative (i.e. high) estimates of air emissions to ensure that the maximum potential impacts were identified. Ozone and NO2 standards were not exceeded at sensitive receptors (i.e. places where people live).

Generic Question ID: 731 Sub ID [70, 107, 216] Raised by [S70 Q605]

The SAR makes no mention of the common morning fogs in Broome in the Dry Season. These come from the sea, are heavy enough to stop aircraft from landing, and may bring in pollutants driven out to sea by strong easterlies on the day before.

Theoretically, it is possible that industrial emissions might contribute to morning fog formation by providing fine airborne particulate matter as additional condensation nuclei above those present in the natural background. In fact, however, the SAR air quality assessment demonstrates that potential particulate emissions from the Precinct are very small and contribution to cumulative particulate levels is negligible, as shown in **Figure 2.8-13** of the **SAR Part 4, Section 2.8.3.3**. Consequently the Precinct is predicted to have negligible effect on the incidence of morning fogs.

The SAR air quality modelling study (**Appendix C-25)** made use of a sophisticated air dispersion model that explicitly models local and regional wind patterns. Consequently, the cumulative air quality impacts discussed in the **SAR Part 4, Section 2.8.3.3**, do incorporate the potential for recirculation of air emissions.

Generic Question ID: 947 Sub ID [212, 198, 87] Raised by [S198 Q1825]

Part 4 Section 2.8.3.4: The following three quotes state that the pollutant benzene will exceed all criteria and concentration levels from the BLNG Precinct:

- "Conservative local modelling predicts that impacts for all pollutants from the LNG Precinct are predicted to be well within the adopted criteria except for benzene, H2S and to a lesser degree toluene.";
- "Predictions indicate that benzene concentrations would be well in excess of the adopted short-term

modelling guideline."

- "Annual benzene concentrations were predicted to just exceed the annual criteria (5.5µg/m3 or 110% of the European standard) outside the south west corner of the Precinct buffer.".

Can this be clarified further? Benzene exposure has serious health effects. The American Petroleum Institute (**API**) stated in 1948 that "it is generally considered that the only absolutely safe concentration for benzene is zero." The US Department of Health and Human Services (**DHHS**) classifies benzene as a human carcinogen. Long-term exposure to excessive levels of benzene in the air causes leukaemia, a potentially fatal cancer of the blood-forming organs, in susceptible individuals. In particular, Acute myeloid leukaemia or acute non-lymphocytic leukaemia (**AML** & **ANLL**) is not disputed to be caused by benzene. International Agency for Research on Cancer rated benzene as "known to be carcinogenic to humans". Source Wikipedia

Based on the range of possible plant designs and calculated estimates of air emissions, the SAR air quality assessment showed that the adopted assessment criteria for benzene, toluene and hydrogen sulphide may be exceeded at some locations outside the proposed Browse LNG Precinct buffer zone. Consequently, any and all derived proposals under the SAR must demonstrate that the particular proposed facility is designed and will be operated so that assessment criteria will not in fact be exceeded and air quality impacts will not in fact be unacceptable.

The SAR air quality modelling was conservative in the sense that the modelling study made assumptions that would tend to over-estimate emissions and associated impacts rather than under-estimate them. Also, a range of likely LNG processing technologies was considered and the assessment framed in terms of a plant configuration that would lead to a high rather than low level of emissions. This is sound practice in any environmental assessment to ensure that worst-cases are properly identified.

It is not possible for a strategic assessment to address the detailed design of particular facilities that may be proposed at a later date. It is also not desirable, since to do so would limit the design options available and might prevent the best solution being identified and implemented.

It is acknowledged that, as a known carcinogen, there are no declared "safe levels" for benzene. Rather, public health studies seek to quantify health risks due to exposure to benzene from all sources and all pathways (inhalation, ingestion, contact). Guidelines for long-term average airborne concentrations are one means to manage the total health risk while recognising that achieving zero exposure over a lifetime is not possible given common background sources such as service stations, motor vehicle exhausts and both active and passive smoking. Human health impacts are discussed at a high level in the SAR **Part 5**, **Section 4.9**, which summarises the state of knowledge of population health in the Kimberley region.

As such, the SAR does not seek to argue the 'safe' concentration of benzene. A guideline concentration was adopted as an assessment criteria, which then determined that exceedances of ground-level concentrations of benzene could occur immediately adjacent to the proposed Precinct buffer zones during some plant operations. Subsequently, all derived proposals under the SAR must demonstrate that the particular proposed facility is designed and will be operated so that assessment criteria will not in fact be exceeded.

Generic Question ID: 87 Sub ID [2, 73] Raised by [S2 Q43]

In 2008 the EPA acknowledged that the emissions from any LNG development at North Head would affect nearby settlements. The decision to locate an industrial development at JPP has now transferred that risk to the nearby settlements of Beagle Bay and Broome. Derby should also be considered within the zone of influence.

The EPA provided advice under Section 16e of the *Environmental Protection Act 1986* on short-listed sites for the proposed Kimberley LNG Precinct in Report 1306 of December 2008. The EPA did not recommend development at North Head, in part because of the potential for nearby settlements, including Beagle Bay, to be affected by emissions from the proposed LNG Precinct. In the same report the EPA found that, of the sites considered on the Dampier Peninsula, James Price Point was the least likely to be environmentally constrained, in part because of the greater distance from permanent human settlements. In particular, James Price Point is 80km distant from Beagle Bay and 150km from Derby.

The Air Quality Study conducted as part of the SAR included modelling of air emissions and their likely impact on sensitive receptor locations including Broome and Beagle Bay. The results are summarised in **Part 4**, **Section 2.8**, with full details included as **Appendix C-25**. Predicted pollutant concentrations from the proposed development were not large at these locations and did not exceed relevant air quality standards for the protection of human health and well-being. For further information on the relevant air quality standards, refer to **SAR Part 4, Section 2.8.1.1**, in particular **Tables 2.8-1** and **2.8-2**.

Although not addressed directly, it is clear from the modelling results that Derby is sufficiently far from James Price Point that the contribution of emissions from the proposed LNG Precinct are not anticipated to result in unacceptable impacts. The SAR outlines a range of management measures and commitments to ensure that

emissions are actively managed, monitored and reported by commercial proponents operating within the LNG Precinct.

Possible relevant links to the SAR:

In development, currently only linking to start of each document;

http://public-consult.epa.wa.gov.au/portal/browse-lng/sap?pointId=75409

http://public-consult.epa.wa.gov.au/portal/browse-lng/sap?pointId=75409

http://public-consult.epa.wa.gov.au/portal/browse-lng/sap?pointId=d21064e13#section-d21064e13

http://public-consult.epa.wa.gov.au/portal/browse-lng/eiam?pointId=74429

http://public-consult.epa.wa.gov.au/portal/browse-lng/eiat?pointId=73748

http://public-consult.epa.wa.gov.au/portal/browse-lng/sia?pointId=74081

http://public-consult.epa.wa.gov.au/portal/browse-lng/com?pointId=73713

Generic Question ID: 356 Sub ID [161, 120] Raised by [S161 Q788]

ACE Submission: ACE believes that the current modelling is on too tight a regional scale and does not appear to address air quality issues like ozone over areas such as Derby, which is downwind of the facility if the average wind directions are observed.

The regional scale air quality modelling study, as documented in **Appendix C-25**, used a computer model that calculates pollutant concentrations on a series of nested grids of progressively finer resolution. The figures presented in the SAR (**Part 4**, **Section 2.8.5**) show most of the inner-most model grid, with the finest resolution. The outer-most model grid extends across most of north Western Australia and well beyond Derby. The inner-most model grid is designed to be large enough to include the highest ground-level concentrations and this fact is routinely confirmed as part of analysing the modelling results.

The summary figures for the regional scale modelling presented in the SAR are of approximately the same extent as the inner-most modelling grid and include all the maximum predicted concentrations. Derby is included in the second inner-most modelling grid and predicted concentrations there were not large compared to any of those presented in the SAR. Further description of the modelling work is presented in **Appendix C-25** of the SAR.

Generic Question ID: 506 Sub ID [232, 197] Raised by [S232 Q1371]

The Indigenous members on the Dampier Peninsula are concerned about their air quality and wonder how the continual pollution output from the Browse LNG Precinct is to be managed? It is not right to say pollution from bushfires is worse, as these events only happen a couple of times a year. How can the emissions from the odd bushfire be more than that from a massive, noxious, polluting gas plant right on our doorstep?

Pollutant emissions will be managed primarily by applying best practice design to the plant so that emissions are eliminated where practicable and otherwise minimised so that unacceptable impact do not occur.

To properly understand environmental impacts, it is important that the total pollutant concentrations to which people may be exposed is identified, so the contribution of emissions from an industrial project must be combined with emissions from existing sources, such as bushfires. The SAR air quality modelling study is designed to identify the maximum concentrations of pollutants that might occur by modelling pollutant sources as if they are operating at a high level through the year, so that the "worst-case" combination of emissions and meteorological conditions can be identified. Emissions from the Precinct are not "okay because bushfires are worse" but the SAR does show that the total change by adding the Precinct emissions is relatively very small.

Short-term averages are not always the most relevant for human or environmental health. Modelling study results for pollutants such as nitrogen dioxide and benzene were also compared against longer-term, annual average assessment criteria. These were not exceeded, which indicates that the impacts are manageable.

Generic Question ID: 734 Sub ID [70, 75] Raised by [S75 Q851]

Bushfires do certainly rage occasionally, but generally for no more than a few days in the late Dry Season. There have been years with quite ferocious fires nearby (perhaps the study year of 2006 was one of them?), but this is not normal in the Broome area. The submitter understands that the fire authorities are totally aware of the need for small cool control fires after heavy wet seasons such as the most recent one, and that this is now the preferred fire regime. The submitter questions the assessment that short term bushfires would pose more air pollution dangers than the constant emissions from BLNG Precinct when some of the gases which would be emitted have no safe thresholds for health.

One reason for selecting 2006 as the study year for modelling was the availability of data on fires for that year from other studies. The air quality study addresses the representativeness of 2006 in SAR **Appendix C-25** in **Section 3.5.6**, and concludes that 2006 was a year with well above average land area burned for the Pilbara and was a slightly above average year for the Kimberley. This is important for the air quality assessment, not because it inflates the contribution from bushfires but because it will lead to a conservative (i.e. high) estimate of cumulative concentrations. It is only prudent that air quality assessments tend to assess the high side when estimating air emissions and resulting ground-level concentrations.

The detailed report of the air quality study presented in SAR **Appendix C-25** includes modelling results for impacts due to: the full 50Mtpa BLNG Precinct in isolation; for existing sources (mainly bushfires) only; and for the cumulative impacts of both sets of emissions combined. These show the relative contribution from each set of sources, and demonstrates that the addition of the BLNG Precinct would lead to only a very small increase in the maximum concentrations predicted across the region.

Generic Question ID: 826 Sub ID [198, 212] Raised by [S198 Q1826]

Part 4 Section 2.8.5.1: It is stated that ground-level pollution concentrations in the area surrounding the BLNG Precinct are anticipated to be low for most of the year and unlikely to give rise to adverse air quality or amenity issues. What about the impact in the other part of the year? Is that when it is likely to give rise to adverse air quality or amenity issues beyond the boundary?

Part 4 Section 2.8.5.1 goes on to state that ground-level concentrations at sensitive receptor locations will be well within adopted air quality criteria, with the exception of benzene and H2S. The SAR is clarifying that the concentrations presented in figures and tables are the maximum concentrations that occur at each location, and that those elevated concentrations do not occur all the time. For most of the time, concentrations will be at or near the background levels due to existing and natural sources. The modelling shows that there are times when ground-level concentrations will be higher but not so high that they are likely to cause adverse air quality or amenity issues. Average concentrations (also presented in the SAR and **Appendix C-25**) are significantly below the maximum concentrations.

As stated, the exceptions are for benzene and for H2S odour, which will be required by EPA and the Department of Environment and Conservation to be managed to a satisfactory standard by any derived proposal under the SAR.

Generic Question ID: 827 Sub ID [212, 198] Raised by [S198 Q1827]

Part 4 Section 2.8.5.1: The Strategic Assessment Report states that the air emissions from the BLNG Precinct will be well within adopted air quality criteria, with the exception of benzene and H2S. So what are they going to do about the benzene?

At a strategic level the SAR air quality study has identified that benzene and H2S emissions from the LNG Precinct have potential to cause elevated ground-level concentrations beyond the Precinct buffer zone (**Part 4 Table 2.8-9**). This finding is based on reasonable and conservative (i.e. high) assumptions, such as the likely composition of feed gas, the variety of LNG technology that might be employed within the Precinct and the manner in which that plant might be operated.

Now that these issues have been identified by the SAR, it will be incumbent on all proponents of derived proposals under the SAR to demonstrate that their particular proposal is designed and will be managed to ensure that unacceptable air quality impacts will not occur. This aspect will be further addressed by:

- submission of a derived proposal by potential future proponents of the Precinct demonstrating how benzene and H2S will be minimised to levels acceptable to the EPA and DEC;
- preparation of an Air Quality Management Plan (see **Table 2.8-12, Part 4 of the SAR**);
- Works Approvals under Part V of the WA EP Act, requiring prescribed activities to achieve appropriate air quality criteria to the satisfaction of DEC prior to commencement of construction; and
- licensing arrangements for prescribed premises under the WA EP Act which will prescribe emission limits and monitoring requirements for emissions such as benzene and H2S.

Generic Question ID: 829 Sub ID [198, 212] Raised by [S198 Q1829]

Part 4, **Section 2.8.6.2**, **Table 2.8-13**: Why would the EPA or an independent company not be responsible for generating air monitoring results and an emissions control performance Annual Report for the BLNG Precinct, so as to ensure transparency and not create bias?

Under Western Australian law it is the occupier of prescribed premises and the owner of industrial plant that is

responsible for ensuring that environmental harm does not occur due to emissions. Applying a "polluter pays" principle, environmental licence conditions commonly require the licensee to undertake monitoring of process emissions or of the ambient environment, employing relevant standard monitoring and audit procedures to maintain quality assurance and control. Data collected in this way has been used successfully to regulate industry, up to the point of supporting prosecutions where required. Examples include Kalgoorlie, Collie and the Kwinana industrial area.

Generic Question ID: 830 Sub ID [198, 212] Raised by [S198 Q1830]

Part 4, **Section 2.8.6.2**, **Table 2.8-13**: Will an emissions monitoring programme definitely include nitrogen compounds, BTEX, and hydrogen sulphide emissions from the BLNG Precinct? This plant should not go ahead until such monitoring programmes have included these emissions.

Referrals of derived proposals under the SAR will include provisional environmental management plans including one for air quality, addressing emissions and ambient air monitoring. The provisional air quality management plan will provide for source and ambient monitoring to demonstrate that the proposed Downstream Project is consistent with the SAR and that environmental targets are being achieved.

Generic Question ID: 831 Sub ID [212, 198] Raised by [S198 Q1831]

Part 4, **Section 2.8.6.2**, **Table 2.8-13**: With regard to "demonstration that cumulative emissions from multiple premises in the BLNG Precinct will comply with NEPM standards outside buffer zones", what is meant by 'multiple premises'?

The Precinct is intended to facilitate a minimum of two LNG facilities producing up to 50Mtpa of LNG. In this context each 'premises' refers to a discrete LNG project operating within the Precinct.

Generic Question ID: 945 Sub ID [212, 198] Raised by [S198 Q1820]

Part 4 Section 2.8.1.2: There is concern about air quality implications when the BLNG Precinct is in operation. Is the low frequency of northerly winds an acceptable risk? What if there is a longer occurrence of unfavourable winds? What will be the health affects on the surrounding communities?

The air quality assessment (SAR **Part 4**, **Section 2.8** and **Appendix C-25**) incorporated a modelling study of air emissions from the Precinct. The study modelled the dispersion of emissions for a full typical year and for the highest likely emissions scenario so as to identify the maximum ground-level concentrations of pollutants under all wind conditions. For the particular case of northerly winds, the distance of the Precinct from local population centres means that higher concentrations than these maximums will not occur.

Human health impacts are discussed in the SAR **Part 5**, **Section 4.9**. With respect to air emissions from the LNG Precinct, the SAR air quality assessment has shown that air quality standards are not exceeded at the sensitive receptors representing population centres and residences.

Generic Question ID: 251 Sub ID [64] Raised by [S64 Q673]

DEC Recommendation 36 (5): That the Proponent provides further details and information on all prescribed activities that may produce air emissions which are discharged to the environment.

Discussion: **Part 1 Section 8.2.8** indicates that atmospheric emissions from the construction and operation of the Precinct have the potential to reduce ambient air quality adjacent to the Precinct, and which could affect human health, amenity and environmental values. **Part 1Table 8-11** provides references to mitigation measures from dust and gaseous emissions but gives no technical specifications, so DEC cannot assess likely environmental impacts from emissions. It is likely that during the approvals process all air quality emissions will be reviewed and assessed by DEC prior to construction and operation.

It is inherent in the nature of a strategic assessment that precise details of future proposals may not be known. That said, the Strategic Assessment Report does contain a full project description (**Part 2**, **Section 5**) regarding likely project characteristics including predicted emissions, used to inform the impact assessment and environmental safeguards, to provide confidence in the impact assessment conclusions and predicted environmental outcomes.

The SAR air quality assessment is based on reasonable assumptions of the range of LNG processing technology available to future tenants of the Precinct. The detailed report of the Air Quality Assessment is presented in **Appendix C-25**, which provides details of the expected emissions from the plant. Specific details of particular plant and technology will be provided at the referral stage of future derived proposals of the SAR. The best practice hierarchy of controls will seek to minimise or eliminate emissions at the early design phase.

The air quality assessment present in **Part 4, Section 2.8**, has shown that the most significant air emissions will

arise during commissioning and operation of an LNG facility. Activities and associated emissions during construction of the Precinct are generally limited to earthmoving and other civil works that will be managed and controlled by conventional and routine management methods.

Generic Question ID: 265 Sub ID [64] Raised by [S64 Q689]

DEC Recommendation 45 (14): Modelling indicates that H2S odours will exceed NSW odour criteria. The Proponent should therefore verify H2S emission rates during detailed assessment of individual gas plants. Current modelled H2S data should also be reanalysed using criteria consistent with current WA practice as this will assist in the interpretation of the odour impacts.

Discussion: The modelling of H2S impacts suggests that H2S odours will be detectable at large distances from the LNG Precinct. The local-scale modelling indicated that odours will be detectable beyond the inner modelling grid and the assessment report estimated that it was possible that odours will exceed the NSW urban odour criteria up to 20 to 30km from the plant and the single residence criteria up to 9km from the plant. The NSW criteria are not comparable with odour assessment methodology normally applied in WA. It may be possible that the NSW criteria are more conservative than criteria used in WA but it is the Proponent's responsibility to demonstrate this.

The H2S emissions estimates appear to be conservative and the report suggests typical H2S content of the feed gas is likely to be lower than that used in the modelling. It is also worth noting that there is range of odour threshold values for H2S reported in the literature and the Proponent needs to justify their selection of the threshold level used in this report.

Highly conservative air emissions modelling undertaken for the SAR (Part 4, section 2.8) identified that hydrogen sulphide (**H2S**) may exceed the amenity-based NSW guidelines to the east of the proposed BLNG Precinct. However, there are several underlying conservative assumptions that have been made in the modelling, which will overstate potential H2S emissions from the proposed BLNG Precinct.

It should be noted that H2S is notoriously hard to measure in gas reservoirs due to its high reactivity with metals. Subsequently, a highly conservative estimate of 20.5 ppm was used as a basis for the air emissions modelling for the SAR. Actual concentrations of H2S in the Browse Basin gas reservoirs could feasibly be half this amount or even less.

Reservoir H2S can react to reduce carbon-steel pipelines and fittings to iron sulphide in the gas stream. Consequently, a very highly conservative estimate of reservoir H2S is essential for the engineering design of the plant to inform selection of appropriate materials. A collateral effect of the absorption of H2S in carbon steel pipelines and fittings is that it will likely be a considerable time after commencement of production before reservoir H2S is measured in significant quantities at the onshore LNG facility.

The SAR impact assessment of H2S emissions is based on a number of deliberately conservative assumptions:

- A very high estimate of reservoir H2S concentration has been adopted for the plant design, more than twice the actual H2S concentration measured in the gas to date;
- H2S impacts are assessed for the full 50 Mtpa development. Although some of the supporting gas fields may have high H2S content, given the proposed production schedules, it is unlikely that all will reach peak concentrations simultaneously;
- A high reservoir CO2 case was used, which increases the volume of gas released and decreases dispersion characteristics to some degree; and
- 90% availability for Thermal Combustion Units (**TCU**s) as a group. In effect 10% of the reservoir CO2 and associated H2S bypassing emission controls.

A modelling strategy with the following less conservative assumptions is likely to significantly reduce potential exceedance of the NSW H2S criteria, while still being considered conservative. Modelling these revised inputs would also provide more realistic (i.e., less highly conservative) estimates of H2S impacts associated with the Browse LNG Precinct activities:

- A reservoir H2S concentration of 10 ppm; and
- Applying the 90% TCU availability on a probabilistic basis for each TCU individually.

It is envisaged that future commercial operators will refine the H2S modelling inputs to more accurately reflect potential emissions of H2S from their proposed facilities as part of their derived proposal referral to the EPA. Ongoing monitoring of reservoir H2S content at the upstream facilities will also provide future commercial operators an early warning of potentially higher levels reaching the onshore facility, which will allow engineering

controls to be applied, such as enhancement of TCU plant or similar, if required.

Generic Question ID: 266 Sub ID [64] Raised by [S64 Q690]

DEC Recommendation 46 (15): The text should be modified to reflect the current status of EPA guidance statement 15.

Discussion: EPA Guidance statement 15 has been withdrawn by the EPA.

EPA Guidance Statement 15 has been withdrawn by the WA EPA and as such is one of several policies or guidelines that are currently in development or otherwise not in force at the time of writing. Such documents or instruments may remain relevant for air quality management. In particular, it is intended that emissions from all large gas turbines will comply with current expectations as summarised in EPA GS-15.

Generic Question ID: 354 Sub ID [161] Raised by [S161 Q786]

ACE Submission: ACE challenges the integrity of the data, methodology and conclusions in relation to the air quality assessment based upon the following: the Study was prepared according a scope of works defined by a proponent; and the documents author, in its disclaimer, stated that they did not fully verify the accuracy or completeness of the information supplied.

The scope of works of technical studies conducted to inform environmental and other regulatory assessments are necessarily defined by the proponent.

Woodside Energy Limited, as the Foundation Proponent for the Browse LNG Precinct has also actively contributed to the development of the SAR to ensure that all relevant environmental factors are identified and provision made for the management and mitigation of adverse environmental impacts. This can only work to improve the outcome of the strategic assessment process.

The legal disclaimer included in the front of the air quality modelling study report (**Appendix C-25**) is typical of technical reports prepared by professional consultants and does not detract from the actual accuracy or relevance of data provided to the consultant by their client. The Foundation Proponent, in this case Woodside Energy Limited, is best qualified to provide information that accurately characterises the proposed development.

Generic Question ID: 355 Sub ID [161] Raised by [S161 Q787]

ACE Submission: There is concern that benzene and hydrogen sulphide concentrations outside the Precinct boundary will exceed guidelines by a factor of 29 and 3 respectively.

The SAR has identified that benzene and hydrogen sulphide emissions have potential to cause high short-term (1-hour average) concentrations in the vicinity of the Precinct and outside the buffer zones based on conservative assumption and the full 50Mtpa development scenario. Whilst the hydrogen sulphide concentrations are predicted to exceed odour guidelines for residences, this is not a health guideline. The benzene levels are predicted to exceed the NSW modelling guidance trigger level (which are set at a level to trigger further understanding of the aspect rather than impacts to human health) and the EU standard for benzene at the southern boundary of the sensitive land use buffer zone.

Accordingly, all referrals for derived proposals under the SAR will be required to show that the proposed facility will manage benzene and hydrogen sulphide so as to minimise or eliminate emissions, such that unacceptable air quality impacts will not occur.

Generic Question ID: 357 Sub ID [161] Raised by [S161 Q789]

ACE Submission: ACE is concerned about the use of modelling of Dampier ambient air quality data to represent air quality in the Kimberley. This data suggested that the air quality in the area is already very close to exceeding the ozone and PM10 NEPM's and was three times higher than the PM2.5 NEPM investigation level (NEPC Consultation Ambient Air Quality, 2010).

There are very few sets of air quality monitoring data for northern Western Australia and none for the Dampier Peninsula relevant to industrial emissions. Air quality data from Dampier was utilised where possible as the best means of estimating the existing environment in the Kimberley. Ambient air quality data from Dampier was used for to verify that the air dispersion models used for the air quality study performed credibly. Verification modelling was conducted for the Dampier region but those model results were not utilised when assessing the Browse LNG Precinct.

In the absence of directly relevant air quality monitoring data for the Dampier Peninsula, a modelling study was used to estimate existing air quality, which did show that predicted maximum ozone concentrations due to existing sources may approach the 4-hour NEPM standard. The air quality assessment went on to demonstrate that there was a relatively small (5%) incremental increase due to the maximum planned development in the

BLNG Precinct, and that this was limited to days already impacted by large bushfires. Ozone concentrations in the absence of existing sources are much lower than the assessment criteria (refer to **Appendix C-25**, **Figures 8-16** and **8-17**).

Elevated particulate concentrations can also occur both with and without the BLNG precinct. It should be noted that air emissions from the Precinct are dominated by emissions from combustion of natural gas in gas turbines, which is the cleanest of available fuels in terms of particulate emissions.

Generic Question ID: 358 Sub ID [161] Raised by [S161 Q790]

ACE Submission: It is noted that the Department of State Development had commissioned PM10 measurements in October 2008, using an instrument that is not an "air quality grade instrument". It is also noted that, according to the most recent report to the NEPC available on the internet, the Department of Environment and Conservation is not NATA accredited to perform ambient air quality testing.

"Air quality grade instrument" commonly refers to monitoring instruments and methods that are formally described in Australian or other standards. Instruments for monitoring airborne particulate matter (PM10, PM2.5) for which Australian Standards have been defined include high-volume (**Hi-Vol**) samplers, the tapered element oscillating microbalance (**TEOM**) and beta attenuation monitors (**BAM**). The particulate monitor deployed at James Price Point for baseline monitoring is an E-BAM and is a portable version of a BAM that can be run on battery and solar power. Use of the E-BAM is arguably best-practice for baseline monitoring in the absence of the stable electrical power supply required by the instruments approved by available standards.

The baseline monitoring station is not operated or managed by the Department of Environment and Conservation.

Generic Question ID: 359 Sub ID [161] Raised by [S161 Q791]

ACE Submission: ACE is concerned that that the modelled ambient air quality results could be significantly lower than actual results, as it was based on data generated by the DEC, which would understate the impact of the ambient air quality.

The air quality modelling study, as documented in the SAR **Appendix C-25**, did not utilise any data provided by the DEC as input to the model.

The air quality modelling study developed estimates of potential air emissions from the Precinct as input to the model along with estimates of existing air emission sources (both natural and anthropogenic). Following standard practice for air quality assessments of proposals, these estimates were based on conservative assumptions about feed gas composition and plant operations so that pollutant emissions and ground-level concentrations would tend to be over-estimated, not underestimated.

Generic Question ID: 360 Sub ID [161] Raised by [S161 Q792]

ACE Submission: ACE took part in the recent NEPC Ambient Air Quality consultation. The overall impression given was that the standards will be revised downwards to reflect the body of evidence indicating health is impacted at levels below the current standard. If this does occur, it is likely that the modelled ambient concentrations in the Kimberley will be exceeded.

The SAR air quality study developed assessment criteria with reference to relevant standards currently in force from a variety of jurisdictions including Australian National Environment Protection Measures.

Results from the air quality modelling study discussed in **Part 4**, **Section 2.8**, provide good reason to believe that the assessment criteria will not be exceeded, and that current air quality will be maintained, at population centres and other relevant sensitive receptors. Longer term (annual average) criteria relevant for chronic health effects of some air toxics are also not exceeded.

Some short-term guideline criteria are exceeded at locations outside the Precinct buffer zone, in particular for benzene. It is not possible to prescribe specific solutions for this issue in a strategic context. However, once identified by the SAR, any and all derived proposals under the SAR will be required to show how the issue will be successfully managed, with reference to specific engineering or management controls.

With regards to potential changes in air quality standards, future regulatory processes which apply to derived proposals, such as licensing and works approvals under Part V of the *Environmental Protection Act 1986*, are capable of enforcing standards deemed relevant to future industry.

Generic Question ID: 362 Sub ID [161] Raised by [S161 Q794]

ACE Submission: ACE notes that when the James Price Point Precinct was added to existing sources in the area, predicted ground-level concentrations exceeded the ozone NEPM by 10%. This is clearly unacceptable,

particularly in combination with high levels of PM10, PM2.5 and respirable particulates (including nano particles) as there is scientific evidence to show cause for concern over the cumulative, additive and synergistic effects of combined pollutants (State of the Art Report on Mixture Toxicity, School of Pharmacy, University of London, UK, 2009).

Predicted ground-level concentrations are discussed in **Part 4, Section 2.8.3.3** of the SAR and summarised in **Table 2.8-7**. These show that the assessment criteria are not exceeded at any of the identified sensitive receptor locations, although the 4-hour average concentration of ozone is close to the criteria level at the site of the proposed BLNG accommodation village. The 4-hour average ozone criteria is exceeded elsewhere but not at a sensitive receptor location. The air quality modelling results are presented in more detail in **Appendix C-25, Section 8**. Inspection of **Figures 8-24** and **8-25** of **Appendix C-25** show that the exceedance of the 4-hour average ozone criteria concentration occurs within the BLNG Precinct itself.

Appendix C-25 presents modelling results for existing sources and for the 50Mtpa BLNG Precinct alone in **Tables 8.1** and **8.4** respectively. **Table 8.5** presents modelling results for the cumulative concentrations due to both the BLNG Precinct and existing sources (mostly fires, with a smaller contribution from other sources at Broome). Comparison of these tables shows that it is the combination of the full 50Mtpa Precinct with existing sources, mostly bushfires, that cause the assessment criteria to be approached at one sensitive receptor and to be exceeded elsewhere. While any elevated concentrations are potentially of concern, it should be noted that the bushfires that dominate the existing sources are essentially random events that occur for a relatively short period of time. This means that the incidence of the highest cumulative concentrations also occur at random locations and, for short periods, and are not sustained for a long time at any particular location.

These modelling results are based on conservative assumptions about the makeup of a future 50Mtpa BLNG Precinct. As such, further refinement of the conservative assessment will be undertaken as engineering details for individual facilities are matured in any future derived proposals under the SAR.

Generic Question ID: 363 Sub ID [161] Raised by [S161 Q798]

ACE Submission: ACE requests further information as to how any quantities of mercury will be contained and safely processed/disposed to ensure it does not become an environmental legacy.

Waste management in Western Australia is controlled under the *Waste Avoidance and Resource Recovery Act 2007* and Environmental Protection (Controlled Waste) Regulations 2004. These prescribe how wastes must be handled based on their potential toxicity. By law, waste from the Browse LNG Precinct will need to be managed in line with these requirements including any collected mercury. Where practical the recovered mercury would be recycled. For example a mercury removal unit is usually placed in the gas processing stream prior to it being liquefied (as the heat exchanges used to liquefy the LNG are made of aluminium which need to be protected from mercury) are typically sent for recycling and recovery at facilities in Melbourne or Europe.

Generic Question ID: 440 Sub ID [44] Raised by [S44 Q414]

With major crises occurring all over the world and pollution levels rising to unsustainable levels, the Kimberley is being sacrificed to add another site to the World's long list of polluting environments.

The Browse LNG Precinct is being progressed on the basis that its environmental impacts can be minimised and managed. A precautionary approach to assessment and management has been taken to reach the required level of certainty regarding environmental outcomes. In these cases, a range of mechanisms have been employed and outlined in the impact assessment for each environmental factor, and commercial proponents locating within the Precinct will be required to demonstrate best practice technologies and management of their projects.

The Proponent acknowledges that the Kimberley region has many important environmental values which must be protected. In recognition of this, the State has recently announced the formation of Kimberley Wilderness Parks covering more than 3.5 million hectares including four new marine parks, a new national park and a number of additional conservation reserves. The preferred location at James Price Point is a considerable distance from the truly iconic wilderness of the remote Kimberley region.

Generic Question ID: 724 Sub ID [70] Raised by [S70 Q596]

Current research into *Lyngbya* blooms in Roebuck Bay shows an increase already in factors that may increase this - including total phosphorus, nitrogen and NOx between 1986-89 and 2005-08 (EK NEWS Bulletin 25, p.8). **Appendix C25** and discussions with Woodside Environmental Engineers show NOx emissions from the BLNG are likely to be 18,000 tonnes pa for a 50Mtpa plant. This is more than twice the levels in Kwinana, and 1.5 times Karratha levels.

As discussed in **Section 4.3** of **Appendix C-25**, the SAR air quality study adopted assessment criteria for

deposition of nitrogen and sulphur based on the Air Quality Guidelines for Europe published by the World Health Organisation (WHO, 2000). These are in terms of a "critical load", an annual deposition rate below which harmful effects on sensitive parts of the environment are not expected to occur. These criteria are 15 kg/ha/year for nitrogen and 4 kg/ha/year for sulphur. Note that the WHO guidelines are for deposition to land surfaces.

Figure 10-1 in **Appendix C-25** shows that the predicted increase in nitrogen deposition over Roebuck Bay is minor, with the contour values for dry deposition being barely changed with the addition of the BLNG Precinct.

Additional data from **Appendix C-25** estimates that the maximum total nitrogen input at any location from both wet and dry deposition currently is 3.8 kg N/ha/year (i.e. without the Precinct). The BLNG Precinct would add a maximum of 0.6 kg N/ha/year to this figure, an increase of 13.6%. However it should be noted from **Figure 10-2** (**Appendix C-25**) that the deposition over Roebuck Bay is significantly lower than the maximum, in the order of 0.10 kg N/ha/year (i.e. total deposition is twice the dry deposition rate of 0.05 kg N/ha/year as shown in the figure). Being conservative and using the maximum figure (which is from an onshore location) this potentially equates to an additional maximum surface nitrogen load to Roebuck Bay of 6 kg N/ha/year.

Although any additional nitrogen input into a marine system could be viewed as undesirable, it is unlikely to contribute further to blooms of *Lyngbya majuscula*. This species, although non-heterocystous, is still able to fix atmospheric nitrogen, particularly under calm conditions (as it does in algal mats (e.g. Paling et al., 1989)), thus this nutrient is unlikely to be a driver for blooms. Experimental studies in Moreton Bay noted this as well "Hence, the results of this study clearly support the hypothesis that iron, phosphorus and organics play a significant role in supporting *L. majuscula* blooms in Moreton Bay." (p. 2, Ahern, 2003). Roebuck Bay is an important RAMSAR site due to the presence of large bird populations. Interestingly it is probably the phosphorus leached from guano that, in part, contributes to increased cyanobacterial blooms. This was also noted by Ahern (2003).

Generic Question ID: 725 Sub ID [70] Raised by [S70 Q598]

Toxic air emissions from the BLNG are huge, and of particular concern are CO, NOx, particulates, SO2 and the formation of ozone. The submitter is sceptical about the air modelling in **Appendix C25**, and the short period this modelling covered.

At 50Mtpa final design capacity, the Browse LNG Precinct is a significant potential development with correspondingly potentially significant air emissions. The SAR air quality assessment is designed to assess the potential impact that emissions from the Precinct may have on ambient ground-level air quality at sensitive receptor locations, such as residences. For the criteria pollutants (carbon monoxide, nitrogen dioxide and ozone), the air quality assessment presented in SAR **Part 4, Section 2.8** and the detailed report on the air quality modelling study (**Appendix C-25**) have shown that the assessment criteria would not be exceeded at sensitive receptor locations. Criteria for particulates and ozone are only approached when combined with existing sources such as bushfires, which generally occur at random locations and for short periods of time.

The air quality modelling study utilised the dispersion models "TAPM" and "TAPM-CTM", developed by the CSIRO Division of Atmospheric Research. These models have been subject to extensive validation studies using published meteorological data-sets from around the world, including studies around Australia. It is common and accepted practice in Australia and elsewhere in the world that air quality modelling studies are conducted for one study year that has been shown to be generally representative of long term conditions at the sites of interest.

The Air Quality Study (**Appendix C-25**) was prepared by independent consultants and reviewed by CSIRO. In addition, the model results (including the model itself) are supplied to and reviewed by the Department of Environment and Conservation's Air Quality Branch on behalf of the EPA.

Generic Question ID: 729 Sub ID [70] Raised by [S70 Q603]

In relation to the comment: "Areas to the due east of the plant will have the highest overall concentrations due to the very frequent and persistent westerlies". Should Derby residents then be worried? It is much more likely that pollutants will be carried out to sea each morning in the Dry, and then possibly brought back in again by westerlies or north westerlies, toward Broome. The latter are common during September through March.

To assess the potential air quality impacts, the summary figures presented the SAR (**Part 4, Section 2.8.5**) cover the region where the highest impacts on air quality are likely occur. Although these figures do not extend east to Derby, the larger model grids extend across most of north Western Australia. Modelled concentrations at Derby are considerably lower than those closer to James Price Point and are not a cause for concern. The SAR air quality modelling study (**Appendix C-25)** made use of a sophisticated air dispersion model that explicitly models local and regional wind patterns, and does include the potential for recirculation of air emissions as suggested.

Generic Question ID: 730 Sub ID [70] Raised by [S70 Q604]

One year (p. 44, Data from 1 Oct 2008 to 30 Sept 2009) is not enough to collect reliable information, as there are many a-typical years. In some years the easterlies hardly blow at all, and in others they are a daily menace.

Although one year may seem a short period of time, it is common practice that air quality modelling studies are conducted for one study year that has been shown to be generally representative of long term conditions at the sites of interest. This practice is generally acceptable to environmental authorities in Australia and elsewhere in the world.

Many years may be considered to be "atypical" for one reason or another. For environmental assessment purposes it is generally sufficient that the selected study year be "typical enough" that all likely meteorological conditions are found at some time. So long as easterly and southerly winds are sufficiently represented and the highest likely impacts are identified, then the modelling is considered appropriate to assess the likely impacts of the proposal.

Generic Question ID: 733 Sub ID [70] Raised by [S70 Q609]

The assumptions on which air quality modelling may be based are queried, particularly the assumptions about wind direction and the lack of adequate long term evidence and analysis of Bureau of Meteorology data. There is concern that toxic gases will reach local residents and pollute borefields.

Local Bureau of Meteorology data was used to characterise the local climate and wind patterns, and especially to confirm that the year selected to model dispersion of air emissions was representative and not particularly unusual. Model results presented are all based on 12 months of Bureau of Meteorology data for the 2006 year. Model validation studies by the CSIRO have demonstrated that the computer dispersion models (TAPM and TAPM-CTM) used for the SAR air quality assessment are able to satisfactorily model the meteorological processes relevant for air quality studies. The detailed air quality assessment report (**Appendix C-25**) includes validation against monitoring data collected at Karratha, so there is good reason to believe that these dispersion models can provide a reasonable simulation of local processes.

Air emissions from the BLNG Precinct would generally have a finite lifetime in the atmosphere and on the ground surface and therefore borefields and ground-water are not at risk from airborne emissions. A surface spill of liquid benzene could, without appropriate mitigation measures, present a risk of soil contamination, however, preventative control measures would minimise the likelihood of such spills occurring.

Generic Question ID: 735 Sub ID [70] Raised by [S70 Q611]

The NEPM (Air Quality) standards of 1998 were intended to be reviewed in 10 years, and to date that has not occurred. As more and more research is carried out and evidence for health effects collected, it is likely that the safe limits must be revised downward. Environmental approval for the BLNG should wait until the NEPM standards have been revised and updated.

The SAR air quality study developed assessment criteria with reference to relevant standards currently in force from a variety of jurisdictions including Australian National Environment Protection Measures.

Results from the air quality modelling study discussed in the SAR **Part 4, Section 2.8**, provide good reason to believe that the assessment criteria will not be exceeded, and current air quality maintained, at population centres and other relevant sensitive receptors. Modelling also predicts that longer term (annual average) criteria relevant for chronic health effects of some air toxics will not be exceeded.

Some short-term guideline criteria are predicted to be exceeded at locations outside the Precinct buffer zone, in particular for benzene. It is not possible to prescribe specific solutions for this issue in a strategic context. However, once identified by the SAR, any and all derived proposals under the SAR will be required to show how the issue will be successfully managed, with reference to specific engineering or management controls.

Generic Question ID: 736 Sub ID [70] Raised by [S70 Q614]

It is difficult to see how up to 8,000 BLNG FIFO workers housed near to the plant, would not be affected by emissions to air which have no safe thresholds.

The BLNG workforce accommodation camp was identified as a sensitive receptor for the Air Quality Study (**Appendix C-25**) and was assessed accordingly. Air dispersion modelling predicted that the air quality at the BLNG workforce accommodation would not exceed any annual health standards due to emissions from the proposed BLNG Precinct.

The first management measure to protect the workforce community from exposure to trace amounts of toxic industrial chemicals is reduction at the source of emissions. The primary source of emissions from LNG plants is

combustion products from gas powered energy generation which is a relatively clean fossil fuel power source. Secondly, the Precinct design has incorporated sound land-use planning practices, such as creating appropriate buffer zones to maintain a clean environment for people during their off-hours.

Of all of the pollutants studied, the SAR air quality study has identified that some VOC emissions, and benzene in particular, will require additional work to minimise emissions to ensure impacts are acceptable. The details of best engineering practices to achieve this result cannot be specified at a strategic level but will form a key component of the detailed design phase of any derived proposals under the SAR, which will have to show how this identified issue will be managed.

Generic Question ID: 739 Sub ID [70] Raised by [S70 Q1749]

How might smog add to the effects of morning fogs, already heavy enough to stop aircraft in Broome?

Theoretically, it is possible that industrial emissions might contribute to morning fog formation by providing fine airborne particulate matter as additional condensation nuclei above those present in the natural background. In fact, however, the SAR air quality assessment demonstrates that the potential particulate emissions from the Precinct are very small and contribution to cumulative particulate levels is negligible, as shown in **Part 4**, **Section 2.8.3.3**, **Figure 2.8-13**. Consequently the Precinct will have negligible effect on the incidence of morning fogs.

Generic Question ID: 810 Sub ID [75] Raised by [S75 Q852]

The SAR report states (**Part 1**, **p. ES-75**) that measures such as buffer zoning will ensure that emissions are largely contained within the area in close proximity to the BLNG precinct. It is impossible to have confidence in this statement, given the basic inaccuracies about wind direction on which this conclusion is based.

Buffer zones serve to separate incompatible land uses from one another so that by design potentially sensitive receptors, such as residential neighbourhoods or accommodation villages, are kept separate from industrial activity and associated emissions. The relatively remote location of James Price Point adds a further 20 to 50 kilometres of separation from the BLNG Precinct and population centres.

This conclusion is drawn from the results of the SAR air quality assessment (**SAR Part 4, Section 2.8.5; Appendix C-25**) and in particular the computer modelling study. Verification studies conducted by the CSIRO have demonstrated that the air dispersion model used in the study (**TAPM**) is able to simulate the local meteorological processes important for dispersion of industrial and other emissions (**SAR Appendix C-25, Section 7**). Model validation studies involve detailed comparisons of model results and monitoring data and do not solely rely upon simple summaries such as annual or seasonal wind roses, which may be provided for broad descriptive purposes only. The models were run for a full 12 months, simulating wind conditions experienced over this period.

Generic Question ID: 824 Sub ID [198] Raised by [S198 Q1822]

Part 4 Section 2.8.2.2: Because gaseous emissions from construction of the BLNG Precinct are not predicted, does that mean they are harmless to nearby communities?

Air emissions sources during construction will be diverse and potentially mobile across the Precinct. As such it is not practicable to predict local air quality impacts from them. However, as stated in **Part 4 Section 2.8.2.2**, construction emissions to air will be dominated by fuel combustion emissions from vehicles and other construction equipment. Construction activities will be similar to construction activity in urban and industrial environments throughout Australia and will not present unusual risks or impacts. The location of the Precinct at James Price Point is relatively remote and distant from local population centres and communities, therefore it is considered to pose negligible impacts to air quality at sensitive receptors.

Generic Question ID: 825 Sub ID [198] Raised by [S198 Q1823]

Part 4 Section 2.8.2.2: Under upset conditions, will the BLNG Precinct's flaring scenarios increase the emissions and will this be considered an acceptable risk for the local communities?

Some upset conditions can lead to increased emissions from the emergency flares but modelling shows that these do not lead to corresponding increases in pollution concentrations at ground-level. There is no resulting risk to local communities because:

- the highest emissions from upset flaring occur over a short period of time and emission rates fall rapidly as the LNG gas train's inventory is depleted;
- flaring releases a great deal of heat, which leads to very high plume rise and enhanced dispersion. By

the time pollutants have been mixed down to the ground, significant dilution of remaining pollutants will have occurred; and

- as a combustion process, flaring effectively incinerates toxic air pollutants in the gas stream.

High flaring events, though short-term, are modelled as if they were occurring continuously throughout the year. This is to ensure that the highest ground-level concentrations are identified. In reality, it is most unlikely that the highest flaring emissions will coincide with the worst case meteorological conditions that lead to the maximum ground-level concentrations. The air quality modelling study shows that, in any case, flaring events do not cause air quality criteria to be exceeded (SAR **Part 4**, **Section 2.8.5.1** and **Appendix C-25**).

Generic Question ID: 828 Sub ID [198] Raised by [S198 Q1828]

Part 4 Section 2.8.6.1: When will further environmental assessments of the BLNG Precinct's source contributions to the predicted ground-level concentrations of pollutants be available?

Air quality studies for the SAR are completed. Referral documents for future derived proposals under the SAR must include further air quality assessments sufficient to show that the particular Downstream Project is consistent with the assumptions and specifications of the SAR and that all identified issues will be managed satisfactorily (as per the WA EPA Act, s38).

Generic Question ID: 913 Sub ID [171] Raised by [S171 Q1902]

DIA Submission: It is possible that air quality could affect engravings, so air quality is a matter of heritage concern, as well as presence of particulates (dust) being a concern for human health.

The potential for emissions from LNG processing activities on Indigenous rock art and engraving sites was investigated in a four year study by CSIRO for the Burrup Rock Art Monitoring Committee. The study was conducted in response to concerns that industrial emissions were having an adverse impact on Indigenous rock art on the Burrup Peninsula.

The CSIRO study included an artificial fumigation and deposition study, to explore the effects of nitrogen dioxide and sulphur dioxide, along with numerous other air pollutants, on the quality and colour of rock art and engravings. This study used fumigation chambers and exposed replica rock art engravings to a number of chemical pollutants including nitrogen oxide, sulphur oxide, ammonia, xylene, benzene and toluene, and reported no changes to the rock surface colour from pollutant concentrations likely to be expected with industrial activity.

The study concluded that sulphur dioxide and nitrogen dioxide deposition within the Burrup area was unlikely to cause any adverse effects to rock or rock art on the Peninsula.

While Kimberley geology tends to be less resistant to physical and chemical weathering than that of the Burrup Peninsula (SAR **Appendix E-4**, **p. 116**), it is also important to note that the Burrup rock art studies considered sites that were much closer to industrial activity (25km) than known sites on the Dampier Peninsula (143km).

Generic Question ID: 1036 Sub ID [224] Raised by [S224 Q1965]

KLC Submission: **Part 4**, **Table 2.8-10** and **Table 2.8-12** Condition No.T-8.2 - There is no reference to standards (or limits to emissions) for each of the main parameters presented in the SAR. A set of minimal limits should be set for each of the key atmospheric emissions (including odour) as part of the current assessment process. Proponents should be required to demonstrate what best practice initiatives have been adopted to improve on the minimal standards specified.

Environmental regulation in Western Australia does not generally prescribe emissions limits that apply to all industrial facilities across the state but instead focuses on managing the ambient concentrations that are more directly relevant for environmental and health impacts. The ambient air quality criteria applied to assess the air quality impacts of the proposed BLNG Precinct are described in the SAR **Part 4**, **Table 2.8-7**, **2.8-8** and **2.8-9**. "Best practice" for industrial processes are implicitly required by Section 51 of the *Environmental Protection Act 1986*, which requires that all reasonable and practicable measures be taken to prevent or minimise emissions. Details of specific aspects of best practice design will feature in referrals of derived proposals and the related management plans under the SAR.

Generic Question ID: 1053 Sub ID [114] Raised by [S114 Q2157]

This part of the coast is a significant recreational area for local people and the prospect of travelling through 'rotten egg gas' to go fishing or even to stay at one of the small tourist ventures along the coast is not good.

Due to inherent difficulties in measuring the hydrogen sulphide content of natural gas reservoirs, a very

conservative approach was taken which is considered highly likely to be a significant over estimate of the likely H2S emissions. **Section 9.1.1.5** in **Appendix C-25** demonstrates how reducing this degree of conservatism reduces the predicted impact. It should be noted that the criteria are based on a 1 second exceedance of the odour based threshold in the hour, for more than 88 times (or hours) in the year.

In addition, the odour criteria applied to hydrogen sulphide concentrations in the SAR derive from criteria developed for residences and are conservative when applied generally to open rural areas. The results as presented in **Figure 9-15** of SAR **Appendix C-25** show that these criteria are not exceeded at any locations near the coast outside the Precinct buffer zones, and so will not impact on recreational fishing areas.

Generic Question ID: 1110 Sub ID [107] Raised by [S107 Q2280]

In relation to the map provided in the air assessment section of the SAR showing camping areas, this did not include the permanent residents who reside in both Carnot Bay, and outside of the Beagle Bay Settlement. Also recreational users have a right to know what pollutants they and their families are being exposed to at each of the camping areas too.

The number of sensitive receptors identified for the air quality assessment was limited for practical reasons but the potential impacts on air quality can be interpolated from the results presented in **Figures 2.8-4** to **2.8-13** in the SAR **Part 4**, **Section 2.8.3**. Modelled concentrations at Carnot Bay are generally about the same as those at Beagle Bay.

Generic Question ID: 1111 Sub ID [107] Raised by [S107 Q2281]

In relation to air assessments, many people collect bush food in the area. Deposition of chemicals on bush foods need to be considered.

Although operations at an industrial facility may include handling and use of a large number of chemicals, in practice very few are handled or released in such a manner that they will be dispersed widely and present a hazard to the surrounding environment and population. The emissions that are likely to be transported off-site in significant concentrations are generally combustion emissions from plant such as gas turbines, flares and other plant such as thermal oxidisers. Emissions from these sources do not include complex chemicals, which would in any case tend to be destroyed by high temperature combustion. For other substances, routine observance of safe working practice with reference to Materials Safety Data Sheets (**MSDS**s) ensure that the working environment is kept safe, and effective land-use planning with application of buffer zones ensure that industrial activities are kept separate from the general population, including areas outside the buffer zone where bush foods may be collected.

Deposition of nitrogen and sulphur are addressed in Section 10 of **Appendix C-25** as the most likely substance of concern. Nitrogen deposition, which is a fertiliser, is predicted to increase on average by 10-15% or 0.3-0.6 kg/ha/yr (or about 1 grain of rice per square metre over the course of a year). Precinct related sulphur deposition is about half this. Both of these values are below the WHO guidelines.

Generic Question ID: 1112 Sub ID [107] Raised by [S107 Q2284]

The submitter believes that the air assessment should not have been released until it was completed, as residents have a right to know and comment on the chemicals and air pollution that they will be exposed too.

The SAR air quality assessment (**Part 4**, **Section 2.8** and **Appendix C-25**) was completed and considers the potential impacts on local and regional air quality of air emissions that could reasonably be expected to arise from the range of LNG technology options that might be constructed at the James Price Point Precinct. LNG processing is described in **Section 2.2** of **Appendix C-25** and technology options are described in **Section 2.3**. Air emissions and possible impacts to the environment and human health are discussed in **Chapters 3** and **4** of **Appendix C-25**.

With regards to commenting on the air assessment component of the SAR, the purpose of the extensive public review period (approximately 15 weeks) was to provide the public an opportunity to comment on the work done to date.

Proponents of future derived proposals under the SAR will be required to demonstrate that their particular design of facility is consistent with the SAR, does not introduce new environmental issues, and that outstanding issues will be managed so that unsatisfactory impacts on air quality do not occur. It is envisaged that significant stakeholder engagement will be required of future proponents of derived proposals, as demonstrated in **Section 2.2** of the Response to Submissions Summary Report.

Generic Question ID: 1113 Sub ID [107] Raised by [S107 Q2285]

In relation to air quality assessments and the potential for chemical deposition in the surrounding environment, of concern is the adequacy of the assessment. In the SAR it was noted that "previous deposition studies undertaken by SKM on the Burrup Peninsula have indicated there are large uncertainties with the deposition predicted by modelling ... The uncertainties in the modelled depositions are due to uncertainties in the water, soil and vegetation surface resistances employed in the calculations."

All modelling studies entail some degree of uncertainty due to random factors such as turbulent changes in wind, natural variations in the weather and variations in the ground surface such as rock outcrops, buildings and patterns of vegetation. This underlying variability can be managed by averaging over time and distance scales and by making appropriately conservative assumptions that tend to over-predict rather than under-predict impacts. Deposition processes in particular are subject to the large variability in natural surfaces and complex transfers between, for example, the open air, the leaf canopy of a woodland area, and the leaf, water or soil surfaces. Predictions of the average deposition over a wider area can still be made, and recognising uncertainty in model results does not imply that reported small impacts are in fact large impacts masked by the uncertainty. A conservative approach to estimating emissions and modelling process serves to counter this risk to a large degree.

Generic Question ID: 1117 Sub ID [212] Raised by [S212 Q1049]

Part 4 Section 2.8.6.1: "Further assessment, in particular of relative source contributions to the predicted ground-level concentrations of pollutants, is recommended. The emissions from the proposed BLNG Precinct were predicted by the modelling to represent a small percentage of emissions in comparison to background emissions in a regional context." Are we really supposed to believe that the LNG plant will have less of an impact on the surrounding pollution levels than anything else?

Emissions estimates for sources in the proposed BLNG Precinct were developed with reference to emissions estimations techniques commonly used for the Australian National Pollutant Inventory database, methods developed by the United States Environment Protection Agency (AP-42) and relevant monitoring data from existing LNG facilities. Contributions to background concentrations from existing sources were calculated using similar techniques, current satellite monitoring data and with reference to relevant studies by the CSIRO.

The air quality modelling study results suggest that regional ground-level concentrations, associated with emissions from the proposed BLNG precinct, are generally comparable to those resulting from existing sources. The air quality modelling study clearly shows that cumulative maximum ground-level concentrations for proposed and existing sources are generally only very slightly higher than the maximum concentrations calculated for existing sources alone (See **Part 4**, **Table 2.8-5** and **Table 2.8-7**).

Generic Question ID: 1120 Sub ID [71] Raised by [S71 Q2585]

The following is a list of some of the additional pollutants released by the Precinct that are not mentioned in depth in the SAR:

- ozone;
- dark smoke;
- dust (as particulates);
- odour;
- light (marine and terrestrial);
- noise (marine and terrestrial);
- hydrocarbons and other chemicals leaking into the marine environment from drilling and production; and
- very large quantities of sediments from dredging and blasting in the marine environment.

A wide range of further toxic chemicals and heavy metals are produced at various stages of LNG production, including: arsenic and compounds; beryllium and compounds; 1,3-Butadiene (vinyl ethylene); cadmium and compounds; carbon monoxide; chromium (VI) compounds; copper and compounds; cumene (1-methylethylbenzene); cyclohexane; ethylbenzene; fluoride compounds; formaldehyde (methyl aldehyde); n-Hexane; hydrogen sulphide; lead and compounds; mercury and compounds; nickel and compounds; particulate matter (PM10); particulate matter (PM2.5); polychlorinated dioxins and furans (TEQ); polycyclic aromatic hydrocarbons (**PAH**s).

Ref: National Pollutants Inventory (**NPI**); EPA reports.

Emissions, discharges and wastes associated with construction, commissioning, operation and decommissioning of the BLNG Precinct have been estimated to inform the Strategic Assessment (refer to **Part**

2, Section 5 for further details)**.** The key emissions, discharges and waste streams were described in broad terms based on the current BLNG Precinct development scenarios. However, discharge rates and total volumes of each stream would be subject to refinement based on individual commercial proponent decisions on the design and construction and operation of their respective facilities.

The Proponent is confident that all key pollutants of relevance to the BLNG Precinct facilities and associated infrastructure have been appropriately characterised, commensurate with the level of detail at this strategic proposal stage, and these have been used to inform the subsequent impact assessments presented in **Parts 3, 4** and **5.**

In response to the list of key pollutants identified in this submission, brief cross-references to the most relevant sections in the SAR are provided below:

- ozone - **Part 4**, **Sections 1.2** and **2.8** (Air Quality) and associated Technical **Appendix C-25**;
- dark smoke - **Part 2**, **Section 5.15**;
- dust (as particulates) - **Part 2**, **Section 5.15** and **Part 4**, **Section 2.8**;
- odour - **Part 2**, **Section 5.15**, and **Part 4**, **Sections 1.2** and **2.8**;
- light (marine and terrestrial) - **Part 2**, **Section 5.15**; **Part 3**, **Section 2.7**; **Part 4**, **Section 2.6**; **Part 5**, **Section 4.4** (and other relevant social surrounds factors);
- noise (marine and terrestrial) - **Part 2**, **Section 5.15**; **Part 3**, **Sections 2.5**, **2.6** and **2.7**; **Part 4**, **Section 2.6**; **Part 5**, **Section 4** (relevant social surrounds factors);
- hydrocarbons and other chemicals with potential to leak into the marine environment from drilling and production - **Part 2**, **Section 5.15**; **Part 3**, **Section 2** (various sections) and **Part 7**. Note drilling and production are relevant to offshore development, addressed as Category C activities in the SAR; and
- sediments from dredging and blasting in the marine environment - **Part 2**, **Sections 5.8** and **5.15**; **Part 3**, **Section 2** (various sections).

With regard to the submitted list of other chemicals and heavy metals produced at various stages of LNG production, it is not the philosophy nor intent of the strategic proposal to characterise and quantify every substance. Many of those listed have been explicitly addressed in the SAR, while others cannot be accurately quantified at this early conceptual engineering phase but have nonetheless been implicitly addressed in the impact assessment. It is expected that commercial proponents within the BLNG Precinct will further quantify estimates of key emissions, discharges and wastes in accordance with good industry practice and regulatory expectations through licensing and other secondary approvals. This will also include assessment and public reporting of all substances above threshold levels in accordance with the National Pollutant Inventory (NPI) NEPM, as listed in this submission. This does not materially influence the impact conclusions or management framework presented in the SAR.

Generic Question ID: 1136 Sub ID [88] Raised by [S88 Q2628]

Documented evidence from existing gas plants shows unacceptable levels of carcinogenic pollution to atmosphere. There is proven evidence that children are more susceptible to toxic pollutants than adults and, as a rapidly developing town with a very high birth rate, this factor alone is of grave concern. It shows total disregard for the health of those most vulnerable. Documented studies need to be included in this survey of these issues.

The primary means of protecting vulnerable members of the population, such as children and the elderly, from chronic effects of industrial emissions is land-use planning. Buffer zones around heavy industrial zones protect the local population from more than occasional and short-term exposures. In addition to the two and three kilometre buffer zones around the BLNG Precinct, James Price Point is relatively remote from local population centres, lying more than 25 kilometres from the nearest residences at Willy Creek and 50 and 75 kilometres respectively from the larger centres of Broome and Beagle Bay. Volatile organic carbons (including carcinogens such as benzene) that are emitted from the BLNG Precinct would not be detectable at these locations, as described in the **SAR Part 4 Section 2.8**.

The SAR air quality study has identified benzene as the most significant potential air toxic emission from the BLNG Precinct (see **SAR Part 4, Table 2.8-9**). As such, all derived proposals under the SAR will be required to demonstrate that such emissions are managed effectively so that unacceptably high concentrations do not occur due to the operation of the Precinct. Monitoring studies of benzene in and around the Karratha Gas Plant on the Burrup Peninsula have shown that high concentrations of benzene do not occur and that exposures are similar to those observed in populated areas around Australia.

Generic Question ID: 1148 Sub ID [211] Raised by [S211 Q1015]

Part 1 Section 4.1: Consideration of other sites is totally inadequate. The submitter does not consider the report has adhered to its terms of reference on this point. We have since heard from Gail McGowan of DSD at a public meeting in Broome in early March, that Karratha was ruled out because air pollution would exceed the current NEPM limits. A quick look at the Bureau of Meteorology radar for the Burrup shows constant rain there at any time, no doubt because of the pollution. The Report should have made this clear which reduces its credibility. This and other omissions lead the submitter to conclude the report is overall a whitewash or propaganda to advance an existing opinion, not an objective view.

The site selection process is discussed further at **Section 4.2** of the Response to Submissions Summary Report.

The **SAR Appendix B-7, Section 6.1** discusses air emission levels at the Burrup Peninsula relative to standards set through the National Environmental Protection Measures (**NEPM**). Limitations noted by DSD relate to the cumulative effects if the North West Shelf, Pluto and Browse Basin projects were to be co-located. While pollution levels at the Burrup Peninsula and surrounding communities do not currently exceed NEPM limits, further significant emission sources could lead to levels in excess of the NEPM standards.

The Bureau of Meteorology radar that appears to show rain at the Burrup during clear weather is in fact an echo from the rocky landscape. For more information please visit http://www.bom.gov.au/weather/radar/info/WA.info.shtml#15.

Generic Question ID: 1160 Sub ID [211] Raised by [S211 Q1031]

Part 1 Section 5.3: Quondong is a much loved fishing, camping and picnic spot - will it be out of bounds? If not, will it be too close to sources of toxins to be healthy for children?

There are a number of potential impacts associated with the development of the Browse LNG Precinct on marine and onshore users, including recreation, that are discussed in **Part 5**, **Sections 4.8** of the Strategic Assessment Report (**SAR**).

The public will be excluded from less than 2km of coastline where a fenced area will define the boundaries of the Precinct's port area. Public access will be maintained to Quondong Point.

With regard to risks associated with exposure to toxins from the Precinct, the results of regional air emissions modelling, conducted as part of the SAR, confirmed that the Precinct is predicted to make a relatively small contribution to air quality, with cumulative regional concentrations dominated by the impacts of bush fires. The SAR also concludes that potential impacts on marine habitat, water quality and amenity in terms of residual impacts to marine users, are expected to be low to very low following implementation of management measures.

Human health impacts were assessed as part of the Social Impact Assessment (**SIA**) and the Aboriginal Social Impact Assessment (ASIA). Human health is also a consideration embedded in the relevant environmental guidelines that apply to the Precinct. For example, air quality, surface water and groundwater guidelines all incorporate protection of human health. Key health impacts identified in the social assessment are discussed specifically as a relevant factor in **Part 5**, **Section 4.9** of the SAR. Further discussion of human health impacts is provided in **Section 4.7.2** of the Response to Submissions Summary Report.

Generic Question ID: 1270 Sub ID [222] Raised by [S222 Q2972]

Millions of tonnes of noxious gases such as benzene, hexene and toluene will be discharged over the life of these projects. The flaring of gases during exploration drilling, production and processing is also a major source of industrial pollution and greenhouse emissions.

It is noted that the strategic assessment process requires a conservative approach to the identification and assessment of environmental impacts be taken. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this, which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35Mtpa. These specific details won't be available until a proponent submits their derived proposals to the EPA for evaluation.

Table 5-12 in **Part 2** of the SAR outlines the predicted maximum emissions from the full 50Mtpa LNG Precinct. An excerpt of that table is produced below:

Emissions CO (tpa) NOx (tpa) SO2 (tpa) VOC tpa) BTEX (tpa) PM (tpa) NO2 (tpa) CH4 (tpa)

Total emissions (tpa) 6,400 18,000 4,600 4,000 1,600 2,060 18,000 9,600

The SAR addresses the impacts of those emissions believed to be of most significance, whether by the volume of emissions (airborne particulate matter, NOX) or by toxicity (such as benzene, taken as representative of air

toxic species).

The SAR studies have shown that impacts on air quality are not more than moderate, and generally do not approach the levels of relevant assessment criteria. The SAR did identify that derived proposals will need to incorporate specific measures to monitor, manage and minimise benzene emissions, from condensate ship-loading in particular. It is expected that measures adopted to manage benzene, such as vapour recovery, will also minimise emissions of other volatile organic compounds, including other air toxic species.

A large emission does not automatically lead to a large impact on the environment and air quality. In the environment substances break down and do not remain indefinitely. For example, benzene is a carcinogen and has exposure standards set accordingly, but it also breaks down within days in soil (cf NPI fact sheet). Benzene is also a precursor for photochemical smog, yet that also means that it does not remain indefinitely in the environment.

Importantly, these emissions calculations do not take into account potential abatement. All future proponents will be required to prepare a Greenhouse Gas Abatement Plan to the satisfaction of the Minister of the Environment that will detail best practice measures to reduce and manage emissions. This plan will be subject to a period of public review prior to finalisation.

Given the global nature of climate change, the Proponent notes that discussion of greenhouse gas emissions related to the BLNG should be presented in the context of net global greenhouse gas levels. The production of natural gas from the Browse LNG Development would contribute in a very positive sense to the efforts to combat climate change. InterGovernmental Panel on Climate Change, Stern, and others agree that natural gas and LNG, which produce substantially less carbon dioxide equivalents (**CO2-e**) than coal or oil, are important bridging fuels on the road to a lower carbon economy. Replacement of coal in particular, is identified as one of the key “stabilisation wedges” required to reduce overall global emissions to a level which will prevent the worst of the predicted impact.

This is echoed in WA's Greenhouse Gas Reduction Strategy which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (**p.40**). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emissions and commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (**p.90**).

Generic Question ID: 1354 Sub ID [216] Raised by [S216 Q1139]

Part 4 Section 2.8.6: Very low means what exactly? Does wasteland and pollution and decimation of virgin bush and pristine marine life and complete changes to the entire nature of the area and town and the complete changes to the whole Peninsula and the wrecking of ancient forest and wrecking of sacred songlines and wrecking of dinosaur footprints and changes to unknown and undiscovered species all rate as very low?

It is assumed that the comment refers to the level of Significance of Residual Impact being rated as "very low" based on the impact assessment summary for Air Quality (**Part 4**, **Section 2.8.6**, **Table 2.8-13**). A detailed assessment of the potential gaseous and particulate emissions from the LNG Precinct indicated that any residual impact on the local (beyond the Precinct boundary) and regional environment, following implementation of proposed management measures would be very low. This is consistent with experience at similar facilities within Australia and overseas.

There is no evidence either from the impact assessment, or from results of similar facilities, to support the submitter's implication that the Peninsula will become a wasteland and that pollution will decimate the bush and marine life.

Generic Question ID: 1362 Sub ID [132] Raised by [S132 Q3334]

The impacts on air quality are largely unknown due to a general lack of understanding about the atmospheric processes at play. It is imperative that the State commit to better understanding these processes so that any potential risks and threats can be properly examined and assessed.

While research into boundary-layer and air pollution related meteorology is ongoing, the atmospheric dispersion processes important for modelling emissions from industrial facilities is sufficiently well understood that models can be applied in regulatory assessments. Residual uncertainties are generally addressed by making conservative assumptions of emissions and relevant background concentrations, so that estimated impacts will tend to be over-predicted.

Processes of particular significance for emissions from the Browse LNG Precinct are discussed in **Section 6.1.2** of SAR **Appendix C-25**. Some validation studies of the models used in the air quality assessment are summarised in **Section 6.2**.

Generic Question ID: 1363 Sub ID [132] Raised by [S132 Q3337]

Baseline studies need to be conducted to determine the current air quality as well as the general movement and modelling of fogs and dews. The regular fogs and dews experienced on the coastal edge of the Peninsula have the potential to concentrate emissions and distribute them along the coastal fringe, impacting both the township of Broome, coastal communities and outstations, as well as the Threatened Ecological Community; Monsoon vine thicket.

Baseline monitoring studies are currently severely hampered by the lack of power and infrastructure at James Price Point. Better data will be able to be collected as the site is developed.

Fogs and dews are surface phenomena that will have little interaction with the generally highly buoyant air emissions from the BLNG Precinct, particularly at night and in the early morning when fog and dew develop.

The relatively isolated location of James Price Point means that, by the time buoyant emissions from the Precinct have mixed to the ground, sufficient dilution has occurred that dry and wet deposition rates are much lower than the adopted assessment criteria for the largest emissions of oxides of nitrogen (see **Appendix C-25, Section 10**).

Generic Question ID: 1411 Sub ID [107] Raised by [S107 Q2289]

In relation to ambient air quality and the associated impacts of air pollution on people, of concern is the adequacy of the air assessment in catering for the outdoor lifestyle of people in Broome along with local meteorological conditions. For example the extent to which ambient air quality estimates, determined from monitoring network data or models, correspond to personal exposure in the population is an important factor to be considered in setting standards for ambient air quality. This will depend on the pollutant in question as well as on a number of local characteristics including lifestyle, climatic conditions, the spatial distribution of pollution sources and local determinants of pollution dispersion (P. 72, The World Health Organisation, Air Quality Guidelines, Update 2005).

The quoted text from the WHO Air Quality Guidelines Update 2005 is particularly concerned with the relationship between personal exposure, indoor concentration and outdoor concentration of air pollution. Care must be taken when using monitoring data from one station, or modelled predictions for one location, to estimate personal exposures for an individual who may be highly mobile and travel through a wide variety of different environments. This is a key difference between occupational health criteria, which traditionally relate to exposures over an eight hour day, five day working week for generally fit and healthy individuals. Ambient and environmental criteria are much lower than occupational criteria because they allow for continual exposure, over a long period of time, of the general population, which may include vulnerable groups such as young children and the elderly.

The SAR air quality assessment discusses potential impacts on air quality at population centres and residences in terms of ambient air quality criteria designed to protect the health and amenity of the general population. The air quality modelling report (**Appendix C-25**) also presents modelling results for the maximum concentrations across the region, noting that these are generally well below the ambient criteria, effectively addressing locations used for outdoor recreation beyond residential areas. The SAR has identified that these criteria are exceeded for benzene, toluene and hydrogen sulphide at particular locations close to the Precinct boundary, and explicitly noted that appropriate controls for these emissions must be developed for derived proposals under the SAR.

The SAR air quality assessment approach is inherently conservative and protective of human health and amenity because it implicitly applies residential criteria across the region.

Generic Question ID: 1417 Sub ID [89] Raised by [S89 Q2639]

The SAR does not provide specific consideration to the air pollution impacts of the proposal. Apart from the fact that the proposed Precinct at its maximum capacity will have carbon emissions equivalent to the entire output of New Zealand, it is obvious that the toxic emission from the Precinct will have serious and long-lasting effects. The topography of the West Kimberley means that these impacts will not be localised, but will spread across much of the Dampier Peninsula, to Derby and beyond. These effects are likely to be, in the long-term, far more costly than any perceived benefits from the proposal.

The SAR air quality assessment (**Part 4, Section 2.8** and **Appendix C-25**) considers the potential impacts on local and regional air quality of air emissions that could reasonably be expected to arise from the range of LNG technology options that might be constructed at the James Price Point Precinct. The majority of the emissions from an LNG plant relate to combustion of natural gas to produce energy. Natural gas is known to be the cleanest burning fossil fuel.

The range of technology options are described in **Section 2.3** of **Appendix C-25**. Sensitivity tests were conducted using computer modelling to determine the relative impacts on air quality due to air emissions from each technology option. As a conservative measure, the air quality assessment was conducted with reference to the technology with the greatest potential impacts, the Large Industrial Gas Turbine (**LIGT**) scenario. Far from having obviously serious and long-lasting effects, modelling results show that predicted maximum ground-level concentrations are not large compared to assessment criteria, with the exception of benzene, toluene and hydrogen sulphide, as summarised in **Table 9.5** of **Appendix C-25**. The elevated concentrations of benzene and toluene are particularly associated with condensate ship-loading. Since this potential risk has been identified by the SAR, all future derived proposals under the SAR will be required to show how the particular engineering design will eliminate or otherwise minimise emissions so that unsatisfactory impacts on air quality do not occur.

2.9 Key Factor: Greenhouse Gas Emissions

Generic Question ID: 88 Sub ID [2, 4, 21, 24, 27, 32, 33, 34, 35, 41, 45, 46, 47, 50, 55, 58, 60, 62, 70, 71, 75, 76, 91, 94, 96, 97, 98, 99, 100, 118, 126, 133, 134, 135, 136, 151, 164, 198, 212, 227, 229, 235, 292, 293] Raised by [S75 Q855]

Greenhouse gas emissions for the Browse Basin LNG project have now been estimated at 39 million tonnes/annum, equivalent to 7% of Australia's emissions. However, these figures do not include greenhouse emissions from the development of nearshore and onshore oil and gas in the Canning Basin. The Strategic Assessment report fails to point out that the CO2 emissions are also likely to increase over the life of the project, with no measures in place to reduce these emissions. Furthermore, no details have been provided for Greenhouse gas abatement plans for all of the proponents or options for sequestration or carbon capture. It is unlikely that the sale of LNG from the Browse Basin will significantly reduce Asia's reliance on coal for power generation, with it likely to be that the use of LNG for power will be in addition to coal.

It is noted that the Strategic Assessment process requires a conservative approach to be taken for the identification and assessment of environmental impacts. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. It is highly unlikely that the levels of greenhouse gas emissions stated in the SAR will be realised.

Emissions from the development of nearshore oil and gas and onshore oil and gas activities are Category B and C activities which are addressed in **Part 4, Section 2.9.6** (Cumulative Impacts of the Proposal and Associated Activities). This approach has been adopted consistent with all other SAR chapters. Upstream activities for the Browse LNG Development are outside the scope of the SAR. The scope of the SAR is the assessment of Precinct activities and aspects (Category A), but with consideration of the cumulative indirect or related activities that may be predicted to occur (Categories B and C).

With regard to the comment that CO2 emissions would increase over the life of the project, it is noted in the SAR that emissions associated with the construction and decommissioning phases will be very small in comparison to those associated with the operational phase (in the order of 1%). Emissions will be greater during the operational phase of the project; however they are not anticipated to increase disproportionately to the plant's operating capacity. As outlined in **Part 4, Section 2.9.2.2** of the SAR, the primary sources of atmospheric emissions from facilities within the BLNG Precinct are reservoir emissions and combustion emissions. Reservoir emissions are largely dependent on the concentrations of CO2 naturally occurring in the subsurface reservoir. The concentration of reservoir CO2 remains constant during the life of a gas field. Emissions resulting from the combustion of natural gas to produce energy to operate the plant are determined by the design of the LNG trains and consequently the installed equipment (primarily gas turbines). Consequently emissions from a LNG train will remain constant over time. Therefore annual emission from the Precinct will be proportional to the installed LNG capacity.

In line with EPA objectives, commercial proponents seeking to locate in the BLNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (**GGAP**), in consultation with the relevant regulatory agencies and to the satisfaction of the Minister for Environment. Under such plans, commercial proponents would need to demonstrate that facilities have been designed and operated to reduce greenhouse gas emissions through application of best practice measures. In addition, the GGAP will be required to address (amongst various measures) specific targets and timeframes for achievement, demonstration of compliance with National scheme for reduction of GHG emissions, independent verification, monitoring and external reporting. Through these mechanisms, relevant agencies will be closely consulted in the development, implementation and reporting of measures to achieve GHG performance objectives, consistent with the framework presented in the SAR.

It is noted that the establishment of the BLNG Precinct would reduce the need for duplication of infrastructure such as ports, accommodation and roads, which would be required by individual companies if they were to build

their own facilities. A single facility would allow the State Government (as the Precinct Proponent), future operators within the BLNG Precinct and other regulatory agencies to efficiently audit activities being undertaken in the BLNG Precinct and ensure compliance with conditions of approval and other commitments through the BLNG Precinct Control Group. Through this mechanism there is opportunity to encourage integrated and effective GHG management practices for activities within the Precinct.

With respect to the broader question of LNG and coal as an energy mix in Asia, it is noted that Australian LNG can play a significant role in reducing global greenhouse emissions through displacement of higher emitting fuels such as coal. This lower carbon emission rate makes natural gas a comparatively clean energy source relative to other hydrocarbon fuels, and can form part of the global solution to climate change. Proposals such as the BLNG Precinct can play an important part in a low carbon future, as summarised in the SAR. Where used as a transitional fuel, LNG power generation systems produce 1.7 times more power for the same carbon emissions as coal-fired generation (Hondo, 2005). For example the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction to its GHG emissions from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001).

Ref: Department for Environment, Food and Rural Affairs, 2001, The UK's Third national communication under the United Nations Framework Convention on Climate Change, DEFRA Publications, UK

Generic Question ID: 297 Sub ID [36, 165, 212, 169, 198, 77, 105] Raised by [S165 Q720]

The Proponent proposes to provide Greenhouse Gas Abatement Plans as required by the EPA and states that "A range of options to further reduce are available, and will be subject to further investigation to evaluate their feasibility as part of the greenhouse gas abatement plan" (**p. 294**). We consider that it is unacceptable that these options have not been put forward at this stage for public scrutiny and comment. As stated in the EPA's Section 16(e) advice on the Kimberley LNG Precinct, "As a minimum the EPA would expect investigations into suitable locations for the injection and long term geological storage of reservoir carbon dioxide. For the gas transport and gas processing stage, the EPA would expect that best practice technology is proposed to maximise energy efficiency and minimise emissions, and carbon offsets are investigated for any residual impacts." None of this detail has been provided in the SAR and there is no evidence that the James Price Point location will have suitable geosequestration sites. Without more details on the options being considered by the Proponent to mitigate greenhouse gas emissions, the public assessment process is seriously undermined.

With regard to possible offsets, the SAR (**Part 4, Section 2.9.3.1**) outlines the Proponent's approach to mitigation, which was subject to detailed review by regulatory agencies prior to release for public comment. Proponents of derived proposals seeking to locate in the BLNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (**GGAP**) with any referral to EPA with significant GHG emissions, seeking a derived proposal under the Strategic Assessment. As the Strategic Assessment is addressing future development by multiple potential future proponents it isn't possible to provide specific abatement measures. The submission of greenhouse abatement options by proponents of derived proposals will enable the inclusion of specific abatement measures relating to the facilities proposed by these proponents. In addition, a condition would be imposed to require proponents of derived proposals to submit a report annually to the EPA on the progress of the implementation of the abatement plan.

The SAR identifies the commitment that, as part of the GGAP, proponents will be expected to complete an evaluation of the feasibility of greenhouse gas emissions reductions, carbon sequestration and/or capture opportunities. At this strategic assessment stage, specific abatement strategies cannot be confirmed by the Precinct Proponent. The Greenhouse Gas Abatement Plan is expected to be subject to a period of public review prior to finalisation.

Generic Question ID: 70 Sub ID [7, 93, 211, 73, 197, 116, 123] Raised by [S73 Q1657]

The BLNG will lead to a significant increase in greenhouse gases - with the state of Western Australia's current greenhouse gas emissions expected to rise from between 45% - 50% upon completion of the Browse project. Unfortunately it will be future generations that will feel the impact of this.

The SAR requires that a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. This uncertainty means that emissions from the BLNG Precinct may range from 12Mt CO2-e to 39Mt CO2-e per year, depending on the plant capacity. This represents 15.7% of WA’s emissions at the lowest end and 51.1% at the highest end (based on 2007 estimate of total emissions from WA to be 76.3 Mt CO-e) (DCC, 2009). This is in the context of an emission profile for the State of WA which has steadily

increased since 1990 and is projected to continue to increase (DCC, 2009).

Further, it is highly unlikely that the levels of greenhouse gas emissions stated in the highest case scenario in the SAR will be realised. Additionally, and importantly, the calculated emissions for the BLNG Precinct are base case, that is, without abatement. Commercial proponents seeking to locate in the BLNG Precinct will be required, in accordance with EPA objectives, to submit a Greenhouse Gas Abatement Plan (**GGAP**), in consultation with the relevant regulatory agencies and to the satisfaction of the Minister for Environment. Under such plans, commercial proponents would need to demonstrate that facilities have been designed and operated to reduce greenhouse gas emissions through application of best practice measures. In addition, the GGAP will be required to address (amongst various measures) specific targets and timeframes for achievement, demonstration of compliance with National scheme for reduction of GHG emissions, independent verification, monitoring and external reporting.

Hence, Greenhouse Gas Abatement Plans provide an important mechanism and opportunity to further reduce the emissions profile of the BLNG Precinct.

With abundant natural resources and in close proximity to LNG markets, Western Australia is positioning itself as a world leader in the supply of clean, high-quality natural gas, with the potential to deliver significant value to the economy.

Extensive studies and assessments have been undertaken (as referenced in the SAR) which demonstrate that these significant benefits can be delivered while protecting the important environmental, heritage and social values of the region. The development of the BLNG Precinct is expected to result in billions of dollars of capital investment, create thousands of jobs and provide opportunities for specialist service providers. It would encourage the establishment of industry-focused training, education and research institutes, and specialist risk management and emergency response resources in the region. The proposal would also provide significant economic and other social benefits to Traditional Owners and West Kimberley Indigenous communities.

In addition to local, regional and national benefits, the establishment of an economically viable gas processing precinct that facilitates the delivery of gas from the Browse Basin to international markets would deliver global benefits in helping to reduce greenhouse emissions through displacement of more carbon-intensive fuels.

Generic Question ID: 101 Sub ID [14, 195, 85, 90, 148, 294] Raised by [S14 Q104]

If this project goes ahead it will emit 32 million tonnes of carbon pollution into the atmosphere. Our current WA emissions are 80 million tonnes a year. The EPA must ask themselves if this is a risk worth taking? Is this a smart move in these modern times when we know that climate change is real (with scientific evidence since 1972).

In addition to efforts to move towards greater reliance on renewable energy, proposals such as the Browse LNG Precinct can play an important role in a lower- carbon future by reducing global greenhouse emissions through the displacement of higher emitting fuels such as coal.

The Precinct will be designed to meet atmospheric emissions and discharge limits which protect the health and safety of the community and protect the natural environment. In line with EPA objectives, commercial proponents seeking to locate in the Precinct will be required to submit a Greenhouse Gas (**GHG**) Abatement Plan, in consultation with the relevant regulatory agencies and to the satisfaction of the Minister for Environment. A 'GHG Abatement Plan' would be required to address the following:

- targets for GHG emissions;
- inventory of GHG emissions;
- best practice measures to reduce GHG emissions including controls to maintain plant reliability and reduce venting and flaring;
- strategies to incorporate greenhouse considerations in plant design, technology selection and operation;
- evaluation of the feasibility of GHG emissions reductions, carbon sequestration and/or capture opportunities;
- compliance with any National scheme for reduction of CO2-e emissions;
- independent verification of emissions in line with National schemes for managing and reporting GHG emissions;
- regular monitoring and external reporting, auditing of GHG emissions and performance; and
- periodically review of the effectiveness of improvement measures through the regular monitoring of GHG emissions and adaptive management of emissions, aimed at reducing GHG per tonne of LNG produced where practicable.

Under such plans, commercial proponents would need to demonstrate that facilities have been designed and

operated to reduce GHG emissions through application of best practice measures. As part of this process, operators will be required to benchmark the GHG efficiency of their operations.

Generic Question ID: 840 Sub ID [212, 198] Raised by [S198 Q1841]

Part 4, **Section 2.9.3.1**: The option to use a Reservoir CO2 Reinjection on the BLNG Precinct does not sound like a viable option at all. The long term monitoring of CO2 raises a number of issues including, legal implications and corporate liability and the public acceptance to name but a few. Geo-sequestration is a question of feasibility and is still being investigated for the BLNG Precinct by the Proponent. Why was this not investigated before any environmental proposal was released for public comment?

Part 4, **Section 2.9.3.1**: In the Forestry Carbon Sequestration and Market Mechanisms of the BLNG Strategic Assessment Report, it states that *"There are inherent risks associated with biological carbon sinks. To use forestry as an example, natural disasters such as bush fires and drought may affect performance of offsets."* It is unclear whether the Proponent is proposing a sink. The public can't comment because the Abatement Plan is not outlined. *"…modelling suggests forestry would require around 500,000ha of new forest to be established and maintained to offset forecast emissions from a 50Mtpa LNG Precinct".* If the Proponent is to try this method, will they be responsible for the funding of such a project? At the moment they are proposing a plant of 3000ha, which is roughly the size of Broome. An abatement plan involving 500,000ha of new forest is a massive task. There is nothing mentioned or guaranteed in the proposal for an abatement plan.

The BLNG Precinct proposal is being assessed as a "strategic proposal" pursuant to Section 38 of the *Environment Protection* (**EP**) *Act 1986.* Commensurate with the detail required for a strategic proposal under the EP Act, the environmental impact assessment involved the development of a nominal project description, the completion of baseline studies, assessments of potential impacts and the development of management measures.

Subject to an approval decision for the BLNG Strategic Proposal, commercial operators may refer their development proposal to the EPA under Section 39B of the EP Act, requesting that their proposal be a derived proposal (i.e. derived from a strategic proposal).

Environmental management plans and other required information will need to be provided by a commercial proponent for evaluation in order for the EPA to determine as to whether the referred proposal could be a derived proposal under Section 39B.

These management plans will also address greenhouse gas management. In discussion with the OEPA, DSD has agreed an approach where a Greenhouse Gas Abatement Plan (**GGAP**) will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal.

The scope of the GGAP is outlined in **Table 2.9-9**, **Part 4** of the SAR, and importantly will address, amongst other items, specific reduction targets and timeframes for achievement, application of best practice measures to reduce emissions, demonstration of compliance with National scheme for reduction of GHG emissions, and independent verification, monitoring and external reporting. Hence, in accordance with the approvals process under the EP Act, a full investigation into best practice abatement measures, to the satisfaction of the Minister, will be prepared as part of the derived proposal process.

Importantly, the GGAP process is aligned with EPA's environmental assessment objective to ensure that GHG emissions from proposed projects are adequately addressed through best practice planning, design and operation.

With respect to specific GHG abatement measures, given forest carbon sinks is one of the current benchmark methods for offsetting greenhouse gas emissions, together with the fact that reservoir CO2 geo-sequestration offers the single biggest opportunity for GHG abatement, means that these are likely to be an abatement option that each proponent will need to consider as part of their GGAP.

However the Proponent notes that implementation of geo-sequestration requires identified injection sites to be technically and economically viable. For example, there are no depleted oil or gas reservoirs in the region that could support a geo-sequestration scheme for the BLNG precinct. Consequently the geo-sequestration options would need to consider unproven traps or geological features that would give sufficient certainty for the containment of CO2 until it is permanently sequestered which will take thousands of years.

The Proponent further recognises the risks associated with forest carbon sinks and acknowledges that plantations of the size mentioned in the SAR would come with their own issues such as effects on the price for available land, environmental impacts of the forestry activities and future price uncertainty for wood products if the scheme cost is based on selling wood to reduce the effective carbon sequestration cost.

Generic Question ID: 567 Sub ID [120, 169] Raised by [S120 Q1203]

ENGO Submission: The Browse LNG facility will be the most pollution intensive LNG production facility in the world, emitting 0.65 tonnes of carbon dioxide for every tonne of LNG produced. The facility would also be the single largest point-source of carbon pollution in Western Australia, increasing Western Australia's carbon pollution by up to 50% and Australia's national GHG emissions by up to 5%.

It is noted that the strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35 Mtpa. Maximum respective increases to WA's emissions (relative to 2007) are 15.7%, 26.2% and 35.4% and to Australia's emissions (relative to 2007) are 2.0%, 3.3% and 4.5%. These specific details won't be available until a proponent submits their derived proposals to the EPA for evaluation.

Importantly, these emissions calculations do not take into account potential abatement.

In line with Environmental Protection Authority (**EPA**) guidance and recent environmental approvals in Western Australia, it is noted that any proponents of derived proposals in the Browse LNG Precinct will be required to submit a Greenhouse Gas Abatement Plan, to the satisfaction of the Western Australian Minister for Environment. Aligned with this, is EPA's environmental assessment objective to ensure that GHG emissions emitted from proposed projects are adequately addressed in the planning/design and operation of projects and that:

- best practicable measures are applied to maximise energy efficiency and minimise emissions;
- comprehensive analysis is undertaken to identify and implement appropriate offsets; and
- proponents of derived proposals undertake an ongoing program to monitor and report emissions and periodically assess opportunities to further reduce greenhouse gas emissions over time.

The GGAP will address specific targets and timeframes for achievement, demonstration of compliance with National scheme for reduction of GHG emissions, independent verification, monitoring and external reporting as outlined in **Part 4, Section 2.9.3.1** of the SAR.
Given the global nature climate change, the Proponent notes that discussion of greenhouse gas emissions generated by the BLNG proposal should be presented in the context of net global greenhouse gas levels. As recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008), LNG has an important role to play in transitioning global energy markets away from energy fuels that are more carbon intensive, thereby contributing to a global reduction in emissions.

Generic Question ID: 834 Sub ID [212, 198, 217] Raised by [S198 Q1836]

Part 4, **Section 2.9.2.2**: The BLNG Strategic Assessment Report states that "Some GHG emissions will be produced by the activities associated with the workers' accommodation facilities as energy and resource consumption servicing the fly-in fly-out population." This is just another example of why the State should be using the Pilbara as the GAS hub, where there is pre-existing infrastructure, such as accommodation and processing equipment. The majority of FIFO workers will come from Perth or other major capital cities. Does the State realise that if the BLNG Precinct was located in the Pilbara, the FIFO workers would fly shorter distances and create less Category B and or C emissions?

It is correctly cited that some GHG emissions will be produced by the activities associated with the workers accommodation facilities as energy and resource consumption servicing the fly-in fly-out (**FIFO**) population. To inform the strategic assessment, it was calculated that on average, annual emissions from this source represent between 0.19 and 0.28% of annual BLNG Precinct emissions, based on a conservative assumption. The greenhouse gas emissions related to carrying the gas via a pipeline to the Pilbara would be orders of magnitude greater than the difference in greenhouse emissions due to increased air transport distances. Although emissions would be dependent on the pipeline design, piping the gas to the Pilbara would increase greenhouse gas emissions in the order of 10%.

The Government has a strategic objective of creating a centralised LNG processing Precinct to manage impacts and ensure impacts are reduced by eliminating the duplication of facilities at numerous locations. The establishment of the BLNG Precinct would reduce the duplication of infrastructure such as ports, accommodation camps and roads, which would be required should individual companies build 'stand alone' facilities. A single, common-user LNG precinct would offer economic efficiencies to proponents, while reducing the development footprint compared to multiple, stand-alone LNG processing facilities – thus limiting the

potential disturbance to environmental, cultural and heritage values. A common-user precinct would also enable a coordinated and consistent approach to: management of potential environmental, heritage and social impacts; monitoring of cumulative effects; and auditing and control mechanisms.

In summary, while the indirect emissions associated with FIFO workforce movements could be marginally reduced by travelling shorter distances to the Pilbara, this would represent a very small proportion of the emissions related to piping the gas to the Pilbara, the actual origins of that workforce are as yet undefined at this strategic proposal stage, and there are a range of considerations to consider in achieving the benefits of a single co-located processing location to minimise duplication of infrastructure and environmental footprints. The largest gains in GHG and energy efficiency will be obtained through efficient design of LNG processing and utility infrastructure, and the management measures proposed through the Greenhouse Gas Abatement Plan (refer **Part 4, Section 2.9, Table 2.9-9**).

Generic Question ID: 89 Sub ID [2, 144] Raised by [S2 Q45]

No details have been provided on the environmental and mining offsets being considered for the JPP industrial development. The report recognised that wild fires make a significant contribution to CO2 emissions in the Kimberley region of WA. The development of the LNG precinct could indirectly result in a massive increase in emissions to air from "wild fires". Mining offset options that are being considered include investment in fire abatement programmes through the Department of Environment and Conservation. This would provide a mechanism for the oil and gas industry to offset their carbon emissions. An increased investment into industrial burning techniques such as aerial firebombing during the dry season could lead to a massive increase in annual CO2 emissions from wildfires lit as a results of fire abatement burning programs. This could have an adverse effect on the biodiversity of the Kimberley rangelands and the water quality of the rivers.

The EPA provided advice under Section 16e of the *Environmental Protection Act 1986* on short-listed sites for the proposed Kimberley LNG Precinct in Report 1306 of December 2008. The EPA did not recommend development at North Head, in part because of the potential for nearby settlements, including Beagle Bay, to be affected by emissions from the proposed LNG Precinct. In the same report the EPA found that, of the sites considered on the Dampier Peninsula, James Price Point was the least likely to be environmentally constrained, in part because of the greater distance from permanent human settlements. In particular, James Price Point is 80km distant from Beagle Bay and 150km from Derby.

The Air Quality Study conducted as part of the SAR included modelling of air emissions and their likely impact on sensitive receptor locations including Broome and Beagle Bay. The results are summarised in **Part 4**, **Section 2.8**, with full details included as **Appendix C-25**. Predicted pollutant concentrations from the proposed development were not large at these locations and did not exceed relevant air quality standards for the protection of human health and well-being. For further information on the relevant air quality standards, refer to **SAR Part 4, Section 2.8.1.1**, in particular **Tables 2.8-1** and **2.8-2**.

Although not addressed directly, it is clear from the modelling results that Derby is sufficiently far from James Price Point that the contribution of emissions from the proposed LNG Precinct are not anticipated to result in unacceptable impacts. The SAR outlines a range of management measures and commitments to ensure that emissions are actively managed, monitored and reported by commercial proponents operating within the LNG Precinct.

Possible relevant links to the SAR:

In development, currently only linking to start of each document;

http://public-consult.epa.wa.gov.au/portal/browse-lng/sap?pointId=75409

http://public-consult.epa.wa.gov.au/portal/browse-lng/sap?pointId=75409

http://public-consult.epa.wa.gov.au/portal/browse-lng/sap?pointId=d21064e13#section-d21064e13

http://public-consult.epa.wa.gov.au/portal/browse-lng/eiam?pointId=74429

http://public-consult.epa.wa.gov.au/portal/browse-lng/eiat?pointId=73748

http://public-consult.epa.wa.gov.au/portal/browse-lng/sia?pointId=74081

http://public-consult.epa.wa.gov.au/portal/browse-lng/com?pointId=73713

Generic Question ID: 260 Sub ID [64, 120] Raised by [S64 Q680]

DEC Recommendation 42 (11): The Proponent should cite the lifecycle benefits of LNG in the context of a discussion of greenhouse gas abatement benefits.

Discussion: The Proponent cites statistics which may present a misleading picture of the global greenhouse gas abatement benefits of LNG.

The SAR states that "Australian LNG can play a significant role reducing global greenhouse emissions through displacement of higher emitting fuels such as coal. For every tonne of CO2 emitted in LNG production within Australia, at least four tonnes can be reduced globally by displacing coal-fired power generation. This lower carbon emission rate makes natural gas a comparatively clean energy source, relative to other hydrocarbon fuels and can form part of the global solution to climate change." (**Part 1** , **p. ES-77**)

The 1:4 ratio is a comparison between emissions generated at source and emissions abated from combustion when LNG displaces coal (in the destination country). This may be a useful parameter when assessing the relative impact of a project on total national emissions, and the extent to which global benefits may outweigh these impacts from an emissions perspective. However, this approach ignores the emissions associated with transport and losses of LNG. It should also be noted that, while the global benefits may be significant and constitute a worthwhile trade-off compared to the domestic emissions, current international frameworks do not recognise this. The emissions from production will be a liability to Australia without any ability to capture consequent reductions elsewhere. This liability needs to be managed, at least until international frameworks progress.

The most accurate measure of global abatement benefits of LNG is the lifecycle assessment. CSIRO reports that the lifecycle emissions of LNG are about 45% less than when Australian thermal coal is exported for power generation in the same country.

The Proponent agrees with DEC that lifecycle assessment is the most useful basis on which to assess the global abatement benefits of LNG. For this reason, supply chain lifecycle emissions for power generation have been presented in **Part 4**, **Figure 2.9-4** of the SAR. The figure shows that overall, the total lifecycle emissions from LNG are considerably less than for coal. The figure also shows that the most significant proportion of emissions over the lifecycle of LNG are associated with combustion. Notably, this proportion is significantly less when compared with coal. The Proponent considers this a useful detail to mention in the SAR.

When examining other emissions in the LNG lifecycle, it is clear that while emissions from LNG transportation, processing and production are greater than the equivalent phases of the emissions lifecycle for coal, they comprise a minor proportion of the total lifecycle emissions. With this in mind, the Proponent does not consider that a misleading picture of greenhouse gas abatement benefits of LNG has been presented.

In addition to the net global emissions benefits that the BLNG Precinct will generate, emissions at a local level will be managed through the development of a Greenhouse Gas Abatement Plan (**GGAP**) by any proponents of derived proposals in the Browse LNG Precinct. The GGAP is required to be submitted to the satisfaction of the Western Australian Minister for Environment and is line with Environmental Protection Authority (**EPA**) guidance and recent environmental approvals in Western Australia. Aligned with this is EPA's environmental assessment objective to ensure GHG emissions from proposed projects are adequately addressed in the planning/design and operation of projects and that:

- best practicable measures are applied to maximise energy efficiency and minimise emissions;
- comprehensive analysis is undertaken to identify and implement appropriate offsets; and
- proponents of derived proposals undertake an ongoing program to monitor and report emissions and periodically assess opportunities to further reduce greenhouse gas emissions over time.

The GGAP will address: specific targets and timeframes for achievement; demonstration of compliance with National scheme for reduction of GHG emissions; independent verification; monitoring; and external reporting - as outlined in **Part 4**, **Section 2.9.3.1** of the SAR.

Generic Question ID: 262 Sub ID [64, 212] Raised by [S64 Q684]

DEC Recommendation 44 (13): That consideration be given to applying a carbon constraint to the proposal in the absence of a carbon pricing mechanism.

Discussion: The Browse LNG Precinct has the capacity to increase State-based emissions by about 50%.

The SAR states that "The base case emissions, without abatement, represents between 15.7 and 51.1% of the total emissions for WA based on the 2007 estimate of 76.3Mt CO2-e (DCC, 2009b). The indicative emissions projected for the BLNG development scenarios represent between 2.0 and 6.5% of Australia's domestic emissions (DCC, 2009b) of 597.2Mt CO-e ... " (**Part 4**, **p. 2-197**).

The implications of the project for both State and national abatement goals should be noted. The upper level projection (6.5% of Australia's domestic emissions in 2007 and 7.1% of Australia's 1990 emissions) has the capacity to substantially compound the difficulty of attaining the national commitment to reduce emissions by 5% in 2020.

The EPA's environmental objective for greenhouse gas emissions is to minimise emissions to levels as low as

practicable on an ongoing basis, and consider offsets to further reduce cumulative emissions (EPA, 2009). The EPA has also noted the need to 'mitigate' greenhouse gas emissions, mindful of Commonwealth and State greenhouse gas strategies and programs.

The SAR also states that "Any proponents of derived proposals in the BLNG Precinct will be required to submit a Greenhouse Abatement Plan with any referral to EPA seeking a derived proposal under this Strategic Proposal. In addition, a condition would be proposed to require any proponents of derived proposals to submit a report annually to the EPA and report publicly on the progress of the implementation of the abatement plan. A range of options to further reduce emissions are available, and will be the subject of further investigation to evaluate their feasibility as part of the greenhouse gas abatement plan." (**Part 4**, **p. 2-204**).

Until there is a carbon price in place, there will be no effective carbon constraint on new projects, including potentially significant emitters. There is currently significant uncertainty over how and when a carbon price is to be introduced. On 24 February 2011, the Commonwealth Government announced that it would seek to pass legislation this year for a carbon price to commence on 1 July 2012. This carbon price would be implemented in two stages: initially a three to five year fixed price period followed by transition to an emissions trading scheme; with the price to be determined by the market.

The Government has a strategic objective of creating a centralised LNG processing Precinct to manage impacts and ensure impacts are reduced by eliminating the duplication of facilities at numerous locations. Setting a carbon constraint for the Browse LNG Precinct may result in development at the Precinct being less favourable than other locations for future proponents.

Setting a carbon constraint is but one of a number of options that requires consideration to manage and mitigate greenhouse gas emissions for the Browse LNG Precinct. A range of options to further reduce emissions will be the subject of investigation to evaluate their feasibility and will be considered as part of a broad greenhouse gas abatement plan.

DSD has recognised the difficulties in fully assessing the greenhouse gas aspects of the project and in discussion with the OEPA has agreed an approach where a Greenhouse Gas Abatement Plan (**GGAP**) will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal (**Table 2.9-9**, **Part 4**). The greenhouse gas abatement plan will address the following:

- targets for greenhouse gas emissions;
- inventory of greenhouse gas emissions;
- best practice measures to reduce greenhouse gas emissions including controls to maintain plant reliability and reduce venting and flaring;
- strategies to incorporate greenhouse considerations in plant design, technology selection and operation, including defined targets and timeframes for achievement of no regrets measures such as energy efficiency programs;
- evaluation of the feasibility of greenhouse gas emissions reduction opportunities;
- compliance with any National scheme for reduction of CO2-e emissions. The GGAP will be reviewed should future National or State schemes be enacted to appropriately respond to future requirements;
- independent verification of emissions in line with National schemes for managing and reporting greenhouse gas emissions;
- regular monitoring and external reporting, auditing of greenhouse gas emissions and performance; and
- periodically review the effectiveness of improvement measures through the regular monitoring of greenhouse gas emissions and adaptive management of emissions, aimed at reducing the greenhouse gas emissions per tonne of LNG produced where practicable. It is expected that operators within the Precinct will provide a Continuous Improvement Report every five years to the Minister for Environment, outlining review of measures undertaken to date and practicability of measures for the next Reporting period.

In addition, DSD recognises the broader public concern with respect to the issues, and has therefore committed to a period of public review of the GHG Abatement Plan prior to finalisation. This ensures transparency and the opportunity for public comment.

Generic Question ID: 598 Sub ID [57, 69] Raised by [S57 Q502]

What is the corporate contribution to abatement of greenhouse gases and its part in reducing climate change emissions?

The production of natural gas from the Browse LNG Development would contribute in a very positive sense to the efforts to combat climate change. IPCC, Stern, and others agree that natural gas and LNG, which produce substantially less carbon dioxide equivalents (**CO2-e**) than coal or oil, are important bridging fuels on the road to

a lower carbon economy. Replacement of coal in particular, is identified as one of the key "stabilisation wedges" required to reduce overall global emissions to a level which will prevent the worst of the predicted impact. This is echoed in WA's Greenhouse Gas Reduction Strategy which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emission and commits encouraging the long term export of relatively cleaner fossil fuels such as LNG (p.90).

Part 4 Section 2.9.4 of the SAR outlines the approach to greenhouse gas abatement at a local level. In line with Environmental Protection Authority (**EPA**) guidance and recent environmental approvals in Western Australia, it is noted that any proponents of derived proposals in the Browse LNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (**GGAP**), to the satisfaction of the Western Australian Minister for Environment.

The GGAP will address specific targets and timeframes for achievement, demonstration of compliance with National scheme for reduction of GHG emissions, independent verification, monitoring and external reporting as outlined in **Part 4**, **Section 2.9.3.1** of the SAR. Therefore while specific greenhouse gas emissions reduction amounts will be determined as part of the GGAP, it is useful to note that the fundamental philosophy underpinning the approach is aligned with EPA's environmental assessment objective regarding GHG emissions in that:

- best practicable measures will be applied to maximise energy efficiency and minimise emissions;
- comprehensive analysis will be undertaken to identify and implement appropriate offsets; and
- proponents of derived proposals will undertake an ongoing program to monitor and report emissions and periodically assess opportunities to further reduce greenhouse gas emissions over time.

Finally, in recognising the broader public concern with respect to greenhouse gas the Proponent has also committed to a period of public review prior to finalising the GGAP.

Generic Question ID: 808 Sub ID [75, 222] Raised by [S75 Q856]

Whatever greenhouse gas abatement occurs, it is very likely that processing on the proposed LNG Precinct will still produce unacceptably high levels of CO2. Not only should sequestration be a requirement, but the WA government should have identified the method to be used, and included details in this assessment for environmental approval. Whichever methodology is adopted, it is likely to have an unacceptably high impact on the environment which should preclude the proposal being given approval to proceed.

The Proponent acknowledges public concern over greenhouse gas emissions related to the BLNG precinct and in doing so notes some useful context to inform this response, specifically:

- the conservative approach taken to the assessment of GHG in the SAR;
- the development of a Greenhouse Gas Abatement Plan, informed by, and aligned with, EPA's objective of minimising GHG emissions; and
- the positive contribution of LNG produced from the BLNG Precinct to the global efforts to combat climate change.

Firstly, the strategic assessment process requires a conservative approach to the identification and assessment of environmental impacts be taken. This has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35Mtpa. In the context of State and Federal emissions levels, this represents maximum respective increases to WA's emissions (relative to 2007) of 15.7%, 26.2% and 35.4% and to Australia's emissions (relative to 2007) of 2.0%, 3.3% and 4.5%. These specific details won't be available until a proponent submits their derived proposals to the EPA for evaluation.

Importantly, these emissions calculations do not take into account potential abatement. In discussion with the OEPA, the Proponent has agreed an approach where a Greenhouse Gas Abatement Plan (GGAP) will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal. The scope of the GGAP is outlined in **Table 2.9-9**, **Part 4** of the SAR, and importantly will address, amongst other items, specific reduction targets and timeframes for achievement, application of best practice measures to reduce emissions, demonstration of compliance with National scheme for reduction of GHG emissions, and independent

verification, monitoring and external reporting. The GGAP process is aligned with EPA's environmental assessment objective to ensure that GHG emissions from proposed projects are adequately addressed through best practice planning, design and operation. Given reservoir CO2 geo-sequestration offers the single biggest opportunity for GHG abatement, this is likely to be an abatement option that each proponent will need to consider as part of their GGAP.

However the Proponent notes that implementation of geo-sequestration requires identified injection sites to be technically and economically viable. For example there are no depleted oil or gas reservoirs in the region that could support a geo-sequestration scheme for the BLNG Precinct. Consequently the geo-sequestration options would need to consider unproven traps or geological features that would give sufficient certainty for the containment of CO2 until it is permanently sequestered which will take thousands of years. With this in mind, mandating geo-sequestration will not necessarily encourage the best practicable emissions reduction outcome by proponents.

In addition, mandating geo-sequestration where it is not technically and economically viable would also diminish the potential for LNG to positively contribute to climate change at the global level as development of the LNG projects would no longer be viable. This is because LNG has an important role to play in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions. This positive outcome is recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008) and reflected in the commitment to encourage the long term export of relatively cleaner fossil fuels such as LNG.

Generic Question ID: 832 Sub ID [198, 212] Raised by [S198 Q1833]

Part 4, **Section 2.9.2.2**: It is stated in the BLNG Strategic Assessment Report that "Emissions associated with the construction and decommissioning phases will be very small in comparison to those associated with the operational phase (in the order of 1%)". Does the State realise that this is only another 5Mtpa CO2? It is stated in the BLNG Strategic Assessment Report that "Similarly fugitive emissions include emissions resulting from intentional or unintentional GHG releases (such as natural gas leaks from joints and seals) are expected to be minor. Based on industry best practices, a conservative estimate of 0.1% of total GHG emissions will result from fugitive emissions." Does the State realise that this is only around 500 tonne of CO2 pa, conservative?

The strategic assessment process requires a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35 Mtpa. As presented in **Part 4**, **Table 2.9.3** of the SAR, maximum total greenhouse gas emissions for these development scenarios are 12, 20 and 27 Mtpa respectively. Using the conservative estimate of 0.1% for the proportion of fugitive emissions, this equates to approximately 0.0018, 0.0029 and 0.004 Mtpa CO2-e, which represents between 0.002% and 0.035% of the total emissions for WA based on the 2007 estimate of 76.3Mt CO2-e (DCC, 2009). These specific details won't be available until a proponent submits their derived proposals to the EPA for evaluation. In comparison (and without diminishing greenhouse gas reduction objectives), the average Australian household produces 12 tonnes of CO2-e per year (CSIRO 2009).

With respect to emissions associated with the construction and decommissioning phases, a guide of 1% of operational phase emissions is provided in the SAR. A proportional amount is typically provided, rather than an aggregated total of tonnes CO2-e, given that detail on relevant time frames is required to make a useful calculation.

However, it is noted that any proponents of derived proposals in the Browse LNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (**GGAP**), to the satisfaction of the Western Australian Minister for Environment. The scope of the plan will consider fugitive emissions as well as emissions associated with construction and decommissioning. The GGAP will address: specific reduction targets and timeframes for achievement; application of best practicable measures to maximise energy efficiency and minimise emissions; demonstration of compliance with National scheme for reduction of GHG emissions; independent verification, monitoring and external reporting as outlined in **Part 4**, **Section 2.9.3.1** of the SAR.

Generic Question ID: 833 Sub ID [198, 212] Raised by [S198 Q1834]

Part 4, **Section 2.9.2.2**: Why was the following statement on the Snohvit facility included? "It should also be noted that the Snohvit facility, which has the lowest greenhouse index, is located in the Arctic Circle. …The Snohvit facility is also subject to a mandatory Norwegian carbon tax regime, providing greater financial incentives for increased efficiency compared to other plants." Does it really relate to the Kimberley BLNG

Precinct? What an interesting graph it would have been if all countries were doing this.

The GHG intensities of some of the major LNG plants worldwide (existing and planned) are presented in **Figure 2.9.1** and **Figure 2.9.2** of the SAR (**Part 4**) as a means of benchmarking, to the extent that it is possible and appropriate, the Browse LNG Development. A direct comparison of facilities cannot always be made, as each facility is subject to different conditions that affect both reservoir emissions and emissions from combustion. Therefore it is often useful to provide additional qualitative information to accompany the quantitative data that is presented on LNG emissions performance. In the case of Snohvit, which is best performing facility included in the graph, its relatively low emissions from combustion are significantly influenced by environmental and economic conditions that do not exist for the BLNG development. The description provides an additional perspective on the conservative projections of emissions performance presented for the BLNG development which the Proponent considers useful and relevant.

Generic Question ID: 836 Sub ID [198, 212] Raised by [S198 Q1840]

Part 4, **Section 2.9.3.1**: Apart from the section on Improved Fire Management Regime in the BLNG Strategic Assessment Report, where are greenhouse gases mitigated or abated? It is fantastic to see that the State government is in discussions with the KLC in regards to a North Kimberley Fire Abatement Project to improve fire management within the Dampier Peninsula. It is not appropriate that the State Government is extending this project by confirming mechanisms and resources of support and funding from proponents of derived proposals. The Kimberley shouldn't have to have a GAS hub to receive the full support of the State Government or other proponents for a Fire Abatement Project, which is needed regardless.

Details of greenhouse gas mitigation and abatement measures will be described in a separate Greenhouse Gas Abatement Plan (**GGAP**) to be developed by future proponents at the BLNG precinct. This is in line with Environmental Protection Authority (**EPA**) guidance and recent environmental approvals in Western Australia, which requires any proponents of derived proposals in the Browse LNG Precinct to submit a GGAP, to the satisfaction of the Western Australian Minister for Environment.

As outlined in **Part 4**, **Section 2.9.3.1** of the SAR, the GGAP will specifically address :

- targets for greenhouse gas emissions;
- inventory of greenhouse gas emissions;
- best practice measures to reduce greenhouse gas emissions including controls to maintain plant reliability and reduce venting and flaring;
- strategies to incorporate greenhouse considerations in plant design, technology selection and operation, including defined targets and timeframes for achievement of no regrets measures such as energy efficiency programs;
- evaluation of the feasibility of greenhouse gas emissions reduction opportunities;
- compliance with any National scheme for reduction of CO2-e emissions. The GGAP will be reviewed should future National or State schemes be enacted to appropriately respond to future requirements;
- independent verification of emissions in line with National schemes for managing and reporting greenhouse gas emissions;
- regular monitoring and external reporting, auditing of greenhouse gas emissions and performance; and
- periodically review the effectiveness of improvement measures through the regular monitoring of greenhouse gas emissions and adaptive management of emissions, aimed at reducing the greenhouse gas emissions per tonne of LNG produced where practicable. It is expected that operators within the Precinct will provide a Continuous Improvement Report every five years to the Minister for Environment, outlining review of measures undertaken to date and practicability of measures for the next Reporting period.

In recognising the broader public concern with respect to greenhouse gas the Proponent has also committed to a period of public review prior to finalising the GGAP.

Specifically in relation to support for fire management, and as noted in **Part 4**, **Section 2.9.3.1** of the SAR, the State's commitments and proposed management measures to improve the local fire management regime, including a Dampier Peninsula Fire Management Strategy (refer **Part 4**, **Section 2.7**) may also provide the opportunity for GHG benefits to be derived. The establishment and operation of a strategic fire management program on the Dampier Peninsula, in cooperation with the Traditional Owners, is an option to reduce GHG emissions, similar to the West Arnhem Land Fire Abatement (**WALFA**) project in the Northern Territory. Under the WALFA program, Indigenous ranger groups are established and trained to undertake strategic early season burning across country, through a partnership agreement between the Aboriginal Traditional Owners and Indigenous ranger groups, Darwin Liquefied Natural Gas (**DLNG**), the Northern Territory Government and the Northern Land Council.

Generic Question ID: 949 Sub ID [198, 212] Raised by [S198 Q1837]

Part 4 Section 2.9.3: The BLNG Strategic Assessment Report states that "Emissions of GHG, unlike other common air emissions, affect the Earth's weather system globally. Emissions from WA are a small component of annual greenhouse gas emissions on a global scale and it is the cumulative effect of emissions from all nations that are responsible for the changes being experienced in the climate system, including sea level rise". What is the above statement trying to say? Is it stating that because the emissions from WA are a small component, compared to the rest of the world, that it's ok to pollute? Is the State trying to relegate some of their responsibility because it is a global problem?

The Proponent did not intend the statement to imply that 'because the emissions from WA are a small component, compared to the rest of the world, that it's OK to pollute'. The SAR commits to the preparation of a Greenhouse Gas Abatement Plan to the satisfaction of the Minister for Environment that addresses, amongst other things, best practice measures to reduce greenhouse gas emissions. The Greenhouse Gas Abatement Plan will be subject to a period of public review prior to finalisation.

The purpose of the statement in the SAR is to recognise that climate change is a complex global phenomena involving complex interactions of the world's atmosphere, oceans and land surfaces. As a result, models to understand and project climate change are developed at a global scale and are based on the cumulative effect of emissions generated across the globe. It is reasonable therefore to put the total quantum of WA's emissions in the global context.

The global context is also important because of the role LNG plays as a transition fuel to a lower carbon future. This role is due to LNG being a less carbon intensive source for generating electricity compared to traditional coal fired stations. This is recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008) which identifies LNG as having a role to play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). The Strategy contains a range of actions to reduce greenhouse gas emissions. These actions recognise the global nature of climate change and therefore the need to consider the management of greenhouse gas emissions at a global scale. Specifically in relation to LNG, the State has recognised that the most useful way to consider its associated emissions is in a global context. As such the State has an action within the Greenhouse Gas Reduction Strategy to encourage the long term export of relatively cleaner fossil fuels such as LNG (Action 4.4 p.90), which will displace more carbon intensive fossil fuels such as coal.

Generic Question ID: 950 Sub ID [198, 212] Raised by [S198 Q1843]

Part 4 Section 2.9.3.1: It is stated in the BLNG Strategic Assessment Report that Total Carbon Capture is a "technology not yet proven for commercial applications..." and "Given the experimental nature of this technology it is not recommended for the Browse development at this stage." Will this mitigate any greenhouse gases? It also states that "Consideration shall be given to provision of space in the case of future retrofit (e.g. blowers in the vicinity of the gas turbines)." Is this space on any of the plans available to the public? How many more hectares will they require?

Greenhouse gas mitigation involves reductions in the concentrations of greenhouse gases either by reducing their sources or by increasing their sinks. Total carbon capture refers to the capture of the exhaust plumes from power generation and liquefaction turbines and the subsequent removal of the CO2 for either storage, such as through geo-sequestration, or treatment. Therefore in theory, this would mitigate some of the greenhouse gases associated with the project. However, as noted in **Part 4**, **Section 2.9.3.1** of the SAR, total carbon capture from all exhausts is an unproven technology at commercial scale, is prohibitively expensive and uses a process that generates its own additional emissions.

With respect to the consideration given to potentially employing total carbon capture in the future, it is noted that any future proponents intending to operate within the Browse LNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (**GGAP**), to the satisfaction of the Western Australian Minister for Environment. The GGAP outlines the intended approach for managing emissions relevant to the Browse LNG Downstream Project and would address the following:

- targets for greenhouse gas emissions;
- inventory of greenhouse gas emissions;
- best practice measures to reduce greenhouse gas emissions including controls to maintain plant reliability and reduce venting and flaring;
- strategies to incorporate greenhouse considerations in plant design, technology selection and operation;
- evaluation of the feasibility of greenhouse gas emissions reductions, carbon sequestration and/or

capture opportunities;
- compliance with any National scheme for reduction of CO2-e emissions;
- independent verification of emissions in line with National schemes for managing and reporting greenhouse gas emissions;
- regular monitoring and external reporting, auditing of greenhouse gas emissions and performance; and
- periodically review the effectiveness of improvement measures through the regular monitoring of greenhouse gas emissions and adaptive management of emissions, aimed at reducing greenhouse gas emissions per tonne of LNG produced where practicable.

The Proponent recognises the broader public concern with respect to greenhouse gas and has therefore committed to a period of public review prior to finalising the GGAP.
The allowance for any space related to "provision of space in the case of future retrofit" would be contained in the identified cleared areas in the SAR.

Generic Question ID: 952 Sub ID [198, 212] Raised by [S198 Q1845]

Part 4 Section 2.9.3.1: In relation to Lifecycle Emissions of the BLNG Strategic Assessment Report, it is reported that: *"However, consideration should be given to the potential for natural gas to reduce emissions globally through the displacement of coal and oil based power generation systems as demonstrated through the lifecycle emissions by fuel type in **Table 2.9-6** and **Table 2.9-7**"*. Whilst the submission agrees with the above statement it is against the destruction of the Kimberley coastline when the Pilbara is already industrialised.

The Proponent notes the comment in this submission that agrees that there is potential for natural gas to reduce emissions through the displacement of coal and oil based power generation systems. There is a considerable amount of literature available to demonstrate that GHG emissions from power plants using LNG as a fuel source are considerably lower than those from plant using other fossil fuel sources.

The issue raised in this context is really specific to the relative costs and benefits of developing a single co-located LNG processing Precinct at the selected location near James Price Point versus other options, including the Pilbara. The reader is referred to the detailed summary of the site selection process, including a comparative analysis of the feasibility of location options for the development of a common-user BLNG Precinct outside of the Kimberley region. A range of technical, environmental, social and economic opportunities and constraints of these options were considered by the Northern Development Taskforce (**NDT**), as presented in **Part 2, Section 4** and associated NDT technical appendices.

The Government has a strategic objective of creating a centralised LNG processing Precinct to manage impacts and ensure impacts are reduced by eliminating the duplication of facilities at numerous locations. The establishment of the BLNG Precinct would reduce the duplication of infrastructure such as ports, accommodation and roads, which would be required should individual companies build 'stand alone' facilities. A single, common-user LNG Precinct would offer economic efficiencies to proponents, while reducing the development footprint compared to multiple, stand-alone LNG processing facilities – thus limiting the potential disturbance to environmental, cultural and heritage values. A common-user Precinct would also enable a coordinated and consistent approach to: management of potential environmental, heritage and social impacts; monitoring of cumulative effects; and auditing and control mechanisms.

In summary, there are a range of considerations to consider in achieving the benefits of a single co-located processing location to minimise duplication of infrastructure and environmental footprints. The focus of the strategic assessment was to evaluate the environmental, social and heritage impacts and benefits relevant to the proposed Precinct location near James Price Point, and define a management framework to achieve acceptable balanced outcomes.

Generic Question ID: 1269 Sub ID [222, 116] Raised by [S222 Q1160]

Part 1 Section 8.2.8: This development would produce very large quantities of greenhouse gasses and other airborne and marine pollutants with far-reaching implications for surrounding communities and for meeting greenhouse gas emissions reduction targets. Browse Basin processing facilities proposed by Shell (Prelude field), the Browse LNG Joint Venture (Stage 1) and Inpex/Total (Ichthys field) will discharge around 17 million tonnes of CO2 into the atmosphere each year. By 2015 the processing of oil and gas from North West Australia is expected to contribute up to 15% of Australia's total emissions.

- Because the gas from Browse is high in carbon dioxide (10%), the proposed Browse LNG Joint Venture will be a massive emitter of greenhouse gases – 12 million tonnes per annum from Stage 1 of the LNG development, increasing to 39,000,000 tonnes per annum at full production. That means this one project will increase WA's annual greenhouse emissions by over 50%. (Ref: DSD Browse LNG Project

'Strategic Assessment Report', 2010).

Emissions occur through:

- venting of carbon dioxide (**CO2**) removed from the reservoir;
- from transport of gas from the reservoir to the plant;
- from LNG processing; and
- from combustion sources used to supply energy for LNG processing.

It is noted that the strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35Mtpa. Maximum respective increases to WA's emissions (relative to 2007) are 15.7%, 26.2% and 35.4% and to Australia's emissions (relative to 2007) are 2.0%, 3.3% and 4.5%. These specific details won't be available until a proponent submits their derived proposals to the EPA for evaluation.

Importantly, these emissions calculations do not take into account potential abatement. All future proponents will be required to prepare a Greenhouse Gas Abatement Plan to the satisfaction of the Minister of the Environment that will detail best practice measures to reduce and manage emissions. This plan will be subject to a period of public review prior to finalisation.

As outlined in **Part 4**, **Section 2.9.3** of the SAR, the Commonwealth Government has committed to an unconditional 5% reduction of CO2-e emissions target by 2020, below 2000 levels. In absolute terms, this represents an emissions target of 525 MTCO2-e. The most conservative, maximum case scenario of 50MTPA production comprises 7.4% of the Commonwealth target. The lowest case scenario of 12Mtpa production comprises only 2.2% of this target.

Given the global nature of climate change, the Proponent notes that discussion of greenhouse gas emissions related to the BLNG should be presented in the context of net global greenhouse gas levels. As recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008), LNG has an important role to play in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions.

The production of natural gas from the Browse LNG Development would contribute in a very positive sense to the efforts to combat climate change. Inter Governmental Panel on Climate Change, Stern, and others agree that natural gas and LNG, which produce substantially less carbon dioxide equivalents (**CO2-e**) than coal or oil, are important bridging fuels on the road to a lower carbon economy. Replacement of coal in particular, is identified as one of the key "stabilisation wedges" required to reduce overall global emissions to a level which will prevent the worst of the predicted impact.

This is echoed in WA's Greenhouse Gas Reduction Strategy which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emission and commits encouraging the long term export of relatively cleaner fossil fuels such as LNG (p.90).

Generic Question ID: 1404 Sub ID [87, 106] Raised by [S87 Q2204]

Relative to gas emissions, CO2 gas emissions from the proposed development are predicted to be 6.5% of Australia's total. This is another huge issue at a time when the Commonwealth government is seeking to reduce Australia's green-house gas production by 5%. This is a massive addition to Australia's national production.

The strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35Mtpa. Maximum respective increases to WA's emissions (relative to 2007) are 15.7%, 26.2% and 35.4% and to Australia's emissions (relative to 2007) are 2.0%, 3.3% and 4.5%. These specific details will not be available until a proponent submits their derived proposals to the EPA for evaluation.

Importantly, these emissions calculations do not take into account potential abatement. As outlined in **Part 4**, **Section 2.9.3** of the SAR, the Commonwealth Government has committed to an unconditional 5% reduction of

CO2-e emissions target by 2020, below 2000 levels. In absolute terms, this represents an emissions target of 525 MT CO2-e. The most conservative, maximum case scenario of 50Mtpa production comprises 7.4% of the Commonwealth target. The best case, scenario of 12Mpta production comprises only 2.2% of this target.

Given the global nature of climate change, the Proponent notes that discussion of greenhouse gas emissions related to the BLNG should be presented in the context of net global greenhouse gas levels. As recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008), LNG has an important role to play in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions. Therefore the production of natural gas from the Browse LNG Precinct would contribute in a very positive sense to the efforts to combat climate change.

Generic Question ID: 90 Sub ID [2] Raised by [S2 Q46]

The offshore oil and gas industry in WA has developed under a culture of self regulation whereby industry calculates emissions to air and emissions to water, then reports those emissions to DEC. There is no requirement for the oil and gas industry to report emissions until a minimum threshold is reached. The threshold levels set by industry may not be low enough to ensure there is no significant contamination to air and water from the JPP development.

The reader is referred to **Part 1**, **Section 3.4** (Management Framework) that outlines a broad range of management controls that are in place to achieve acceptable outcomes. All prescribed industrial premises (including facilities within the proposed Precinct) are obligated to manage, monitor and regularly report environmental performance (including emissions and discharge data) and incidents to the relevant regulatory authority (e.g. the Department of Environment and Conservation as part of Part V of the *Environmental Protection Act 1986*. This regulatory oversight ensures that monitoring is undertaken and environmental conditions set during the approval process are being met by proponents.

Environmental guidelines for discharges and emissions are commonly set at a federal level (e.g. National Environmental Protection Measures (**NEPM**) and ANZECC/ARMCANZ Water Quality Guidelines 2000), however regulatory authorities in each State and Territory can and do apply emission and discharge criteria as deemed appropriate to ensure facilities achieve acceptable limits. In instances where relevant standards do not exist (e.g. a NEPM standard), international guidelines are often adopted (e.g. World Health Organisation Guidelines for Air Quality 2000). In general, thresholds for specific toxicants/pollutants are set at levels to avoid nuisance/harm to human health or environmental integrity.

There are reporting thresholds that have been set under some arrangements (e.g. the National Pollutant Inventory (**NPI**) NEPM, or National Greenhouse and Energy Reporting Act (**NGER**) requirements. However, this does not preclude the requirement for facilities to manage, monitor and report their emissions in accordance with licence conditions.

Generic Question ID: 261 Sub ID [64] Raised by [S64 Q682]

DEC Recommendation 43 (12): The Proponent should acknowledge that global benefits will be delivered only for that portion of LNG which displaces more carbon-intensive fuels.

Discussion: While the Proponent notes the caveats in relation to global abatement benefits where LNG displaces coal-fired power generation, the estimate suggests that there may be a reasonable prospect that all the Browse LNG will displace more emission intensive fuels (coal).

The SAR states that "Where used as a transitional fuel, LNG power generation systems produce 1.7 times more power for the same carbon emissions as coal-fired generation (Hondo, 2005). This means that a peak export rate of 50Mtpa of LNG could generate 750,000,000 megawatt hours (**MWh**) of electricity; resulting in emission reductions of 312 million tonnes (**Mt**) CO2 equivalents (**CO2-e**) per year where LNG displaces coal-fired power generation". (**Part 1 p. ES-77**).

It is only when countries change their business-as-usual energy supply case away from coal to LNG as a result of the availability of LNG from WA that the greenhouse emissions benefit can be claimed. For example, Japan has a LNG baseline and is building no more coal-fired capability, therefore the benefit argument of LNG against coal in Japan cannot be sustained.

The Proponent acknowledges that global greenhouse gas benefits will only be delivered for that portion of LNG which displaces more carbon intensive fuels.

In responding to DEC's recommendation, the Proponent refers to WA's Greenhouse Gas Reduction Strategy, prepared by the WA Greenhouse Task Force (2004), which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (**p. 40**). Importantly, the Strategy recognises the export of LNG as

contributing to a global reduction in emissions. As part of WA's greenhouse gas management response, the WA Government commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (p.90).

Real-world examples of where LNG has made a positive contribution to overall emissions exist. For example the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction of its GHG emissions from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001).

The Proponent notes that global energy demand and supply is affected by a wide range of policy and price signals. With forecast GDP growth in Asia, power demand there is expected to increase significantly (IEO, 2010) To meet this demand there must be an increase in all fuel types that can operate at baseload, including LNG. Significant growth in natural gas consumption is projected for non-OECD Asia, with China and India leading. In both these countries, natural gas currently is a minor part of the overall energy mix, accounting for only 7% and 3%, respectively, of total energy consumption in 2007. Those shares nearly double in projections of LNG consumption in the most recent (2010) International Energy Outlook. This is supported by government policy such as that in China, whose central government is promoting natural gas as a preferred energy source; it has set an ambitious target of increasing the share of natural gas in its overall energy mix to 10% by 2020.

Ultimately, LNG plays an important role in transitioning to a less greenhouse intensive energy supply mix. Increasing the availability of LNG on the market is an important step in that transition.

Generic Question ID: 263 Sub ID [64] Raised by [S64 Q687]

DEC Submission: The SAR states that "A recent US study on the lifecycle emissions of LNG versus existing and future coal power generation identified that emissions from LNG based power generation using existing natural gas combined cycle (**NGCC**) technology were 38% of those from current American coal technology mix and 57% of the most efficient future coal technologies (Advanced Ultra Supercritical and Integrated Gasification Combined Cycle (**IGCC**)." (**Part 4** p. 2-200).

While the efficiency benefits of LNG are not contested, the results of this study, prepared for the Centre for liquefied Natural Gas, may tend to overstate the benefits and impede a balanced assessment of LNG lifecycle benefits. The PACE (2009) study reports lifecycle emissions for existing coal technology as 2731 lb CO2-e/MWh, and LNG as 1045 lb CO2-e/MWh. An independent study (Jaramillo et al, 2007) found that lifecycle emissions for LNG are between 7% and 55% better than coal.

The emission intensity factors selected for the PACE study warrant further scrutiny. For instance:

- For an LNG plant, PACE assumes use of the most efficient combustion technology (i.e. combined cycle gas turbine) and uses a plant emission factor of 797 lbs CO2-e/MWh (362 kg CO2-e/MWh). Other data suggest CCGT emissions intensity is closer to 380-420 kg CO2-e/MWh.
- For a 'current' coal plant, PACE uses a plant emission factor of 2614 lbs CO2e/MWh (1188 kg CO2-e/MWh). Other data suggest subcritical pulverised coal combustion technologies (in the WA South West Interconnected System and the Australian National Electricity Market, for instance) have emissions intensities of between 880-920 kg CO2-e/MWh.
- For an 'advanced' coal plant, PACE uses plant emission factors of 1773 lbs (805 kg) CO2-e/MWh for ultra-supercritical and 1714 lbs (779 kg) CO2-e/MWh for IGCC combustion. Other data suggest these figures are closer to 720 and 710 (kg CO2-e/MWh) respectively.

CSIRO reports that the lifecycle emissions of LNG are about 45% less than when Australian thermal coal is exported for power generation in the same country.

Part 4, **Section 2.9.3.2.1** of the SAR acknowledges that a considerable amount of literature is available to demonstrate that GHG emissions from power plants using LNG as a fuel source are considerably lower than those from plant using other fossil fuel sources. In recognising the efficiency benefits of LNG over coal fired power stations the PACE (2009) study was referenced as one of the more recent assessments. Since the publication of the SAR, an even more recent lifecycle analyses by the US National Energy Technology Laboratory found LNG to have 58% less emissions than coal. Notwithstanding the fact that this study, along with all lifecycle assessments, have assumptions and uncertainty bands inherent in their analyses, the key point to be made is the scale of difference between coal and LNG lifecycle emissions. Specific scrutiny of the emissions intensity factors used in the PACE (2009) study does not diminish this point. The other data referenced in the submission question introduce an uncertainty band of between 5 and 23%. Even at the lowest end of the range, LNG emissions can still be described as 'considerably lower' than emissions from coal fired power. For this reason it is the Proponents' view that a balanced assessment of lifecycle benefits is not

impeded.

Generic Question ID: 264 Sub ID [64] Raised by [S64 Q688]

DEC Submission: The Proponent's calculations of global abatement benefits are based on the most favourable - and arguably unlikely - assumptions and therefore may impede an objective evaluation of greenhouse-related project benefits.

The SAR states that "In practical terms, the development of the Browse Basin and the BLNG Precinct has the potential to enable emission reductions of 312Mt of CO2-e per year if LNG displaces coal fired power generation, based on 15.15 tonnes LNG per MWh electricity, using Hondo (2005) averaged LNG (LNG fired and LNGCC) and coal emissions factors. This saving is equivalent to a 1.26% of global emissions referenced against a 2000 baseline year." (**Part 4** p. 2-202).

The global greenhouse benefits on which these estimates are based are predicated on a production rate of 50Mtpa and the questionable assumption that all of the LNG from the Precinct displaces coal-fired power generation. These assumptions are speculative and may tend to skew a balanced assessment of greenhouse-related project benefits.

The production of natural gas from the Browse LNG Development would contribute in a very positive sense to the efforts to combat climate change. IPCC, Stern, and others agree that natural gas and LNG, which produce substantially less carbon dioxide equivalents (CO2-e) than coal or oil, are important bridging fuels on the road to a lower carbon economy. Replacement of coal in particular, is identified as one of the key “stabilisation wedges” required to reduce overall global emissions to a level which will prevent the worst of the predicted impact.

This is echoed in WA's Greenhouse Gas Reduction Strategy which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (**p. 40**). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emission and commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (**p. 90**).

A CSIRO (1996) study shows that for every tonne of CO2-e emitted in LNG production within Australia, 4 tonnes of emissions from the coal alternative can be avoided globally. More recent work by Worley Parsons (2008) validates the CSIRO figures, showing that for every tonne of CO2-e emitted in LNG production within Australia, between 5½ and 9½ tonnes of emissions from the coal alternative can be avoided globally.

In presenting the greenhouse-related project benefit, the Proponent has also considered actual examples where LNG has directly contributed to lower greenhouse gas emissions levels at a broader scale. For example the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction to its GHG emissions from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001).

For this Strategic-level assessment, the Proponent considers it reasonable to equally apply the maximum 50Mtpa capacity discussion to both the potential GHG emission scenarios, and possible derived benefits using LNG versus other fuels. The Proponent acknowledges that not all LNG from the Precinct will displace coal-fired power generation. Government policy and markets in LNG importing economies will also influence the extent of displacement. However LNG plays an important role in transitioning to a less greenhouse intensive energy supply mix, particularly in growing economies with high energy demands such as China. Increasing the availability of LNG on the market is an important step in that transition.

Generic Question ID: 302 Sub ID [112] Raised by [S112 Q715]

The Proponent's argument that the development of gas reserves from the Browse Basin will "deliver greenhouse benefits" is a false argument. On the Proponent's figures, 50Mtpa of LNG produced per year will add over 445Mtpa CO2-e (312/0.7) to global greenhouse gas emissions, representing 1.8% (1.26/0.7) of global emissions, using the Proponent's 2000 reference figure. It is not a benefit, but a harm, as continual fossil fuel extraction and burning (along with other anthropogenic sources of greenhouse gas emissions) threaten catastrophic changes to climate. The 445Mtpa CO2-e emissions from the LNG produced in the Precinct can only represent a reduction in GHG emissions if it is assumed the power would otherwise have been produced by burning coal - which the Proponents don't prove.

The strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a

maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35Mtpa. This equates to 0.05%, 0.08% and 0.11% of global emissions referenced against a 2000 baseline. Importantly, these emissions figures are in the absence of any abatement measures. Each proponent will be required as a result of the SAR to produce a Greenhouse Gas Abatement Plan to demonstrate the inclusion of abatement measures. This plan will be prepared to the satisfaction of the Western Australian Minister for Environment, and will also be available for a period of public review.

With respect to delivering greenhouse benefits, the Proponent notes WA's Greenhouse Gas Reduction Strategy, prepared by the WA Greenhouse Task Force (2004), which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emissions. As part of WA's greenhouse gas management response, the WA Government commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (p.90).

The dynamics of the global energy market are affected by a wide range of policy and price signals which influence demand and supply. Hence, it is difficult to guarantee (prove) a specific future energy supply scenario. However, history can often provide a useful guide, and real-world examples of where LNG has made a positive contribution to overall emissions do exist. For example the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction to its GHG emissions from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001).

Looking forward, with forecast GDP growth in Asia, power demand there is expected to increase significantly, regardless of the availability of a specific energy fuel type. To meet this demand there must be an increase in all fuel types that can operate at baseload, including LNG. Significant growth in natural gas consumption is projected for non-OECD Asia, with China and India leading. In both these countries, natural gas currently is a minor part of the overall energy mix, accounting for only 7 percent and 3 percent, respectively, of total energy consumption in 2007. Those shares nearly double in projections of LNG consumption in the most recent (2010) International Energy Outlook. This is supported by government policy such as that in China, whose central government is promoting natural gas as a preferred energy source; it has set an ambitious target of increasing the share of natural gas in its overall energy mix to 10 percent by 2020. So while guarantees about specific future energy scenarios cannot be made, it is reasonable to be guided by both historical, real world examples as well as global policy trends in suggested LNG can have a net positive effect on global greenhouse gas levels.

Ultimately, LNG plays an important role in transitioning to a less greenhouse intensive energy supply mix. Increasing the availability of LNG on the market is an important step in that transition.

Generic Question ID: 303 Sub ID [112] Raised by [S112 Q716]

In addition to the emissions from the LNG produced at the site, the gas precinct project itself will add an additional 12-39Mtpa CO2-e to WA's already excessive annual greenhouse gas production.

It is noted that the strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case (equating to 39Mtpa CO2-e), the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35 Mtpa. Maximum respective increases to WA’s greenhouse emissions (relative to 2007) are 15.7%, 26.2% and 35.4%, which are significantly less than the highly conservative, maximum predictions included in the SAR.

Importantly, these emissions calculations do not take into account potential abatement.

In line with Environmental Protection Authority (**EPA**) guidance and recent environmental approvals in Western Australia, it is noted that any proponents of derived proposals in the Browse LNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (**GGAP**), to the satisfaction of the Western Australian Minister for Environment. Aligned with this is EPA's environmental assessment objective to ensure that GHG emissions from proposed projects are adequately addressed through best practice planning, design and operation. The GGAP will address specific targets and timeframes for achievement, demonstration of compliance with National scheme for reduction of GHG emissions, independent verification, monitoring and external reporting as outlined in **Part 4**, **Section 2.9.3.1** of the SAR.

Given the global nature of climate change, the Proponent notes that discussion of greenhouse gas emissions related to the BLNG should be presented in the context of net global greenhouse gas levels. As recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008), LNG has an important role to play in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions.

Generic Question ID: 507 Sub ID [232] Raised by [S232 Q1372]

The Indigenous members of the Dampier Peninsula wonder how the planting of trees to offset the CO2 emissions from the LNG Precinct would work?

A carbon offset represents a reduction in greenhouse gases, or enhancement of greenhouse gas removal from the atmosphere by sinks, relative to a business-as-usual baseline. Carbon offsets are tradeable and often used to negate (or offset) all or part of another entity's emissions (DCCEE 2009).

There are a number of alternatives to offset emissions to produce some form of 'credit' that can be used against the emissions from the Browse LNG facility. Potential options include:

1. Direct investment in abatement opportunities.
2. Use of international carbon market for the direct purchase of permits
3. Participation in an Australian emissions market.

Planting trees (forestry) falls under the first option. In essence it would require Proponents of derived proposals to establish and maintain an area of new forest (a biological carbon sink) that corresponds to the amount of amount of carbon to be offset. The Commonwealth Department of Climate Change and Energy Efficiency has published a National Carbon Offsets Standard, which took effect on 1 July 2010 to support consumer confidence in the voluntary carbon offset market and the integrity of the carbon offset and carbon neutral products they purchase. The Standard specifies:

- the types of carbon offsets that constitute genuine, additional emissions reductions in the context of the CPRS;
- the general principles and requirements for calculating the carbon footprint of a product or organisation;
- requirements for transparent recording of the carbon footprint, measures taken to reduce emissions and the amount reduced and the emissions amount offset and the type of carbon offsets purchased and retired; and
- requirements for auditing the veracity of carbon footprint calculations and offset claim

The Proponent refers the reader to this Standard for additional detail, which can be accessed at: (http://www.climatechange.gov.au/government/initiatives/national-carbon-offset-standard.aspx)

As part of the broader approach to greenhouse gas abatement, and in line with Environmental Protection Authority (**EPA**) guidance and recent environmental approvals in Western Australia, it is noted that any proponents of derived proposals in the Browse LNG Precinct will be required to submit a Greenhouse Gas Abatement Plan (**GGAP**), to the satisfaction of the Western Australian Minister for Environment. Aligned with this is EPA's environmental assessment objective to ensure that GHG emissions emitted from proposed projects are adequately addressed in the planning/design and operation of projects and that:

- best practicable measures are applied to maximise energy efficiency and minimise emissions;
- comprehensive analysis is undertaken to identify and implement appropriate offsets; and
- proponents of derived proposals undertake an ongoing program to monitor and report emissions and periodically assess opportunities to further reduce greenhouse gas emissions over time.

The GGAP will address specific targets and timeframes for achievement, demonstration of compliance with National scheme for reduction of GHG emissions, independent verification, monitoring and external reporting as outlined in **Part 4, Section 2.9.3.1** of the SAR. In recognising the broader public concern with respect to greenhouse gas the Proponent has also committed to a period of public review prior to finalising the GGAP.

Generic Question ID: 535 Sub ID [27] Raised by [S27 Q230]

The development and existence of a massive gas processing facility on the Kimberley coast at James Price Point will severely impact Australia's efforts to reduce its global carbon footprint and fulfil its international commitments.

The strategic assessment process requires a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35Mtpa. Maximum respective increases to WA's emissions (relative to 2007) are 15.7%, 26.2% and 35.4% and to Australia's emissions (relative to 2007) are 2.0%, 3.3% and 4.5%. The project specific details won't be available until a proponent submits their derived proposals to the EPA for evaluation.

As outlined in **Part 4**, **Section 2.9.3** of the SAR, the Commonwealth Government has committed to an unconditional 5% reduction of CO2-e emissions target by 2020, below 2000 levels. In absolute terms, this represents an emissions target of 525 MT CO2-e. The most conservative, maximum case scenario of 50Mtpa production comprises 7.4% of the Commonwealth target. The best case scenario of 12Mtpa production comprises only 2.2% of this target.

Given the global nature of climate change, the Proponent notes that discussion of greenhouse gas emissions related to the BLNG should be presented in the context of net global greenhouse gas levels. As recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008), LNG has an important role to play in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions.

Generic Question ID: 697 Sub ID [120] Raised by [S120 Q1469]

ENGO Submission: The WA EPA guidance policy for GHG mitigation requiring best practice is fundamentally flawed on a number of fronts and should not be applied to this project.

The EPA is an independent statutory authority with operations that are governed by the *Environmental Protection Act 1986*. Through the execution of its functions and the pursuit of its objectives to protect the environment and prevent, control and abate pollution it can contribute to greenhouse gas management in the jurisdiction of WA.

As stated in the foreword to EPA's Guidance Note No. 12 (Minimising Greenhouse Gas Emissions), EPA's Guidance Note series provides the basis for EPA's evaluation of, and advice on, development proposals subject to EIA. Guidance Statement No. 12 specifically addresses the minimisation of greenhouse gas emissions from significant new or expanding operations.

The wider policy direction for greenhouse gas management in WA, and thereby a direct link with meeting Australia's greenhouse gas reduction commitments, is contained in WA's Greenhouse Gas Strategy (2004 and updated in 2008). The Strategy recognises the important role LNG plays in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions. It commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG.

With this as context, the Proponent has recognised the difficulties in fully assessing the Greenhouse gas aspects of the project and, in discussion with the OEPA, has agreed an approach whereby a Greenhouse Gas Abatement Plan will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal (**Part 4**, **Table 2.9-9**). Part of this plan will include an evaluation of the feasibility of greenhouse gas emissions reduction opportunities. In recognising the broader public concern with respect to greenhouse gas, the Proponent has committed to a period of public review of the abatement plan prior to finalisation.

Generic Question ID: 698 Sub ID [120] Raised by [S120 Q1470]

ENGO Submission: The cumulative impacts of carbon pollution from other proposed developments in Western Australia must be taken into account in the assessment of this proposal. Western Australia is set to double its GHG output over the next decade.

The cumulative emissions of the BLNG precinct proposal and from emissions from indirectly facilitated or related projects in the region have been considered in **Part 4, Section 2.9.6** of the SAR. This includes emissions from activities that may indirectly arise as a result of the development and operation of the BLNG Precinct as well as supply chain emissions associated with the gas production in the Browse Basin and the pipeline from the Browse to James Price Point.

The total (aggregated) greenhouse gas emissions from all proposed developments in Western Australia is addressed through WA's Greenhouse Gas Strategy (2004 and updated in 2008) and the Premiers Climate Change Action Statement (2007). As a response to the global challenge climate change poses, the Strategy recognises the important role LNG plays in contributing to a global reduction in emissions. Through availability of supply, LNG supports the transition of global energy markets away from carbon intensive energy fuels such

as coal. The Strategy includes a commitment by the State to encourage the long term export of relatively cleaner fossil fuels such as LNG.

Notwithstanding this context, the Proponent recognises the role it can play in minimising emissions from the BLNG Precinct. In discussion with the OEPA, an approach has been agreed where a Greenhouse Gas Abatement Plan (**GGAP**) will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal. The scope of the GGAP is outlined in **Table 2.9-9**, **Part 4** of the SAR, and importantly will address, amongst other items, specific reduction targets and timeframes for achievement, application of best practice measures to reduce emissions, demonstration of compliance with National scheme for reduction of GHG emissions, and independent verification, monitoring and external reporting.

Generic Question ID: 859 Sub ID [169] Raised by [S169 Q1713]

Environs Kimberley Submission: The SAR contends that not developing the gas reserves at all would remove "the ability to deliver greenhouse benefits that would be realised by Browse Basin LNG displacing coal in power generation in international markets". The SAR should include in its "No Development" option the greenhouse benefits derivable from current commercially available green power options requiring no mining of fossil fuels. The SAR should also detail, with the impending carbon offset opportunities, why incentives have not been offered to interested industry to investigate these alternatives to mining non-renewable resources in Western Australia.

WA's Greenhouse Gas Reduction Strategy, prepared by the WA Greenhouse Task Force (2004), recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). Importantly, the export of LNG is recognised as contributing to a global reduction in emissions. Hence as part of WA's greenhouse gas management response, the WA Government commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (p.90), in addition to a range of measures to encourage the uptake of renewable energy sources as part of a balanced energy portfolio for the State.

It is acknowledged that the 'no development' option would mean that the direct emissions associated with this specific development may not eventuate, however this may incorrectly assume that the commercialisation and development of alternative gas resources to meet forecast energy use would not proceed via other *ad hoc* LNG developments. The processing of natural gas through new, highly efficient LNG liquefaction facilities can be reasonably expected to provide GHG benefits (on a tonne CO2e per tonne LNG basis) relative to existing facilities. Should the Browse gas reserves not be developed at all, this would remove the ability to deliver greenhouse benefits that would be realised by Browse Basin LNG displacing coal in power generation in international markets. A single BLNG Precinct would offer commercial proponents the economic efficiencies of shared infrastructure, and would also reduce the environmental footprint of development compared to multiple, stand-alone LNG processing facilities.

The assessment presented in the SAR is in the context of an evolving policy landscape with regard to climate change policy at the State, Commonwealth and international levels. It is not the objective of the SAR to detail incentives to interested industry stakeholders to investigate and invest in alternative energy sources. That said, the SAR does define the expectation for proponents of derived proposals to prepare and implement a Greenhouse Gas Abatement Plan (**GGAP**) in consultation with the relevant regulatory agencies. The GGAP for individual LNG facilities would be expected to include specific abatement targets and timeframes for achievement, including 'no regrets' measures such as energy efficiency programs. A range of options to further reduce emissions are available, and will be the subject of further investigation to evaluate their feasibility as part of the GGAP.

Generic Question ID: 860 Sub ID [169] Raised by [S169 Q1717]

Environs Kimberley Submission: Carbon pollution from this project will have a direct effect on the WA environment, and therefore should be regulated by the WA EPA under the *Environmental Protection Act*. Scientific and legal precedents are now common in other jurisdictions for this approach, including the US EPA determination of carbon dioxide as a dangerous pollutant.

In Western Australia, the *Environment Protection Act 1986* is the overarching legislation that provides for the prevention, control and abatement of pollution and environmental harm. This principle of environmental harm includes impacts from greenhouse gas emissions. Specifically, this occurs where greenhouse gas emissions from any new proposed projects and extensions to projects subject to environmental impact assessment by the EPA is identified as a relevant environmental factor under Part 4 of the Act. In addition, a Guidance Statement has been prepared by the EPA to support this (Guidance Statement No. 12: Guidance Statement for Minimising Greenhouse Gas Emissions). It outlines the EPA's environmental objective for greenhouse gas management to

reduce emissions to a level which is as low as is practicable.

This approach differs to that in the US, where, rather than focusing on environmental harm, regulations specify emission standards that set specific limits to the amount of pollutants that can be released into the environment. Hence in order to regulate greenhouse gas emissions, CO2 needed to be defined as a pollutant. This occurred via the US EPA's 'Endangerment Finding' of carbon dioxide under Section 202(a) of the *US Clean Air Act*. Importantly, this finding is based on current and future concentrations of greenhouse gases endangering public health, as a result of the role of greenhouse gas in propagating climate change, and not because of any direct health effects.

Generic Question ID: 958 Sub ID [169] Raised by [S169 Q1715]

Environs Kimberley Submission: The SAR claims that the LNG produced by the potential projects is a clean fuel source that could have a net effect of reducing greenhouse emissions globally. While LNG is somewhat cleaner that coal, there is no evidence presented that the sale of LNG into the global energy market will displace coal fired energy generation, or result in any less coal being used. The dynamics of the energy market would suggest that the overwhelming outcome of additional LNG supply will be additional energy demand, and in fact LNG may actually displace cleaner forms of energy such as wind or solar power. The claims that LNG will result in reduced carbon pollution lack any credibility without detailed modelling to demonstrate and guarantee that LNG sales will displace dirtier fuel sources.

responding to this comment, the Proponent notes WA's Greenhouse Gas Reduction Strategy, prepared by the WA Greenhouse Task Force (2004), which outlines WA's response to the greenhouse issue. The Strategy recognises natural gas as a less carbon intensive replacement source for generating electricity compared to traditional coal fired stations and the role it can play in bridging the gap between the existing oil and future hydrogen-based economies (p.40). Importantly, the Strategy recognises the export of LNG as contributing to a global reduction in emissions. As part of WA's greenhouse gas management response, the WA Government commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG (p.90).

The dynamics of the global energy market are affected by a wide range of policy and price signals which influence demand and supply. Hence, it is difficult to guarantee a specific future energy supply scenario. However, history can often provide a useful guide, and real-world examples of where LNG has made a positive contribution to overall emissions do exist. For example the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction to its GHG emissions from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001).

Looking forward, with forecast GDP growth in Asia, power demand there is expected to increase significantly, regardless of the availability of a specific energy fuel type. To meet this demand there must be an increase in all fuel types that can operate at baseload, including LNG. Significant growth in natural gas consumption is projected for non-OECD Asia, with China and India leading. In both these countries, natural gas currently is a minor part of the overall energy mix, accounting for only 7 percent and 3 percent, respectively, of total energy consumption in 2007. Those shares nearly double in projections of LNG consumption in the most recent (2010) International Energy Outlook. This is supported by government policy such as that in China, whose central government is promoting natural gas as a preferred energy source; it has set an ambitious target of increasing the share of natural gas in its overall energy mix to 10 percent by 2020. In parallel with policies that support LNG and limit the growth of coal are other policy and incentives throughout the world supporting renewable energy. So while guarantees about specific future energy scenarios cannot be made, it is reasonable to be guided by both historical, real world examples as well as global policy trends in suggesting LNG can have a net positive effect on global greenhouse gas levels.

Ultimately, LNG plays an important role in transitioning to a less greenhouse intensive energy supply mix. Increasing the availability of LNG on the market is an important step in that transition.

Generic Question ID: 1118 Sub ID [212] Raised by [S212 Q2577]

Part 4 Section 2.9: "Natural gas has an important role to play in displacing coal and crude oil derived fuels from existing and future power generation projects, as part of initiatives to reduce global carbon emissions." Supposedly If LNG is so much better than coal or oil, why isn't Australia jumping on board the LNG train for power generation? Why is the majority of this resource heading overseas?

LNG can be considered an energy transport mechanism as well as a fuel source. Approximately 60% of Western Australia's power generation capacity is fuelled by natural gas. In the case of power stations in Broome and elsewhere in the Kimberley these are powered by LNG trucked from Karratha.

Technologies for power generation using natural gas, including LNG transportation, are proven and LNG

projects have a key role to play in facilitating a transition to a low carbon future. Australia has 1.6% of known natural gas reserves worldwide (BP, 2010) and has for more than 20 years demonstrated its ability to reliably supply LNG to international customers.

Where used as a transitional fuel, LNG power generation systems produce on average 1.7 times more power for the same carbon emissions as coal fired generation (Hondo, 2005). This means that a peak production rate of 50Mtpa of LNG exported from the Browse reservoir could generate 750,000,000MWh of electricity; resulting in emission reductions of 312Mt CO2 equivalents (**CO2-e**) per year where LNG displaces coal fired power generation. This saving is equivalent to a 1.26% of global emissions referenced against a year 2000 baseline (Boden et al., 2009).

For more information, refer to the SAR **Part 4**, **Section 2.9.**

Generic Question ID: 1146 Sub ID [225] Raised by [S225 Q2801]

CCI Submission: Project opponents claim that the BLNG development would have a significant impact on climate change, stating that LNG "is not a clean industry" and that "gas industry pollutants deplete the environment's ozone layer and contribute to global warming". While the project will emit greenhouse gases in its construction and production phases, project opponents fail to take a broader view in that natural gas is a much cleaner energy source than more carbon intensive fuels. Therefore, exports of natural gas from WA to major overseas markets help to reduce global greenhouse gas emissions. As much as project opponents prefer not to see heavy industry development in the Kimberley, it is also important to recognise the role that Australia's gas industry can play in assisting Australia and - through LNG exports - the world, to move to a less carbon intensive future.

The State also acknowledges the global benefits of LNG production, as outlined in WA's Greenhouse Gas Strategy (2004 and updated in 2008) and the Premier's Climate Change Action Statement (2007). The Strategy recognises the important role LNG plays in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions. It commits to encouraging the long term export of relatively cleaner fossil fuels such as LNG.

Generic Question ID: 1310 Sub ID [195] Raised by [S195 Q3245]

Part 7 Section 1: There is CO2 to be sequestered somehow. Unlike Chevron's $43 billion Gorgon project on Barrow Island, off the Pilbara coast, where there are underground saline aquifers, there is no known way of storing the millions of tonnes of CO2 that will be produced at James Price Point.

Reservoir CO2 geo-sequestration is typically considered as a potential abatement measure because it offers the single biggest opportunity for GHG abatement. However its implementation requires identified injection sites to be technically and economically viable. For example there are no depleted oil or gas reservoirs in the region that could support a geo-sequestration scheme for the BLNG precinct. Consequently the geo-sequestration options would need to consider unproven traps or geological features that would give sufficient certainty for the containment of CO2 until it is permanently sequestered which will take thousands of years. These considerations will be made by each proponent and incorporated into a Greenhouse Gas Abatement Plan (**GGAP**) that will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal. The scope of the GGAP is outlined in **Table 2.9-9**, **Part 4** of the SAR, and importantly will address, amongst other items, specific reduction targets and timeframes for achievement, application of best practice measures to reduce emissions, demonstration of compliance with National scheme for reduction of GHG emissions, and independent verification, monitoring and external reporting. The GGAP process is aligned with EPA's environmental assessment objective to ensure that GHG emissions from proposed projects are adequately addressed through best practice planning, design and operation. In summary, this process means the best practicable GHG abatement opportunities will be identified and implemented.

Generic Question ID: 1420 Sub ID [198] Raised by [S198 Q1839]

Part 4 Section 2.9.3.1: Why would the State allow the proponents to monitor and report on the GHG emissions from the BLNG Precinct? To allow the proponents to periodically assess opportunities to further reduce GHGs is not appropriate. The monitoring and reporting needs to be completed by an independent company with no vested interest in the outcomes of the report whatsoever. To allow the proponent to complete such a task is a very biased approach and will not provide valid data. The BLNG Strategic Assessment Report states that "In addition, a condition would be proposed to require any proponents of derived proposals to submit a report annually to the EPA on the progress of the implementation of the abatement plan". Why are the conditions for monitoring and reporting not set, rather than proposed?

DSD, in discussion with the OEPA, has agreed an approach where a greenhouse gas abatement plan will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal (**Part 4**, **Table 2.9-**

9). In the context of the concern raised in this submission, the greenhouse gas abatement plan will address the following:

- independent verification of emissions in line with National schemes for managing and reporting greenhouse gas emissions;
- regular monitoring and external reporting, auditing of greenhouse gas emissions and performance; and
- periodically review the effectiveness of improvement measures through the regular monitoring of greenhouse gas emissions and adaptive management of emissions, aimed at reducing the greenhouse gas emissions per tonne of LNG produced where practicable.

Annual reporting requirements are proposed, to ensure that proponents of derived proposals report:

- greenhouse gas abatement measures undertaken during the reporting period;
- greenhouse gas audits;
- compliance with energy efficiency targets for managing greenhouse gases; and
- reporting will be in accordance with Nationally legislated schemes for greenhouse gas reporting and disclosure.

In reality, it is the proponents of facilities within the BLNG Precinct that will be able to readily monitor and report on energy use and associated GHG emissions. Therefore it is submitted that it makes sense for these proposed conditions to sit with proponents, in accordance with established practice and precedent conditions set by the EPA for managing greenhouse emissions.

In response to the point: 'Why are the conditions for monitoring and reporting not set, rather than proposed?', the conditions are proposed in the SAR as the basis for review and comment by a range of stakeholders, and represent the Proponent's management response in the Draft SAR for public comment. It is ultimately the assessment and regulatory decision-making of State and Commonwealth Environmental Ministers that will determine the acceptability of implementation conditions to be set for the strategic proposal.

Part 5: Social

1 Introduction

Generic Question ID: 139 Sub ID [21, 24, 32, 35, 45, 59, 62, 77, 85, 93, 97, 98, 99, 105, 118, 132, 134, 148, 195] Raised by [S45 Q424]

The social impact assessment does not adequately assess the impact that an influx of 8,000 construction workers will have on Broome/Dampier Peninsula/Kimberley.

As a condition of operating at the Browse LNG Precinct, commercial proponents will be required to administer a managed-access construction worker camp within reasonable proximity of the Precinct site, where both internal and external access will be controlled. In addition, commercial proponents will also be required to prepare and implement an Access Management Plan, to limit and control interaction between the construction workforce when they are not at work, and the communities of Broome and the Dampier Peninsula.

The figure of 6,000 construction workers is used in the Strategic Assessment Report (**SAR**) as a result of extensive workforce projections conducted as part of the Social Impact Assessment (**SIA**). Modelling of the projected size of the construction workforce was conducted for Volume 2 of the SIA, which is included as **Appendix D-2** of the SAR. The modelling examined five Precinct development scenarios:

- Scenario 1: No development of Precinct;
- Scenario 2: Low development (15Mtpa LNG Precinct within 15 years);
- Scenario 3A: Medium development (25Mtpa LNG Precinct within 25 years);
- Scenario 3B: Medium development (35Mtpa LNG Precinct within 25 years); and
- Scenario 4: High development (50Mtpa LNG Precinct within 30 years).

Government and industry market analysts have predicted that the low to medium development scenarios (Scenarios 2, 3A and 3B) are considerably more likely than the high development scenario (Scenario 4). The high development scenario is regarded as aspirational, and as a result, much less likely to occur. For this reason the SIA focused on the more likely low and medium scenarios (Scenarios 2, 3A and 3B).
The construction workforce modelling included a 'best estimate', a lower estimate (-10%) and an upper estimate (+30%) for each scenario (Volume 2 of the SIA, which is included in the supporting **Annexures**). The modelling arrived at a figure of 5,943 as a 'best estimate', with a lower estimate of 5,349, and an upper estimate of 7,726 for each of the three most likely development scenarios. This modelling will continue to occur, and will inform the management of the Precinct to ensure that any potential impact is identified at an early stage, so that an appropriate management strategy can be enacted.

The Strategic Social Impact Management Plan (**SSIMP**) provides a framework for the further development of strategies to enhance opportunities, and avoid, mitigate or manage the social impacts arising from the establishment of the Precinct. The management of worker behaviour, as well as the requirement for a managed-access construction camp, is referred to specifically under the Precinct Condition strategies, outlined in **Part 5, Section 5.4** of the Strategic Assessment Report.

Generic Question ID: 385 Sub ID [104] Raised by [S104 Q901]

DoH Submission: The Government is to be congratulated for recognising the need to consider the social impacts on the people in the region that may arise from implementation of the Browse Liquefied Natural Gas Precinct (**BLNG Precinct**) proposal. The recognition of the importance of the SIA of the BLNG Precinct should establish precedence for all major developments in WA. Similarly, the SIA should form the basis for the establishment of procedures for formal assessments of potential social impacts.

It is hoped that the Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**) conducted as part of the strategic assessment process for the Browse LNG Precinct will encourage other proponents of major resource development projects to undertake social impact assessments, and apply best practice methodologies at the strategic and project levels of analysis.

Generic Question ID: 393 Sub ID [104] Raised by [S104 Q906]

DoH Submission: DoH recommends the Government endorses a review of the SIA process used for the BLNG Precinct to assess and document learnings for use in future assessments.

As with any assessment, there are lessons to be learned from the strategic assessment process for the Browse LNG Precinct that will provide useful guidance in conducting future Social Impact Assessments (**SIA**). The

Department of State Development will conduct its own process to review the SIA process and outcomes, and these lessons will contribute to the wider pool of knowledge the department will draw upon when conducting SIAs.

In addition, the SIA conducted for the Precinct was peer-reviewed by an internationally recognised SIA expert to ensure that it adhered to best practice standards. Dr Nick Taylor of New Zealand was asked by the Department of State Development to undertake a peer review of the Browse LNG Precinct Strategic Social Impact Assessment. Dr Taylor's peer review contains a number of valuable comments and critiques of the SIA and is available online at: http://www.dsd.wa.gov.au/7901.aspx.

Generic Question ID: 481 Sub ID [166] Raised by [S166 Q1396]

Shire of Broome Submission (2): The issues raised in the Cardno Pty Ltd report set out in Attachment I requires further investigation and refinement.

The Shire of Broome commissioned the report by Cardno Pty Ltd to review key aspects of the SAR and provide advice to the Council as to the relevant issues and possible impacts on Council's operations. Specifically, Cardno was requested to review **Part 5** of the SAR Social Impact Assessment and supporting documentation. The Cardno report highlighted a wide range of issues that were identified in the SAR as being of particular significance to the Shire. The report was balanced, in raising both positive comments, and areas for further investigation. Some concerns included:

- potential increases to the cost of living and salaries;
- anticipated pressure placed upon services and infrastructure;
- demand pressures upon land and housing;
- security of water supply;
- capacity of water treatment facilities;
- management of wastewater;
- capacity of solid waste facilities;
- provision of power and gas supplies;
- upgrades to telecommunications;
- impacts on road usage;
- impacts arising from use of the port facility;
- impacts arising from increased use of the airport;
- health service impacts;
- education, training and employment;
- recreational opportunities and impacts;
- tourism;
- police, justice, and social needs;
- community identity;
- social values;
- strategic Indigenous Impacts;
- direct social surrounds and socio-economic factors; and
- visual amenity, light, and landscape.

In each case, the matters highlighted by Cardno may be categorised into concerns about direct impacts to the Shire (e.g. cost impacts, competition for skills, increased workload, additional responsibilities etc), awareness and potential concern about impacts to the community, or potential opportunities for the Shire which should be leveraged to optimise the benefits that could eventuate. Each of the matters raised is a legitimate question raised on behalf of the Shire, and the State acknowledges the need for ongoing attention as proposed.
The Proponent also notes the following points to provide some further context in addressing issues raised:

- Potential increases in salaries are generally welcomed, although obviously a concern to competing employers. The concern is offset by the potential for itinerant workers seeking opportunities at the Precinct, potential for upskilling of local community members, and the availability of partners of Precinct workers. Overall the greater the depth of workforce in the town, the lesser the impact on cost of living.
- Anticipated pressures on services and infrastructure are largely a symptom of natural growth. To the extent that the growth levels may be disputed, this may be responded to with an adaptive management framework which monitors key characteristics, and responds accordingly.
- The State is confident that the demand for land and housing is matched with the availability of planned land releases by both LandCorp and the Yawuru native title holders, which each have significant land

areas available for development.

- Cardno's discussion of the capacity of infrastructure in relation to Precinct requirements assumes the Precinct's utilisation of existing community infrastructure. In fact, with the exception of the road network, the expectation is that the Precinct will be largely self sufficient with respect to water, power, and gas infrastructure. To the extent that the Shire may be able to leverage off opportunities, for example access to power or gas from the Precinct, it is likely that such solutions would be medium to long term prospects.
- Similarly, concerns about the 'high growth' scenario 4 represents a long term prospect (35 years or more), which allows considerable time for agencies to adapt to additional pressures.

The SAR's primary concern has been to address the immediate impacts with respect to the proposed Precinct development, rather than to address the Shire's natural growth. Nonetheless, these two growth effects are difficult to separate, and the result is similar insofar as in either case it will be the responsibility of individual Government agencies to fund growth over their respective jurisdictions and to address any capacity constraints. The Shire is central to the Precinct management structure through its position on the Social Management Committee and this will be the forum for addressing such social management issues, the purpose of which will be to monitor concerns, flag priorities, and identify the appropriate mechanisms to address these concerns.

The Proponent reiterates the Shire's role as a key stakeholder of the SAR, and will also continue to liaise with the council directly to address the concerns arising in the Cardno report and more broadly related to the Precinct.

Generic Question ID: 907 Sub ID [171] Raised by [S171 Q1896]

DIA Submission: DIA is pleased with the Proponent's heritage considerations of the project. The Department of State Development and Woodside have been meeting with DIA fortnightly to discuss progress in assessing heritage.

The State Government and Woodside will continue to liaise with the Department of Indigenous Affairs (**DIA**) as appropriate, should the project be approved. This may include liaising with DIA as detailed management plans are developed, during the construction, operation and decommissioning stages of the Precinct.

Input from DIA will be particularly valuable to ensuring the effective implementation of strategies aimed at improving the education, health, social and economic well-being of Indigenous people in the West Kimberley region.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 969 Sub ID [224] Raised by [S224 Q1931]

KLC Submission: The inadequate and at times cursory nature of the SAR's treatment of key social impact issues is highlighted by the much more extensive and detailed attention it gives, for instance, to the physical visibility and light emissions of the Precinct (**Part 5**, **p. 4.53-4.81**).

It is difficult to respond to this comment without specific examples of the proposed inadequacies. The Proponent undertook a considerable body of work to complete the social impact assessment (see **Appendices D-1** to **D-6**). The work undertaken is robust and has stood up to peer scrutiny. This is not to forget the work done by KLC in completing its Aboriginal Social Impact Assessment (see **Appendices E-1** to **E-7**).

The counter-example given addresses factors that demonstrate a clear quantitative impact are readily described, and which are directly attributable to the Precinct. The analysis of light emissions is a well understood science that lends itself to visual representations to demonstrate impacts and is also directly comparable to other examples in order to draw comparisons.

Social impacts are often difficult to describe or to identify a causal link. Such a level of scrutiny has not been applied to similar projects in the past so comparable data are not readily available. In these cases an adaptive management framework is proposed whereby changes are monitored over time and addressed as impacts are felt. This represents a higher level of commitment than comparable projects in the past.

1.1 Structure of the Social Components of the Browse Strategic Assessment Report

Generic Question ID: 387 Sub ID [104] Raised by [S104 Q903]

DoH Submission: The EPA has limited authority to assess social issues and there has been no information on how the information and recommendations developed for the SIA are to be incorporated into decision-making processes, particularly for WA.

It is acknowledged that the EPA has limited authority to assess social issues. The Department of State Development (**DSD**) will be responsible for overseeing and coordinating the management arrangements and safeguards described in the Strategic Assessment Report. Where social impact issues are not addressed under the *Environmental Protection Act 1986,* DSD will play the major role in liaising with other relevant government agencies to ensure that commitments, monitoring and reporting on social impacts and management is undertaken.

To ensure delivery of the necessary environmental and social management measures, the Strategic Assessment Report proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 804 Sub ID [75] Raised by [S75 Q860]

I encourage the EPA to refer to the Indigenous impact assessment produced by Kimberley Land Council, which identifies a number of concerns (see p. 16 3 paragraph of the submission for specific examples).

A number of potential socio-economic impacts on Indigenous people in Broome and the Dampier Peninsula were identified in the Indigenous Impacts Report undertaken by the Kimberley Land Council (**Appendix E**). These findings were used by the Department of State Development (**DSD**) to inform the management measures outlined in the SAR (**Part 5, Section 5**), which will minimise the potential negative impacts of the Browse LNG Precinct development and maximise the potential opportunities. For a summary of how the 75 recommendations of the Aboriginal Social Impact Assessment (**ASIA**) were addressed by DSD, refer to the supporting **Annexure** of the SAR. Further information is provided in **Section 4.9** of the Response to Submission Summary Report.

DSD has submitted the SAR and all appendices to the EPA for advice, including the six-volume Indigenous Impact Report. This documentation and feedback received by the public will be considered by the EPA in making its decision.

Generic Question ID: 914 Sub ID [171] Raised by [S171 Q1903]

DIA Submission: It is noted that future commercial proponents in the area will be required to conduct a project level social impact assessment (**Part 5** p. 3-1). It is recommended that this assessment include an Indigenous component in consultation with Yawuru as Native Title Holders.

The considerable technical environmental and social studies conducted as part of the Strategic Assessment were undertaken on the basis of establishing the Browse LNG Precinct, south of James Price Point on the Dampier Peninsula. The studies undertaken were focused on the primary impact area, which is within land and waters currently subject to a Native Title claim by the Goolarabooloo Jabirr Jabirr (**GJJ**) claimant group. Accordingly, the GJJ were the most heavily engaged Indigenous group throughout the strategic assessment process. Consultation with the Yawuru was planned during the ASIA but did not eventuate.

The purpose of the Strategic Assessment Report (**SAR**) was to focus on the high-level, strategic impacts of the Browse LNG Precinct development, and propose a range of management measures to address these impacts. In most cases, additional work will need to be done prior to construction and on an ongoing basis. This includes additional work to examine impacts on Indigenous groups throughout the primary impact area, and will occur through development of the management mechanisms outlined in the Strategic Social Impact Management Plan (SAR **Part 5, Section 5**), and from the project-level Social Impact Assessments.

Generic Question ID: 1154 Sub ID [211] Raised by [S211 Q2810]

Part 1 Section 3.2: Who is going to assess the Social Impact Assessment? Surely not the EPA?

There is currently no legislative requirement for social impact assessment in Western Australia. The *Environmental Protections Act 1986* limits consideration to those social issues closely linked to environmental matters such as noise, dust, light, visual amenity, emissions and Aboriginal heritage. As per the Terms of Reference for the Strategic Assessment, the Commonwealth Minister for Environment is obliged to take social factors into consideration when assessing the development of the Precinct.

By undertaking a Strategic Assessment including a social impact assessment the State and Commonwealth Governments have created a unique opportunity for social issues to be considered strategically, in the planning

for future developments. It is noted that a purpose of the Department of State Development (**DSD**) is to ensure that economic development provides maximum benefit to the State. The delivery of positive social outcomes is also an objective of the Browse LNG Precinct. Accordingly, DSD is well placed to take responsibility for coordinating management arrangements described in the Strategic Assessment Report.

To assist with delivery of the necessary environmental and social management measures, the Strategic Assessment Report proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

To maintain a level of transparency in the reporting of social impacts, and to reflect best-practice standards, a critique of the SIA included a peer review conducted by Dr. Nick Taylor. This review can be found at http://www.dsd.wa.gov.au/7901.aspx.

Generic Question ID: 1390 Sub ID [150] Raised by [S150 Q3157]

The claim from the Premier that people who oppose the project will be responsible for the poor living condition of kids in the Broome area is unjustified. The money spent on the Indigenous impact reports would have been better spent on the community. For example, it could have provided disadvantaged kids in schools with meals for many years in Broome and the Dampier Peninsula or assisted in building a refuge for the homeless at night.

As part of the Strategic Assessment process, the Kimberley Land Council (**KLC**) prepared a six-volume Indigenous Impacts Report (**Appendix E**). This has included consultations with affected Indigenous people to ensure that the interests of Traditional Owners and other Indigenous people in the West Kimberley were properly taken into account and reported in the Strategic Assessment Report (**SAR**). These assessments have identified the issues that need to be managed to ensure that Indigenous communities are equipped to take advantage of the opportunities created by the Precinct and to minimise the potential for negative impacts.

There are two main reasons the State Government invested in the Indigenous Impacts Report. First, as the Precinct proponent, the Department of State Development (**DSD**) has a responsibility to assess the potential impacts of the Browse LNG Precinct development on the Indigenous people in Broome and the Dampier Peninsula. This is part of the Terms of Reference (**Appendix A**) for the Strategic Assessment. Second, the State Government is committed to delivering fundamental economic and social change to the West Kimberley through development of the Precinct at James Price Point. To do this requires identification of the potential positive and negative impacts of the development, along with appropriate management measures to minimise negative impacts and maximise the opportunities for Indigenous people.

The proposal to build the Browse LNG Precinct near James Price Point has drawn attention to existing social and economic issues in Broome, such as poverty, homelessness and social service deficiencies. These issues would be addressed in part through the implementation of the management measures outlined in the Strategic Social Impact Management Plan (**SSIMP**) (**Part 5, Section 5)**. For example, service provision in Broome will be addressed in the Broome Social Services Strategy, which will contribute to strengthening the existing social services, ensuring that it can absorb any impacts arising from the project.

The management measures outlined in the SAR are aimed at addressing the specific impacts of the project, and they will complement broader ongoing efforts to address socio-economic disadvantage in the West Kimberley. Addressing socio-economic disadvantage in regional communities (both indigenous and non-indigenous) is a challenging issue that is the joint responsibility of the Commonwealth, State and local governments. This is the subject of an ongoing dialogue between communities and governments that is independent of this project, and there are numerous programs to improve service delivery in Broome and the Kimberley that will continue regardless of the development of the Precinct.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners can have significant input into the environment and social management associated with the Precinct.

The State Government is committed to closing the gap in the Kimberley, and the development of the Precinct can play a role in closing that gap. The Browse LNG Precinct will provide opportunities for new initiatives to improve the health, education, social and economic well-being of Indigenous people, and significantly reduce disadvantage across the broader Kimberley community. In addition to measures aimed at managing the impacts of the project, commercial proponents and the State Government will deliver a number of benefits to Traditional Owners and other Indigenous people through the Indigenous Land Use Agreement. The details of these indigenous benefits are encapsulated in the Agreement between the State Government, Woodside and the Kimberley Land Council on behalf of Traditional Owners.

1.2 Relevant Socio-Economic Factors

2 Strategic Social Impact Assessment

Generic Question ID: 179 Sub ID [39, 75, 212, 229, 200, 114, 87, 106, 71, 136, 149, 207] Raised by [S75 Q867]

The financial flow-on from the BLNG project will increase access to and availability of drugs and alcohol, compounding existing alcohol and drug issues.

The Social Impact Assessment (**SIA**), conducted as part of the strategic assessment process for the Browse LNG Precinct, identified increased access to drugs and alcohol as one of the concerns of health professionals and community members. Given that the Dampier Peninsula is an alcohol restricted area, there is also concern about the availability of alcohol to local Indigenous residents of the Dampier Peninsula. These same concerns were raised in the Aboriginal Social Impact Assessment (**ASIA**), which highlighted that the presence of construction workers on the Peninsula could potentially increase the availability of alcohol, drugs and undesirable behaviours among the Indigenous community.

Accordingly, as a condition of operating at the Precinct, commercial proponents will be required to administer a managed-access construction worker camp, with the enforcement of relevant workforce management strategies such as a code of conduct, to manage and mitigate these issues.

Any commercial proponent wishing to operate at the Precinct will be responsible for preparing and implementing a management plan to ensure the effective management of the construction workforce. The plan is to be developed with all relevant community stakeholders, and is to include relevant targets and performance indicators. Commercial proponents will also be required to prepare and implement a worker behaviour management plan which will include clear policies and procedures to control access to drugs and alcohol. The management plan is to be developed prior to construction and in consultation with all relevant stakeholders, and will include relevant targets and performance indicators. As with all management measures outlined in the SAR, should monitoring indicate that these targets are not being met, additional measures would be implemented. The construction and operation phases of the Browse LNG Precinct will be handled like any modern resource operation which involves the use of heavy industrial equipment and exposure to regional communities. As such, it is likely that employees of commercial proponents will be subject to regular drug and alcohol testing.

Due to likely increases in the provision of social services in the West Kimberley associated with the development of the Precinct, there is also a potential for the project to mitigate existing alcohol and drug issues on the Dampier Peninsula, by providing support services and networks not currently provided.

Generic Question ID: 270 Sub ID [39, 120, 201, 114, 87, 106, 90, 160] Raised by [S39 Q746]

FIFO workers in the Pilbara experience family dysfunction, guilt, loneliness, substance abuse, depression and reduced commitment to workplace tasks. These symptoms are likely to impact on Broome's crime rate.

The potential impacts of FIFO are not specific to the Precinct but rather a general issue of concern and important consideration of all industries that use FIFO workforces. It is a matter that will be addressed not only through Precinct management, but also needs to be addressed more broadly at an industry-Government wide level.

As this submission acknowledges and as noted in the Social Impact Assessment (**SIA**), a 2009 Planning WA public discussion paper suggests the social impacts of the FIFO workforce in the Pilbara include family dysfunction, guilt, loneliness, substance abuse, depression and reduced commitment to operations as commonly experienced by FIFO workers. At the same time, a recent study by UWA on FIFO found that FIFO employees and partners were generally no more likely to have high stress levels, poor relationship quality or poor health behaviours than commuting employees or community samples. Contrary to the anecdotal evidence that FIFO employees are more likely to have poor health behaviours such as binge drinking or illegal drug use, the study found FIFO employees had similar, and in some cases significantly better health behaviours and outcomes than commuting employees (http://www.uwa.edu.au/__data/assets/pdf_file/0003/405426/FIFO_Report.pdf).

Although the projected population increase in Broome due to development of the Precinct is expected to be small, it can be expected that any population increase would contribute to the crime rate, based on average criminal activity per head of population nationally. At the Browse LNG Precinct, this issue will be addressed in a number of ways. For example, a policy of limiting FIFO workforce layover time in Broome may substantially mitigate potential social issues arising from the presence of a construction workforce. Additionally, the existing practice in the Industry of compulsory random alcohol and drug testing is likely to limit potential substance misuse by Precinct workers in the town.

Safety and security at the Precinct will be managed as part of the Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**). Commercial proponents will be required to develop a safety and security management which includes a policy of obtaining police clearances for workers. As noted in the SAR, Broome District Police believe that the Precinct itself may require its own police post, due to the size of the construction workforce. A decision has yet to be made as to whether the Precinct would be policed from Broome. If this were the case, additional resources would be allocated so that Broome-based service delivery is not diminished.

Generic Question ID: 329 Sub ID [25, 35, 120, 205, 215, 211] Raised by [S120 Q1302]

There is concern that the social structure of a very special cosmopolitan healthy community will be ruined. Despite some local problems, Broome is a healthy town with a strong sense of community. This sense of community has been lost in many Australian towns and cities, and there has been a lot of money spent on trying to regain that. Don't destroy it here in the first place.

The town of Broome has a strong community identity and distinctive character that is highly valued by its residents**.** The unique character of Broome is closely related to its historical development and its strong links to the mining, pearling, fishing, pastoral and tourism industries.

Community identity is not static and changes over time. The significant natural population growth projected for Broome means that the town will undergo significant change in the next twenty years. Community engagement conducted for the Strategic Assessment Report (**SAR**) found that community concerns already exist in relation to impacts on Broome's 'sense of place' due to the projected population growth independent of the Precinct's existence.

Some change in community character is inevitable with significant population growth. However, strong town planning combined with management measures proposed in the SAR can help successfully integrate these new elements with the existing character of Broome.

The SAR identifies the following interdependent strategies to manage the issue of Broome's sense of place:

- The implementation of a Sense of Place Management Strategy. This would see the local government lead the engagement of the Broome community in developing a vision for Broome to guide its future planning.
- The decision to accommodate the FIFO construction workforce in a managed-access construction camp near the Precinct rather than having them live in Broome.
- The implementation of policies and procedures to manage Precinct worker behaviour including measures to prevent unacceptable behaviour when visiting Broome.
- The implementation of a tourism strategy that maintains the current tourism image of Broome, while providing a framework for the ongoing development of the BLNG Precinct.
- The implementation of education, training and employment strategies to increase local employment in both construction and operational phases of the Precinct in order to retain benefits and promote residence within the Kimberley.
- The implementation of a strategy to minimise the number of transient or opportunistic workers arriving in the region and to manage those who do arrive.

The State Government is committed to maintaining the sense of place of Broome and the Dampier Peninsula. This will require stringent management of potential social impacts associated with the Precinct. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR proposes several mechanisms aimed at managing the sense of place of Broome and the broader West Kimberley community from both an Indigenous and non-Indigenous perspective. These mechanisms allow for the continuation of cultural practices and maintenance of cultural heritage values in the area.

To ensure delivery of the necessary social management measures to protect the character of Broome, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 148 Sub ID [23, 200, 201, 203, 153] Raised by [S23 Q176]

UWA Submission (Point 3): It appears that the Report did not undergo a process of review, a problem that has diminished its potential quality. The Report suffers from unnecessary repetition, contradictions, a lack of integration and cohesion, and a fraught writing style that has resulted in an overly lengthy document. There is also a heavy reliance on quantitative data compiled by government agencies, claims are rarely supported by relevant substantive evidence, and a review of the existing literature is highly selective. These problems tend to:

- diminish the State Government's intention to have (and to be able to rely on) comprehensive feedback about the proposed project, and
- reduce accessibility and therefore the general public's opportunity to provide adequate, informed comment. The response time-line is also tight.

There were two peer reviewers of the Social Impact Assessment (**SIA**):

Dr Nick Taylor, the then President of the International Association for Impact Assessment, reviewed the DSD strategic SIA. His interim peer review is available on the DSD website at: http://www.dsd.wa.gov.au/documents/000213.browselng.pm.pdf

Prof Richie Howitt peer reviewed the Draft Aboriginal Social Impact Assessment.

The strategic SIA **Volume 1** did include extensive demographic data due to the recognised deficiency in the ABS 2006 statistics in the Kimberley, especially Indigenous demography. The strategic SIA also used an appropriately quantitative approach to develop potential Precinct development scenarios to assess the cumulative effects of Precinct development.

The response time line was initially 12 weeks and a three week extension to this was provided mid-way through the process. This exceeds many minimum statutory requirements for processes of this nature.

Generic Question ID: 239 Sub ID [39, 217, 153] Raised by [S39 Q730]

The range of social benefits described in the SAR will happen anyway with the increase in population and associated initiatives that are necessary to sustain employment and community services.

A significant demographic feature of the Shire of Broome is that even without the Browse LNG Precinct development, it demonstrates exceptionally high growth, with a 4.7% per annum population increase from 1976 to 2006. Broome is currently experiencing the effects of this significant population growth with the demand for many services outstripping supply. This growth is expected to continue regardless of whether or not development of the Precinct proceeds. Population projections undertaken as part of the Social Impact Assessment (**SIA**) showed a mid-range projection from 17,100 people in 2011 to 31,400 people in 2041, representing an increase of 84% over the next 30 years.

While this level of population growth is expected to stimulate some local economic activity (e.g. building of homes, increased retail and social services), it is often insufficient on its own to support an economically and socially sustainable community. The development of the Precinct therefore provides a significant and unique opportunity for the West Kimberley to acquire economic activity and social benefits above those generated simply from population growth.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5**, **Section 5** of the Strategic Assessment Report (**SAR**), proposes a number of strategies in this regard, including:

- The Broome Social Services Strategy, which will identify gaps or serious deficits in the provision of social services within the town of Broome, and will engage with the community to identify priorities in responding to these gaps.
- The West Kimberley Socio-Economic Strategy, which will be a whole of Government initiative to address overarching provision of social services in the broader West Kimberley region.

The State Government has the lead responsibility for developing the West Kimberley Socio-Economic Strategy and the Broome Social Services Strategy.

In addition to dedicated State and Commonwealth Government service delivery, it is envisaged that future commercial proponents would also contribute funding for these strategies. Commitments for funding have already been made under the signed Heads of Agreement between the State Government, the Kimberley Land Council and Woodside. As part of this agreement, the State Government and Woodside (i.e. the Foundation Proponent) have committed to increase funding to improve Government facilities and services for the wider West Kimberley community.

Generic Question ID: 760 Sub ID [200, 217] Raised by [S200 Q993]

The SAR **Part 5**, **Section 2** states that "The development of the BLNG Precinct would bring significant benefits for the people of the west Kimberley. These include economic and employment opportunities both at the Precinct and in Broome and the surrounding areas." This is pure conjecture and skewed opinion. The predicted 250 million dollars over 30 years, equates to 8 million per year or approximately 8-16 houses in Broome at current prices.

The $250 million referenced in the submission is only the State's portion of the benefits package under the Heads of Agreement (HoA). This will provide a range of benefits to contribute towards the social, health and economic needs of Indigenous people in the Kimberley, such as the following:

- land tenure reform on the Dampier Peninsula to establish appropriate tenure for housing, economic opportunities and environmental protection;
- the establishment of a Kimberley Enhancement Scheme; and
- Economic Development, Housing, Education and Cultural Preservation Funds.

This is only a portion of the total money that will be invested in the West Kimberley. In addition to the State's contribution, the HoA also requires that Foundation and future commercial proponents deliver a range of employment and training benefits as well as significant contributions to provide for the social and economic development of Traditional Owners and the broader community.
The key finding of the Strategic Assessment Report (**SAR**) is that the development of the Browse LNG Precinct would be an overall benefit to the local economy, bringing a range of economic development and employment opportunities to the West Kimberley. For example, it would bring opportunities to supply services to the Precinct, as well as a greater availability of training and employment opportunities for local residents. The development of the Precinct would increase and secure the economic resilience of the area well into the future, by introducing another economic sector.

In addition to providing opportunities for the community as a whole, the Precinct would bring substantial employment opportunities and economic benefits specifically for Indigenous people, as identified in the Aboriginal Social Impact Assessment (**ASIA**). For example, there would be increased opportunities in education, training and employment, including the development of training networks, scholarships and apprenticeships. Targeted employment of local Indigenous people would also facilitate employment and business opportunities.

At the same time, the SAR discusses the significant socio-economic barriers that will need to be addressed in order for local people to realise the employment benefits presented by the Precinct. The State Government knows that overcoming these barriers is essential if the local community is to be able to take advantage of the direct and indirect employment opportunities resulting from the establishment of the Precinct. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, will help to ensure benefits are realised through stringent management strategies including:

- An Education, Training and Employment Strategy:
    - to maximise education, training and employment opportunities for the local community; and
    - ensure a coordinated approach to the range of education, training and employment strategies implemented to support the development of the Browse LNG Precinct.
- An Indigenous Workforce Development Strategy:
    - to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
    - to develop and implement a strategy to increase the number of Indigenous workers on the project;
    - to develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment;
    - to provide opportunities for Indigenous people to work on cultural and environmental values relevant to precinct operation; and
    - to develop appropriate workforce arrangements and that includes support for Indigenous workers.

Funding and implementation of these strategies will be a key focus in the next phase of the project. These programs will be delivered through the land access agreement negotiated with the Traditional Owners, the framework for which has been agreed in the signed HoA. The HoA also provides for an Education Development Fund to support scholarships and training programs.

The local employment strategies in the SAR will link to existing programs to assist local people to overcome barriers. Through the National Partnerships process education, employment and training projects are being developed in an integrated "whole of life cycle" framework. Trade training projects are being developed to ensure there is a dovetail approach between school based trades or vocational training and industry training. These projects are either funded, in development, or under discussion between the Kimberley Land Council, the Commonwealth and State Governments and other partners.

To ensure delivery of the necessary social management measures and strategies, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 147 Sub ID [23] Raised by [S23 Q175]

UWA Submission (Point 2): The SAR attends only to the social matters discussed in the SIA Report. It does not focus on the ecological implications of the proposed development as those with expertise in this field better address these. Indeed, there is a wealth of high-level research available that the WA Department of State Development will have access to. The submission points out, that it is rarely the case that the ecological and environmental implications of a development project do not impact on social factors, human behaviours and cultural life. Regularly conceptualised in substantive research and other literature as the human/environment relationship, the effect humans have on the environment (and vice-versa) is emphasised. It is a great shame that this emphasis was not taken up in the SAR.

As the submission notes, it is rare that the ecological and environmental implications of a development project do not impact on social factors, human behaviours and cultural life. The commenter would have preferred a greater integration of the social and environmental issues in the SAR. However the SAR followed the standard structure for multidisciplinary reports (i.e. separate volumes dealing with environmental and social impacts). It also focused on the environmental and social factors arising from the scoping exercise conducted at the outset of the SAR.

While the SIA may not focus as much on the human/environment relationship as the commenter would prefer, it does discuss the interaction between humans and nature in several contexts, most notably with respect to Aboriginal values. For instance, the Heritage Impact Assessment and SAR (**Part 5**) state that "the Traditional Owners of the James Price Point area and the wider Dampier Peninsula are part of an interconnected system of country, culture, people and places across the Dampier Peninsula and the wider HIA area. As such the development of the Plan has the potential to affect these interconnected values". The HIA also discusses the nature of the 'Indigenous cultural landscapes' and 'Indigenous cultural seascapes'.

Other examples in the SIA of impact issues reflecting the human/natural environment relationship include:

- The indirect impacts on Indigenous people via impacts on species with ethno-biological significance.
- Impacts on Indigenous people's customary fishing practices.

How changes in an environment (noise, waste discharges) could affect people's perceptions of an area's local amenity and sense of place.

Generic Question ID: 149 Sub ID [23] Raised by [S23 Q177]

UWA Submission (Point 4): The broad theme that permeates the Report is that establishment of the proposed gas project will ease the current socio-economic problems experienced by Indigenous and non-Indigenous people in Broome and in the Kimberley more broadly. Of particular concern is the assumption that the LNG Plant's establishment is regularly taken as a given. This approach could be strongly objected to as an SIA is meant to be an unbiased investigative process required to report on the likely social impact of an impending development. Recommendations showing how the consequences of a certain development might be overcome are usually included in an SIA, but the recommendations provided in the current Report generally carry the view that the gas development will proceed regardless of a process of inquiry. The following statement is an example: 'The BLNG Strategic Social Impact Management Plan (**SSIMP**) provides a framework for the further development of strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the establishment of the LNG Precinct' (**p. 312**). Issues of procedural fairness and natural justice automatically arise in such an approach where a right of reply by citizens, organisations and industries genuinely concerned about project implications is constrained.

Conducting an SIA requires the practitioner to consider two futures of the community: one in which the project does not proceed, and one in which it does proceed. The SIA considered five development scenarios, and the 'no development' option was included as Scenario 1.

Whether or not the BLNG Precinct is developed will be determined by the State and Commonwealth governments through the approvals process. The SIA does not assume that the project will proceed; however, it must consider the possibility that the project is approved and assess the potential impacts under that scenario. It is through this impact assessment that appropriate management measures can be developed. This is a responsible course of action that ensures the government is prepared to manage the impacts of the project, should it be approved. Accordingly, DSD has outlined a range of management plans and strategies that will need to be developed and implemented prior to construction and through the operation of the Precinct.

Generic Question ID: 152 Sub ID [23] Raised by [S23 Q180]

UWA Submission (Point 7): The Report has a tendency to make superficial judgements and distinctions, such as the arbitrary 'primary' and 'secondary' area distinctions (**p. 39**) that obscure the complex of cultural life, sociality and population fluctuation experienced by Indigenous and non-Indigenous persons regularly moving in/out of Broome (**p. 33-38**). The insertion of tables and figures that obfuscate the rich diversity of local sociocultural life also hamper adequate description of the local population, and people's relationship to each other and the coastal and inland environment.

Social Impact Assessment (**SIA**) methodology requires that a study area is defined. The concept of a primary and secondary impact area was developed to differentiate between the area of most impact (primary impact area) and the area of likely lesser social impact (secondary impact area). The strategic SIA (**Volume 1**) explains the methodology in demarcating primary and secondary impact areas (SIA **Volume 1**, **p. 13-14**). This distinction was supported by the peer reviewer. The ASIA also clearly defined the study area which was similar to the secondary impact area.

Part 5 of the Strategic Assessment Report is a summary of the comprehensive strategic Social Impact Assessment and the Indigenous Impacts Reports. The Indigenous Impacts Report includes a detailed Heritage Impact Assessment Report that emphasises the interconnectedness of peoples' relationships to each other and to the coastal and inland area.

Generic Question ID: 323 Sub ID [35] Raised by [S35 Q811]

It must be noted that the Pilbara is not a place where many people want to live for very long periods of time - they just want to make money and get out.

DSD coordinated a comprehensive strategic-level social impact assessment (**SIA**) on the potential development of the Browse LNG Precinct to assess the potential social impacts of Precinct development over time. One of the main reasons for this SIA was to avoid, lessen and manage many of the social impacts that occur in large resource developments and that have occurred in the Pilbara. Most of the social impacts in the Pilbara were not assessed and nor were the impacts avoided where possible and managed where not. Woodside, as the most likely Foundation Proponent, is currently conducting a comprehensive project-level SIA to assess the potential impacts of the Woodside project and identify ways to avoid, lessen and manage these impacts over the life of the project.

Key impact issues that were identified in the strategic-level SIA included potential changes to Broome's community identify or 'sense of place' and the impacts of a large number of temporary and permanent workers on aspects such as housing. The strategic-level SIA Management Plan identifies management plans that are required from all LNG developers at the Precinct. As there is no legislation requiring either SIA or the management of social impacts, the strategic SIA developed a new social enforcement mechanism. This mechanism requires that industries at the Precinct, as a lease condition, develop, monitor and report on the management plans to the satisfaction of the Precinct governance structure outlined in **Section 2.3** of the Response to Public Submissions Summary Report.

The Strategic Social Management Plan in **Part 5**, **Section 5** (http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf) outlines the strategies to manage the social and economic impact on Broome and the surrounding area and enhance the opportunities. These strategies are aimed at avoiding many of the impacts that occurred in the Pilbara and managing those that do occur. The requirement that the commercial proponents house their construction workforce in a managed-access construction camp and manage their access to Broome and Dampier Peninsula will avoid many of the potential social impacts. A number of other social management measures aim to manage potential impacts such as minimising the number of transient or opportunistic workers arriving in the region and managing those who do arrive to limit the impact on Broome's community identity or 'sense of place' and housing supply.

Generic Question ID: 330 Sub ID [35] Raised by [S35 Q327]

There are both the negative and positive impacts (increased wealth is being the most common positive impact) on individuals. The money people earn comes at a very high personal price and collectively its impact is overwhelmingly negative - it is not community building.

The State Government is of the view that development of the Browse LNG Precinct would provide considerable social and economic benefits, and is committed to the delivery of these benefits to the population of the West Kimberley. Although potential negative socio-economic impacts were identified in the Strategic Assessment Report (**SAR**), the central finding of the SAR is that the Precinct-related social impacts can largely be managed through implementation of mitigation, management and monitoring strategies. The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the SAR, includes a range of measures to

maximise these benefits whilst minimising the potential negative impacts of the project.

Increased opportunities for education, training and employment for local people would raise the level of education for many members of the community, increasing quality of life and extending opportunities beyond employment at the Precinct. In addition, the project will make addressing social service deficits in Broome a key priority through the Broome Social Services Strategy and the West Kimberley Socio-Economic Strategy. This will benefit community well-being in both the short and longer term, making impacts of future population growth more manageable.

The State Government is also of the view that development of the Precinct will provide opportunities for new initiatives to substantially improve the education, health, social and economic wellbeing of Indigenous people in the region, and will significantly reduce disadvantage throughout the Kimberley.

Generic Question ID: 652 Sub ID [120] Raised by [S120 Q1295]

ENGO Submission: **Part 5 Section 2.2.2** Workforce Assumptions. What analysis has been completed on the potential social impacts of a camp for 600 workers on the outskirts of Broome? Woodside is undertaking a project-based SIA, so this would be expected to form part of it. However, this accommodation contingency is inadequately addressed in the Strategic SIA. The SIA says this contingency is possible due to delays caused by land access issues. This is a very real possibility given that the compulsory acquisition process initiated by the WA Government may get bogged down in the court system. Moreover, what guarantees are there that Fly-in Fly-out (**FIFO**) will remain for the duration of the LNG projects?

While the Woodside temporary workers camp has been excluded from the Strategic Assessment, it is subject to the relevant planning legislation. The Western Australian *Planning and Development Act 2005* establishes the legislative basis for State and local planning. Under this legislation, Broome Shire's *Town Planning Scheme No. 4* provides the planning framework to guide the future development of Broome. The *Town Planning Scheme No. 4* provides for a range of local planning policies, including "Transient Workers Accommodation" (Local Planning Policy 8.8) (http://www.broome.wa.gov.au/council/pdf/policy/88.pdf). This planning policy relates to a "temporary or intermittent workforce employed on one or more finite projects in or based in the Shire of Broome". The policy provides a number of assessment criteria to enable the council to assess Transient Workers Accommodation proposals.

A FIFO workforce was recommended to mitigate impacts (e.g. population impacts, workforce competition) of the Precinct on Broome, and this recommendation was made in response to community concerns and the specialist studies undertaken as part of the strategic assessment. There are a number of drawbacks to utilising a FIFO workforce; for example, this measure has the potential to reduce the local economic benefits of the Precinct to Broome and the Kimberley. Accordingly, it is important that the community have the option of requesting a move to a more local workforce over time.

The desirability of using a largely FIFO workforce will be monitored as part of the social monitoring program. No guarantees are being made regarding the use of a FIFO workforce for the life of the project due to the adoption of an adaptive management approach. Social monitoring and ongoing involvement of key stakeholders, including the community and workers, will allow management to be responsive to changing needs and conditions. As with all management measures, the involvement of the communities of Broome and the Dampier Peninsula in decisions about what is working and what is not will be important in determining if changes should be made to the mitigation and management measures in order to achieve better social outcomes. The decision to limit interaction between the community and Precinct workers was made based on community concerns identified in the Social Impact Assessment and Aboriginal Social Impact Assessment. However, it is possible that community perceptions will change over time and this management measure will need to be adjusted to suit changing conditions.

Generic Question ID: 929 Sub ID [227] Raised by [S227 Q1991]

Grants and job are being offered as bribes to the wider community and to the KLC by the Corporate companies involved. These incentives are forcing people to make decisions against their beliefs and understandings. The feeling of hopelessness in the community at large, struggling to live with the rapidly changing place, is spreading and being reflected in the latest suicide and movement statistics for the Kimberley.

The State Government believes that development of the Browse LNG Precinct will provide opportunities for new initiatives to improve the health, education, social and economic well-being of Indigenous people, and significantly reduce disadvantage across the broader Kimberley community. Education and training initiatives provided by the development of the Precinct, will facilitate the up-skilling of local people to work directly or indirectly on the Browse LNG Precinct, and will improve the capacity of skilled workers across the region. The skills acquired through training for jobs on the Precinct will also be able to be applied to non-project jobs. For example, following the establishment of the Precinct, local workers could use their skills and experience to

meet the additional demand for skilled employees (e.g. tradespeople to build new homes) generated by the projected natural population growth within the Shire of Broome and the West Kimberley. The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), identifies the State Government with the lead responsibility of addressing any gaps in social service delivery in the West Kimberley region (Broome Social Services Strategy). In this regard, many synergies exist with the development of the Precinct.

In addition, there are also a number of benefits for Traditional Owners that are associated with the provision of land under a land tenure agreement. These are linked to the provision of land, as they are benefits that will be delivered directly as a result of the project. The details of these Indigenous benefits were encapsulated in the agreement between the State government, Woodside and the Goolarabooloo Jabirr Jabirr on 30 June 2011. Details are presented in **Section 2.5** of the Response to Submissions Summary Report.

The Strategic Social Impact Management Plan is presented in **Part 5, Section 5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

Generic Question ID: 1087 Sub ID [140] Raised by [S140 Q2130]

The submitter believes that if the Precinct is approved their business (small plant based/ organic beauty products) will be ruined, because:

- they will no longer be able to vouch for the purity and non-toxicity of their products, nor will customers want to keep buying products compromised in purity by toxic emissions; and
- the Precinct 45 kilometres away will spoil the image and meaning of the products inspired by Kimberley wilderness and the unique Broome environment.

Small businesses that rely on natural products from the West Kimberley, like tourism, may benefit from its image as a remote, wilderness destination. Overall, about half of the stakeholder groups consulted for the Tourism Impact Assessment (**TIA**) (**Appendix D-5**) believed that the proposed development would have a negative impact on the Kimberley's tourism and reputation and image. Overall around one third of all visitors surveyed for the TIA believed the proposed Precinct would have a negative impact on the image of Broome and the Kimberley, while over half did not see that there would be any impact. There was a broad range of views in terms of the reasons for any damage and to the longevity of the negative impact (i.e. whether it would persist beyond the construction phase). However, it is possible that potential negative impacts to the Kimberley's image could also apply to other small businesses outside of tourism that rely on the region's remote, pristine wilderness image.

The actual impact of the development will be dependent upon proactive and cooperative management plans by key stakeholders to protect the Kimberley's destination. The Tourism Management Strategy is the key management measure that will be implemented to address the potential impact of the Precinct on the destination's image. The objective of the strategy, led by Tourism WA, will be to maintain the current tourism image of Broome, while providing a framework for the ongoing development of the Browse LNG Precinct.

In addition to protecting the Kimberley's image, the environmental impacts of the Precinct will be managed through compliance with the applicable environmental regulations and implementation of the environmental management measures outlined in the SAR. Refer to **Parts 3** and **4** for a description of the predicted environmental impacts and the associated management measures. Through these measures construction and operational atmospheric emissions from the BLNG Precinct will be largely contained within the area in close proximity to the BLNG Precinct, encapsulated by the Sensitive Land Use Buffer Zone. Ground-level pollution concentrations are anticipated to be low for most of the year and unlikely to give rise to adverse air quality or amenity issues beyond the boundary.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1121 Sub ID [212] Raised by [S212 Q2598]

Part 5 Section 2.1: The SAR refers to a "range of social benefits". These will happen anyway with the increase in population and associated initiatives that are necessary to sustain employment and community services. The SAR notes that the "state agreed to provide in excess of $250 million over 30 years… (for land tenure, Kimberley Enhancement Scheme, economic development, housing, education and cultural preservation). This is not a lot of money and it is over a very long time period -TOO LITTLE, TOO SLOW! And this investment by the government (both state and federal) needs to happen irrespective of the LNG hub and further

industrialisation of the Kimberley.

On 30 June 2011 the Goolarabooloo Jabirr Jabirr native title claimant group gave its consent to the BLNG Precinct and agreed to surrender their native title rights and interests in the land and waters required for the Precinct in return for substantial benefits valued at over $1.5 billion and continuing engagement in the management of the Precinct, including environmental, social and heritage management. The agreements are summarised in **Section 1.2.4 'Benefits to Traditional Owners'** in the Response to Submissions Summary Report and details of these agreements are attached in the supporting **Annexures**.

The Agreement also requires that Foundation and future commercial proponents deliver a range of employment and training benefits as well as significant contributions to provide for the social and economic development of Traditional Owners and the broader community.

This benefits package is specifically targeted at the Indigenous community and is additional to the social infrastructure that would be provided as a result of the projected population growth for the area.

Generic Question ID: 1422 Sub ID [120] Raised by [S120 Q3398]

ENGO Submission: There are acknowledged limitations to the SIA, including uncertainties about the future commercial proponents and workforce numbers.

Due to the strategic nature of the SIA, the prediction of social impacts needed to be based on assumption about the likely characteristics of projects locating at the Precinct. This was provided by Woodside as the likely Foundation Proponent. This information provided a reasonable basis for social impact prediction at a strategic level of assessment. If the Browse LNG Precinct is approved, additional social impact studies will be conducted by commercial proponents at the project level which will include refined project characteristics. However, this is unlikely to result in the introduction of large changes to the project characteristics assumed in the SAR and SIA.

2.1 Baseline Profile: Broome and the Region

Generic Question ID: 762 Sub ID [200, 217] Raised by [S200 Q994]

Part 5 Section 2.1.3 states that "A significant feature of the Shire of Broome is that even without the BLNG Precinct development, it demonstrates exceptionally high growth with a 4.7% per annum population increase from 1976 to 2006. Broome is currently experiencing the effects of this significant population growth with the demand for many services outstripping supply. "Broome doesn't need LNG for growth.

The submitter agrees with the concerns stated in SAR **Section 5**, **Part 2.11.2**. Broome's population will grow even if the LNG plant doesn't go ahead but it will grow slower and have a much better chance of growing in a balanced way.

Regardless of whether or not the Browse LNG Precinct proceeds, population projections indicate that the population of Broome will substantially increase. However, development of the Precinct offers Broome, and the broader West Kimberley region, a unique opportunity to substantially alleviate its existing social pressures through Government and commercial proponent activity. This represents an advantage that may not exist without the prospect of the Precinct. The large scale nature of LNG activities would also provide opportunities for companies and service providers to locate activities within Broome. This would aid in further diversifying the region's economy and provide it with even further employment and income benefits.

Generic Question ID: 755 Sub ID [70] Raised by [S70 Q620]

Broome population and economic development is already developing without industrialisation.

Although the population growth rate of Broome is projected to be high regardless of the project, it is notable that population projections do not explicitly model economic activity. Economic activity is captured in the population projections to some extent through assumptions that are made based on knowledge of past trends and committed new projects. Whilst trends in employment growth associated with economic activity are implied in the migration assumptions, the high growth rate projected for the Kimberley arises from high fertility assumptions (relative to the rest of Western Australia).

Although the Kimberley region has experienced favourable growth conditions since 2000, particularly in relation to mining and tourism activities, the region's contribution to the state's Gross State Product (**GSP**) is small. The development of an LNG industry in the region does provide significant scope for the region to considerably increase its contribution to the State's economy and to increase education, training and employment opportunities in the Kimberley.

A key objective of State Government in establishing the Precinct is to provide opportunities for local employment and economic development. The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry. Subsequently, the local manufacturing

and construction base would grow through contracting to supply goods and services to the Precinct. This would result in flow-on benefits of increased business income and an increase in the capacity of local businesses to deal with large clients and projects. This increased capacity can be utilised to generate an expanded customer base beyond the LNG sector (e.g. retail and hospitality sectors). Education, training and employment opportunities associated with Precinct employment would also generate a pool of skilled people in the region. Skills acquired through training for jobs on the Browse LNG Precinct can also be applied to non-project jobs, which can assist in addressing the lack of skilled workers in Broome noted by many businesses.

Generic Question ID: 1303 Sub ID [195] Raised by [S195 Q961]

Part 5 Section 2.1.2: At a shire meeting the councillors voted 'no' to support a gas precinct within the shire boundaries. This motion has not been rescinded and still stands, although the shire president has since stated that the gas hub is inevitable and we should learn to live with it.

This motion was superseded by a further resolution of the meeting (item 11.1) on 26 November 2009 formally acknowledging the Precinct and offering cooperation as a key stakeholder of the Precinct. The concerns of the Shire of Broome and the regional community have been considered by the State Government throughout the Strategic Assessment process, and will be considered holistically with other comments and considerations in the approvals process and beyond, should the project be approved. Since that time, the Shire of Broome has also released a number of additional resolutions, and it has also been a key stakeholder in consultations conducted by the State government and commercial proponents.

The Shire of Broome has articulated its questions and concerns about the Browse LNG Precinct throughout the site selection and impact assessment process. It has established a Webpage devoted to the Precinct, on which it has posted a number of documents addressing community and Shire questions and concerns about the development (http://broome.wa.gov.au/browse.htm). This includes 'Question and Answer' documents in which the Department of State Development and Woodside respond to questions raised by the community and council. The Shire also commissioned a report by Cardno Pty LCD which identifies issues raised in previous Council resolutions, and used this information to prepare a submission on the Strategic Assessment Report (**SAR**). This report is also available on the Shire of Broome's 'Browse Oil and Gas' Webpage.

The State Government will continue to work with the local Shire to ensure that local issues are addressed. This includes ensuring that the Precinct does not place additional demands on services in the Shire of Broome. Any service gaps that result from the development of the Precinct will be addressed by the State and/or the commercial proponents of the Precinct. Acceptance of management plans by commercial proponents will be a requirement of the State before any construction is allowed to commence.

2.2 SIA Methodology

Generic Question ID: 247 Sub ID [39, 212, 205, 215, 207] Raised by [S39 Q734]

The assessment and community consultation were restricted to 'Precinct' rather than project level issues. Both the WA State Government and the potential Foundation Proponent acknowledge that further consultation will need to take place at the 'project level'. The SIA has completely disregarded its own authenticity by making this statement of limitation.

The Browse LNG Precinct proposal is based on the State Government establishing a single site (i.e. Precinct) where a number of LNG companies (i.e. commercial proponents) could subsequently establish their own project-level facilities under lease arrangements. The Precinct proposal is to be assessed as a "strategic proposal" pursuant to Section 38 of the *Environmental Protection Act 1986*.

A Strategic Assessment provides a high-level and holistic impact assessment rather than a detailed project-level impact assessment. The Social Impact Assessment component of the Strategic Assessment Report (**SAR**) is consistent with this strategic level of assessment. The SAR strives to present the most realistic expectations regarding the characteristics of the development concept even though there is some uncertainty regarding the ultimate design, operation, scale and timing of specific developments at the Precinct.

If there is agreement that the Precinct proposal can be implemented, the Western Australian Minister for Environment will issue a statement that the strategic proposal may be implemented and prescribe the implementation conditions to be applied. This does not automatically grant approval to any specific projects within the Precinct. Commercial proponents wishing to construct and operate LNG facilities within the Precinct would still need to refer their project-level proposals to the Environmental Protection Authority for assessment. They would also need to demonstrate that they would meet any conditions set by the State Government (e.g. through lease conditions) for commercial proponents establishing at the Precinct. The Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the SAR proposes a number of project-level, Precinct Condition strategies to maximise positive impacts associated with the development of the Precinct, and

mitigate and manage any potential negative impacts. These include:

- a managed-access construction camp;
- cross-cultural training;
- Indigenous workforce development; and
- strategies to retain local benefits.

These mechanisms will ensure that any potential commercial proponents wishing to operate at the Precinct endorse the recommendations of the Social Impact Assessment featured in the Strategic Assessment Report, and adhere to State Government conditions.

Generic Question ID: 244 Sub ID [39, 205, 212, 215] Raised by [S39 Q732]

The SIA focuses on the likely low and medium development scenarios for the LNG Precinct. If the high development scenario is actualised, when will that impact statement be undertaken?

Government and industry market analysts have predicted that the low to medium development scenarios for the Precinct are considerably more likely than the high development scenario. The high development scenario (Scenario 4) should be regarded as an aspiration and less likely to occur. This scenario would represent the presence of three commercial proponents operating at the Precinct. All additional commercial proponents, including a third commercial proponent should Scenario 4 eventuate, will be required to go through the EPA approvals process for Derived Proposals. Future commercial proponents are also expected to build on the work outlined in the Strategic Assessment Report (**SAR**), by conducting their own project-level social impact assessments based on the more defined specifications of their particular project proposals.

In addition, all commercial proponents would be subject to the governance arrangements to be established for the Precinct, and thus would need to develop all required management plans and monitoring systems which will arise out of that process.

The Strategic Social Impact Management Plan (**SSIMP**) provides a framework for the further development of strategies to enhance opportunities, and avoid, mitigate or manage the social impacts arising from the establishment of the Precinct. The management of worker behaviour, as well as the requirement for a managed-access construction camp, is referred to specifically under the Precinct Condition strategies, outlined in **Part 5, Section 5.4** of the Strategic Assessment Report.

Generic Question ID: 756 Sub ID [70, 148, 195] Raised by [S70 Q619]

There was no business or economic modelling performed for the Strategic Assessment.

The development of the Browse LNG Precinct can be expected to generate a range of investment, business and employment opportunities for people in Broome and surrounding areas. However, due to the strategic nature of the assessment, the use of economic modelling to predict financial impacts of the development of the Precinct was constrained. Currently, it is too early to predict with adequate certainty the anticipated investment and expenditure under each scenario. While the use of several economic modelling processes was considered, no appropriate model was available to accurately quantify the economic impacts of the Precinct. In addition, using other projects to compare the operation of the proposed Precinct is of limited use because of its greenfield nature and the uniqueness of the scale and operation of the Precinct.

The Social Impact Assessment (**Volume 2**, **Appendix D-2**) contains a high-level assessment of the potential positive (e.g. increase in GDP, business revenue and income) and negative (e.g. inflation) economic impacts of the Precinct. This work, which was summarised in the SAR, broadly examines and qualitatively analyses the macroeconomic impacts of the expenditure and investment associated with the LNG Precinct, including the impacts on GDP, income, prices and fiscal variables (refer to **Section 2.3**, **Part 5**). From this strategic level impact assessment, it was found similar scale projects have achieved increases in Australia's GDP by $70 million and by $90 million for Western Australia over the last decade.

Generic Question ID: 805 Sub ID [75, 106] Raised by [S75 Q859]

Given the lack of firm information about workforce management at the Precinct it is difficult for the authors of this report or respondents to provide definitive statements about all the social impacts that may result from the project. This, in itself, should be sufficient reason to delay approval for the project until a detailed proposal is provided by the WA government.

There are considerable gas resources off the Kimberley coast and a high level of industry interest in developing these resources. This raises the potential for multiple and uncoordinated gas processing facilities to be developed along the Kimberley Region coast leading to unnecessary and significant social and environmental

impacts. In order to avoid such an outcome, the State Government has identified a single multi-user LNG Precinct from which gas can be processed and transported.

The Precinct concept is based on the State Government establishing a single site (i.e. Precinct) where up to three LNG companies (i.e. commercial proponents) could subsequently establish their own project-level facilities under lease arrangements. The Browse LNG Precinct proposal is to be assessed as a "strategic proposal" pursuant to Section 38 of the *Environmental Protection Act 1986*. A Strategic Assessment provides a high-level impact assessment rather than a detailed project-level impact assessment. The Social Impact Assessment (**SIA**) component of the SAR is consistent with this strategic level of assessment. The SAR strives to present the most realistic expectations regarding the characteristics of the development concept even though there is some uncertainty regarding the ultimate design, operation, scale and timing of specific developments at the Precinct.

The SAR focused on the high-level, strategic impacts of the Precinct development and provided a range of management measures to address these impacts. If there is agreement that the Browse LNG Precinct proposal can be implemented, the Minister for Environment will issue a statement that the strategic proposal may be implemented and prescribe the implementation conditions to be applied. This does not grant approval to implement any specific future proposals identified in the strategic proposal under the *Environmental Protection Act 1986*. Commercial proponents wishing to operate at the Precinct would still need to refer their project-level proposals to the EPA. They would also need to demonstrate that they would meet any conditions set by the State Government (e.g. through lease conditions) for commercial proponents establishing at the Precinct.

If approved, additional work would be done to manage the impacts of the project prior to construction and on an ongoing basis. This includes additional data collection and development of management plans as outlined in the SAR. The project-level Browse SIA will contain a more detailed assessment of the socio-economic impacts of Woodside's proposed development within the Precinct. The Browse SIA is currently underway. More information on the Browse SIA can be found online at the project website: http://www.ebc.net.au/bsia/.

Generic Question ID: 150 Sub ID [23] Raised by [S23 Q178]

UWA Response (Point 5): The Report regularly refers to the International Association for SIA as a guide but fails to note that the Association makes explicit that 'little (in the SIA process] can be taken for granted… International Guidelines and Principles (for SIA) is a flawed concept...because such guidelines tend to emphasise guidelines rather than principles'. Pointing out a range of methodological, conceptual and ethical problems, the Association also stresses that 'the regulatory context varies, the cultural/religious context varies, and the social and economic priorities for development vary' (SIA, International Principles, Special Publication Series No. 2, May 2003). The Association's primary concern in SIA work is to ensure full participation of the population likely to be impacted by a proposed development whilst cautioning that 'Even where participatory processes are involved, too often they do not include the people to whom the guidelines are directed. These are the people who ultimately need to develop "ownership" of the guidelines if they are to be adopted and utilised'.

The IAIA International Principles of Social Impact Assessment (**SIA**) document acknowledges the challenges with creating principles for SIA, and emphasises that they are a guide that should be tailored to local context. The strategic SIA was peer reviewed by an internationally recognised SIA expert to ensure that it met best practice standards. Dr Nick Taylor of New Zealand, the then President of the International Association of Impact Assessment, was asked by the Department of State Development (**DSD**) to undertake a peer review of the Browse LNG Precinct Strategic SIA. Over the course of the SIA, Dr Taylor had periodic interaction with those conducting the SIA including several site visits. This allowed the peer reviewer to bring external insights and knowledge to the SIA process, and ensure that the SIA approach was appropriate for this context. Dr Taylor determined that "the SIA process used was sound and the approach well founded". Dr Taylor's interim peer review of the SIA is available online at: http://www.dsd.wa.gov.au/7901.aspx. In addition, the KLC completed an Indigenous Impact Report, funded by the State, which included an Aboriginal SIA (**ASIA**). Prof Richard Howitt peer reviewed the Draft ASIA.

The SIA and ASIA involved consultation with the indigenous and non-indigenous sectors of the community (**Appendix E** of the Strategic Assessment Report), and consultations with Traditional Owners are still ongoing. In addition, the project-level SIA is currently being undertaken and also contains extensive community consultation with both indigenous and non-indigenous communities affected by the development. The impact assessment, including the community consultation, was incorporated into the SAR and guided the development of management strategies outlined in the Strategic Social Impact Management Plan (**SSIMP**) (SAR **Part 5**, **Section 5**). Community concerns also informed the final review and evaluation of the Strategic Assessment Report prior to its public release.

Generic Question ID: 151 Sub ID [23] Raised by [S23 Q179]

UWA Response (Point 6): There is little evidence in the Report that extensive, open-ended consultations with persons likely to be directly impacted by the proposed project has occurred, and/or that local or visiting groups have any sense of project 'ownership'. If this process had taken place, the Report would contain much more qualitative and integrated data than it does. As it stands, the Report is top-heavy with statistics and reflects a style more common in policy, economic planning, and legal domains. This is unusual in social impact assessment reportage.

Both the SIA and the ASIA included community consultation. This is included in the comprehensive Annexure B to SIA Volume 2: Assessment of Impacts and Volume 2 of the Indigenous Impacts Report (**Appendix E** of the Strategic Assessment Report). The report reflects a *strategic-level* assessment of the potential development over time of the proposed LNG Precinct. The *project-level* SIA is currently being undertaken and also contains extensive community consultation.

Generic Question ID: 154 Sub ID [23] Raised by [S23 Q182]

The submission from the University of Western Australia (refer to UWA Submission Point 9) refers to the project development workforce forecasts (SAR **p. 42**) which suggest that at certain stages of the project between 80-90% of workers will be Fly In / Fly Out (**FIFO**), a measure that has had dramatic consequences elsewhere for local well-being in Western Australia. As Marcia Langton points out with regard to Pilbara projects, for instance, local residents without full-time employment in regions where FIFO occurs suffer significant socio-economic problems. It is not clear in the SAR why or how this measure will be employed if the LNG project proceeds. In what way will the lessons learned from the Pilbara (where socio-economic inequalities have worsened alongside the introduction of FIFO) be addressed?

The State government made the decision to initially utilise a FIFO construction workforce as a result of a number of factors. Broome is an iconic tourism town that has little housing or services capacity because of its extraordinary population growth in recent times. In addition, LNG work forces are characterised by a large construction workforce (following a bell-shaped curve) and a small permanent workforce. As a result of these constraints, it was agreed that a large percentage of the initial construction workforce will need to be FIFO. The strategic (precinct-level) Social Management Plan and governance structure has been structured to enable the FIFO proportion of the workforce to change should community opinion change in the future as Broome develops more capacity.

Addressing socio-economic impacts is a concern for all industries that use FIFO work forces, including the Browse LNG Precinct. An important aspect of conducting the impact assessments was learning from the experiences of industrial developments elsewhere, particularly those utilising a FIFO workforce. The State government reviewed a number of documents to better understand the socio-economic impacts of the FIFO workforce in the Pilbara and assist in the development of effective strategies to manage these impacts. In addition to addressing these impacts at a project and Precinct level, addressing them more broadly is a matter that is presently on government and industry agendas.

The lessons learned from the Pilbara helped inform the State government in developing a range of strategies to manage the socio-economic impacts. These management measures are outlined in the Strategic Social Impact Management Plan (**SSIMP**), e.g.:

- A managed access construction camp that will manage the exit and entry of the workforce and external entry by people not legitimately at the Precinct. This measure is also a key mitigation and management strategy supported by the ASIA to manage worker impacts on Broome and the Dampier Peninsula and its communities.
- Access to Broome and the Dampier Peninsula will also be managed to minimise potential negative impacts of the large-scale construction workforce on Dampier Peninsula communities.
- Commercial proponents will be required to develop a policy and procedures to manage undesirable workforce behaviour.

The SSIMP also includes strategies to address some of the existing socio-economic conditions, such as the social service deficiencies. Measures to help local people secure employment are also essential. For this reason, the SSIMP includes strategies to help local people benefit from this project by taking advantage of the direct and indirect employment opportunities resulting from the establishment of the LNG Precinct. For example, the SSIMP includes a requirement that a management plan for education, training and employment be developed and implemented prior to project construction. The State has already begun work on addressing training and education deficiencies (e.g. by commissioning a feasibility study for a Trade Training Centre). Such a centre would assist in removing barriers to long-term employment for Indigenous and non-Indigenous people and provide employers with an appropriately skilled local labour force.

All of these measures have been developed to minimise the potential negative socio-economic impacts and maximise the potential benefits of this development for the communities of the Dampier Peninsula. As with other measures in the SSIMP, relevant targets and indicators will need to be developed and monitored. The management plans, policies and procedures required will be reviewed by the Social Management Committee.

Generic Question ID: 643 Sub ID [120] Raised by [S120 Q1286]

ENGO Submission: The basic assumption behind the Social Impact Assessment (**SIA**) is that the Browse LNG Precinct development will have little social impact on Broome and the surrounding area because population growth is set to continue at a high rate regardless. This serves to downplay the immediate impacts of the development on the basis of population projections that may, or may not, eventuate.

The intention is not to downplay the impact of the Browse LNG Precinct workforce on the population characteristics of Broome. Rather, the Social Impact Assessment (**SIA**) needed to not only examine the projected contribution of new residents due to the project but also the future population growth without the project. The population growth scenarios in the Strategic Assessment Report (**SAR**) are based on population data from the Australian Bureau of Statistics (ABS) and the Western Australian Planning Commission (**WAPC**). The SAR includes three population growth scenarios. One is taken directly from WAPC's *WA Tomorrow* (2005), and two which adjust these projections to compensate for the recognised inaccuracies in the Estimated Resident Population (**ERP**) estimates made by the ABS. The current methods used to produce ERPs are known to undercount Indigenous residents.

The conclusion that population growth would be modest in comparison to Broome's natural population growth is based on the assumption that 80-90 percent of the construction workforce would be FIFO and living in a managed access construction camp. The operational workforce is predicted to be 400 to 600 workers, plus about 160 onshore and offshore contractors during operations. It is predicted that up to 50% of the operational workforce would reside in Broome.

Although any population increases driven by the development of the Precinct are modest in comparison to Broome's natural population growth, the Department of State Development recognises that some impacts would result in additional demands on already stressed systems. For example, they would result in additional demands on already vulnerable services and facilities. These service limitations will be addressed through development and implementation of the West Kimberley Socio-Economic Strategy, outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5** of the SAR). Housing issues will be addressed by LandCorp which is overseeing land releases in Broome North.

Generic Question ID: 651 Sub ID [120] Raised by [S120 Q1294]

ENGO Submission: **Part 5 Section 2.2** SIA Methodology. The methodology for the SIA is supposed to follow best practice as identified in the International Principles of SIA 151 (IAIA, 2003), but it clearly does not live up to at least one of these principles, given the obvious level of community opposition to the proposed Precinct. Development projects should be broadly acceptable to the members of those communities likely to benefit from, or be affected by, the planned intervention.

Social Impact Assessment (**SIA**) is a process or tool that allows practitioners to assess the social impacts of planned interventions (e.g. policies, programs, plans, projects) and to develop strategies for the ongoing monitoring and management of those impacts. An SIA includes the processes of analysing, monitoring and managing the intended and intended social consequences, both positive and negative, of a proposed development and any social change resulting from that development.

SIA is guided by international principles. As referenced in this submission, these principles include eight "fundamental principles for development". One of these principles states that "The SIA community of practice considers that...development projects should be broadly acceptable to the members of those communities likely to benefit from, or be affected by, the planned intervention." An important distinction between this set of principles and those that are specific to SIA practice is that the fundamental principles of development are those values held by SIA practitioners. Achieving broad public support is not a requirement of the SIA process. There will always inevitably be some level of opposition to large development proposals.

SIA practitioners recognise that social impacts are not the only considerations in the decision-making process. As is also stated in the principles, the opinions and views of experts should not be the sole consideration in decisions about planned interventions. SIA practitioners undertake an assessment of the social impacts, but decisions are made at the political level based on a range of factors beyond the scope of social impacts. As a matter of best practice, SIA practitioners, through the international principles for SIA, urge decision-makers to consider the level of public support when making development decisions. As part of the approvals process, feedback received from the public review of the Strategic Assessment Report (**SAR**) is considered along with the information presented in the reports. All of this information together will assist the State and Commonwealth

Governments in making their final decisions.

Generic Question ID: 749 Sub ID [70] Raised by [S70 Q623]

There are questions about the surveys used having very small sample sizes, not being random, and posing biased or misleading questions which may have influenced responses. For example, Appendix III p.174 states as follows:

"Which of the following is most important to you:

1. Cheaper and more flights to and from Broome;
2. No LNG precinct development at Prices Point;
3. Increased business and work opportunities in and around Broome."

These are not necessarily related, assume flights and increased work opportunities will be cheaper/ better with a gas hub, and discourages selection of option 2.

The significance of the tourism industry to the Kimberley region prompted Tourism WA to commission a Tourism Impact Assessment (**TIA**) in 2009. Tourism is one of the largest sector employers in the region and represents around 64% of the Broome's total generated revenue. The tourism impact assessment (**p. 46**) highlighted the important contribution of the tourism sector to the Kimberley economy; which accounts for around $637.3m in 2008 or around 35.8% of the total economy valued at $1.778 billion. The TIA also reported that surveyed Broome residents view tourism as good for Broome and they support the continued growth of tourism in Broome.

The TIA used a combination of qualitative and quantitative research methods to assess the potential impacts of an LNG Precinct on the region's tourism industry. The TIA offers valuable information on stakeholder, resident and visitor perceptions. However, it is important to recognise the limitations of the assessment, being as follows:

- As the study was an impact assessment, the resident and tourist surveys were not designed to be statistically representative samples.
- It is agreed that the resident survey is not random. It systematically selected residents who were part of an existing email data base for Broome.
- The questions in the resident survey were designed to verify (validate) or reject hypotheses developed through the qualitative research phase of the TIA.
- The purpose of questions involving ranking options against one another only reveals relative importance as opposed to absolute importance. Despite this limitation, this information is still of value in identifying general views and concerns regarding the development of the Precinct.

The Proponent recognises that there is a wide range of views about the potential impact of the Browse LNG Precinct on the tourism industry. The Strategic Social Impact Management Plan (SAR **Part 5, Section 5**) commits to maintaining or enhancing the tourism image of Broome. The next stage of work will include the development of a detailed management plan to ensure that Broome's tourism industry and the development of the Browse LNG Precinct can satisfactorily co-exist.

Generic Question ID: 802 Sub ID [75] Raised by [S75 Q862]

The SAR (**Part 1**, **Executive Summary p. ES-100**) states that half of the industry stakeholders, visitors groups and tourist surveyed considered that the proposed development would have a negative impact on the Kimberley's reputation and image. No details are given about the composition of the group surveyed, and if Indigenous tourism operators were included. If they were not, in reality the negative response is likely to be higher.

The SAR (**Part 1**, **Executive Summary p. ES-100**) states that half of the industry stakeholders, visitors groups and tourist surveyed considered that the proposed development would have a negative impact on the Kimberley's reputation and image. No details are given about the composition of the group surveyed, and if Indigenous tourism operators were included. If they were not, in reality the negative response is likely to be higher.

Generic Question ID: 1276 Sub ID [136] Raised by [S136 Q2971]

In relation to research for the proposed development, the social impact assessment was extremely limited in scope. There was never an option of the development not going ahead and instead the focus has just been to limit potential impacts identified in the present scope of research.

Conducting a Social Impact Assessment (**SIA**) requires the practitioner to consider two futures of the community: one in which the project does not proceed, and one in which it does proceed. The SIA considered five development scenarios, and the 'no development' option was included as Scenario 1. This option was also reflected in **Part 5** of the SAR.

Whether or not the Browse LNG Precinct is developed will be determined by the State and Commonwealth Governments through the approvals process. The SIA does not assume that the project will proceed; however, it must consider the possibility that the project is approved and assess the potential impacts under that scenario. It is through this impact assessment that appropriate management measures can be developed. This is a responsible course of action that ensures the government is prepared to manage the impacts of the project, should it be approved. Accordingly, DSD has outlined a range of management plans and strategies that will need to be developed and implemented prior to construction and through the operation of the Precinct.

A key step in any SIA is the scoping phase. The scoping phase defines the scope of the project and includes the site selection process. It includes the identification of important issues for the project, such as environmental and heritage values, and service provision. The scope of the social factors to be covered in the SAR was identified in the Terms of Reference agreed between the State and the Commonwealth Governments (SAR **Appendix A**). During the scoping phase for the Browse SIA, extensive consultation was conducted with community stakeholders and Traditional Owners.

The purpose of the scoping phase is to provide focus to the SIA and ensure the right methods are used in the impact assessment. It is not to identify every feasible impact, rather it provides focus to the SIA so the most significant impacts can be assessed and managed. While the purpose of scoping in impact assessment is to provide an initial identification of potential impact issues that warrant further analysis during technical studies, the technical studies provide additional information and a clearer understanding of the significance of these impact issues. As the SIA is conducted, the technical analyses helped to confirm or refute the initial assumptions made in the scoping phase. For instance, they may reveal that the impact issues identified in the scoping phase are more or less significant than originally thought or that the nature of the impacts is somewhat different to that anticipated.

Generic Question ID: 1289 Sub ID [124] Raised by [S124 Q3099]

There has been no adequate modelling on wider impacts such as the opportunistic workforce.

The opportunistic workforce was involved in the modelling undertaken for the DSD SIA and summarised in the SAR. The SIA modelled an opportunistic workforce ranging from 2-10% and this was reflected in the overall workforce modelling.

The State Government will require commercial proponents locating at the Precinct to identify strategies (e.g. hiring policies) that will be implemented to discourage opportunistic workers from coming to Broome seeking project employment. Such strategies could include clear policies on recruitment and measures to ensure potential transient workers clearly understand and follow the proper channels of recruitment. These measures will be incorporated in the management plans that will be developed prior to commencement of construction.

Commercial proponents will have an important role to play in limiting the number of transient workers that migrate to Broome and managing those that do arrive. Although not the sole responsibility of commercial proponents, companies can discourage these workers from moving to the region. This will be part of the required Transient Workforce Management Plan to be prepared by the commercial proponents (**Part 5**, **Section 5.4.8**). Accordingly, the potential impact of transient workers will also be explored as part of the project-level SIA being undertaken by Woodside.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1297 Sub ID [149] Raised by [S149 Q3135]

The increased population associated with the proposed development will put unacceptable pressure on the environment. This includes sensitive areas of Roebuck Bay, coastal dunes and Monsoon Vine Thicket areas. For example, there will be an increased risk of unfettered access to these areas with 4WD vehicles and motorbikes. There is no guarantee that workers would be confined to a village during construction or maintenance shut down periods.

The pressures on services due to population growth within the Shire of Broome, attributable to both 'natural' population growth and the development and operation of the Precinct, will be significant. Broome's natural growth is projected to increase by 84% from 17,100 people in 2011 to 31,400 people in 2041. Detailed population modelling was undertaken based on low, medium and high assumptions cases for each development scenario, and is reported in detail in Volume Two of the Social Impact Assessment (**SIA**) (**Appendix D-2**). Based on this modelling, even the higher scenario (3B) of 35Mtpa development, only adds a further 5% to the population of the Shire of Broome. Refer to **Figure 2-6** in the Strategic Assessment Report (**SAR**) (**Part 5**) for a visual comparison of natural population growth to population growth predicted as a result of the Precinct.

Given the projected natural population growth, the most significant social impacts identified over the 30 year term of the Strategic Assessment arise from the significant predicted population growth anticipated for the Shire of Broome. This would impact on access to current recreational facilities, including natural features such as coastal dunes. As in any growing community, a discussion of how recreational access to environmentally sensitive areas (e.g. coastal dunes) should be managed will need to occur as part of future planning.

As is appropriate in an impact assessment, the management measures outlined in the SAR (**Part 5, Section 5**) are focused on managing the impacts from the Precinct development, rather than the broader challenges of recreational access in a growing community. As discussed in the SAR, due to restricted access to the area around the Precinct, the pattern of use for the James Price Point coastal area is anticipated to change. As a result, the current recreational values would potentially be affected with users choosing to use the buffer area surrounding the Precinct, other locations along the coastline, or ceasing to use the area all together. To protect the recreational values of this area, and avoid increased pressure on other areas of the coast, existing coastal recreational areas and coastal vehicle access around the Precinct site would be maintained to the greatest extent possible with access to James Price Point maintained through the construction of a bypass track around the Precinct. Investigation into options for the establishment of alternative access routes and recreational use areas will be undertaken as required.

In response to Traditional Owner concern around the recreation impacts of increasing population on country, commercial proponents will be required to implement policy and procedures to manage access to Broome and the Dampier Peninsula by the construction workforce. The State Government will also prepare and implement an Engagement Plan to manage all interactions with public users of the marine and terrestrial environment in and around James Precinct Point, including recreational users and tourism operators.

Generic Question ID: 1318 Sub ID [95] Raised by [S95 Q3020]

Broome has suffered over the last 20 years from rapid growth and successive governments have not provided support for the increasing demands on the infrastructure of social services. Families who have lived here for generations are struggling to pay the rising property prices and general cost of living.

A community concern identified during the Broome sense of place workshop was the lack of forward planning during recent growth periods, leaving a system that was unable to cope with changes in demand. This concern was due to changes in the region occurring independently of the Precinct's existence, such as the high population growth rate in Broome in recent years, with related problems, such as deficient social service provision and lack of housing.

A strategic assessment was conducted at this level in order to avoid the problems that a lack of forward planning can create. There are considerable gas resources off the Kimberley coast and a high level of industry interest in developing these resources. This raises the potential for multiple and uncoordinated gas processing facilities to be developed along the Kimberley coast leading to unnecessary and significant social and environmental impacts.

In order to avoid such an outcome, the State Government has proposed the establishment of a single multi-user LNG Precinct from which gas can be processed and transported. Through the Strategic Assessment process, the State Government has identified the potential high-level impacts of the Precinct and planning and management priorities that should be addressed in subsequent stages, should the development proceed. The central findings outlined in the Strategic Assessment Report is that the community will be able to cope with changes generated by the Browse LNG Precinct, and the environmental values of the Kimberley will be maintained, provided the mitigation, management and monitoring strategies are implemented.

As this submission acknowledges, there are community concerns that the Precinct development could exacerbate cost of living pressures in Broome. The wages of Precinct workers would be substantially higher than many of those offered in existing industries in Broome, such as the tourism and hospitality sector. This in the context of a community that is already experiencing a number of pressures, such as house price growth outstripping wage growth and cost of living. The pressures on housing affordability and cost of living will be addressed through a number of management measures in the SAR (**Part 5, Section 5**), including the use of a FIFO workforce during the construction phase, a managed-access construction camp and local living policies. In

addition, a number of management measures will be implemented to address housing issues in Broome, including the following:

- Implementation by LandCorp of a land and housing management plan to ensure that the timely supply of land and housing to meet the needs of Broome and the project. The strategy is also intended to address short-term accommodation deficits, affordable housing, social housing and homelessness issues.
- The commercial proponents are to implement a Transient Workforce Management Strategy to discourage these transient workers from moving to the region and manage those that do arrive.
- Commercial proponents are also required to develop a program to monitor the effectiveness of local purchasing strategies. This will include local indicators of economic development such as cost of living, employment and business development.

To ensure delivery of the necessary environmental and social management measures, the Strategic Assessment Report proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1344 Sub ID [132] Raised by [S132 Q3315]

The suspension of public involvement in the Dampier Peninsula planning process in order to push ahead with plans for the Precinct has undermined the credibility of the process and resulted in a government and corporation driven planning process, effectively treating the aspirations and concerns of the public with contempt.

The State Government made the decision to suspend the planning process for the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) in recognition that the proposal to develop the Browse LNG Precinct at James Price Point was under consideration. Given that the development of the Precinct could have a significant impact on the content of this Strategy, the Government determined the most prudent course of action would be to suspend development of this strategy until the environmental approvals process for the Precinct was complete. As stated in the Strategic Assessment Report (**SAR**) (**Part 5**), the State Government has committed to working with Traditional Owners and the broader community to further develop the Dampier Peninsula Planning Strategy and to developing a process to manage recreation activities on the Dampier Peninsula that is consistent with the Strategy.

Generic Question ID: 1355 Sub ID [216] Raised by [S216 Q1143]

Part 5 Section 2.2.2: The SAR states elsewhere that there will be 8,000 workers so why continue with the 600 figure?

A figure of 6,000 construction workers is used in the Strategic Assessment Report (**SAR**) as a result of extensive workforce projections conducted as part of the Social Impact Assessment (**SIA**). Modelling of the projected size of the construction workforce was conducted for Volume 2 of the SIA, which is included as **Appendix D-2** of the SAR.

As a condition of operating at the Browse LNG Precinct, commercial proponents will be required to administer a managed-access construction worker camp within reasonable proximity of the Precinct site, where both internal and external access will be controlled. In addition, commercial proponents will also be required to prepare and implement an Access Management Plan, to limit and control interaction between the construction workforce when they are not at work, and the communities of Broome and the Dampier Peninsula.

As noted in the **Part 5** of the SAR, the peak workforce number of 6,000 workers will only apply to the construction phase. The operational workforce, which will be present in the region over the longer term, will number between 400 and 600.

2.3 Economic Factors

Generic Question ID: 918 Sub ID [24, 27, 32, 42, 45, 62, 70, 76, 77, 85, 95, 97, 98, 99, 105, 108, 114, 118, 120, 127, 132, 133, 137, 140, 141, 148, 227] Raised by [S127 Q1907]

Kimberley Development Commission: There appears to have been no analysis of the positive and negative impact that the Precinct would have on local businesses. No estimates on the impact of the Precinct on the local economy has been determined, however this may yet be covered by the Woodside Social Impact Assessment.

Several private submissions have expressed similar concerns as follows:

- How will lower paid industries and small businesses compete with the gas hub for workers?
- How would they attract and retain employees when much higher rents and living costs, like those in the Pilbara, occur in Broome?
- Will there be a study done to determine the impact to small business and their future viability?

Workforce competition, amongst commercial proponents, Broome businesses, and Government and non-Government agencies, is a likely impact associated with the construction phase of the Precinct. It is an objective of State Government, in establishing the Browse LNG Precinct, to maximise opportunities for local employment and local economic development within the West Kimberley region.

As outlined in the Strategic Assessment Report (**SAR**), the opportunity for the region's small manufacturing and construction base to contract for supply of Precinct goods and services is likely to generate flow-on benefits for the region. These benefits include an increase in both business income and in the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area and expand its capacity even beyond LNG contracting. It is likely that new employment opportunities with Broome-based contractors (for example laundry, catering, transport and trades-people) may generate an expanded customer base for the region's non-Precinct related businesses (such as retail and hospitality) and could also include opportunities for the establishment of new Indigenous business ventures.

At present, the cost of living in the Kimberley is approximately 17% higher than in Perth, which is indicative of current supply constraints. The development of the Precinct may generate a benefit by creating a larger market and bringing about a deflation of certain costs such as food. The recent release of residential land at Broome North by LandCorp is an example of the State's desire to alleviate any future land and rent costs associated with natural population growth in Broome.

At the project assessment level, the Foundation Proponent (currently Woodside) will conduct a specialist economic study to examine the base case for economic development in Broome and estimate the impacts on the local economy as a result of the construction and operation of the LNG development (e.g. direct and indirect jobs, expenditures, housing and rent values). The State will also emphasise the importance of local content in any proposed commercial activity within the Precinct.

Part 5, Section 5 of the SAR outlines the Strategic Social Impact Management Plan (**SSIMP**) for the Precinct. The SSIMP provides a framework for the further development of strategies to enhance opportunities, and avoid, mitigate or manage the social impacts arising from the establishment of the Precinct. It adopts adaptive management principles and seeks a balanced approach which maximises benefits through negotiated outcomes. The adaptive management principles will allow the strategies to be adjusted in response to changed or new conditions, should they eventuate.

Generic Question ID: 41 Sub ID [39, 200, 217, 155, 205, 215] Raised by [S39 Q735]

Given the largely FIFO arrangements and the unusually high non-project population growth predicted over the 30 year time span, why is the development so important for the Kimberley as the region seemingly will not benefit from the Precinct?

A significant feature of the Shire of Broome is that even without the Precinct development, it demonstrates exceptionally high growth with a 4.7% per annum population increase from 1976 to 2006. Broome is currently experiencing the effects of this significant population growth with the demand for many services outstripping supply. Whilst the population is expected to grow regardless of the Precinct development, it is notable that population projections do not explicitly model economic activity.

Economic activity is sometimes captured in population projections through assumptions that are made based on knowledge of past trends and committed new projects. Whilst trends in employment growth associated with economic activity are implied in the migration assumptions, the high growth rate projected for the Kimberley also arises from high fertility assumptions relative to the rest of Western Australia.

Additionally, although the Kimberley region has experienced favourable economic growth conditions since 2000, particularly in relation to mining and tourism activities, there still exists a high level of social and economic disadvantage in the region predominantly in remote communities. Development of the Browse LNG Precinct will allow opportunities for new initiatives to increase the health, education, social and economic well-being of many remote communities, and substantially reduce disadvantage across the Kimberley.

While the construction workforce will be largely comprised of FIFO workers, there are still a number of ways in which the local and regional economy will benefit. A key objective of State Government in establishing the Precinct is to provide opportunities for local employment and economic development. The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry. Subsequently, the local manufacturing and construction base would grow through

contracting to supply goods and services to the Precinct. This would result in flow-on benefits of increased business income and an increase in the capacity of local businesses to deal with large clients and projects. This increased capacity can be utilised to generate an expanded customer base beyond the LNG sector (e.g. retail and hospitality sectors). Education, training and employment opportunities associated with Precinct employment would also generate a pool of skilled people in the region. Skills acquired through training for jobs on the BLNG Precinct can also be applied to non-project jobs, which can assist in addressing the lack of skilled workers in Broome noted by many businesses.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a number of strategies aimed at improving service provision within the region, and maximising the benefits associated with the Precinct for the local community.

Generic Question ID: 249 Sub ID [39, 212, 205, 215] Raised by [S39 Q736]

Would development of the BLNG Precinct and associated export infrastructure make the mining of mineral deposits in the Kimberley more economically viable?

The Browse LNG Precinct is being progressed on the basis that it will be a multi-user facility, with the ability to accommodate at least two LNG projects. The Precinct and associated export infrastructure will only be used for the development of Browse Basin gas, and is not related to any mining of mineral deposits in the region, nor to any other extractive industries.

Generic Question ID: 267 Sub ID [39, 205, 215, 212] Raised by [S39 Q740]

What proportion of profits from the Gas Precinct is likely to be held by residents of the Kimberley?

The economic benefits from Precinct activities would be provided to the region in a variety of forms. For example, the redistribution of taxes to the State and Local Governments would provide for a range of Government and social services. Similarly, Precinct proponents will be required to pay Rate Equivalent Payments which will offset the costs of Local Government services. A benefits package valued at around $1.5 billion will also contribute to a range of initiatives to create opportunities and address disadvantage within the Indigenous community.

Increases in the regional and local gross domestic product (**GDP**) would derive from spending that resulted from supply, procurement and associated spending by Precinct workers and their families.

The Browse LNG Precinct will also bring significant benefits in long term employment, business opportunities and economic and community development to the Kimberley. Developing the Precinct will provide opportunities for the region to considerably increase its contribution to the State's economy and to increase employment opportunities. For every direct job created by the LNG Precinct, it is estimated that one and half indirect jobs could also be created. These benefits are discussed in the SAR **Part 5**.

While Kimberley residents that own a share of businesses operating in the Precinct may receive profits from those activities, the economic benefits of gas development extend well beyond the profitability of those businesses directly involved.

Generic Question ID: 1123 Sub ID [27, 212, 205, 215] Raised by [S212 Q1083]

Part 5, **Section 2.3.2.3**: Impact on Regional and Local Income It is important that locally established businesses are aware of, and have strategies to manage a relatively fast reduction in demand for their services. This may be averted should new future commercial proponents be secured. This is pure 'passing the buck.' The BLNG cannot be counted on to provide the economic stimulus to the community which would be most impacted by its presence BUT if the rest of the Kimberley is opened up, then maybe some of the economic benefits would continue. But for how long? One generation? And then we are left with barren land and no economic prospects. This is the ultimate in not taking responsibility for one's own actions and the consequences of them.

At a national level, the Browse LNG Precinct would have a positive net impact on Australia's GDP. As an indication of the significant contribution to GDP, one forecast predicted that Chevron's Gorgon project has the potential to boost GDP by $64 billion (net present value) (Chevron, 2010a). The Gorgon Project comprises a three train 15Mtpa LNG facility that is similar in size to the proposed foundation development scenario (Scenario 2). National household income is also likely to increase with the establishment of the Precinct due to increased income earned by workers and businesses and the multiplier effects of income spent by these workers on the income for other individuals in the economy.

As discussed in the Strategic Assessment Report (**SAR**), the Precinct would provide a major injection into the local and regional economy as well, particularly through the opportunities created for local businesses. Although this would be tempered during the operations phase, the decline may be averted should new future commercial proponents be secured. In addition, the State Government and commercial proponents will help to ensure that

locally established businesses have strategies to handle this decline.

One of the key long term flow-on benefits of employing local businesses in the development of the Precinct would include both an increase in business income and the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area, leading to expansions in business and workforce capacity well beyond LNG contracting.

The long term benefits of the project extend beyond the economic benefits. The education, training and employment programs developed as a result of the Precinct, and provided to employees at the Precinct, can assist in creating a better trained and skilled workforce, which will play a role in addressing the widespread scarcity of skilled labour in Australia. This will particularly be the case for local people. In addition to education and training programs, the project will make addressing social service deficits in Broome a key priority. This will benefit community well-being in both the short and longer term, making impacts of future population growth more manageable. In a region that is relatively disadvantaged compared to other areas of Australia, there are significant long-term social benefits of increasing access to social services, education, training and employment.

Furthermore, the development of the LNG industry in Australia has the potential to play a significant role in reducing global greenhouse emissions through displacement of higher emitting fuels such as coal. This lower carbon emission rate makes natural gas a comparatively clean energy source relative to other hydrocarbon fuels and can form part of the global solution to climate change. Proposals such as the Browse LNG Precinct can play an important part in a low carbon future, and set a precedent for more environmentally responsible development in the natural resources and energy industry.

Generic Question ID: 794 Sub ID [75, 106, 211] Raised by [S75 Q873]

The conclusion (**Part 1**, **p. ES-103**) that the development will create benefits through new opportunities for Traditional Owners is misleading. Traditional Owners should not have to sell their country to access education or funds to use for housing and health services. These should be provided to them as a right under the government's legal obligation to provide such services to its citizens. There are already considerable opportunities for Traditional Owners who wish to obtain employment in the mining industry - at Argyle, at Sally Malay, at Koolen Island for example. The low levels of Kimberley Aboriginal employment in these organisations is probably indicative of a reluctance of Aboriginal people to work in an industry that is destroying their country and culture as well as a failure of industry and/or government to provide realistic pre-employment training and mentoring programmes.

The SAR Conclusion (**Part 1**, **p. ES-103**) suggests one of the benefits obtained by development of the Precinct is indirect stimulus of the local economy. This is misleading. Firstly, the economist employed by the consultants undertaking the Woodside Social Impact assessment's preliminary estimate was that only a limited number of long term new secondary impact jobs would be created by the LNG Precinct proposal, particularly after the end of the construction phase. Many of jobs are likely to be taken by opportunistic/transient workers with pre-existing skills rather than by Broome residents who would need training. Secondly, findings of recent studies suggest the local economy will not receive a net benefit from FIFO workers. Finally many Broome businesses are not ready to tender to supply services to the Precinct - they do not have the correct accreditations, insurances, policy and procedures manuals etc.

Commercial proponents wishing to locate at the Precinct will develop a strategy to discourage transient workers from moving to the region and, once they have arrived, have procedures in place to manage those that do arrive. This will be part of the required Transient Workforce Management Plan (**Part 5**, **Section 5.4.8**).

In addition to managing the opportunistic/transient worker issue, it will also be necessary to provide local people and businesses with the skills they need to take advantage of direct and indirect employment opportunities arising from the Precinct. As discussed in the SAR, this requires overcoming existing socio-economic barriers and providing education, training and employment opportunities for local Indigenous and non-Indigenous people. The SAR includes a number of strategies to assist in achieving this outcome, including the following:

- An Education, Training and Employment Strategy that will ensure the education, training and employment opportunities are maximised for the local community.
- An Indigenous Workforce Development Strategy that will coordinate the range of Indigenous education, training and employment strategies. The strategy will also seek increase the number of Indigenous workers on the project; develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment; provide opportunities for Indigenous people to work on cultural and environmental values relevant to precinct operation; and develop appropriate workforce arrangements including support for Indigenous workers.
- Local purchasing strategies: to maximise economic benefits for the communities of Broome and the

region by encouraging Precinct expenditure within local businesses and industry.

The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry. Local purchasing policies will help local businesses become more viable and expand their capacities. As discussed in the Strategic Assessment Report (SAR), the opportunity for the region's small manufacturing and construction base to contract for supply of Precinct goods and services will result in benefits through increased income and an increase in capacity to deal with large clients and projects. Flow-on benefits of this increased capacity may include an expanded customer base, even beyond the LNG sector (e.g. retail and hospitality sectors).
As noted in the SAR (**Part 5, Section 5**), the local purchasing strategies will feature targets and performance indicators such as the value of locally bought goods and services and the number of local Indigenous business enterprises developed. Commercial proponents will also be required to develop a program to monitor the effectiveness of this management measure. This will include local indicators of economic development such as cost of living, employment and business development. Under the proposed governance structure, the monitoring results will be reported to the Social Management Committee to ensure that management measures are maximising social benefits.

To ensure delivery of the necessary social impact management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Through local development initiatives such as the Kimberley Business Capability and Services Register (**Kimberley BIZ**), Woodside as Foundation Proponent, has already commenced work with local industries to enhance their capacity to participate in works associated with the exploration and development of Browse Basin gas. Woodside is also in the process of conducting its own project-level Social Impact Assessment (**SIA**), which will seek to further enhance community participation. The objective of Woodside's SIA, and hence it's preliminary estimate of job flow-on directly associated with the Precinct (quoted in this submission), is to identify strategies and mechanisms through which improvements to the creation and retention of local jobs in the West Kimberley can be developed.

Generic Question ID: 237 Sub ID [39, 217] Raised by [S39 Q729]

Predicted increased economic resilience by introducing the project is not significant as it will only provide a small increase in employment and economic benefit. The local economy would benefit more by providing Broome with a needed marina.

Although development of a marina in Broome is beyond the scope of this project, increased pressure on marine infrastructure was identified as a potential impact associated with the development of the Precinct, and was addressed in the Strategic Assessment Report (**SAR**). A common concern amongst stakeholders was that development of the Precinct would create extra pressure on the Port, further stretching the limited current facilities and making it harder to unload product and take on fuel and stores. The Precinct Infrastructure Assessment Study (SAR **Appendix D-6**) identified that the Broome port, including planned upgrades and expansion, should adequately handle the anticipated increase in vessel traffic as a result of the Precinct's operation and construction activities.

In addition to these improvements, the development of the BLNG Precinct does not preclude the development of a marina; rather improvements to marine infrastructure were identified as a potential benefit of the project. The need for a marina has been a long-standing issue in Broome, but previous attempts to secure funding for a boating facility have not been successful due to the substantial construction and operating costs and technical complexities (i.e. very large tidal range and regular occurrence of cyclonic storms). The need for a marina was one of the concerns that arose during the Tourism Impact Assessment and the Fisheries Impact Study. Marine tourism operators consulted for the Tourism Impact Assessment noted that they believe this project represents an opportunity for the industry to leverage improvements to existing marine infrastructure. These stakeholders consistently suggested that a safe boat harbour and/or marina should be developed as part of any new marine infrastructure development at the Broome Port (SAR **Appendix D-5**).

The State Government has responded to calls from the community to urgently provide a boating facility in Broome. In May 2010, the State Government announced funding for the Department of Transport (**DoT**) to construct a boating facility located in west Roebuck Bay. The proposed facility, adjacent to the Port of Broome slipway, will serve the majority of the boating public. The facility is planned to include a multi-lane boat ramp, protective breakwaters, dredged basin and a floating jetty, along with access roads and parking areas. Planning to address the needs of the balance of the Broome small-craft fleet will also continue.

DoT conduct detailed planning, investigation, approval and design processes for the facility in 2010 and 2011. Tenders for construction are expected to be called in late 2011. DoT's report on the Broome Boating Facility can

be found online at: http://www.transport.wa.gov.au/imarine/21620.asp.

Generic Question ID: 795 Sub ID [75, 106] Raised by [S75 Q872]

If high wages can be sourced via employment at the LNG precinct, who will work in the low paid community service jobs in Broome? Where will the hospital get cleaners, the shopping centres get security officers, the aged care service get personal care attendants etc? The Broome Shire has already acknowledged how the high cost of living makes it difficult for low-paid workers to survive in the town, and purchased subsidised accommodation to support their ability to remain. What else will they have to do to ensure essential services can be provided? Similarly, if local businesses can secure high paying contracts at the gas precinct, who will provide the small services that Broome householders require from plumbers, electricians, garden maintenance firms, swimming pool cleaners, etc? These services are already expensive. It is likely that they will become unobtainable.

These are all potential impacts identified a number of times in submissions and in the SAR, and the management of these will require focus. All aspects of this question have already been answered in response to other submissions (i.e. housing costs are addressed in QID 1722, 747 and 343; Workforce competition is addressed in QID 727; the cost of labour is addressed in QID 1864).

The management mechanisms proposed through the imposition of Precinct conditions will be progressed during the next stage of the development process. To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1190 Sub ID [205, 215] Raised by [S205 Q2656]

Part 5 Section 2.3: With regard to the Economic Baseline Context in the BLNG SAR, it states in the last paragraph that "…further work would need to be done by the Foundation Proponent to establish a more accurate picture should the Precinct proceed". Will this be completed before construction of the Precinct begins and the Broome economy has no more options, but to manage the impact of the Precinct?

The project-level Browse Social Impact Assessment (**SIA**) will contain a more detailed assessment of the socio-economic impacts of the Foundation Proponent's proposed development within the Precinct. The Browse SIA is currently underway and includes an analysis of the economic impacts. This will be completed before construction commences. More information on the Browse SIA can be found online at the project website: http://www.ebc.net.au/bsia/.

Generic Question ID: 16 Sub ID [2] Raised by [S2 Q17]

The Strategic Assessment report provides insufficient detail on the economic benefits and costs to the local, regional and national economy including consideration of: royalty estimates to the state and federal government, state and federal subsidies to the proponents, the cost of CO2 emissions, and the liability of both the state and federal governments for any emissions from the expansion of the oil and gas industry in the Browse Basin.

Section 2.3 (Economic Factors) of **Part 5,** Social Assessment summarises the likely local and regional economic impact of the development of the Precinct. The Strategic Assessment did briefly consider the Impacts on National Income (**Part 5 Section 2.3.2.1**) and the Impacts on State Income (**Part 5, Section 2.3.2.2**). The Social Impact Assessment **Volume 2** (http://www.dsd.wa.gov.au/documents/Browse_SAR_Appendix_D-2_.pdf) Section 2: Economic Impacts provides more information.

Generic Question ID: 252 Sub ID [39] Raised by [S39 Q737]

Will the project create a boom and bust scenario for Broome and the region when local businesses are no longer needed following the construction phase?

Part 5 of the Strategic Assessment Report (**SAR**) outlines that the construction and start-up phases of the Browse LNG Precinct would inevitably support major injections into the regional economy, particularly through the opportunities created for local businesses. However, the benefits of these economic impacts would be diluted by the relatively quick drop in demand as construction comes to an end. It is important that locally established businesses are aware of, and have strategies to manage, a relatively fast reduction in demand for their services. This decline may be averted should new future commercial proponents be secured.

The flow-on benefits identified in the SAR of employing local businesses in the development of the Precinct, would include both an increase in business income and the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area. It is not possible to predict the exact nature of future economic opportunities that will arise in the region, but expansions in business and workforce

capacity have applications well beyond the LNG industry. This is particularly the case if the population of Broome grows as predicted, as there will be a need to provide housing and services for this growing population. In addition, there is at present a recognised scarcity of skilled workers in Broome. Education, training and vocational experience offered through the development of the Precinct may assist in addressing this scarcity post-construction.

Commercial proponents wishing to operate at the Precinct will be required to develop and implement a strategy for retaining local benefits. This strategy must communicate the potential temporary nature of opportunities dependant on Precinct construction. It is also notable that the strategies to retain local benefits developed by the commercial proponents would contribute to the West Kimberley Socio-Economic Development Strategy. Utilising the additional capacity and skill base in the future economic development of the region should be part of this discussion to ensure that the flow-on benefits of the project are maximised.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, proposes a number of strategies to maximise the potential benefits associated with the development of the Precinct, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf.

Generic Question ID: 304 Sub ID [167] Raised by [S167 Q721]

There is doubt over the suggested 'creation of jobs in the Kimberley' as presented in the SAR given the finite lifetime of the 'jobs boom' for FIFO LNG workers.

As discussed in the Strategic Assessment Report (**SAR**), construction and start-up phases would inevitably support major injections into the regional economy, particularly through the opportunities created for local businesses. However, the benefits of these economic impacts would be tempered by the relatively quick decline in demand as construction comes to an end. It is important that locally established businesses are aware of, and have strategies to manage, a relatively fast reduction in demand for their services. This decline may be averted should new future commercial proponents be secured.

Flow-on benefits of employing local businesses in the development of the Precinct would include both an increase in business income and in the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area. It is not possible to predict the exact nature of future economic opportunities that will arise in the region, but expansions in business and workforce capacity have applications well beyond LNG contracting. This is particularly the case if the population of Broome grows as predicted, as there will be a need to provide housing and services for this growing population. In addition, there is a recognised scarcity of skilled workers in Broome. Education, training and vocational experience offered through development of the Precinct may assist in addressing this scarcity post-construction.

The State Government believes that development of the Precinct will provide opportunities for new initiatives to improve the health, education, social and economic well-being of Indigenous people, and significantly reduce disadvantage across the broader Kimberley community. The up-skilling of local people to work directly or indirectly on the Precinct will increase the under-capacity pool of skilled workers across the region. The skills acquired through training for jobs on the Precinct will also be able to be applied to non-project jobs. For example, following Precinct construction local up-skilled workers would help meet the additional demand for skilled employees (e.g. tradespeople to build new homes) generated by the projected natural population growth within the Shire of Broome and the West Kimberley.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the SAR, provides a framework for the further development of strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the development of the Precinct. The SSIMP proposes detailed Precinct Condition strategies, which will include considerable education, training and employment components for the community of the West Kimberley. For example, commercial proponents locating in the Precinct will be required to develop and implement a strategy for retaining local benefits. This strategy must communicate the potential temporary nature of opportunities dependant on Precinct construction. It is also notable that the strategies to retain local benefits developed by the commercial proponents would contribute to the West Kimberley Socio-Economic Development Strategy. Utilising the additional capacity and skill base in the future economic development of the region should be part of this discussion to ensure that the flow-on benefits of the project are optimised.

Generic Question ID: 318 Sub ID [25] Raised by [S25 Q217]

There is concern that local businesses are already going broke due to organisations that have established themselves in mining regions and can be so competitive in pricing that locals cannot compete.

An objective of the State Government in establishing the Browse LNG Precinct is to provide opportunities for local employment and local economic development in the West Kimberley. This will require the development and implementation of effective management measures prior to construction and on an ongoing basis. To this

end, the Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the SAR proposes a number of management strategies.

A Precinct Condition strategy outlined by the SSIMP states those commercial proponents wishing to operate at the Precinct will be required to develop and implement a management plan to retain local benefits prior to a construction. This will include implementation of local purchasing strategies that will encourage Precinct expenditure within local businesses and industry. The purchasing strategy will be based on the demands of the Precinct and related activities as well as an assessment of Broome and the region's current and future capacity to supply goods and services. The strategies to retain local benefits will also assist in retaining regional benefits by contributing to the development of the West Kimberley Socio-Economic Development Strategy, which seeks to maximise all socio-economic benefits of the Precinct for the West Kimberley.

Local purchasing policies will help local businesses become more viable and expand their capacities. As discussed in the SAR, the opportunity for the region's small manufacturing and construction base to contract for supply of Precinct goods and services is likely to generate flow-on benefits including an increase in both business income and in the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area, even beyond LNG contracting. This will also help local businesses generate an expanded customer base in non-Precinct related business (e.g. retail and hospitality sectors).

Through local development initiatives such as the Kimberley Business Capability and Services Register (**Kimberley BIZ**), Woodside as Foundation Proponent, has already commenced work with local industries to enhance their capacity to participate in works associated with the exploration and development of Browse Basin gas. Woodside is also in the process of conducting its own project-level Social Impact Assessment, which will seek to further enhance community participation.

As noted in the SAR (**Part V**, **Section 5**), the management plans proposed in the SSIMP must include relevant targets and performance indicators such as the value of locally bought goods and services and the number of local Indigenous business enterprises developed. Commercial proponents are also required to develop a program to monitor the effectiveness of this management measure. This will include local indicators of economic development such as cost of living, employment and business development.

To ensure delivery of the necessary social impact management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 721 Sub ID [203] Raised by [S203 Q1696]

An alternative to the negative impacts and short term profit made through the proposal is to support local business, tourism and better employment in the area through better planning and establishments with local business.

The development of the Browse LNG Precinct at James Price Point does not preclude the continued existence and enhancement of existing industries (e.g. tourism) in Broome. This issue was discussed in the SAR, particularly in relation to tourism. As discussed in the Tourism Impact Assessment undertaken by Tourism WA and conducted by Kadar Pearson and Partners (**Appendix D-5**), there is historical evidence to suggest that tourism and mining have been able to co-exist for some time in the Kimberley. Although the scale of the Precinct differs from the existing mining activity in the region, mining has co-existed with existing industry in the Kimberley for over five decades.

The development of the Precinct provides significant scope for the region to diversify and considerably increase its contribution to the State's economy, including in tourism and related sectors such as retail, hospitality and aviation. For example, as aviation officials in the TIA emphasised, development of the Precinct would increase air travel into the region, which would benefit tourism. In addition, it is likely that new employment opportunities with Broome-based contractors (for example laundry, catering, transport and trades-people) may generate an expanded customer base for the region's non-Precinct related businesses (such as retail and hospitality) and could also include opportunities for the establishment of new Indigenous business ventures. In addition to increased spending associated with new employees and their families, an increase in average individual incomes from direct employees and contractors would also suggest a likely increase in local spending.

The Strategic Assessment identifies potential impacts of the project and provides measures to mitigate those impacts and maximise the opportunities. A broader discussion of economic development and planning in Broome and the West Kimberley is outside the scope of this project; however, this does not prevent the local government from engaging in community dialogue about the community needs and aspirations for the area. Although the focus will be on the impacts and benefits arising from the Precinct, there are a number of management measures in the SAR that can make a contribution to this broader planning for the West Kimberley. For example, the Tourism Management Strategy will outline measures to maintain or enhance the current tourism image of Broome, while providing a framework for ongoing development of the Browse LNG

Precinct. The Broome 'Sense of Place' Management Strategy will contribute by creating a clear plan to maintain Broome's character, identity and 'Sense of Place'. This will include community vision, heritage, spatial planning and Sense of Place guidelines. Finally, the West Kimberley Socio-Economic Strategy will also provide an opportunity to map the existing capacity of businesses in the West Kimberley as they relate to the project.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 765 Sub ID [200] Raised by [S200 Q1785]

The SAR contained no discussion on the arts in Broome. The crafts, painting, drama, dance, parades, markets are a huge part of Broome for the residents and the tourists who love it and return for it. Many residents get all or some of their income from art. Many Indigenous people find avenues in Broome to sell their paintings or carvings or textile works. With commercial rents going up, art galleries are already closing in Broome. Monsoon gallery and The Bay Gallery are reportedly planning to close. The Factory and several others have suffered with the higher rents. The LNG plant will not have a positive effect on these sortsof cottage craft industries. This will mean a huge change in the atmosphere of the town and a significant loss of talent and beauty. If artists have nowhere to display and sell their goods they either move on or stop producing.

The strategic Social Impact Assessment (**SIA**) focused on the social impacts to which the region is most vulnerable (in magnitude and likelihood). Although the potential impacts of the Browse LNG Precinct on the arts in Broome did not emerge as a key social impact factor, these impacts are included in the assessment of impacts on community identity, 'sense of place' and tourism, and the impact on community facilities in Broome. For example, the Tourism Impact Assessment (**TIA**) (**Appendix D-5**) included consultation with stakeholders representing arts interests. A visitors survey was also conducted as part of the TIA, which asked visitors about that their activities in the area, including visits to cultural tours, markets, art galleries and festivals. Discussion of the arts was also part of the 'sense of place' workshop. At this community engagement event, the community were asked about how they anticipate the 'sense of place' in Broome to change in the absence of the project. One of these concerns included the lack of arts facilities, function centres, or museums to preserve and promote culture and the arts. The need for more volunteers and sponsorship for the arts was also a concern, and participants indicated that growth could positively impact this.

The Precinct's impact on the arts in Broome will be managed by measures that will seek to maintain the 'sense of place', community identity and tourism image of Broome. Managing the interaction between the large construction workforce and the communities of Broome and on the Dampier Peninsula will also help ensure that the unique Broome feel is maintained. These impacts will be managed via the implementation of the following management plans:

- The Sense of Place Management Strategy;
- The Managed-Access Construction Camp;
- Access to Broome and the Dampier Peninsula;
- Workforce Behaviour Management;
- Tourism Impact Management Strategy; and
- Opportunistic Workforce Management.

More information on each of these strategies can be found in the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR.
To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 792 Sub ID [75] Raised by [S75 Q875]

The conclusion (**Part 1, 'Executive Summary' p. 103**) that the development will create additional growth opportunities commensurate with future expansions of the Precinct is misleading. This supposed benefit is in direct contradiction to Mr Barnett's assertion that there would be no future expansions of the Precinct.

The Precinct is being developed to accommodate a minimum of two LNG processing operations, with a combined capacity of up to 50 million tonnes per annum, all within a footprint of less than 2500ha. On this basis it is not expected that future expansion of the Precinct would be necessary.

Woodside Energy Limited has undertaken extensive investigations as a potential Foundation Proponent. It has indicated that its initial project would produce around 12 million tonnes per annum of LNG, with potential to upgrade to 25 million tonnes per annum over time. The foundation project, including any future expansion,

would be accommodated within an area of around 500ha. Additional areas within the Precinct would only be developed as required by a future proponent.

Generic Question ID: 798 Sub ID [75] Raised by [S75 Q868]

Part 5 of the SAR makes no realistic attempt to assess the flow-on impacts of the proposed developments for local communities. It attempts to suggest that, as the town of Broome is already growing, the additional workforce will not create new or unexpected demands for additional services (**Part 1**, **p. ES-87**). The mitigation strategy suggested (**p. ES-88**) is to separate the workforce from the population of Broome. This is actively disingenuous as it fails to mention the plan to have a temporary 600-person workers camp situated on the edge of Broome town-site, to house construction workers who will build the workers camp at the proposed Precinct site. This work camp which is planned to have a lifetime of 15 years (which makes its designation as a 'temporary' questionable) is another example of the misleading approach adopted throughout the SAR documentation. The Precinct cannot be built unless construction workers can initially be housed in a temporary camp. Therefore, details should have been included in this proposal and included in the assessment process.

The temporary workers camp is outside the scope of the strategic assessment, as agreed upon by the State and Commonwealth Governments. While the Woodside temporary workers camp is outside the scope of the Strategic Assessment, it is subject to the relevant planning legislation. The Western Australian *Planning and Development Act 2005* establishes the legislative basis for State and local planning. Under this legislation, Broome Shire's *Town Planning Scheme No. 4* provides the planning framework to guide the future development of Broome. The *Town Planning Scheme No. 4* provides for a range of local planning policies, including "Transient Workers Accommodation" (Local Planning Policy 8.8) (http://www.broome.wa.gov.au/council/pdf/policy/88.pdf). This planning policy relates to a "temporary or intermittent workforce employed on one or more finite projects in or based in the Shire of Broome". The policy provides a number of assessment criteria to enable the council to assess Transient Workers Accommodation proposals.

Generic Question ID: 843 Sub ID [201] Raised by [S201 Q1809]

Driving a vehicle for tourist related activities equates to $20 - $25 per hour (depending on day of week). To drive the same vehicle for James Price Point/Woodside related activities would equate to $50 - $60 per hour.

As discussed in the Strategic Assessment Report (**SAR**), average household and individual incomes are relatively low in the West Kimberley, while cost of living (e.g. cost of daily necessities, food, fuel and utilities) is relatively high. Broome is already experiencing a number of pressures, such as house price growth outstripping wage growth and a higher cost of living than Perth. During the community engagement, it was clear that the community fears these pressures could be exacerbated by development of the Browse LNG Precinct.

As this submission acknowledges, the wages of Precinct workers would be substantially higher than many of those offered in existing industries in Broome, such as the tourism and hospitality sector. These higher wages would be a benefit to local people who are directly or indirectly employed by the Precinct, potentially increasing individual incomes with a subsequent increase in local spending. However, there is also a discussion in the SAR of the potential negative impacts that have occurred elsewhere and were of concern to the local community. For example, the community has expressed concern that wage discrepancy between the town and workers could lead to disharmony, negatively impacting sense of place. There were also concerns that the higher disposable incomes of Precinct workers could inflate the cost of living and increase housing and rent prices in Broome. The pressures on housing affordability and cost of living will be addressed through a number of management measures in the SAR, such as the following:

- use of a largely FIFO workforce during the construction phase;
- house FIFO workers at a managed access construction camp near the Precinct;
- restrict incentives to discourage construction workers from living in Broome;
- develop a strategy to discourage opportunistic workers and manage those that do arrive; and
- develop a specific housing strategy that ensures the provision of appropriate housing in Broome.

Commercial proponents are also, under the "Retain Local Benefits" management strategy, required to monitor local indicators of economic development such as cost of living, employment and business development. This monitoring will help flag any changes in the cost of living caused by the Precinct so that impact management measures can be responsive. Information on these strategies are contained in the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG

Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 919 Sub ID [127] Raised by [S127 Q1908]

Kimberley Development Commission: The Commission facilitates the Kimberley Business Capability and Services Register that is sponsored by a range of commercial operations including the Foundation Proponent of the Browse LNG Precinct. The Register will be used to improve local business outcomes from this and other major regional projects. Mention of this initiative would therefore seem appropriate.

A key objective of State Government in establishing the Precinct is to provide opportunities for local businesses. The State Government supports the work of the Kimberley Development Commission, Woodside and others in developing the Kimberley Capability and Services Register, which is a valuable tool in connecting local businesses with regional development opportunities, including the Browse LNG Precinct. Although the register was not mentioned in the SAR, the State will assist in promoting the register and its website (http://www.kimberleybiz.com.au/home.asp). The State Government will also support the use of this register in the implementation of local purchasing strategies developed by commercial proponents to encourage Precinct expenditure within local businesses and industry.

Generic Question ID: 966 Sub ID [224] Raised by [S224 Q1928]

KLC Submission: There are serious inadequacies in the proposed management arrangements in terms of their capacity to manage the BLNG Precinct in a way that is commercially viable and likely to maximise its use by proponents developing natural gas resources in the Browse Basin. The State risks propagating a sub-optimal situation in which the first proponent secures the majority of the Precinct benefits and is able to make establishment of competing industries more difficult.

In developing the Browse LNG Precinct the Western Australian Government is committed to ensuring that the Precinct will accommodate a minimum of two commercial proponents operating on an equal basis. For example, the State has designed the Precinct to enable equitable access to the port and sharing of common-user facilities such as the port, roads, and infrastructure corridors. While the State is conscious of the need to ensure a commercial outcome for the Foundation Proponent, it will also ensure that the Foundation Proponent does not undertake actions that will undermine the attractiveness of the Precinct for future proponents. To provide assurance for Government and future proponents this will be reinforced through commercial agreements, leases and management plans.

The governance structure has been developed with the objective of ensuring any actions by the foundation proponent do not disadvantage future proponents. For example, the on-site management of the Broome Port Authority from the early stages of the Precinct will assist in the achievement of this objective. Commercial proponents will be given equal status on Precinct committees as and when there is a firm commitment to utilise the Precinct.

The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1139 Sub ID [90] Raised by [S90 Q2651]

The living experiences of mining towns in the Pilbara demonstrate that the average person does not benefit financially from this kind of industrialisation. It is the big company owners and directors who have huge financial gains. These people generally do not live in the areas concerned, so do not have an interest or moral consideration of the environmental impacts created by the destruction of the environment.

The State Government drew on the experiences of other regions that have been affected by industrial development, such as the Pilbara, in predicting the potential impacts from the Browse LNG Precinct development. While these experiences are useful in informing impact prediction and developing management measures, the broader context in which the industrial development will occur must also be considered. There are fundamental differences between the West Kimberley and the Pilbara. For example, the communities in the Pilbara were established as mining communities, whereas Broome is an existing town, and the towns have differing histories of development.

According to a report published on the Western Australian Chamber of Minerals and Energy's website, there are currently 15,930 Pilbara residents engaged in resource-related employment, with a further 15,464 employed on a FIFO basis (Waller, 2010). These figures represent the significant number of average people who benefit directly from the opportunities presented by Western Australia's expanding resource industry.

As part of the social impact assessment, literature on impacts of resource development in the Pilbara was reviewed. As this was a strategic assessment, the impacts discussed in the SAR focussed on high-level impacts

of the Precinct development, including a number of references to the impacts experienced in the Pilbara. More detailed discussion of impacts experienced due to resource development in the Pilbara can be found in the SIA, particularly in Section 10 of Volume 1 (SAR **Appendix D-1**). The fact that a comprehensive strategic assessment process was conducted for the Precinct is indicative of the State Government's commitment to ensure that there are appropriate management strategies in place for any potential impacts associated with its development.

Management strategies outlined in the SAR are aimed at avoiding many of the impacts that occurred in the Pilbara towns and managing those that do occur. This includes strategies to ensure local businesses and community members will benefit from the project. A number of stakeholders consulted for the Social Impact Assessment (**Appendix D**) and Aboriginal Social Impact Assessment (**Appendix E**) were concerned that the Precinct would have a negative impact on local communities if they do not have sufficient and meaningful employment and opportunities. This is a common criticism of other resource development projects in the Pilbara and elsewhere. Acknowledging this concern, the State government has made development of Education, Training and Employment and Indigenous Workforce Development Strategies a requirement of commercial proponents locating at the Precinct (**Part 5, Section 5**).

Assisting local businesses to benefit from the Precinct is another key objective of the State Government in the development of the Browse LNG Precinct. The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry (**Part 5, Section 5**). In addition to local procurement policies, the State Government has a critical leadership role to play in championing and assisting the capability of local businesses to participate in development of the Browse LNG Precinct. Guided by the *Building Local Industry Policy* (2009), the State Government will support maximising opportunities for local industry, ensuring they have full, fair and reasonable opportunities to supply major projects.

Generic Question ID: 1358 Sub ID [160] Raised by [S160 Q3216]

The advantage for the Kimberley community will be minute: the benefits of this project will go to export markets (China, Japan and India) who will be purchasing gas for an expected A$0.06 per litre. The balance will go to multi-national mining companies and a handful of FIFO employees. Any royalties will be divided between the Commonwealth and State governments located thousands of kilometres from the Kimberley with the monies being spent on local constituent projects and not on the Broome or Kimberley region.

Development of the Browse LNG Precinct is a rare opportunity for Western Australia and the Kimberley. Benefits are discussed in **Section 1.2** of the Response to Submissions Summary Report.

The Precinct will attract investment worth more than $30 billion, generate new opportunities for existing and future businesses and create new jobs, strengthening the local economy and promoting new investment in community facilities and services. The Precinct will not only provide considerable job opportunities through its design, construction, operational and support service workforce demands but the expenditure arising from these jobs will create further wide ranging indirect benefits for the region and the state. It is expected that for every direct job created by the Precinct up to one and a half indirect jobs could be created in the region, including supply services, building and construction and tourism.

Furthermore, the project will strengthen and diversify the economic base of the region through, for example, new industry-focused training, education and research institutes, and specialist risk management and emergency response services.

A particular objective of Government in facilitating the development of the Browse LNG Precinct is to provide opportunities to substantially improve the education, health, social and economic well-being of Aboriginal people and to significantly reduce disadvantage within the Kimberley community. On 30 June 2011, agreements were signed between the State Government, Woodside Energy Ltd and the Goolarabooloo Jabirr Jabirr native title claimant group that establishes a unique and comprehensive regime of benefits valued at more than $1.5 billion, including:

- funds and land for economic development and housing initiatives;
- funds to support initiatives to address the social impacts of the Precinct;
- new employment, education, training and business opportunities;
- better services and facilities for Indigenous communities;
- support to enable Traditional Owners to promote and protect Aboriginal culture and heritage; and
- commitment that no future LNG development will occur on the Kimberley Coast without the consent of Traditional Owners.

These agreements are discussed further in **Section 2.5** of the Response to Submissions Summary Report.

2.4 Demand for Land and Housing

Generic Question ID: 181 Sub ID [39, 212, 207] Raised by [S39 Q379]

Proponents should not be permitted to purchase any housing in or around Broome. To do so would: compromise the health, living conditions, multiculturalism and access for the existing population; threaten the lifestyles, livelihoods, and affordability of living in Broome; and seriously exacerbate existing homelessness.

The community consultation and engagement activities undertaken for the Strategic Assessment Report (**SAR**) identified the availability and affordability of housing as a key community concern. The cost of buying and renting housing in Broome is already high compared to the rest of Western Australia and Australia.

The development of the 694ha Broome North is intended to meet Broome's long-term housing needs associated with predicted natural population growth. LandCorp is the facilitator of the land development at Broome North and plans to enable development of the full spectrum of housing, from social housing and service worker accommodation through to medium income housing and first home owner housing.

Housing management measures recommended in the SAR include:

- Establishment of a managed-access construction worker camp during the construction phase to minimise the housing needs of the Precinct workforce.
- Implementation by LandCorp of a land and housing management plan to ensure that the timely supply of land and housing to meet the needs of Broome and the project. The strategy is also intended to address short-term accommodation deficits, affordable housing, social housing and homelessness issues.
- Transient workers and their families are often attracted to resource development projects in the hope of finding employment. These workers can place additional demands on short-term accommodation. The commercial proponents are to implement a Transient Workforce Management Strategy to discourage these transient workers from moving to the region and manage those that do arrive.

The Remote Communities Housing National Partnerships Agreement already prioritises the Dampier Peninsula, and more than $110m (2009-2014) has been committed to new building projects and refurbishment. The Homelessness National Partnerships agreement provides funding for hostels and one is under consideration for Broome.

The State Government believes that development of the Browse LNG Precinct will provide opportunities for new initiatives to improve the health, education, social and economic wellbeing of Indigenous people, and significantly reduce disadvantage within the broader Kimberley community.

Generic Question ID: 254 Sub ID [39, 212, 205, 215] Raised by [S39 Q738]

The predicted housing requirements depend on whether Precinct development follows the low, medium or high case scenario. Is the community not entitled to know at the beginning what is going to happen, or must there be constant adjustment to the changing developmental scenarios?

The Browse LNG Precinct proposal is based on the State Government establishing a single site (i.e. Precinct) where a number of LNG companies (i.e. commercial proponents) could subsequently establish their own project-level facilities under lease arrangements. The Precinct proposal is to be assessed as a "strategic proposal" pursuant to Section 38 of the *Environmental Protection Act 1986*.

A Strategic Assessment provides a high-level and holistic impact assessment rather than a detailed project-level impact assessment. Commercial proponents are required to go through a separate, project-level approvals process.

The Social Impact Assessment component of the Strategic Assessment Report (**SAR**) is consistent with the strategic level of assessment. The purpose of the SAR is to present the most realistic expectations regarding the characteristics of the development concept, even though there is some uncertainty regarding the ultimate design, operation, scale and timing of specific developments at the Precinct. Given this uncertainty, management strategies proposed in the SAR are designed to be adaptive so that they can be adjusted in response to changed or new conditions, should they eventuate.

To ensure delivery of the necessary social management measures associated with housing in Broome and the West Kimberley, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 616 Sub ID [62, 195] Raised by [S62 Q524]

The increase of property prices predicted by REIA indicates maximum impact while the SAR indicates minimum impact.

The community consultation and engagement activities undertaken for the Strategic Assessment Report (**SAR**) identified the availability and affordability of housing as a key community concern. The cost of buying and renting housing in Broome is already high compared to the rest of Western Australia and Australia.

While the statement made by REIWA concerning the potential impact of the Precinct on the Broome property market is acknowledged, the State Government is of the view that housing costs can be effectively managed through strategic planning and the provision of adequate supply of land. This view has been informed by the substantial analysis conducted as part of the Strategic Assessment process, and the management and mitigation measures proposed in the SAR.

For example, the development of the 694ha Broome North land development is intended to meet Broome's long-term housing needs associated with predicted natural population growth. LandCorp is the facilitator of the land development at Broome North and plans to enable development of the full spectrum of housing, from social housing and service worker accommodation through to medium income housing and first home owner housing.

Housing management measures recommended in the SAR include:

- Establishment of a managed-access construction worker camp during the construction phase to minimise the housing needs of the Precinct workforce.
- Implementation by LandCorp of a land and housing management plan to ensure that the timely supply of land and housing to meet the needs of Broome and the project. The strategy is also intended to address short-term accommodation deficits, affordable housing, social housing and homelessness issues.
- Transient workers and their families are often attracted to resource development projects in the hope of finding employment. These workers can place additional demands on short-term accommodation. The commercial proponents are to implement a Transient Workforce Management Strategy to discourage these transient workers from moving to the region and manage those that do arrive.

The existing housing landscape will need to be addressed in addition to each proponent's close management of its accommodation requirements in order to prevent more serious social housing issues developing in Broome. As described in the Strategic Assessment Report (**SAR**), LandCorp (as the State's facilitator of land development) and the Department of Housing will develop an overall land and housing management strategy that:

- provides an understanding of current housing issues in Broome;
- addresses short-term accommodation deficits, affordable housing, social housing and homelessness issues;
- manages the impacts of the Precinct development on local and regional housing;
- identifies potential impacts on different types of housing during the different phases of Precinct construction;
- monitors housing supply and demand; and
- ensures timely release of land for housing and corresponding construction capability.

To ensure delivery of the necessary housing and general social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.
The Remote Communities Housing National Partnerships Agreement already prioritises the Dampier Peninsula, and more than $110m (2009-2014) has been committed to new building projects and refurbishment. The Homelessness National Partnerships agreement provides funding for hostels and one is under consideration for Broome.

Generic Question ID: 488 Sub ID [120, 172, 111] Raised by [S172 Q1403]

Department of Planning: Housing, Accommodation and Tourism -

The Kimberley Regional Planning Committee (a committee of the Western Australian Planning Committee) is in the initial stages of preparing a Regional Planning and Infrastructure Framework for the Kimberley. Initial workshops with the Committee have identified that a key aim of the Framework is to encourage development

within the Kimberley that fosters economic growth and improves social capital, whilst ensuring recognition of both the cultural and environmental sensitivities of the region. The Shire of Broome will advertise the draft Local Planning Strategy (**LPS**) in the coming months. The draft LPS provides a strategic framework, including identification of the anticipated infrastructure (including social infrastructure) requirements based on population and development forecasts. The draft LPS supports the findings of the SAR **Part 5** - Social Impact Assessment, in that it is considered that there is an adequate supply of zoned land to support both residential and industrial demand. The Social Impact Assessment however, does not provide strategies to ensure that appropriate housing is provided for the workers that does not compete with housing for Broome residents, or the short stay tourism market.

In the past, Broome has experienced a shortage of housing, escalating rents and housing prices, and the town experiences additional pressure during the tourist season from April to November, when the population can double. The approval of Broome North in 2010 has the potential to provide some 5000 additional lots, which is expected to reduce this housing pressure. LandCorp advises that, depending on demand, it is anticipated that 200 lots will be placed on the market per annum.

The SAR acknowledges that there would be increased demand for a range of accommodation from a number of sources in Broome and that, during the initial and pre-construction phase, some employees may need to be accommodated in Broome in short-stay accommodation, and that families may require housing when they move to Broome to be closer to workers at the Precinct. As the SAR states, experience in the Pilbara shows that opportunistic workers move to resource towns expecting to be able to access low cost short term accommodation, such as that offered by caravan parks. The SAR recommends that a housing strategy be prepared to manage these impacts.

As seen in the Pilbara, it will be difficult to manage this demand, to ensure that Broome residents still have access to an affordable and diverse building stock, and that short stay accommodation for seasonal tourists remains available for this purpose. The supply of tourist accommodation in Broome is already under pressure from competing interests. It has been reported that the Last Resort Backpackers and Broome Time Lodge are booked for 6 month to 1 year blocks by resource and development companies, the Broome Motel is being bought by the Department of Housing for low-income government workers and the Roebuck Hotel has recently being sold to the Walkabout Hotel Group who have a number of hotels in the Pilbara (which have a predominant occupancy of resource workers). There is also a marked reduction in tourism accommodation availability during the dry season from seasonal workers.

The community consultation and engagement activities undertaken for the Strategic Assessment Report (**SAR**) identified the availability and affordability of short-term and long-term housing and accommodation as a key community concern. The cost of buying and renting housing and accommodation in Broome is already high compared to the rest of Western Australia and Australia.

The development of the 694ha Broome North is intended to meet Broome's long-term housing needs associated with predicted natural population growth. LandCorp is the facilitator of the land development at Broome North and plans to enable development of the full spectrum of housing, from social housing and service worker accommodation through to medium income housing and first home owner housing.

Housing and accommodation management measures recommended in the SAR include:

The establishment of a managed-access construction worker camp during the construction phase to minimise the housing needs of the Precinct workforce.

Implementation by LandCorp of a land and housing management plan to ensure the timely supply of land and housing to meet the needs of Broome and the project. The strategy is also intended to address short-term accommodation deficits, affordable housing, social housing and homelessness issues.

Transient workers and their families are often attracted to resource development projects in the hope of finding employment. These workers can place additional demands on short-term accommodation. The commercial proponents are to implement a Transient Workforce Management Strategy to discourage these transient workers from moving to the region and manage those that do arrive. These measures will also seek to ensure sufficient temporary accommodation for the opportunistic workforce to avoid impacts on Broome's short-stay accommodation in the tourist season.

The Remote Communities Housing National Partnerships Agreement already prioritises the Dampier Peninsula, and more than $110m (2009-2014) has been committed to new building projects and refurbishment. This will help to facilitate equitable distribution of the benefits associated with the development of the Precinct to remote communities on the Dampier Peninsula. The State Government believes that development of the Precinct will provide opportunities for new initiatives to improve the health, education, social and economic well-being of Indigenous people, and significantly reduce disadvantage within the broader Kimberley community.

Generic Question ID: 32 Sub ID [3, 196] Raised by [S3 Q50]

It must be noted that the Pilbara is not a place many people want to live for very long periods of time - they just want to make money and get out. This development will increase the housing problem in Broome and result in a further divided community. Many people already have to leave Broome as it is unaffordable, however it is far cheaper than the mining towns of the Pilbara.

DSD coordinated a comprehensive strategic-level social impact assessment (**SIA**) on the potential development of the Browse LNG Precinct to assess the potential social impacts of Precinct development over time. One of the main reasons for this SIA was to avoid, lessen and manage many of the social impacts that occur in large resource developments and that have occurred in the Pilbara. Most of the social impacts in the Pilbara were not assessed and nor were the impacts avoided where possible and managed where not. Woodside, as the most likely Foundation Proponent, is currently conducting a comprehensive project-level SIA to assess the potential impacts of the Woodside project and identify ways to avoid, lessen and manage these impacts over the life of the project.

Key impact issues that were identified in the strategic-level SIA included potential changes to Broome's community identify or 'sense of place' and the impacts of a large number of temporary and permanent workers on aspects such as housing. The strategic-level SIA Management Plan identifies management plans that are required from all LNG developers at the Precinct. As there is no legislation requiring either SIA or the management of social impacts, the strategic SIA developed a new social enforcement mechanism. This mechanism requires that industries at the Precinct, as a lease condition, develop, monitor and report on the management plans to the satisfaction of the Precinct governance structure outlined in **Section 2.3** of the Response to Submissions Summary Report.

The Strategic Social Management Plan in **Part 5**, **Section 5** (http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf) outlines the strategies to manage the social and economic impact on Broome and the surrounding area and enhance the opportunities. These strategies are aimed at avoiding many of the impacts that occurred in the Pilbara and managing those that do occur. The requirement that the commercial proponents house their construction workforce in a managed-access construction camp and manage their access to Broome and Dampier Peninsula will avoid many of the potential social impacts. A number of other social management measures aim to manage potential impacts such as minimising the number of transient or opportunistic workers arriving in the region and managing those who do arrive to limit the impact on Broome's community identity or 'sense of place' and housing supply.

Generic Question ID: 1304 Sub ID [216, 195] Raised by [S195 Q3221]

Part 5 Section 2.4.3: Has the DSD spoken to the unions yet? Kevin Reynolds of the CMFEU has already stated that workers are not going to live in a prison camp and that workers should not be treated as prisoners. Who is going to take on the unions over living away from home allowances which are a big part of their wages? In Karratha groups of workers were pooling their allowances and renting a house rather than live in a camp - this brought on a rise in rents. You can't force these people to live in a camp.

A managed-access construction camp limit will minimise the potential negative socio-economic impacts of allowing workers to live in Broome (e.g. increased cost of living and housing prices, impacts on tourism). Although there are potential drawbacks to this approach, the decision was made in response to community concerns and the findings identified in the Social Impact Assessment and Aboriginal Social Impact Assessment.

As stated in **Part 5, Section 2.2.2**, between 80 and 90% of construction workers at the Precinct are expected to be employed on a FIFO basis. As a condition of locating at the Precinct, commercial proponents will be required to operate a managed-access construction camp near the Precinct for these FIFO construction workers. The State Government agrees that it will be important to strike the right balance between protecting the communities of Broome and the Dampier Peninsula from impacts and the personal well-being of Precinct construction workers. Commercial proponents will provide a healthy living and working environment for Precinct workers at the camp, and the camp will meet the regulatory requirements (e.g. Western Australia's *Construction Camp Regulations 2004*). Each commercial proponent will be required to develop an accommodation plan to ensure workforce accommodation needs over the life of its project will be met without increasing the existing affordability and availability stresses on permanent and temporary accommodation in Broome and surrounding areas. Commercial proponents will also develop a code of conduct for workers that will help ensure appropriate interaction between Precinct workers and the community.

It will also be important to monitor the effectiveness of the managed-access camp over time. The policy of separation was agreed in consultation with stakeholders and the community; however, it is possible that community perceptions will change over time and the community will ask for changes to the level of separation between Precinct workers and the community. The effectiveness of this management measure will be monitored

as part of the social monitoring program.

Generic Question ID: 484 Sub ID [166] Raised by [S166 Q1399]

Shire of Broome (5): The issue of the Shire of Broome being disadvantaged by LandCorp and other State Trading Enterprises, who are not required to pay Council rates, needs to be rectified.

LandCorp is developing the Broome North Residential Estate and the Blue Haze and Broome Road Industrial Estates to provide for the future expansion of Broome. Government policy for all Crown Land developments requires LandCorp to pay rates equivalent payments to the State during incorporation of the land. Once the land is transferred to freehold title, individual title holders pay rates to the local Shire in return for Shire services. LandCorp will also provide a contribution from the sale of each lot to the Shire for the provision of community infrastructure. The Shire of Broome therefore stands to benefit significantly from LandCorp's development of this land through the broadening of their rates base.

Commercial proponents operating at the Browse LNG Precinct will be required to make rate equivalent payments. The State will consult with the Shire of Broome to ensure that rates are set at an appropriate level to address any costs incurred by the Shire in servicing the Precinct.

Generic Question ID: 510 Sub ID [232] Raised by [S232 Q1375]

The Aboriginal community members on the Dampier Peninsula are pleased that housing is now being offered to their people, but wonder why they have to sign a lease for 40 years?

Funding for Indigenous housing in the West Kimberley is currently being provided under the National Partnership Agreement (**NPA**) on Remote Indigenous Housing. The NPA process is separate from the proposal to establish a gas precinct near James Price Point and thus is outside the scope of the Strategic Assessment Report (**SAR**).

The NPA is administered through the Commonwealth Government's Department of Families, Housing, Community Services and Indigenous Affairs (**FAHCSIA**). Information on issues regarding Indigenous home ownership and NPA lease arrangements is available on the FAHCSIA website: http://www.fahcsia.gov.au/sa/indigenous/pubs/housing/indig_home_ownership/Pages/default.aspx

Generic Question ID: 541 Sub ID [170] Raised by [S170 Q1423]

WWF and ACF Submission: How long does a maintenance shutdown last? Where will the additional 1000 people be housed?

Regular maintenance shutdowns are standard procedures for all LNG processing facilities. The length of shutdowns will depend on the maintenance schedules of commercial proponents. The additional workforce demands will be expected to be accommodated within the workers accommodation site outlined in the Precinct plan.

Generic Question ID: 747 Sub ID [197] Raised by [S197 Q1722]

Part 5 Section 2.4.3. According to an article in the local Broome Advertiser (3 Feb 2011), the ongoing shortage of affordable housing in Broome is effecting the success of and indigenous training and education program "Nyaarla Projects". The article states that the organisation is struggling to find affordable housing for its participants. This is just one of the many examples where average and often disadvantaged people suffer because housing is already too expensive in Broome, especially for indigenous people. The Precinct will not provide any relief to this situation, instead it will only serve to exacerbate it.

The housing shortage and escalating rents and housing prices were key concerns identified in the strategic Social Impact Assessment. Housing to provide for the predicted population growth in Broome will be provided by the development at Broome North. Approved in 2010, Broome North has the potential to provide upwards of 4,900 additional lots, which is expected to reduce this housing pressure. As the State's facilitator of land development, LandCorp advises that, depending on demand, it is anticipated that 200 lots will be placed on the market per annum. Should the project be approved, LandCorp has indicated that preference will be given to first homebuyers and local residents (Browse SIA Community Advisory Committee Meeting Notes, 9 December 2010).

In addition to addressing the housing shortage, Broome North will also provide affordable housing. Approximately 1 in 8 or 9 lots in Broome North will be community housing allocations. In addition, there will be a housing affordability fund rebate of $18,595 for the first stage. The availability of additional homes could also help alleviate upwards pressure on housing prices and alleviate some of the problems that community members, such as Nyaarla Projects participants, have experienced. LandCorp has also indicated that it is trying

to encourage affordable housing by providing a range of different house and land options. As people vacate lower price houses elsewhere in the town to buy and build their own house in Broome North, this can also release more affordable houses into the market (Browse SIA Community Advisory Committee Meeting Notes, 9 December 2010).

Due to the use of a largely FIFO workforce, the additional housing demand as a result of the project is expected to be small in relation to the demand created by predicted housing growth in Broome. The predicted housing requirements during the operations phase will depend on whether Precinct development follows the low, medium or high development scenario. Under the medium development scenario there would be an approximate maximum demand for between 273 and 650 dwellings generated by the Precinct workforce. The annual average demand for housing would be between 174 and 362 dwellings. LandCorp has indicated that it would provide a separate allocation in addition to the current allocation to meet project requirements (Browse SIA Community Advisory Committee Meeting Notes, 9 December 2010).

The existing housing landscape will need to be addressed in addition to each commercial proponent's close management of its housing requirements in order to prevent more serious social housing issues developing in Broome. As described in the SAR, LandCorp will develop an overall land and housing management strategy that ensures the provision of appropriate housing in Broome, including affordable and social housing. In addition, the following measures will help alleviate the impacts of the Precinct on local housing:

- house FIFO workers at accommodation near the Precinct where external entry and exit is managed;
- restrict incentives for construction workers to live in Broome;
- develop a strategy to discourage opportunistic workers and manage those that do arrive; and
- develop a specific housing strategy.

These measures are discussed in greater detail in **Section 5**, **Part 5** of the SAR. To ensure delivery of these management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 797 Sub ID [75] Raised by [S75 Q870]

One wonders what the mitigation strategy proposed (**Part 5 Section 2.4.2** on **p. 2-26**) for people moving opportunistically to Broome could possibly mean in practice. Further, on **p. 2-31** the SAR states: "in addition, the Precinct workforce management strategies would limit the number of construction workers living in Broome and making use of Broome Health Services." This statement obviously contradicts statements in other sections of the report about opportunities for local people to gain employment.

Commercial proponents will be required to develop a strategy prior to construction to minimise the number of transient or opportunistic workers arriving in the region and to manage those who do arrive. Such a strategy could include clear policies on recruitment and measures to ensure potential transient workers clearly understand and follow the proper channels of recruitment.

Further, policies to encourage local employment and those to discourage workers from living in Broome target two different populations. To encourage local employment, commercial proponents will be required to develop education, training and employment strategies to increase local employment in both construction and operational phases of the Precinct. In addition, commercial proponents are required to develop strategies to maximise economic benefits for Broome, the Kimberley region, and the State of Western Australia. This will maximise LNG related local employment and local industry participation over time and will include a local, regional and State purchasing strategy for labour, services, and materials during construction and operation. The purpose of these strategies is to help people who already live in the Kimberley to benefit from direct and indirect employment opportunities offered by the Precinct.

On the other hand, measures to discourage local living are aimed at construction workers who do not already live in Broome. The purpose of such measures is to avoid unmanageable population influx into Broome during the construction phase of LNG facilities. Construction workers who do not already live in the area will be discouraged from living in the area. Commercial proponents are asked to discourage construction workers who do not live in the area from moving to Broome, and to avoid providing incentives for the large scale construction work force. During the operations phase, it is expected that a proportion of the much smaller operational workforce will choose to live in Broome over time.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 862 Sub ID [218] Raised by [S218 Q1863]

Will the BLNG developers provide compensation to existing residents for inflicting unaffordable increases to their cost of living?

The community engagement undertaken for the Strategic Assessment Report (**SAR**) identified the availability and affordability of housing and cost of living as a key community concern (**SAR Part 5, Section 2.4.3**). The cost of living in Broome is already high compared to the rest of Western Australia and Australia, due in part to a substantial lack of affordable housing options in addition to the inherent supply costs of construction in remote locations, and the design requirements of the sometimes extreme climatic conditions.

The development of the 694ha Broome North by LandCorp will meet Broome's long-term housing needs associated with predicted natural population growth. Plans will enable development of the full spectrum of housing, from social housing and service worker accommodation, through to medium income housing and first home owner housing. Other housing management measures recommended in the Strategic Social Impact Management Plan (**SAR Part 5, Section 5**) include:

- The establishment of a managed-access construction worker camp during the construction phase to minimise the housing needs of the Precinct workforce.
- Implementation by LandCorp of a land and housing management plan to ensure the timely supply of land and housing to meet the needs of Broome and the project.
- A Transient Workforce Management Strategy to discourage transient workers from moving to the region, and manage those that do arrive.

While some potential negative social impacts were identified in **Part 5** of the SAR, the State Government is of the view that the development of the Precinct would be an overall benefit to the local economy, bringing a range of social and economic development and employment opportunities. For example, it would bring opportunities to supply services to the Precinct, as well as a greater availability of training and employment opportunities for local residents. The development of the Precinct would increase and secure the economic resilience of the area well into the future, by introducing another economic sector, which would assist in managing costs of living.
The SAR acknowledges that without effective mitigation measures, some of the potential negative social impacts associated with the development of the BLNG Precinct could be highly significant. However, the central finding of the SAR, which was informed by both a Social Impact Assessment (**Appendices D-1** to **D-3**) and an Aboriginal Social Impact Assessment (**Appendices E-1** to **E-6**), is that the recommended mitigation and management measures should reduce the level of residual negative social impacts to acceptable levels, and substantially increase the social and economic well-being of the local community. This highlights the necessity of successful implementation of the recommended social impact management measures in order to minimise potential negative social impacts and maximise potential positive social impacts. Compliance with management measures will be required of all Precinct proponents (e.g. via lease conditions).

The success of this management measures will also rest on an effective monitoring plan. Using adaptive management principles will allow adjustments to be made if management measures are not performing as well as predicted. Accordingly, the Strategic Social Impact Management Plan adopts adaptive management principles, which will allow strategies to be adjusted in response to changed or new conditions, should they eventuate. This is particularly relevant to the effective management of social issues, which are dynamic in nature.

At a Commonwealth level, the Remote Communities Housing National Partnerships Agreement already prioritises the Dampier Peninsula, and more than $110m (2009-2014) has been committed to new building projects and refurbishment. The Homelessness National Partnerships agreement provides funding for hostels and one is under consideration for Broome.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 938 Sub ID [65] Raised by [S65 Q542]

There is an unacceptable amount of homeless people living in Broome. This issue needs to be addressed before any industrial development in the town.

The community consultation activities undertaken for the SAR identified the availability and affordability of housing as a key community concern. The cost of buying and renting housing in Broome is high compared to the rest of WA and Australia. The Social Impact Assessment, conducted as part of the Strategic Assessment process to establish baseline social data, identified a number existing social issues currently affecting Broome.

While no industrial development will occur in Broome as part of this project, unless well managed the

development of the Precinct near James Price Point may indirectly exacerbate the existing social housing issues in Broome and more specifically the issue of homelessness. The demand for temporary and permanent housing in Broome needs to be closely monitored so that housing supply is able to meet the demand.

The development of the 694ha Broome North is intended to meet Broome's long-term housing needs. LandCorp is the facilitator of the land development at Broome North and plans to enable development of the full spectrum of housing, from social housing and service worker accommodation through to medium income housing and first home owner housing.

Housing management measures recommended in the SAR include:

- The establishment of a FIFO camp during the construction phase to minimise the housing needs of the Precinct workforce.
- Implementation by LandCorp of a land and housing management plan to ensure that the timely supply of land and housing to meet the needs of Broome and the project. The strategy is also intended to address short-term accommodation deficits, affordable housing, social housing and homelessness issues.
- Transient workers and their families are often attracted to resource development projects in the hope of finding employment. These workers can place additional demands on short-term accommodation. The commercial proponents are to implement a Transient Workforce Management Strategy to discourage these transient workers from moving to the region and manage those that do arrive.

To ensure delivery of the necessary housing and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

The Remote Communities housing National Partnerships Agreement already prioritises Dampier Peninsula in excess of $110m (2009-2014) committed to new builds and refurbishments. The Homelessness National Partnerships agreement provides funding for hostels and one is under consideration for Broome.

The HoA identifies further funding for housing and home ownership of an additional $30 million into the Indigenous Housing Fund during the life of the agreement. The HoA also provides funding for the development of Indigenous enterprise which, should the Traditional Owner's decide, could be used to support the development of an Indigenous housing development business.

Generic Question ID: 1166 Sub ID [211] Raised by [S211 Q1040]

Part 1 Section 10.1: Housing Affordability - The submitter spoke at a public forum with a representative from LandCorp. He was so pleased to be able to offer Broome residents land at a so-called affordable price, in the new Broome North subdivision. When asked how this price was worked out, he said it was done in conjunction with real estate appraisals and a licensed valuer. When questioned whether the price therefore had nothing whatsoever to do with the actual cost of bringing this land to market, he ventured an explanation that they had lost on the latest development in Kununurra, so they made up that loss in Broome.

The community consultation and engagement activities undertaken for the Strategic Assessment Report (SAR) identified the availability and affordability of housing as a key community concern. The cost of buying and renting housing in Broome is already high compared to the rest of Western Australia and Australia.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, proposes a number of mechanisms through which the availability and affordability can be managed. In particular the development of the 694ha Broome North is intended to meet Broome's long-term housing needs associated with predicted natural population growth. LandCorp is the facilitator of the land development at Broome North and plans to enable development of the full spectrum of housing, from social housing and service worker accommodation through to medium income housing and first home owner housing.

The pricing policy described relates affordable house prices to the realistic market prices in the region, and not the cost of development. The availability of land facilitated by LandCorp would prevent artificial escalation of prices due to supply constraints. However, under-pricing development could also have the effect of de-valuing existing properties, lead to potentially negative impacts on the local economy and other unintended consequences.

Generic Question ID: 1305 Sub ID [195] Raised by [S195 Q967]

Part 5 Section 2.4.3: The workers higher up the food chain won't want to live in camp and will want to bring their families and rent a house at any price. Just look at Karratha. How are you going to stop opportunistic workers having road blocks out of town? It is impossible. They will arrive and you can't stop them. Where will the tourists stay? Broome gets maxed out every dry season now as it is. There is no tourist industry in Karratha or Port Hedland as all accommodation is taken up by workers. Clearly the DSD have no idea about people.

The managed-access workers camp near the Precinct will meet most of the direct workforce accommodation needs for the construction phase. Living in the camp will be a requirement for workers during the construction phase of the Precinct. This will be part of local living policies to be developed by the commercial proponents, which will also restrict incentives to live locally.

As noted in the submission, the supply of some forms of tourist accommodation in Broome is already under pressure from competing interests. Even with these measures in place, short-term accommodation (e.g. caravan parks, some motels/hotels) would likely come under additional pressure due to the accommodation needs of project employees in the initial and pre-construction phase, families that decide to move to Broome to be closer to construction workers at the Precinct, and opportunistic workers looking for employment in the construction phase. This form of accommodation is currently oversubscribed in the peak tourist season in Broome and commercial proponents would need to manage these impacts.

As proposed in the SAR, prior to the commencement of construction, commercial proponents will also be required to develop a strategy to minimise the number of transient or opportunistic workers arriving in the region and to manage those who do arrive. Such a strategy could include clear policies on recruitment and measures to ensure potential transient workers clearly understand and follow the proper channels of recruitment.

The predicted housing requirements during the operations phase will depend on whether Precinct development follows the low, medium or high development scenario. Under the medium development scenario there would be an approximate maximum demand for between 273 and 650 dwellings generated by the Precinct workforce. The annual average demand for housing would be between 174 and 362 dwellings. The development of the 694ha Broome North is intended to meet Broome's long-term housing needs. LandCorp is the facilitator of the land development at Broome North and plans to enable development of the full spectrum of housing, from social housing and service worker accommodation through to medium income housing and first home owner housing. Preference will be given to first homebuyers and local residents.

The existing housing landscape will need to be addressed in addition to each proponent's close management of its housing requirements in order to prevent more serious social housing issues developing in Broome. As described in the SAR, LandCorp as the State's facilitator of land development will develop an overall land and housing management strategy that:

- provides an understanding of current housing issues in Broome;
- manages the impacts of the Precinct development on local and regional housing;
- identifies potential impacts on different types of housing during the different phases of Precinct construction;
- monitors housing supply and demand;
- ensures timely release of land for housing and corresponding construction capability; and
- addresses short-term accommodation deficits, affordable housing, social housing and homelessness issues.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

2.5 Social Infrastructure, Public Utilities and Transport

Generic Question ID: 79 Sub ID [39, 195, 212, 216, 120, 137, 114, 182] Raised by [S39 Q353]

The project will place increased stress upon Broome's community services. How will this be addressed and who will be responsible for addressing and funding these services?

Although the potential impacts arising from the development of the Precinct upon Broome's community services are likely to be small, these additional pressures have been assessed within the context of a service system already under considerable pressure. These service limitations will be addressed through a number of strategies that will improve coordination of existing service provision, encourage better use of existing funds and identify the areas of greatest need. The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5,**

Section 5 of the Strategic Assessment Report (**SAR**), proposes a number of strategies in this regard, including:

- The West Kimberley Socio-Economic Strategy:
  - Many of the SAR social management strategies include measures to generate and improve the socio-economic opportunities offered through the development of the Precinct.
  - A coordinated approach to identification of these opportunities and their likely synergies with other initiatives (such as might arise from the Dampier Peninsula Planning) and subsequently communicating them to the local community will ensure the economic development opportunities can be maximised as best as possible, including for indigenous people.
  - Establishing a mechanism to implement this initiative is currently under consideration.
- The Broome Social Services Strategy, a sub strategy to the West Kimberley Socio-Economic Strategy, will be a whole of Government approach to reducing the vulnerability of existing social services in Broome. It will identify gaps or serious deficits in the provision of those services, and will engage with the community to identify priorities in responding to these gaps.
- A Health, Emergency Services, Policing and Security Strategy, which will be a requirement for commercial proponents intending to operate at the Precinct. This strategy should ensure that health and emergency services will be provided to the Precinct without impacting upon services in Broome, and that an appropriate level and quality of security is provided at the Precinct.

The SAR emphasises the imperative to develop these strategies in the short term, to increase the current capacity of the social services in the region in order to prevent further pressure. In the longer term, these strategies will assist in expanding the capacity of services in the West Kimberley in order to accommodate any direct and indirect employment and population increases associated with the Precinct.
The State Government has the lead responsibility for developing the West Kimberley Socio-Economic Strategy and the Broome Social Services Strategy. Commercial proponents will be responsible for developing their Health, Emergency Services, Policing and Security Strategies.

In addition to dedicated State and Commonwealth Government service delivery, it is envisaged that future commercial proponents would also contribute funding for the strategy. Commitments for funding have already been made under the signed Heads of Agreement between the State Government, the Kimberley Land Council and Woodside. As part of this agreement, the State Government and Woodside (i.e. the Foundation Proponent) have committed to increase funding to improve Government facilities and services for the wider West Kimberley community.

Further information on these management measures is included in the Strategic Social Impact Management Plan, included in **Part 5, Section 5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf.

Generic Question ID: 482 Sub ID [166, 114, 106] Raised by [S166 Q1397]

Shire of Broome (3): There is a critical need for the Shire of Broome to be provided with sufficient resources to provide an adequate level of infrastructure and services through the development and operational phases of this project.

The State will continue to work closely with the Shire of Broome to ensure that the development and operation of the Precinct does not adversely affect the provision of infrastructure and services throughout the life of the Precinct.

The Precinct itself is intended to be primarily self sufficient, and so is not expected to have a significant direct impact upon Shire services or infrastructure. However, it is recognised in the Social Impact Assessment (see the SAR **Part 5**) that the Precinct may have indirect impacts on services in the town of Broome and that any impacts should be managed. A Strategic Social Impact Management Plan (**SSIMP**) (**Part 5**, **Section 5**) provides the framework for the development of strategies to enhance opportunities and avoid, mitigate or manage social impacts arising from the establishment of the LNG Precinct. Adaptive management principles would allow the strategies to be adjusted in response to changed or new conditions, should they eventuate. While Shire services and infrastructure were not specifically identified as being a focal area (as reflected in **Part 5**, **Table 5.1**), the State will now include these in its monitoring activities.

It should also be noted that the development of the BLNG Precinct will bring significant benefits for communities in the West Kimberley and the Shire of Broome in particular. Benefits include a range of jobs and economic growth opportunities (see **Section 1.2** of this Response to Submissions Summary Report) which will benefit both the Indigenous and non-Indigenous communities and individuals. Significantly, the Precinct will also be subject to Rate Equivalent Payments negotiated by the State; however these will be determined in consultation

with the Shire to ensure that it is not negatively impacted by the Precinct.

The revised governance structure is described at **Section 2.3** of the Response to Submissions Summary Report. This Governance structure will be responsible for the implementation of the SSIMP. As a key stakeholder, the Shire has a clear role in the Governance structure, and in particular delivery of the SSIMP.

Generic Question ID: 742 Sub ID [197, 106, 144] Raised by [S197 Q979]

Part 5 Section 2.5.2: The submitter is concerned about the effect of industrial expansion with respect to this Precinct on the quality and health of drinking water in Broome. How will the emission of harmful chemicals and un-researched effects of chemical mixes impact the source of our drinking water (Broome aquifer), and the health effects associated with the removal of chemical waste and by-products. This was not discussed within the SAR.

Contamination of the Broome water supply was considered an extremely unlikely event and therefore was not addressed in the SAR. However, there are two unlikely but possible ways in which the water supply in Broome could be affected due to pollution.

The first would be deposition from air emissions. These aspects are addressed in **Part 4**, **Section 2.8** of the SAR. In particular the deposition of air pollutants is shown to be low (shown for nitrogen and sulphur compounds which are not dissimilar to those contained in fertiliser). It is extremely unlikely that these levels could have any effect on the Broome drinking water supply.

The second manner in which the Broome water supply could be impacted is via direct contamination (e.g. via a spill) that reaches the Broome borefield. The Department of Water defines a groundwater protection zone around the borefield to protect it against these risks. No construction works or operations occur in or even near to this zone with the Precinct being 30-40 km from the borefield. Also the groundwater flow from the Precinct is offshore away from the Broome borefield.

Consequently the Browse LNG Precinct will not impact upon the quality and health of drinking water in Broome.

Chemical and other wastes will need to be managed as per Western Australian law which will require the waste to be sent to the appropriate licensed facility for that waste type for safe disposal. In addition the Proponent has committed to prepare and implement a Waste Management Plan which includes the following (**Table 2.1-4**, **Part 4** of the SAR):

- measures to reduce, reuse and recycle wastes from the construction and operational BLNG Precinct activities;
- arrangements for any transportation of waste streams on public roads, or marine based transportation; and
- disposal or treatment options for various waste streams associated with BLNG Precinct activities.

Generic Question ID: 1055 Sub ID [114, 106] Raised by [S106 Q2266]

Access to the Dampier Peninsula were raised in some submissions:

- During the construction phase the tourist experience will include negotiating the Cape Leveque road used by heavy haulage vehicles, restricted access to parts of the Peninsula and noise and dust pollution at campsites near to the construction site. The SAR states that discussions with the tourist sector are 'expected to appropriately mitigate these impacts" No detail is given as to how they will do this.
- A planned road will be built from the Cape Leveque road around the Precinct so that we can still drive to Manari but this will not now be a short day trip and families will have to negotiate around heavy haulage and other industrial traffic.

As identified in the Infrastructure Assessment (**SAR Appendix D-6**), the remaining unsealed sections of the Broome-Cape Leveque Road will require upgrading prior to the commencement of the construction phase. This includes an upgrade of part of the Cape Leveque Road and a new road from the Cape Leveque Road to James Price Point would need to be constructed as part of the pioneer works. As the Cape Leveque road is the only route linking the communities on the Dampier Peninsula to Broome, the road would therefore contain Precinct traffic as well as both tourists and residents travelling up the Dampier Peninsula.

Manari Road will not be closed off, so public access to all areas south of the Browse LNG Precinct will be maintained as it is at present. To the north of the Precinct site, public access to Manari Road will be provided either by the Precinct Road running from the Cape Leveque Road or via a diversion track that will skirt around

the Precinct Boundary. Public access to James Price Point will be maintained.

As described in the SAR (**Part 5, Section 5**), commercial proponents will be required to prepare a Transport Management Strategy to limit, mitigate and manage the potential transport impacts of the Precinct and associated infrastructure. The strategy will focus on the behaviour of road users and will:

- ensure the safe and efficient transport services for traffic between the Precinct and Broome;
- ensure the safety of other users of the Precinct-related roads;
- address potential increased heavy vehicle use and any related increases in traffic in Broome centre; and
- manage airport FIFO transfers, which may include for example the development of specific facilities to accommodate FIFO transfers.

Additionally, a full transport assessment will be conducted as the design of the Browse LNG Precinct becomes more detailed. This assessment will identify any transport issues and suggest mitigation measures.
To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 414 Sub ID [104] Raised by [S104 Q921]

DoH Submission: DoH recommends that the road from Broome up the peninsula be sealed to make it an all-weather road. This allows for people to have better access to community and reduces the requirement for residents to purchase 4WD vehicles and the additional expenses this entails for travel in the region.

In addition to constructing a 19km access road to the Browse LNG Precinct, Main Roads WA will upgrade and seal 25km of the existing Broome - Cape Leveque Road as part of the scope of works associated with the Precinct. This work does, however, fall outside the scope of the Strategic Assessment Report (**SAR**). Work on this section of Broome -Cape Leveque Road will complement Main Roads WA's proposed future plans to upgrade and seal the remaining unsealed 90km of the road. Presently, these future plans are expected to occur as part of a two-year program, following the successful completion of the initial upgrade works.

Generic Question ID: 478 Sub ID [166] Raised by [S166 Q1393]

Shire of Broome Submission (1e): The allocation of sufficient resources to the Shire of Broome to provide an adequate level of service to the community and resource sector with particular regard to its staffing levels, equipment and information technology, and office accommodation, a matter raised in Council's resolution of 7 November 2008, has not been adequately addressed in the SAR **Part 5**.

Precinct proponents will be required to pay Rate Equivalent Payments which will offset the costs of Local Government services. The State Government will work with the Shire to ensure that Rates are paid at an appropriate level to address the issues and concerns raised.

Generic Question ID: 763 Sub ID [200] Raised by [S200 Q995]

Part 5 Section 2.5.1 states that "Bottled gas is available and sourced by some residents in the region, although it is expensive." This is not an accurate reflection of use, being on average 1-2 bottles per year at $30 per bottle.

The strategic assessment looks at both the baseline condition of infrastructure and the potential impact of the project on this infrastructure. In this case, a reference was made to the current reliance on bottled gas, rather than piped gas, in Broome. Gas use in Broome is currently low. The Infrastructure Assessment (**SAR Appendix D-6**) examined the potential impact of the Precinct on Broome's current infrastructure (e.g. water, sewerage, power, waste). This included an assessment of potential impacts of the Precinct on the supply of bottled gas to Broome residents. Unless certain construction activities have a high reliance on bottled gas, the Infrastructure Assessment determined that the Browse LNG Precinct's construction period will have little effect on Broome's bottled gas industry.

Generic Question ID: 1170 Sub ID [211] Raised by [S211 Q2821]

Part 1 Section 11: Submitter challenges the assumption that the Precinct will reduce the cost of flights to Broome. Flights are not expensive now, compared to 1980s and 90s.

Among the potential benefits to tourism in Broome arising from the Precinct are more flights helping to lower the cost of tourists visiting the area. This was one of the key findings of the Tourism Impact Assessment (**TIA**) undertaken by KPP (**Appendix D-5**). Many tourism industry stakeholders consulted during the TIA noted that

the development of the Browse LNG Precinct could provide significant opportunities with regard to air services. More specifically, it stands to create a more competitive air market and strengthen the case for an international air service into Broome, which has been a long time aspiration, and stimulate further expansion in domestic services. The anticipated expansion of air services could strengthen destination appeal and facilitate a broadening of core markets and contribute towards a more resilient tourism industry.

As discussed in the TIA, airfares can be expected to decrease mainly due to the potential for reaching a critical mass of passengers. If an aviation route is to remain sustainable, there is a need for solid passenger loads in both directions and the correct 'mix' of corporate and leisure passengers. This in turn minimises the cost per available seat kilometre (**ASK**). This is particularly important in Broome's case. To date Broome has not had the depth of corporate business to support an international service; however, development of the Browse LNG Precinct could lead to the critical mass needed to support more sustainable and lower cost travel. For this reason, discussions with senior airlines officials in the TIA revealed an optimistic view of the prospects of developing an international service into the Kimberley. On the domestic front, lack of seat capacity and rising fares are considered highly unlikely given the highly competitive aviation routes to Broome which, unlike Karratha, have been founded on tourism.

2.6 Health Services and Facilities

Generic Question ID: 54 Sub ID [5, 56, 39, 75, 229, 120, 197, 205, 215, 96, 95] Raised by [S5 Q73]

The increase to Broome's population as a result of the BLNG Precinct will place increased pressure on the health system in the Broome area, which is already struggling to cope.

The strategic Social Impact Assessment (**SIA**) highlighted the considerable stress on the health system Broome, mainly because of the significant growth in the Shire of Broome's population over some time. Over the thirty years from 1976 to 2006, the Shire of Broome's population increased from 3,590 to 14,175 (an increase of 4.7% per annum) compared with 1.8% for Western Australia as a whole.

The Strategic Assessment Report (**Part 5, Section 5**) recommends developing a strategy to improve human service delivery in Broome. In addition, it recommends a number of social management strategies to limit the impact of Precinct development on Broome. These include requiring that commercial proponents house their construction workforce in a managed access construction workforce camp close to the Precinct and establish appropriate Precinct primary health care and emergency services to avoid impacts on Broome's heath services.

Generic Question ID: 211 Sub ID [40, 70] Raised by [S40 Q395]

What improvements to health services will be provided to cope with the additional health impacts associated with a large industrial estate nearby.

The Social Impact Assessment, included in **Appendix D** of the Strategic Assessment Report (**SAR**), highlights the considerable stress currently impacting the health and social services system in Broome as a result of significant population growth over the past 35 years. Over the period from 1976 to 2006, the population of the Shire of Broome increased from 3,590 to 14,175, representing an increase of 4.7% per annum. In comparison, the State of Western Australia as a whole experienced growth at only 1.8% per annum, over the same period of time.

Part 5, **Section 5** of the SAR recommends the development of a strategy to improve the delivery of social services in Broome. The objective would be to increase the current capacity of social services within Broome, and ensure that there is scope to provide additional capacity to meet any demand arising from the effects of the projected natural population growth as well as the operations phase of the Precinct.

In addition, the SAR recommends a number of social management strategies to limit the impact of the Precinct's development on Broome, particularly during the construction phase. These strategies include the requirement that commercial proponents house their construction workforce in a managed access construction workforce camp close to the Precinct, and establish appropriate Precinct primary health care and emergency services to avoid impacts on health services in Broome, and the broader West Kimberley region.

Generic Question ID: 386 Sub ID [104, 211] Raised by [S104 Q902]

DoH Submission: WA Health has established Health Impact Assessment (**HIA**) procedures for new developments which are being addressed by many development proponents with limited additional burden to approvals requirements.

Although a specific Health Impact Assessment was not conducted as a separate exercise, health impacts were assessed as part of the Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**). In addition, health concerns were considered in a number of the specialist studies (e.g. Air Quality Modelling, **Part**

4). Human health is also a consideration embedded in the relevant environmental guidelines that apply to the Precinct. For example, air quality, surface water and groundwater guidelines all incorporate protection of human health.

Key health impacts identified in the social assessment are discussed specifically as a relevant factor in **Part 5, Section 4.9** of the SAR. The impacts on health services are also discussed in **Part 5, Section 2.6**. For information on potential health impacts identified for the Indigenous community, refer to **Part 5, Section 3.4.6** of the SAR.

A number of management measures outlined in the Strategic Social Impact Management Plan will address the potential impacts on human health. For example, health service deficiencies in Broome will be addressed as part of the Broome Social Services Strategy. Commercial proponents at the Precinct will be required under proposed Precinct Condition strategies to prepare and implement a management plan to ensure that the provision of primary health care, emergency and security services to the Precinct does not impact on health services in the region services. It is expected that development of the Precinct will increase the capacity of the region's health services.

Health also forms a significant portion of the investment that will accompany land tenure. This includes health support for Indigenous medical services, drug and alcohol services, aged care services, primary care services and Royal Flying Doctor Service clinics; and investment in the COAG National Health Care Agreement, National Partnership Agreement and Indigenous Health National Partnership Agreement (SAR **Part 5**, **Section 3**, **Table 3-1**).

Generic Question ID: 314 Sub ID [25] Raised by [S25 Q213]

There is concern that the mental health of locals and workers will be affected with lots of secondary and tertiary damage due to behavioural problems, abuse and resulting trauma.

Behavioural problems can arise from resource projects if the local population is not provided with adequate opportunities to benefit from a project. A key objective of the State Government in locating the Browse LNG Precinct in the Kimberley is to maximise and retain benefits for local people, both Indigenous and non-Indigenous. The Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the SAR, proposes a number of mechanisms in this regard including:

- managed-access construction worker accommodation;
- implementation of education, training and employment strategies to increase local employment in both construction and operational phases of the Precinct in order to retain benefits and promote residence within the Kimberley;
- implementation by the commercial proponents of an Indigenous Workforce Development Strategy;
- implementation of a local purchasing strategy for labour, services, and materials during construction and operation; and
- developing, where relevant, emerging Indigenous businesses.

Part 5, **Section 4.9** of the Strategic Assessment Report (**SAR**) outlines the potential health impacts associated with the development of the Browse LNG Precinct. Due to Broome's high rate of natural population growth, much of the region's health service is already operating at capacity. This issue has developed independent of the Precinct development.

Plans to improve the delivery of health services in Broome may affect the region's existing health delivery landscape and population influx. For example, the establishment of the proposed Mental Health Unit for the Pilbara and Kimberley may bring more than the estimated number of patient family and supports to Broome from outlying areas.

It is acknowledged that the population impacts caused by the Precinct will place additional demand on existing health service delivery. This is mainly due to anticipated movement of the transient or opportunistic workforce to Broome. However, assuming that the mitigation and management mechanisms identified in the SSIMP are implemented, these impacts are likely to be manageable.

Generic Question ID: 396 Sub ID [104] Raised by [S104 Q908]

DoH Submission: The initial consultation on health and well-being in Broome which targeted health practitioners in the region provided important initial evaluation of potential health impacts from the proposal as well as identified existing shortfalls in current health related activities. Similarly, the ASIA undertaken by the Kimberley Land Council (**KLC**) considered health issues potentially arising from establishment of the BLNG Precinct. However, subsequent consultation with health practitioners in the region has been limited to representatives

from WA Health. Integrated feedback from the KAHPF did not occur until the public review period. The health issues raised in the ASIA and within the SIA do not align well and some key issues require further clarification. Should Government wish to address these issues within decision-making for the Precinct, it will be important to address health implications appropriately through further consultation and planning with and among key stakeholders.

As discussed in **Part 5, Section 4.9** of the Strategic Assessment Report (**SAR**), health services in Broome and the West Kimberley region are currently operating at capacity. Accordingly, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR proposes the development of a Broome Social Services Strategy. The Broome Social Services Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need. In addition to dedicated State and Commonwealth service delivery, it is envisaged that, as LNG companies located at the Precinct will be using Broome services either directly or indirectly, they will also contribute funding for the strategy.

It is agreed that effectively responding to Indigenous health needs will require a collaborative and coordinated effort across the region and key stakeholders. Engagement with key stakeholders will continue through development of management strategies and monitoring programs, including the Broome Social Services Strategy. There will be opportunities for Indigenous health stakeholders, including the Kimberley Aboriginal Health Planning Forum (**KAHPF**), to be involved in management of potential impacts.

To ensure delivery of the necessary social management measures, the SAR proposed that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 753 Sub ID [197] Raised by [S197 Q1756]

Part 5 Section 4.9.4. Submitter knows of a local Broome nurse who cannot work at Broome Hospital because she is not entitled to subsidised housing as a local appointee. How can people live in the long term like this? If the hospital is already in need of staff, without the added pressure of the Precinct, why can't this nurse receive housing? Will the Precinct bring with it the propensity for the government services to look after its locals instead of constantly bringing outsiders in?

A significant proportion of private rental accommodation in Broome is consumed by the Government Regional Officer Housing (**GROH**) program which provides highly subsidised accommodation for many State Public Service staff. This depletes the availability of private family rental accommodation on the market and to some extent, protects private rental prices from dropping due to the natural competition that a private-individual based market would create.

As Broome has a large portion of its workforce employed in the lower wage services sector, the growth in house prices is fast outstripping wage growth. The primary driver for high future housing demand in the region is the projected natural population growth in the Shire of Broome.

Community consultation undertaken by the State revealed that a common concern about Precinct-driven impacts was on housing demand, availability and affordability. The existing housing landscape will need to be addressed in addition to each commercial proponent's close management of its housing requirements in order to prevent more serious housing issues developing in Broome. As described in the SAR, LandCorp (as the State's facilitator of land development) and the Department of Housing will develop an overall land and housing management strategy that:

- provides an understanding of current housing issues in Broome;
- addresses short-term accommodation deficits, affordable housing, social housing and homelessness issues.
- manages the impacts of the Precinct development on local and regional housing;
- identifies potential impacts on different types of housing during the different phases of Precinct construction;
- monitors housing supply and demand; and
- ensures timely release of land for housing and corresponding construction capability.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1124 Sub ID [212] Raised by [S212 Q1085]

Part 5, **Section 2.6.2**: "The existing Broome medical services are unlikely to be able to meet the projected demand from non-Precinct and Precinct-related growth. This demand steadily escalates across all scenarios between 2011 and 2041. " What will be done to address this and by whom? Perhaps the proponents of the LNG precinct should be made to address this issue from some of the huge profits. If the local community is going to be forced to give up so much for the benefit of the rest of the nation, we deserve the very best health services in the country. Once again, aboriginal people in particular are going to be the ones who bear the brunt of this.

The State Government acknowledges that development of the Browse LNG Precinct could potentially place increased demand on already stressed services in Broome. Accordingly, the State Government has made a commitment in the SAR to address existing deficits in regional social service provision through development of the Broome Social Services Strategy. This will be a whole of government initiative to increase capacity of services such as health, education, child care, counselling, therapeutic and emergency services to prevent further pressure. In addition to addressing existing deficits in the short term, this strategy will assist in the longer term to increase the capacity of health and social service provision to accommodate any potential increase demand resulting from natural population growth in Broome, as well as the development of the Precinct.

Commercial proponents wishing to locate at the Precinct will also be required to ensure appropriate primary health care, emergency, security and police services are provided to the Precinct and construction camp, without detracting from service provision to Broome. The development by commercial proponents, of a Precinct Health, Emergency Services, Policing and Security Strategy will be required prior to construction. These strategies will include targets and performance indicators, such as the level of Precinct use (time spent, number of incidents) of Broome health care, police and emergency services. To ensure management measures are effective, mechanisms to review and adapt mitigation and management as required will be included in the Precinct-level monitoring system. More information on these management strategies can be found in **Part 5**, **Section 5** of the SAR.

The present lack of resources to meet Indigenous health needs in the Kimberley, particularly with regards to mental health, was also highlighted in the Aboriginal Social Impact Assessment, with a recommendation for increased Indigenous mental health funding within the area of impact. The Broome Social Services Strategy will be one of several measures to address this deficiency, along with increasing accessibility to those services for Indigenous communities on the Dampier Peninsula. In addition, further measures to mitigate and manage impacts on health and well-being for Indigenous people are provided for in the land access agreement negotiated with the Traditional Owners.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners can have significant input into the social management measures outlined in the SAR, particularly with regards to provision of health services.

2.7 Education, Training and Employment

Generic Question ID: 274 Sub ID [39, 200, 217, 205, 215, 212, 160] Raised by [S39 Q750]

Most jobs on the proposed BLNG Precinct are likely to be for skilled workers and few people in the region have the necessary skills required. Where is the evidence of concrete plans to up skill local workers? Where are the educational strategies that have been drawn up?

The State Government recognises that maximising education, training and employment opportunities is crucial to the delivery of the social and economic benefits associated with the development of the Browse LNG Precinct. A common criticism of major industrial developments in the past is that local people have not been able to reap the benefits of these developments through direct and indirect employment. Accordingly, the State Government conducted a comprehensive Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**) as part of the strategic assessment process for the Precinct, to develop appropriate management measures to facilitate the potential benefits of the Precinct to the West Kimberley community.

Although the State Government already provides education and training in the West Kimberley, maximising local employment at the Browse LNG Precinct will require additional programs to ensure local people have the skills to take advantage of direct and indirect employment opportunities. The Strategic Assessment Report (**SAR**) identifies a range of barriers that currently limit the ability of local community members to secure employment, and as a result, providing the skills to overcome those barriers is a priority. Accordingly, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, proposes a number of strategies to enable local people to take advantage of the direct and indirect employment opportunities

associated with the development of the Precinct. These include:

- An Education, Training and Employment Strategy
  - to maximise education, training and employment opportunities for the local community; and
  - ensure a coordinated approach to the range of education, training and employment opportunities which will be implemented to support the development of the Precinct.
- An Indigenous Workforce Strategy
  - to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
  - to develop and implement a strategy to increase the number of Indigenous workers on the project;
  - to develop or link to existing programs aimed at assisting Indigenous people to overcome potential barriers to education, training and employment;
  - to provide opportunities for Indigenous people to participate in cultural and environmental values relevant to Precinct operations; and
  - to develop appropriate workforce arrangements which includes support for Indigenous workers.

The strategies to increase education, training and employment of local people outlined in the SAR, are intended to complement the efforts of other State Government departments and agencies. For example, the Kimberley College of TAFE already offers short courses to engage Indigenous students and encourage them to move into longer training programs. In addition, the Department of Training and Workforce Development has already implemented or is in the process of implementing a range of training and workforce development initiatives for the Kimberley. These initiatives are underpinned by a whole of government plan (*Skilling WA: A workforce development plan for Western Australia*) to build, attract and retain a skilled workforce in Western Australia. The State Government recognises the importance of this holistic approach, and has noted in the SAR that the education, training and employment management strategies will necessitate a coordinated approach involving the key government and non-government agencies and stakeholders across the West Kimberley region.
It should also be noted that the State Government is seeking a commitment from the Australian Government to invest in the establishment of a Trade Training Centre in the West Kimberley and other employment and training initiatives so that the region's population, especially Aboriginal people, is well positioned to take advantage of the direct and indirect employment opportunities associated with the construction and operation of LNG Precinct.

Generic Question ID: 168 Sub ID [39, 217, 163, 212, 95, 207] Raised by [S39 Q365]

The SAR proposes to "develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment" (**p. 105**). Surely a gas hub should not be providing what the state government should already be providing to every citizen in WA, that is health, education and training opportunities.

There are two main reasons that an increase in education, training and employment should accompany the development of the Browse LNG Precinct. First, the inevitable increase in population will likely result in an increased demand for education and training, and it is the responsibility of the Proponent to address the impacts arising from the proposal. Second, the State Government is committed to delivering fundamental economic and social change to the West Kimberley through development of the Precinct and the local jobs that it will create. A common criticism of major industrial developments in the past is that local people have not been able to reap the benefits of these developments through direct and indirect employment. This in part, is what drove the State Government to undertake both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) as part of the strategic assessment process. The State Government recognises that maximising education, training and employment opportunities is crucial to delivering benefits to the local community.

Although the State Government already provides education in the West Kimberley, maximising local employment at the Browse LNG Precinct will require additional programs to ensure that local people have the skills to take advantage of direct and indirect employment opportunities. As discussed in the Strategic Assessment Report (**SAR**), there are a range of barriers that currently limit the ability of local community members to secure employment, and providing the skills to overcome those barriers is a priority. This requires provision of additional education and training, as well as addressing the significant socio-economic factors preventing Indigenous people from engaging in economic and employment programs.

The strategies contained within the Strategic Social Impact Management Plan (**Part 5**, **Section 5** of the SAR), to increase education, training and employment of local people are meant to complement the efforts of other

parties (e.g. other State government departments). For example, the Kimberley College of TAFE already offers short courses to engage Indigenous students and encourage them to move into longer training programs. In addition, the Department of Training and Workforce development has already implemented or is in the process of implementing a range of training and workforce development initiatives for the Kimberley. These initiatives are underpinned by a whole of government plan (Skilling WA: A workforce development plan for Western Australia) to build, attract and retain a skilled workforce in WA. The Department of State Development recognises the importance of this holistic approach and has noted in Part 5 of the SAR that the education, training and employment management plan will necessitate a coordinated approach involving the key government and non-government stakeholders.

Generic Question ID: 276 Sub ID [39, 212, 90, 205, 215] Raised by [S39 Q752]

In regard to the potential impact of BLNG Precinct on education and training; how would a rapid and substantial increase in student population to secondary schools in Broome be managed in the short term? Either the schools would continue to swell in transportable buildings, or a major rebuilding effort would be required. Is there consideration for a second private school to be built.

One of the advantages of establishing a managed-access construction worker camp to service the Browse LNG Precinct, is that the Precinct development would not result in the families of FIFO construction workers moving to Broome. This provides some lead time for education authorities in the region to adequately prepare for the increase in student numbers associated with the predicted natural population growth of Broome, and the Precinct's operational workforce.

According to the regional State education authorities in the West Kimberley, Broome Senior High School currently has the capacity to double the current enrolment of around 500 students. While there is spare secondary schooling capacity to cope with projected increases in population, a current issue that would be exacerbated by a growing population, there is a desire by some for an independent private school, to reduce the need to send children to boarding school in Perth when private schooling is the preferred option.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes that a strategy for the provision of services such as health, education, child care, counselling, therapeutic and emergency services be developed in the short term, to increase the current capacity of these services to prevent further pressure. In the longer term, this would increase the capacity of health, education and social service provision in general, to accommodate the predicted natural population growth of Broome, along with any growth associated with the development of the Precinct. The Broome Social Services Strategy will be a State Government initiative to address deficits in the provision of social services in Broome. The Strategy will be developed in close consultation with the Broome community, to identify priorities of concern, and ensure the outcomes reflect the needs and aspirations of the local population.

Generic Question ID: 55 Sub ID [39, 212, 205, 215] Raised by [S39 Q356]

If educational reform is aimed at supporting the construction phase, one has to wonder how many students will benefit directly. Once the plant reaches operation it is likely to be run by a relatively small group of highly skilled employees. Hence, unless there are other major projects that move into the Kimberley the products of a LNG inspired "up skilling" education system will likely not find employment in the Kimberley.

It is anticipated that many of the skills acquired through training for jobs on the Precinct will also be able to be applied to non-project jobs.

The Kimberley region has experienced considerable economic growth conditions since 2000, particularly in relation to the resources industry. The resources industry has a long history in the Kimberley, starting with the discovery of gold near Halls Creek in 1885. The Kimberley contains the largest range of mineral commodities of any region in Western Australia, and the resources industry is currently the largest industry in the Kimberley by value of production, which was around $1.5 billion in 2007/08.

However, there exists in the Kimberley a high level of social and economic disadvantage, particularly in regional and remote areas. At present, inadequate education and training prevents some local people, including many Indigenous residents, from taking advantage of existing employment opportunities in the region. The town of Broome currently experiences difficulties in acquiring skilled workers across many industries and sectors.

The State Government believes that development of the Browse LNG Precinct provide opportunities for new initiatives to improve the health, education, social and economic wellbeing of Indigenous people, and significantly reduce disadvantage across the broader Kimberley community. The up-skilling of local people to work directly or indirectly on the Browse LNG Precinct will increase the under-capacity pool of skilled workers across the region. As noted above, the skills acquired through training for jobs on the Precinct will also be able to be applied to non-project jobs. For example, following Precinct construction local up-skilled workers would help meet the additional demand for skilled employees (e.g. tradespeople to build new homes) generated by the

projected natural population growth within the Shire of Broome and the West Kimberley.

Small businesses that up-skill and obtain contracts on the Precinct and related activities, may also use their increased capacities to expand their customer base in non-Precinct related business. These opportunities would exist from a range of employment sectors from light industrial activity, to retail and hospitality.

The Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) provides a framework for the further development of strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the development of the Browse LNG Precinct. The SSIMP imposes detailed Precinct Condition strategies, which will include considerable education, training and employment components for the community of the West Kimberley.

Generic Question ID: 275 Sub ID [39, 205, 215, 212] Raised by [S39 Q751]

Why is there a lack of comparative information in the BLNG SAR that suggests the educational opportunities of Aboriginal students has been enhanced by the development projects that have occurred in the Pilbara? One would consider, given large industrial projects have been in operation since the 1970s, that there should be a number of existing educational models / strategies that could be employed in this region. The reality may be that educational outcomes in these areas have not been significantly enhanced by embracing industrial development and associated education regimes.

As part of the social impact assessment, literature on impacts of resource development in the Pilbara was reviewed. As this was a strategic assessment, the impacts discussed in the Strategic Assessment Report (**SAR**) focused on high-level impacts of the Precinct development, including a number of references to the impacts experienced in the Pilbara. More detailed discussion of impacts experienced due to resource development in the Pilbara can be found in the Social Impact Assessment (**SIA**), particularly in Section 10 of Volume 1 (SAR **Appendix D-1**). Historically, efforts to employ local Indigenous people on resource projects have produced mixed outcomes. This in part, is what drove the State Government to undertake both a SIA, and an Aboriginal Social Impact Assessment (**ASIA**) as part of the strategic assessment process for the Browse LNG Precinct.

Management strategies outlined in **Part 5, Section 5** of the SAR are aimed at avoiding many of the impacts that occurred in the Pilbara towns and managing those that do occur. This includes an Indigenous Workforce Development Strategy that will maximise opportunities for education, training and employment for local Indigenous people.

The SAR discussed the significant socio-economic barriers that may need to be addressed in order for local people to realise the employment benefits associated with the development of the Precinct. Accordingly, the SAR recommended that several strategies be put in place to enable local people to take advantage of the direct and indirect opportunities generated by the project.

- An Education, Training and Employment Strategy
    - to maximise education, training and employment opportunities for the local community; and
    - to ensure a coordinated approach to the range of education, training and employment strategies which will be implemented to support the development of the Precinct.
- An Indigenous Workforce Development Strategy
    - to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
    - to develop and implement a strategy to increase the number of Indigenous workers on the project;
    - to develop or link to existing programs which assist Indigenous people to overcome potential barriers to education, training and employment;
    - to provide opportunities for Indigenous people to participate in cultural and environmental values relevant to Precinct operations; and
    - to develop appropriate workforce arrangements which includes support for Indigenous workers.

To ensure delivery of the necessary social management strategies and measures, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 277 Sub ID [39, 205, 215, 212] Raised by [S39 Q753]

Generally speaking multi-cultural social cohesion between students attending "established" Broome schools is evident. Significant additions of students from outside Kimberley are likely to cause some tensions within this context.

Potential changes to the unique “Broome feel” have been a major concern raised by many stakeholders throughout the community consultation conducted as part of the strategic assessment process. In the Social Impact Assessment (**SIA**), it was clear that multi-culturalism was a key component of Broome’s identity that stakeholders valued. The uppermost estimate of student increases is 15 to 16.5 percent, which could lead to significant changes in the demographic of students in Broome schools. However, the cultural backgrounds of employees and their families that move to Broome due to development of the Precinct are as yet unknown, so prediction of this impact is difficult at this early stage. It is also important to note that community identity is not static and changes over time. The past increases in population brought with it changes to Broome’s community identity. This is likely to continue with the population increases projected for Broome, even in the absence of the project.

Changes in related variables would be captured as part of social monitoring related to community identity and sense of place. The Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), proposes strategies to retain the unique character and ‘Sense of Place’ associated with Broome during the development of the Browse LNG Precinct. One of these is a Broome ‘Sense of Place’ Management Strategy. This strategy will include relevant targets and indicators, including a target of “no significant negative change in monitoring surveys”. Guidelines to manage Broome’s identity and ‘Sense of Place’ will also be developed.

To ensure delivery of the necessary social management measures outlined in the SSIMP, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 182 Sub ID [39, 212, 207] Raised by [S39 Q380]

The SIA report lists five objectives (all existing goals of DETWA) linked to participation programs for Indigenous young people. The proponents of the BLNG Precinct are trying to imply that new education and training programs are something that they are bringing to the table and that the community must rely on them for these things to happen. These programs already exist.

Whilst there are existing education and training programs in the West Kimberley, the development of the Browse LNG Precinct presents a number of opportunities to add to, and complement, these programs. For example, the Aboriginal Social Impact Assessment (**ASIA**) found that the Precinct offered an opportunity to provide additional schools and trade training centres, scholarships and sponsorships, and a range of training programs that are more directly work related. The State Government has responded to the findings of the ASIA and has outlined a range of strategies identified in the Strategic Social Impact Management Plan (**SSIMP**), as outlined in **Part 5, Section 5** of the SAR, to provide these opportunities. For example, the State has already committed to supporting Indigenous economic development and to the establishment of an Education Development Fund to support scholarships and other training programs for Indigenous people as part of the signed Heads of Agreement. In addition, the ASIA noted the potential for the Precinct to facilitate the development of Trade Training Centres. A Trade Training Centre could deliver vocational education to ensure that Indigenous people, and others living in the Kimberley, have the opportunity to develop the skills and competencies that will lead to long term employment resulting from the development of the region. The State Government is further developing this concept and has commissioned a feasibility study.

It is also important to note that the strategies to increase education, training and employment of Indigenous people outlined in the SAR are meant to complement the efforts of other parties (e.g. other State government departments). For example, the Kimberley College of TAFE already offers short courses to engage Indigenous students and encourage them to move into longer training programs. In addition, the Department of Training and Workforce development has already implemented, or is in the process of implementing, a range of training and workforce development initiatives for the Kimberley. Education and training opportunities arising from the development of the Browse LNG Precinct would be supporting or supplementing these efforts, rather than duplicating them. The State Government and the commercial proponents will be working with these agencies, and other key government and non-government stakeholders, in developing and implementing the education, training and employment management plan to ensure a coordinated approach.

Generic Question ID: 1199 Sub ID [205, 215, 212] Raised by [S205 Q2680]

Part 5 Section 3.4.4.5: The Potential Impact of BLNG Precinct on Education and Training, refers to the "expansion of curricula available at secondary schools in Broome". This is a logical assumption if student numbers are greater. How will the school accommodate greater numbers?

Many of the agencies interviewed for the Aboriginal Social Impact Assessment (**ASIA**) (**Appendix E-3**) identified education and training as potential opportunities that could arise from the development of the Browse LNG Precinct. These include additional schools and trade training centres; scholarships and sponsorships; and more diverse training programs that are work-related and training on the job programs. They also believe that the secondary schools in Broome will be able to offer wider curricula due to larger student numbers coming with the influx of personnel working on the Precinct, and the potential to recruit more specialist teachers.

Although some stakeholders were concerned that the secondary schools would not be able to accommodate additional students, the social impact assessment determined, through a review of secondary school enrolments, that there is some capacity to cope with projected increases in population. In relation to the 13-17 years age group, the maximum projected direct and indirect population increase attributable to the Precinct development and operation over the next 30 years is between 55 and 135 students. There are currently two secondary schools in Broome, the public Broome Senior High School and the Catholic St Mary's College. According to the then Broome Department of Education and Training, the current Broome Senior High School has the capacity to double the current enrolment of around 500 students. While there is spare secondary schooling capacity to cope with projected increases in population, a current issue that will be exacerbated by additional population is a perceived need for an independent private school to reduce the need to send children to boarding school in Perth when private schooling is the preferred option.

It should also be noted that the Anglican Schools Commission of Western Australia (**ASCWA**) recently announced that it plans to develop land in Broome so it can open a new private school by the end of the decade.

Generic Question ID: 4 Sub ID [1, 232] Raised by [S1 Q3]

There is a lack of real employment opportunities as a result of the BLNG Precinct for Kimberley Aboriginal people, due to lack of education and training (according to Wayne Bergmann, KLC Chairman, as quoted on ABC radio 8 Sept 2010).

The State recognises the key role of education and skills development in enabling local Indigenous people to be able to take advantage of the opportunities presented by the LNG Precinct. The Strategic Assessment Report identifies a range of strategies as part of the Strategic Social Impact Management Plan (**SSIMP**) in **Part 5**, **Section 5**, tailored towards the delivery of social and economic benefits to Traditional Owners associated with the Browse LNG Precinct. For example, as a condition of locating at the Precinct, commercial proponents are required to prepare management strategies, to the satisfaction of Precinct Management, to: maximise education, training and employment opportunities for the local community to support the development of the LNG Precinct; and increase the Indigenous workforce and ensuring their development. This Indigenous Workforce Development Strategy will ensure a coordinated approach to the range of Indigenous education, training and employment strategies; develop and implement a strategy to increase the number of Indigenous workers on the project; develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment; provide opportunities for Indigenous people to work on cultural and environmental values relevant to precinct operation; and develop appropriate workforce arrangements that includes support for Indigenous workers. The implementation of these management measures will be overseen by Precinct Management.

In addition, the Heads of Agreement signed on 21 April 2009 by the State Government, the Kimberley Land Council (**KLC**) and Woodside (as a potential Foundation Proponent) established the Browse LNG Precinct near James Price Point, subject to the ultimate execution of a formal Indigenous Land Use Agreement (**ILUA**), or, if an ILUA is not achievable in a reasonable timeframe, another form of binding agreement. This agreement committed the State to supporting Indigenous economic development and to establishing an Education Development Fund to support scholarships and other training programs for Indigenous people.

Generic Question ID: 233 Sub ID [39, 217] Raised by [S39 Q727]

Experiences from Karratha and other mining towns have shown that when these jobs are taken up by locals it is at the expense of other industries and local businesses, who will experience a shortage of skills and labour.

A key objective of State Government in locating the Browse LNG Precinct in the Kimberley is to maximise and retain benefits for local people and businesses, both Indigenous and non-Indigenous.

Workforce competition, amongst commercial proponents, Broome businesses, and Government and non-

Government agencies, is a likely impact associated with construction phases at the Precinct. Broome and the West Kimberley region currently experience difficulties in acquiring employees across all sectors, and this problem would increase with the town's natural population growth and an assumed increase in demand for labour during Precinct construction.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), proposes a number of mechanisms to retain the significant economic benefits associated with the development of the Precinct, within the West Kimberley region.

These mechanisms include developing education, training and employment skills, and supporting local businesses where possible. The up-skilling of local people to work directly or indirectly on the Browse LNG Precinct will increase the under-capacity pool of skilled workers across the region. The skills acquired through training for jobs on the Precinct will also be able to be applied to non-project jobs. For example, following Precinct construction local up-skilled workers would help meet the additional demand for skilled employees (e.g. tradespeople to build new homes) generated by the projected natural population growth within the Shire of Broome and the West Kimberley.

Small businesses that up-skill and obtain contracts on the Precinct and related activities, may also use their increased capacities to expand their customer base in non-Precinct related business. These opportunities would exist from a range of employment sectors, from light industrial activity to retail and hospitality.

The SSIMP also proposes a purchasing strategy, which would encourage Precinct expenditure within local businesses and industry. As Broome has a limited manufacturing base, a local purchasing strategy would facilitate its growth.

Some of the opportunities might however, be short-lived, and it is likely that businesses that have developed to support the construction phase of the initial Precinct development may later see a rapid decline in the demand for their services. As a result, additional strategies to retain local benefits at a project level will be developed the commercial proponents, and would contribute to the West Kimberley Socio-Economic Development Strategy, encouraging sustainable growth in the region.

Generic Question ID: 235 Sub ID [39, 217] Raised by [S39 Q728]

Aboriginal people would quite possibly not travel great distances across the Kimberley for jobs on the project, as they are not taking the option now of travelling to the Pilbara where there are almost unlimited jobs available.

It is an objective of the State Government to maximise the opportunities presented by the establishment of the Browse LNG Precinct, to substantially improve the education, health, social and economic wellbeing of Indigenous people and significantly reduce disadvantage within the Kimberley community. Historically, efforts to employ local Indigenous people on resource projects have produced mixed outcomes. However, at September 2010, some 24 Indigenous people from the Peninsula and seven from Derby were working in the Pilbara on a fly-in fly-out basis, and the company employing them views the program as very successful. A rough but very modest estimate at that time of the number of Indigenous people across the State working in the resource sector was around 1,350 (DIA 02 09 2010).

Additionally, the Kimberley is a vast region and long travel distances are a barrier to employment for many people. However there are currently high unemployment rates in Indigenous communities in Broome (estimated at 19.8%) and the Dampier Peninsula (over 80%) so there is actually a significant opportunity for the Precinct to create employment for many who do not have to travel far.

These potential barriers to employment are in part what drove the State Government to undertake both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) as part of the strategic assessment process for the Browse LNG Precinct. The SIA/ASIA process facilitated the consideration of social impacts within a process which typically focuses purely on environmental approvals.

The Strategic Assessment Report (**SAR**) discusses the significant socio-economic barriers that may need to be addressed in order for local people to realise the employment benefits associated with the development of the Browse LNG Precinct. Accordingly, the SAR recommends that several strategies be put in place to enable local people to take advantage of the direct and indirect employment opportunities generated by the project. These are:

- An Education, Training and Employment Strategy:
    - to maximise education, training and employment opportunities for the local community; and
    - ensure a coordinated approach to the range of education, training and employment strategies which will be implemented to support the development of the Precinct.
- An Indigenous Workforce Development Strategy:

- to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
- to develop and implement a strategy to increase the number of Indigenous workers on the project;
- to develop or link to existing programs which assist Indigenous people to overcome potential barriers to education, training and employment;
- to provide opportunities for Indigenous people to participate in cultural and environmental values relevant to Precinct operations; and
- to develop appropriate workforce arrangements which includes support for Indigenous workers.

Measures to mitigate and manage impacts on employment and development opportunities for Indigenous people will be provided in the land tenure arrangements negotiated with the Traditional Owners. The Heads of Agreement, signed by the State Government, Kimberley Land Council (**KLC**) and Woodside in April 2009, provides for an Education Development Fund to support scholarships and training programs, upon signing of an Indigenous Land Use Agreement or other land tenure agreement.

The local employment strategies outlined in **Part 5** of the SAR, will link to existing programs to assist Indigenous people. Through the National Partnerships process, education, employment and training projects are being developed into an integrated "whole of life cycle" framework. Trade training projects are being developed to ensure that there is a dovetail approach between school based trades or vocational training and industry training. These projects are either funded, in development, or under discussion, between the KLC and the State and Commonwealth Governments and other partners.

The local employment strategies need to start well in advance of the Precinct establishment and be well coordinated to ensure a match between the skills required, the capacity of the training providers, and the existing level of the potential trainees. If these barriers are addressed, the development of the Precinct presents considerable opportunities for local Indigenous employment, which will also increase the socio-economic wellbeing of local Indigenous people, and help alleviate and reduce disadvantage across the broader West Kimberley region.

Generic Question ID: 863 Sub ID [218, 164] Raised by [S218 Q1864]

Currently, sourcing of labour and housing for that same labour is difficult due to its expensive nature. This will be exacerbated should this project be approved.

A key objective of State Government in locating the Browse LNG Precinct in the Kimberley is to maximise and retain benefits for local people and businesses, both Indigenous and non-Indigenous.

Workforce competition, amongst commercial proponents, Broome businesses, and Government and non-Government agencies is a likely impact associated with construction phases at the Precinct. Broome and the West Kimberley region currently experience difficulties in acquiring employees across all sectors, and this problem would increase with the town's natural population growth and an assumed increase in demand for labour during Precinct construction.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), proposes a number of mechanisms to retain the significant economic benefits associated with the development of the Precinct, within the West Kimberley region.

These mechanisms include developing education, training and employment skills, and supporting local businesses where possible. The up-skilling of local people to work directly or indirectly on the Browse LNG Precinct will increase the under-capacity pool of skilled workers across the region. The skills acquired through training for jobs on the Precinct will also be able to be applied to non-project jobs. For example, following Precinct construction local up-skilled workers would help meet the additional demand for skilled employees (e.g. tradespeople to build new homes) generated by the projected natural population growth within the Shire of Broome and the West Kimberley.

Small businesses that up-skill and obtain contracts on the Precinct and related activities, may also use their increased capacities to expand their customer base in non-Precinct related business. These opportunities would exist from a range of employment sectors from light industrial activity, to retail and hospitality.

The SSIMP also proposes a purchasing strategy, which would encourage Precinct expenditure within local businesses and industry. As Broome has a limited manufacturing base, a local purchasing strategy would facilitate its growth.

Some of the opportunities might however, be short-lived, and it is likely that businesses that have developed to support the construction phase of the initial Precinct development may later see a rapid decline in the demand

for their services. As a result, additional strategies to retain local benefits at a project level will be developed the commercial proponents, and would contribute to the West Kimberley Socio-Economic Development Strategy, encouraging sustainable growth in the region.

While the construction and operation of the Browse LNG Precinct is likely to result in increased competition for labour in the region, this process may lead to wage increases for other industries, such as tourism, agriculture, aquaculture and pearling and commercial fishing. Increased demand for labour is a key aspect with the potential to cause a social impact for a number of socio-economic factors (see **Table 1-1, Part 5, Section 1** of the SAR). Whilst increased wages would be a benefit to local workers, the SAR acknowledges the negative impact this could have on local businesses through increased labour costs and additional skills shortages. The impact of the Precinct on labour costs will be managed by:

- Use of a largely FIFO workforce to mitigate increased pressure on the local labour market.
- Implementation of transient workforce management measures that will include measures to gainfully use transient/opportunistic workers that arrive due to the project to fill employment vacancies in Broome.
- Education, training and vocational experience offered through development of the Precinct may assist in creating a pool of skilled workers. This can help address the recognised scarcity of skilled workers in Broome that was noted by many businesses.
- A fishing industry mitigation and management strategy with the commercial and recreational fishers and tourism operators will be developed to mitigate and manage the impacts on this industry. Among the potential impacts that will need to be addressed is a potential general increase in the cost of living that puts upward pressure on relatively low tourism, commercial fishing and pearling wages.

More information on these management measures can be found in the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR.

Generic Question ID: 864 Sub ID [212, 218] Raised by [S218 Q1866]

This document infers that the WA state government is not already providing the best possible educational funding and outcomes. Is this the case? By providing private sponsorship to education, a government responsibility, the BLNG proponents knowingly spread fear that children will not be fully educated if the project is not allowed.

The provision of public education is and will continue to be a State Government responsibility. The proposal to establish the Browse LNG Precinct provides the opportunity for additional investment by the State and Commonwealth Governments and the commercial proponents in the area of education and training. This investment will focus on assisting local people to be able to take advantage of the employment opportunities presented by the Browse LNG Precinct.

The issue of education and training was seen by ASIA participants as critical in shaping the impacts of the Precinct, in particular whether Indigenous people would be able to share in the benefits created by employment opportunities, or whether these opportunities would flow largely to non-Indigenous people and outsiders, increasing existing social and economic inequalities. Poor levels of literacy and numeracy are seen as a major constraint for some Indigenous people, especially the youth, preventing them from actively engaging in meaningful employment and other opportunities.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR contains a number of relevant management strategies. These include:

- An Education, Training and Employment Strategy: to maximise education, training and employment opportunities for the local community and ensure a coordinated approach to the range of education, training and employment strategies implemented to support the development of the Precinct; and
- An Indigenous Workforce Development Strategy: to ensure a coordinated approach to the range of Indigenous education, training and employment strategies; develop and implement a strategy to increase the number of Indigenous workers on the project; develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment; provide opportunities for Indigenous people to work on cultural and environmental values relevant to Precinct operation; and, develop appropriate workforce arrangements and that includes support for Indigenous workers.

Measures to maximise opportunities for education and training for Indigenous people will be provided for in the land access agreement negotiated with the Traditional Owners, the framework for which is provided in the HoA. The education National Partnership Agreement is providing major investments in the Kimberley that address

these recommendations including: the student hostel in Broome; school trades centres; and literacy and numeracy programs.

Education, employment and training projects are being developed in an integrated "whole of life cycle" or productivity framework. In key areas, for example trade training, projects are being developed to ensure there is an articulated or dovetail approach between school based trades or vocational training and industry training. These projects are funded, in development or under discussion between the Kimberley Land Council, Department of Education, Employment and Workplace Relations, Department of State Development, Department of Indigenous Affairs and other State and Commonwealth Government agencies and other partners. Many other projects are funded, under development or under discussion that impact on the "whole of life cycle, productivity 'closing the gap' agendas covering early childhood, education, employment and training outcomes across the Kimberley.

The HoA also provides for an Education Development Fund to support scholarships and training programs upon signing of a land access agreement. The state would also be seeking commitments from the commercial proponents over the life of the Precinct to address education and training requirements to support the skills required for the Precinct.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 209 Sub ID [40] Raised by [S40 Q393]

Jobs for local people are touted as a benefit, but other similar programmes for local Indigenous workers have found the take-up rate is minimal. Why would the proposed project be any different?

It is an objective of the State Government to maximise the opportunities presented by the establishment of the Browse LNG Precinct, to substantially improve the education, health, social and economic wellbeing of Indigenous people and significantly reduce disadvantage within the Kimberley community. Historically, efforts to employ local Indigenous people on resource projects have produced mixed outcomes. This in part is what drove the State Government to undertake both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) as part of the strategic assessment process for the Browse LNG Precinct. The SIA/ASIA process facilitated the consideration of social impacts within a process which typically focuses purely on environmental approvals.

The Strategic Assessment Report (**SAR**) discusses the significant socio-economic barriers that may need to be addressed in order for local people to realise the employment benefits associated with the development of the Browse LNG Precinct. Accordingly, the SAR recommends that several strategies be put in place to enable local people to take advantage of the direct and indirect employment opportunities generated by the project. These are:

An Education, Training and Employment Strategy:

- to maximise education, training and employment opportunities for the local community; and
- ensure a coordinated approach to the range of education, training and employment strategies which will be implemented to support the development of the Precinct.

An Indigenous Workforce Development Strategy:

- to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
- to develop and implement a strategy to increase the number of Indigenous workers on the project;
- to develop or link to existing programs which assist Indigenous people to overcome potential barriers to education, training and employment;
- to provide opportunities for Indigenous people to participate in cultural and environmental values relevant to Precinct operations; and
- to develop appropriate workforce arrangements which includes support for Indigenous workers.

Measures to mitigate and manage impacts on employment and development opportunities for Indigenous people will be provided in the land tenure arrangements negotiated with the Traditional Owners. The Heads of Agreement, signed by the State Government, Kimberley Land Council (**KLC**) and Woodside in April 2009, provides for an Education Development Fund to support scholarships and training programs, upon signing of an Indigenous Land Use Agreement or other land tenure agreement.

The local employment strategies outlined in **Part 5** of the SAR, will link to existing programs to assist Indigenous people. Through the National Partnerships process, education, employment and training projects are being developed into an integrated "whole of life cycle" framework. Trade training projects are being developed to ensure there is a dovetail approach between school based trades or vocational training and industry training. These projects are either funded, in development, or under discussion, between the KLC and the State and Commonwealth Governments and other partners.

The local employment strategies need to start well in advance of the Precinct establishment and be well coordinated to ensure a match between the skills required, the capacity of the training providers, and the existing level of the potential trainees. If these barriers are addressed, the development of the Precinct presents considerable opportunities for local Indigenous employment, which will also increase the socio-economic wellbeing of local Indigenous people, and help alleviate and reduce disadvantage across the broader West Kimberley region.

Generic Question ID: 492 Sub ID [232] Raised by [S232 Q1356]

Can the State engage with young Aboriginal people; as the proposed Precinct has the potential for them to secure a job and get off the dole?

Development of the Browse LNG Precinct will provide opportunities for local Indigenous youth to gain purposeful employment. To achieve this, the State Government is committed to working directly with Traditional Owners to put in place appropriate measures to overcome the barriers that too often prevent Indigenous people from being able to take advantage of such opportunities. The Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) proposes management mechanisms which will encourage and develop social participation and engagement with the Indigenous youth of the region. The Education, Training and Employment strategy intends to train a local workforce that can be deployed during Precinct construction, and will ensure the up-skilling of the regional workforce in the longer-term. This plan is to ensure a coordinated approach which maximises opportunities for the local community, and includes relevant targets and performance indicators.

The objectives of this management plan will be to:

- ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
- develop and implement a strategy to increase the number of Indigenous workers on the project;
- develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment;
- provide opportunities for Indigenous people to work on cultural and environmental values relevant to precinct operation; and
- develop appropriate workforce arrangements that include support for Indigenous workers.

The State Government is also currently seeking input from both the Commonwealth Government and private industry in order to investigate the development of a construction, civil infrastructure and oil and gas industry Trade Training Centre in the Kimberley. Such an initiative would offer substantial opportunities for the region's youth, and ensure the adaptability and sustainability of the regional workforce into the future.

Generic Question ID: 502 Sub ID [232] Raised by [S232 Q1366]

The Indigenous community members on the Dampier Peninsula asked how their people could get good jobs on the Browse LNG Precinct? The projects on the Burrup Peninsula have not provided jobs for Indigenous people.

It is an objective of State Government to maximise the opportunities presented by the establishment of the Browse LNG Precinct, to substantially improve the education, health, social and economic wellbeing of Indigenous people, and significantly reduce disadvantage within the Kimberley community.

Historically, efforts to employ local Indigenous people on resource projects have produced mixed outcomes. However, more recently it is important to note that 170 jobs for Indigenous people were created during the construction phase of the Pluto LNG project on the Burrup Peninsula. An additional 30 Indigenous people are in the process of completing traineeships for the operations phase of the project. While it is not correct to say that there are no jobs for Indigenous people on the Burrup Peninsula, there is always more that can be done to facilitate Indigenous engagement on these significant projects.

This in part, is what drove the State Government to undertake both a Social Impact Assessment (**SIA**), and an Aboriginal Social Impact Assessment (**ASIA**), as part of the strategic assessment process for the Browse LNG Precinct. The SIA/ASIA process facilitated the consideration of social impacts within a process which typically

focuses purely on environmental approvals.

The Strategic Assessment Report (**SAR**) discusses the significant socio-economic barriers that may need to be addressed in order for local people to realise the employment benefits associated with the development of the Precinct. Accordingly, the SAR recommends that several strategies be put in place to enable local people to take advantage of the direct and indirect opportunities generated by the project. These include:

An Education, Training and Employment Strategy

- to maximise education, training and employment opportunities for the local community; and
- to ensure a coordinated approach to the range of education, training and employment strategies which will be implemented to support the development of the Precinct.

An Indigenous Workforce Development Strategy

- to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
- to develop and implement a strategy to increase the number of Indigenous workers on the project;
- to develop or link to existing programs which assist Indigenous people to overcome potential barriers to education, training and employment;
- to provide opportunities for Indigenous people to participate in cultural and environmental values relevant to Precinct operations; and
- to develop appropriate workforce arrangements which includes support for Indigenous workers.

Commercial proponents wishing to locate at the Browse LNG Precinct will also be required to collaborate with State and Commonwealth Government education and training authorities to implement an Indigenous education, training and employment management plan that ensures a coordinated approach and maximises opportunities for the local community and includes relevant targets and performance indicators.
The objectives of the management plan are:

- to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
- to develop and implement a strategy to increase the number of Indigenous workers on the project;
- to develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment;
- to provide opportunities for Indigenous people to work on cultural and environmental values relevant to Precinct operation; and
- to develop appropriate workforce arrangements that include support for Indigenous workers.

Ongoing engagement with Traditional Owners will be critical to the successful development and implementation of the proposed management plans. Accordingly, the State Government will continue to engage with Indigenous communities on the Dampier Peninsula during the next phase of the project, to ensure that their interests and needs are appropriately represented.

Generic Question ID: 654 Sub ID [120] Raised by [S120 Q1298]

ENGO Submission: **Part 5 Section 2.7.2.2** Employment Impacts. The outlined employment multiplier effects must be questioned. Rama and Lawrence 152 (2009) are highly critical of the assumptions made by governments and project proponents in their calculations of multiplier effects. Estimates of secondary benefits do not consider the opportunity cost of using resources that were previously being used elsewhere in the economy, or would likely be used elsewhere in the economy. These opportunity costs can be particularly high where the labour market is tight, as is the case in Broome and in the mining sector generally. Multipliers, the authors conclude, offer little practical guidance to public policy.

Employment multiplier effects at a local level can be difficult to assess. This is particularly true where industry is considering locating next to a town with a small manufacturing base, as in the case of Broome. The employment multipliers for the strategic SIA were included as a general guide only and mainly to assess the additional people that might move to Broome.

Because of the uncertainly around the development of the Browse LNG Precinct, a number of potential development scenarios were developed. In addition, for each scenario, a set of low, medium and high assumptions were made. For the employment multipliers, these included low (.5) medium (1) and high (1.5) assumptions about the additional people. Therefore, each potential scenario had an employment multiplier

range of .5 to 1.5 applied as a guide to the potential additional people.

The development of the Precinct can be expected to generate a range of investment, business and employment opportunities for people in Broome and surrounding areas. This is consistent with experience with other projects that have been completed in Western Australia.

Generic Question ID: 718 Sub ID [203] Raised by [S203 Q1691]

The Precinct serves to provide jobs for locals, however at what cost? Will the locals actually want this work (many claim they do not want to work at the plant)?

As with all industrial developments, the development of the Precinct has both the potential to create negative impacts and to bring substantial benefits to the affected communities. The central finding of the strategic Social Impact Assessment (**Part 5**) is that if the mitigation, management and monitoring strategies are implemented, the Precinct-related social impacts can largely be managed. The SAR also concludes that the development of the Precinct would be a net benefit to the local economy, bringing a range of economic development and direct and indirect employment opportunities. For example, it would bring direct employment and indirect employment, as well as greater availability of education and training opportunities for local residents. The development of the Precinct would increase the economic resilience of the area by introducing another economic sector, benefiting the economy as a whole.

There will be some people in the community who are not interested in employment at the Precinct. However, employment opportunities at the Precinct will be available for those in the community that are interested. The SAR includes a number of management measures to remove the barriers to local people securing employment by offering education, training and employment opportunities and implementing a local purchasing policy (**Part 5, Section 5**). These strategies will start well in advance of the Precinct establishment and be well co-ordinated to ensure a match between the skills required, the capacity of the training providers and local businesses and the programs to provide local people with the required skills. If these barriers are addressed, the development of the Precinct will present considerable economic opportunities for the people of the West Kimberley.

Generic Question ID: 897 Sub ID [217] Raised by [S217 Q1892]

Education cutbacks for Aboriginal support for students in schools (e.g. ATAS and Follow the Dream) have occurred this year despite the need and success of this government assistance. How will future needs be met when the government is not addressing the current needs of the community?

Addressing existing needs and providing for the future will require a joint effort between the State and Commonwealth governments and commercial proponents wishing to locate at the Precinct. The Commonwealth Government has advised that the West Kimberley will be a major beneficiary of increased resources over the next four years and beyond. The benefits will be delivered through the National Partnerships process that gives States/Territories particular responsibilities for implementation following agreement on a Bilateral Implementation Plan. The Commonwealth Government will work closely with the Western Australian State Government to ensure that the Kimberley region receives the necessary priority in program implementation. This funding includes an $80 million investment in education, training and employment (**Part 5, Table 3-1** of the SAR).

In addition to the responsibilities of the government (Commonwealth, State and local) in meeting existing needs, commercial proponents will ensure that benefits are delivered as a result of this project. Commercial proponents will be required to develop an Education, Training and Employment Strategy to maximise education, training and employment opportunities for the local community. This will require the involvement of State government to ensure a coordinated approach to the range of education, training and employment strategies implemented to support the development of the LNG Precinct.

Funding and implementation of this strategy will be a key focus in the next phase of work. As defined in the Heads of Agreement (**HoA**), an Education Development Fund to support scholarships and training programs will be delivered through the land access agreement negotiated with the Traditional Owners. To ensure the effective delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners can have a significant input into the environmental and social management associated with the Precinct.

Funding for existing education programs is independent of this development, but is also an important aspect of closing the education gap. The Aboriginal Tutorial Assistance Scheme (**ATAS**) or Indigenous Tutorial Assistance Scheme (**ITAS**) is currently funded by the State and Commonwealth governments. The Commonwealth provides funding for supplementary tuition to Indigenous students in Years 4, 6, 8 and 10, and a

State-based initiative provides funding for students in years 11 and 12. The Follow the Dream Tertiary Aspirations Strategy for Aboriginal students is designed to help Aboriginal students reach their career potential by graduating from secondary school and achieving university entrance. In April 2011 Woodside announced it would provide three years of funding to this program in Broome.

Generic Question ID: 1144 Sub ID [225] Raised by [S225 Q2799]

CCI Submission: Claims that the BLNG development will threaten Indigenous employment in the region and that the tourism sector promises to employ far more indigenous people than in the oil and gas sector are unsubstantiated. Tourism and LNG development are not mutually exclusive. If managed properly, the BLNG development will improve the social conditions and employment opportunities for local communities by broadening the economic base of the region.

Tourism is a key industry in the Kimberley, and the State Government is committed to ensuring that the area's tourism image is maintained. The sentiment that tourism and the Browse LNG Precinct development can co-exist is one that many stakeholders consulted for the Tourism Impact Assessment (**TIA**) share. To ensure that this occurs, a tourism marketing strategy will be developed. The objective of the strategy, led by Tourism WA, will be to maintain the current tourism image of Broome, while providing a framework for the ongoing development of the BLNG Precinct.

As this submission acknowledges, the development of an LNG industry in the region provides significant scope for the region to considerably increase its contribution to the State's economy and to increase training and employment opportunities in the Kimberley. Although the Kimberley region has experienced favourable growth conditions since 2000, particularly in relation to mining and tourism activities, the region's contribution to the state's Gross State Product (**GSP**) is still small. However, the size of the activity associated with the Precinct is large in proportion to current economic activity in the region, bringing with it the potential to substantially increase the regional contribution to GSP.

Provision of local economic benefits will be targeted through implementation of local purchasing strategies by commercial proponents that will encourage Precinct expenditure within local businesses and industry. In addition, measures to provide education, training and employment opportunities to local Indigenous and non-Indigenous people will be implemented, as well as measures specifically targeted to increase Indigenous participation in the workforce (see **Part 5, Section 5** of the SAR).

To ensure delivery of the necessary environmental and social management measures, the SAR propose that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

2.8 Sport and Recreation including Recreational Fishing

Generic Question ID: 1292 Sub ID [106] Raised by [S106 Q2269]

This development will place two of the last free fishing and camping sites for the local community out of bounds.

Public access will be maintained to both James Price Point and to Quondong Point, where it is understood there are informal camping areas and opportunities for fishing.

There are also a range of management measures that will ensure the protection of the marine resources on which recreational fishers depend. For example, commercial proponents at the Precinct will be required to demonstrate application of best practice measures to minimise the impacts on coastal processes from onshore and near shore marine infrastructure. The management of Invasive Marine Species (**IMS**) is an important measure to ensure the health of the marine ecosystem is maintained. IMS will be managed in accordance with international, State and Commonwealth legislation and through the implementation of best management practices.

More information on the potential impacts to recreational fishing values, and the management measures to address those impacts, can be found in **Section 4.8, Part 5** of the SAR.

2.9 Tourism

Generic Question ID: 308 Sub ID [62, 167, 212, 87, 205, 215, 236] Raised by [S167 Q724]

The Kimberley tourism 'brand' would be substantially damaged by an oil and gas industry on the Kimberley coast and recovery would be a major challenge requiring even more money, effort and time once the finite life span of the mining, oil and gas had finished.

Although the Kimberley has experienced favourable growth conditions since 2000, particularly in relation to mining and tourism activities, there still exists a significant degree of social disadvantage in the community.

This is especially true in the remote parts of the region. The development of the Browse LNG Precinct in the Kimberley would considerably increase employment opportunities, along with initiatives to substantially improve the education, health, social and economic well-being of Indigenous people and significantly reduce disadvantage within the broader Kimberley community.

A Tourism Impact Assessment (**TIA**) was commissioned by Tourism WA and the Department of State Development as part of the Strategic Assessment process. The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation, the means to maximise the potential benefits and mitigate and manage potential negative impacts.

The TIA described the current state of the tourism industry in Broome and the Kimberley region, and the potential implications associated with the development of the Precinct. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily coexist. As a result, the Strategic Social Impact Management Plan, outlined in **Part 5**, **Section 5** of the Strategic Assessment Report, proposes a tourism management plan, with Tourism WA as the lead agency, to meet this recommendation.

It is State Government's view that the Precinct can coexist with the tourism industry in Broome and in the Kimberley, due to the vast distances between the Precinct site and iconic destinations such as the Horizontal Waterfalls (225km), Mitchell Plateau (495km), and the Bungle Bungles (665km). The pristine nature of such destinations will remain, and their value will not be diminished. It is also noted that mining and tourism have coexisted in the Kimberley since the 1950s.

Additionally, the Precinct is expected to deliver a number of positive benefits to the tourism industry, which may include:

- more frequent and cheaper air services;
- new investment in facilities and services; and
- future opportunities for small businesses to provide services to a growing tourism trade.

The State Government has also committed to establishing a conservation area, significantly larger the area of land required for the Precinct, as well as a range of proposed marine parks.
Woodside's project-level SIA will include further investigation of the potential impacts of their project on the tourism sector within the Shire of Broome.

The Tourism Impact Assessment is included in Appendix D-5 of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/8249.aspx.

Generic Question ID: 690 Sub ID [211, 120, 87] Raised by [S120 Q1338]

ENGO Submission: "The Kimberley coast expedition cruise industry consists of more than 30 vessels operating multi-day cruises along the coast between Broome and Wyndham. The industry has grown by around 500% over the last 10 years. Approximately 7,400 people annually participate in a charter or cruise while in the Broome area ...Marine tourism is one of only five iconic tourism experiences used to market Western Australia as a holiday destination... The Kimberley expedition cruise industry currently injects in excess of $250 million annually into the local economy. The Kimberley expedition cruises are considered to be a high yielding product where the daily cost of a cruise is usually in excess of $1000. On average, each passenger spends $7000 per trip in addition to the cost of the cruise." [Department of Premier and Cabinet website, www.premier.wa.gov.au/Ministers/Donna-Faragher/Documents_camdenSoundARefugeForRecovery_200910.pdf].

As the above statement highlights, the Kimberley coastal and marine environment is already a substantial economic asset for the region through the rapidly expanding marine tourism industry. This is a high-yielding sector that creates local jobs. In response to community and industry concerns about the impact of industrialisation on this and other tourism assets, the Proponent of the LNG project at James Price Point commissioned a study that was supposed to independently assess the risk. Tourism industry specialists have criticised this study as biased and not an adequate reflection of the existing industry or risks to it from heavy industry. A critique of the TIA by Dr Michael Hughes of Curtin University (provided with this submission) has identified the following issues:

- It has an extremely narrow scope - only considers the LNG plant in isolation and does not include the necessary associated industrial activity in the region to supply and support the LNG plant, such as the Browse Basin Rigs and export of LNG.
- The examples used in the report of other regions where tourism and industry co-exist are misrepresented or add no insight.

- The surveys on which the report is based use much speculation and assumptions. The report is based on "what if" scenarios that are heavily influenced by the narrow scope of the project; limited and selective information provided as part of the survey; what residents and tourists understand about what the construction and operation of an LNG plant involves in the regional context; how the survey questions are worded and the insinuations they make; how the respondents interpret these questions.
- The surveys have questions that are either purposefully or ignorantly designed to encourage a response that favours the LNG plant development.
- The resident and tourist survey have a very small sample size that is unlikely to validly represent the total population.
- The resident survey is not random - it is a small opportunistic sample of Broome residents with internet and email access who were on a previously constructed consumer confidence survey database for Broome.

Based on this flawed approach, the report provides the "evidence" to support the notion that the LNG hub will not impact on tourism.

The State Government acknowledges the significant contribution made by the tourism industry to the regional economy of the Kimberley. Accordingly, Tourism WA and the Department of State Development commissioned a Tourism Impact Assessment (TIA) as part of the Strategic Assessment process for the Browse LNG Precinct (**Appendix D-5**).

As discussed in the SAR (**Part 5, Section 2.9**), tourism is a key contributor to the Kimberley economy, and is a key sector employer. The TIA (p. 46) highlighted the important contribution of the tourism sector to the Kimberley economy; which accounts for around $637.3m in 2008 or around 35.8% of the total economy valued at $1.778billion. The industry is highly integrated with all elements of the sector (tour operators/accommodation operators etc) interdependent. In recent years Broome has become a high profile tourist destination and is perceived as an access point for the Kimberley with tourists travelling on for extended luxury Kimberley coastal cruising, adventure based land based tours, Indigenous and eco-experiences, and as a service town to many free and independent tourists. The TIA also reported that surveyed Broome residents view tourism as good for Broome and they support the continued growth of tourism in Broome (TIA p 87).

The importance of cruise operations to the tourism industry is highlighted in the SAR and TIA. Broome serves as the main port for close to 40 cruise operators that offer marine based luxury Kimberley coastal experiences (TIA p.16). Cruise ship movements through the Port of Broome increased by 25.8% in 2009/2010 over the previous year, with an estimated 24,000 transit passengers forecast for the current period 2010/2011 (TIA p.46). The SAR discusses how Broome's tourism sector benefits from cruise ship tourism. The Kimberley coast is the focus of a small but important expedition cruise industry that operates mostly from Broome and trades on the exceptional wilderness values that exist along the entire Kimberley coast. Commercial expedition cruising to this wild and remote part of the Kimberley coast has grown rapidly over the past 10 years. In 2006/07 twenty-eight companies, operating 30 vessels were conducting coastal expedition cruises between Broome and Wyndham. Large international cruise ships also visit and berth at Broome's port. Broome hosts around 24,000 transit passengers from large cruise ships each year (**Part 5, Section 4.7.1.3**).

The TIA described the current state of the tourism industry in Broome and the Kimberley region, and the potential implications should the Precinct proceed. Aspects associated with the development and operation of the Precinct and associated infrastructure that may have a social-economic impact in relation to Tourism were identified in the Scope of the Strategic Assessment and considered in the impact assessment to be of medium to high significance. These aspects include:

- altered fire regime;
- atmospheric emissions;
- use of infrastructure and services;
- restricted areas;
- increased demand for labour;
- introduced pests – terrestrial;
- light emissions – marine;
- marine noise and vibration;
- marine discharges including non routine events;
- physical presence marine and terrestrial;
- sediment deposition and turbidity;
- site disturbance and excavation – marine and terrestrial;
- terrestrial wastes and discharges;
- vegetation/habitat clearing;

- vehicle movements; and
- vessel movements.

The State is committed to ensuring that Broome's tourism industry and the LNG Precinct can satisfactorily co-exist. There are a range of management measures to address each of the potential impacts identified above, which are described in the SAR (**Part 5, Section 4.7**). The State Government was responsive to the recommendations of the TIA. This included a recommendation that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily co-exist. As a result, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a tourism management plan, with Tourism WA as lead agency, to meet this recommendation.
The following is in response to the submission's comments on the TIA methodology:

- As the study was an impact assessment, rather than a public referendum on the development, the resident and tourist surveys were not designed to be statistically representative samples.
- We agree that the resident survey is not random. It systematically selected residents who were part of an existing email data base for Broome.
- The scope of the TIA was consistent with the project brief provided to KPP by Tourism WA. The TIA also included an extensive qualitative research phase that involved a broad range of tourism stakeholders. This research underpinned the quantitative research phase. For example, the questions in the resident survey were designed to verify (validate) or reject hypotheses developed through the qualitative research phase of the TIA (p.81).
- It is agreed that questions involving ranking options against one another only reveals relative importance as opposed to absolute importance. Despite this limitation, this information is still of value.

The submission states that the TIA "only considers the LNG plant in isolation and does not include the necessary associated industrial activity in the region to supply and support the LNG plant, the Browse Basin Rigs and export of LNG". In response, the approach applied in the TIA was consistent with the SAR which focused on Category A related activities. These are the core elements of the Browse LNG Precinct, including associated infrastructure, necessary to process and export hydrocarbons. The TIA also examined some Category B activities (i.e. indirect activities and actions as a result of the Browse LNG Precinct) such as the Broome Airport and housing.

Generic Question ID: 1180 Sub ID [205, 215, 212] Raised by [S212 Q2827]

Part 5 Section 2.9.1: The Tasmanian town of Strahan is a good example of a thriving tourist town that has survived as it has retained an iconic river system (Gordon/Franklin) rather than be developed into a hydro-electricity scheme. Surely the Broome / Peninsula coast can continue to thrive as an iconic tourist destination – gas pipe lined or processed offshore.

The State Government acknowledges the significant contribution made by the tourism industry to the regional economy of the Kimberley. Accordingly, Tourism WA and the Department of State Development commissioned a Tourism Impact Assessment (**TIA**) as part of the Strategic Assessment process for the Browse LNG Precinct. The TIA concluded that tourism in the Kimberley and the Browse LNG Precinct could co-exist. It also noted that tourism and mining had co-existed in the Kimberley since the 1950s.

The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation the means to maximise the potential benefits, and mitigate and manage potential negative impacts. The potential impacts on tourism are also summarised in **Section 4.7** in **Part 5** of the Strategic Assessment Report (**SAR**).

The TIA described the current state of the tourism industry in Broome and the Kimberley region, and the potential implications should the Precinct proceed. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily co-exist. As a result, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a tourism management plan, with Tourism WA as lead agency, to meet this recommendation.

The development of the Precinct also provides significant scope for the region to diversify and considerably increase its contribution to the State's economy, including in tourism-related sectors such as retail, hospitality and aviation. For example, as aviation officials in the TIA emphasised, development of the Precinct would increase air travel into the region, which would benefit tourism. In addition, it is likely that new employment opportunities with Broome-based contractors (for example laundry, catering, transport and trades-people) may generate an expanded customer base for the region's non-Precinct related businesses (such as retail and

hospitality) and could also include opportunities for the establishment of new Indigenous business. In addition to increased spending associated with new employees and their families, an increase in average individual incomes from direct employees and contractors would also suggest a likely increase in local spending.

Development of the Precinct could also further develop tourism activities in the region through the management of construction workforce movements. Facilitating organised recreational activities throughout the construction phase of the Precinct could deliver a significant boost to tourism businesses in Broome, particularly during the off-season.

The Tourism Impact Assessment is included in **Appendix D-5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/8249.aspx.

Generic Question ID: 1193 Sub ID [205, 215, 212] Raised by [S205 Q2667]

Part 5 Section 2.9: The BLNG Strategic Assessment Report states that the TIA recognises that a number of tourist industry representatives are concerned about the future of tourism. Why is there no mention in the report that a number of tourism representatives are opposed to the Precinct development?

The Tourism Impact Assessment conducted by KPP collected data via qualitative and quantitative research methods that included a range of stakeholders, Broome residents, and visitors to the region. Views held by tourism industry stakeholders were captured via one-on-one, in-depth interviews. The data collected in these interviews was analysed based 'clusters' or categories of stakeholders, which included several types of tourism operators (e.g. marine based and Indigenous) and other tourism industry representatives (e.g. tourism associations, accommodation providers).

The purpose of an impact assessment is to determine the impacts of the development and develop strategies to minimise or manage those impacts. Although the TIA discusses opposition to the project and the range of views that exist, opposition to the Precinct was not a specific topic of the stakeholder interviews. The focus of the TIA was primarily on exploring views of stakeholders in terms of positive and negative impacts of gas development through each development stage (i.e. construction, operation) and strategies to manage those impacts. Accordingly, interviews included such topics as the co-existence of tourism and LNG development, the potential impacts on visitor numbers and whether the Precinct would have a positive or negative impact on the "Kimberley Brand" reputation.

Results and comments from stakeholder interviews are extensive, thus the SAR only contains a summary of the views collected in the TIA. However, all information gathered was documented in the TIA, including stakeholder opposition to the development. The TIA is included as an appendix to the SAR (**Appendix D-5**). Opposition to the project more generally is also discussed in the main body of the SAR, in **Section 3.4.4.11**, **Part 5**.

Generic Question ID: 305 Sub ID [167, 77] Raised by [S167 Q722]

A specific and detailed Tourism Impact Assessment and Plan is required and should be subject to consultation with the whole of the Tourism Industry (and wider WA community). It should forecast tourism impact on the proposed James Prices Point project and the plans they will enact to address these. Impacts should be properly assessed such as to the Dampier Peninsula and the Gibb River Road which will potentially be adversely affected by any heavy duty works on the Dampier Peninsula and that will have a flow on affect on the East Kimberley.

The State recognises that tourism is one of the key industries in Broome and the Kimberley region. Together with Perth and Margaret River, Broome is one of Western Australia's iconic tourism destinations. As a result of concerns about the potential impact of the Precinct on Broome's tourism industry, a Tourism Impact Assessment (**TIA**) was conducted by an independent consultancy as part of the Strategic Assessment process.

The TIA, commissioned by Tourism WA and the Department of State Development, concluded that tourism and the development of the Precinct could coexist. It also pointed out that that tourism and mining have coexisted in the Kimberley since the 1950s. The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation, the means to maximise potential benefits, and mitigate and manage potential negative impacts.

The TIA described the current state of the tourism industry in Broome and the Kimberley region, and the potential implications associated with the development of the Precinct. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily coexist. The Strategic Social Impact Management Plan, outlined in Part 5, Section 5 of the Strategic Assessment Report, proposes a Tourism Management Plan, with Tourism WA as the lead agency, to meet this recommendation.

It is State Government's view that the Precinct can coexist with the tourism industry in Broome and in the Kimberley, due to the vast distances between the Precinct sites and iconic destinations such as the Horizontal

Waterfalls (225km), Mitchell Plateau (495km), and the Bungle Bungles (665km). The pristine nature of such destinations will remain, and their value will not be diminished.

As an attraction, the Gibb River Road is significant not only to the tourism industry, but also to the cultural and heritage values of the Kimberley. However, at its closest point, the Gibb River Road is over 200km from the Precinct site, and as such, it is highly unlikely to be affected by Precinct operations. State Government has also committed to road upgrades on the Dampier Peninsula, which will improve connectivity in the region.

Woodside's project-level SIA will include further investigation of the potential impacts of its project on the tourism sector within the Shire of Broome.

The Tourism Impact Assessment is included in Appendix D-5 of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/aspx

Generic Question ID: 1191 Sub ID [205, 215] Raised by [S205 Q2660]

Part 5 Section 2.9: The BLNG Strategic Assessment Report states that "The undeveloped nature of the Kimberley and Dampier Peninsula has value to the tourism industry…. wilderness experience and cultural / eco experiences are a significant factor influencing holiday decisions". In relation to the predicted impacts, based on a TIA with tourism industry stakeholders and Broome residents; which residents are they referring to?

The resident survey for the TIA was conducted online, and a total of 119 verified responses from residents were received and included in the analysis. The questionnaire was sent to Broome residents in an existing database held by KPP, the consultant undertaking the TIA. This database has been developed over time for KPP's quarterly Consumer Confidence Surveys. This database was created via a random selection of residents.

More information on the methodology used can be found in the TIA, **Appendix D-5**.

Generic Question ID: 1192 Sub ID [205, 215] Raised by [S205 Q2663]

Part 5 Section 2.9: Does the State understand that 66% of surveyed Broome residents agreed that Broome is a tourist town and they don't want a BLNG FIFO worker culture to develop?

It is acknowledged in the SAR that tourism is a key industry in the Kimberley. Accordingly, the State Government is committed to ensure that the area's tourism image is maintained. In the resident survey conducted by KPP for the Tourism Impact Assessment (**Appendix D-5**), 66 percent of respondents agreed with the statement "Broome is a tourist town and we do not want a fly-in, fly-out culture to develop." The SAR acknowledges this finding (**Part 5, Section 2.9**) and includes a number of measures to ensure that the tourism industry in Broome is maintained and minimise the impact of the FIFO workforce on the town (**Part 5, Section 5**). This will be accomplished through:

- Development of a tourism marketing strategy, in consultation with key stakeholders, which will maintain the current tourism image of Broome, while providing a framework for the ongoing development of the BLNG Precinct.
- Operation of a managed-access construction camp will limit the interaction between the construction workforce and the Broome and Dampier Peninsula communities when they are not at work by limiting internal and external access to the construction camp.
- Implementation of measures to manage the access of workers to recreation and tourist destinations in consultation with the communities and Traditional Owners via an access management plan.
- Implementation of workforce behaviour policies will minimise social impacts (e.g. substance and alcohol abuse) that could negatively impact on the region's tourism brand.

With the implementation of these management measures, it is predicted that the residual impact of the presence and visibility of the FIFO workforce will not be significant, as there will be limited interaction between the Precinct workforce and the communities of Broome and the Dampier Peninsula.

To assist with the delivery of the necessary tourism management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 153 Sub ID [23] Raised by [S23 Q181]

UUWA Submission (Point 8): The discussion about population prediction underplays the view that high-level international and national tourism is likely to be disaffected, rather than maintained or encouraged, if the proposed project proceeds. A large gap in the information is that a downturn in tourism is minimised. In what way is such a downturn likely to impact on local conditions, organisations, industries, and enterprises, as well as

people's general wellbeing? How will the problems that emerge be 'avoided; managed and mitigated'? What will the socio-economic cost be to local Indigenous and non-Indigenous businesses and the State, and what procedures will specifically be put in place to offset a likely diminishing interest in the Kimberley as a tourist destination, especially as a region renowned internationally for its iconic beauty?

A Tourism Impact Assessment was conducted as a specialist study of the SIA. This report is contained in the Strategic Assessment Report as Appendix D-6. This report concluded that tourism could co-exist with the BLNG Precinct development at James Price Point. The "Management of Tourism Impacts" Management plan (SIA **Volume 3 p.19**) has the objective that "Broome retains its status as one of WA's premier tourism destinations" with the outcome that "the tourism image of Broome is maintained or enhanced and coexists with the LNG Precinct". It is expected that Tourism WA will lead the development of this strategy and management plan, supported by the commercial proponents and the Precinct management.

Generic Question ID: 790 Sub ID [75] Raised by [S75 Q878]

The conclusion (**Part 1**, **p. ES-103**) that the development will mean more flights which will help to lower the cost of flights is misleading. Evidence from Karratha suggests that flight costs increased and seat availability actually decreased as fly-in/fly-out worker numbers increased.

There are fundamental differences between Broome and Karratha, which do not support their use as appropriate comparisons. The town of Broome has a strong community identity and distinctive character that is highly valued by its residents**.** The unique character of Broome is closely related to its historical development and its strong links to the pearling, fishing, pastoral, and tourism industries.

Karratha, while also having a strong community identity and distinctive character, was established to service the growing mining and natural gas projects in the Pilbara in the 1960s. Unlike Broome, which in having been established in the 1880s has developed a diverse local economy, Karratha's economic base continues to rely purely upon the mining and natural gas industries.

In assessing the potential impacts on tourism, the Strategic Assessment Report (**SAR**) found that development of the Browse LNG Precinct could co-exist with the tourism industry of Broome and Kimberley.

Among the potential benefits to tourism in Broome arising from the development of the Browse LNG Precinct are more flights helping to lower the cost of tourists visiting the area. This was one of the key findings of the Tourism Impact Assessment (**TIA**) undertaken by KPP (**Appendix D-5**). Many tourism industry stakeholders consulted during the TIA noted that the presence of the Precinct could provide significant opportunities with regard to air services. More specifically, it stands to create a more competitive air fare market and strengthen the case for an international air service into Broome, which has been a long time aspiration. Such a development would also stimulate further expansion in domestic services. The anticipated expansion of air services could strengthen destination appeal and facilitate a broadening of core markets and contribute towards a more resilient tourism industry.

As discussed in the TIA, airfares can be expected to decrease mainly due to the potential for reaching a critical mass of passengers. If an aviation route is to remain sustainable, there is a need for solid passenger loads in both directions and the correct 'mix' of corporate and leisure passengers. This in turn minimises the cost per available seat kilometre (**ASK**). This is particularly important in Broome's case. To date Broome has not has the depth of corporate business to support an international service; however, development of the Precinct could lead to the critical mass needed to support more sustainable and lower cost travel. For this reason, discussions with senior airlines officials in the TIA revealed an optimistic view of the prospects of developing an international service into the Kimberley.

Generic Question ID: 1108 Sub ID [155] Raised by [S155 Q2541]

The Traditional Owners have the capacity to share knowledge about this country with local and overseas visitors. There is a strong spiritual connection that the Traditional Owners have to the land in this area.

As acknowledged in **Part 5, Section 2.9** of the Strategic Assessment Report (**SAR**), cultural tourism is an important industry for the Indigenous people of Broome and the Dampier Peninsula. The strategic Social Impact Assessment of the proposed Browse LNG Precinct included a Tourism Impact Assessment (**TIA**), undertaken by Tourism WA and conducted by Kadar Pearson and Partners (**Appendix D-5**). The TIA highlighted that approximately 20 Indigenous cultural tourism organisations operate in the Broome and Dampier Peninsula area. Indigenous people share their knowledge with domestic and international tourists and offer a range of tourist activities from bush retreats to wilderness experiences, dreamtime and off-road tours. Indigenous tourism operators were among the stakeholders consulted for the TIA. In addition, the Aboriginal Social Impact Assessment (**ASIA**) undertaken by the Kimberley Land Council (**KLC**) (**Appendix E-3**), included a discussion of potential negative and positive impacts on Indigenous tourism ventures (see **Sections 3.4.12** and **3.5.3** in the

ASIA).

As indicated in the SAR, the main finding is that the Precinct could co-exist with tourism.

Development of the Precinct has the potential to both positively and negatively impact on Indigenous tourism enterprises. For example, visitors to Indigenous tourism operations in the Dampier Peninsula expect a remote natural experience and may be impacted by direct lighting, light spill from infrastructure lighting, the high pressure emergency flare (during flaring events), and sky glow though surrounding vegetation. However, the possibility of sealing the Broome – Cape Leveque Road could benefit the Indigenous tourism operators who access various locations via this road. Whilst sealing the road could result in a number of positive benefits for Indigenous tourism ventures in the Dampier Peninsula, tourist access needs to be managed to avoid an unsustainable influx of visitors impacting on the local environment, heritage sites and local communities. With appropriate management however, it is likely that Indigenous cultural tourism ventures could become more sustainable through increased visitor numbers.

Several management measures outlined in the SAR will address impacts to Indigenous tourism and tourism operators in the Dampier Peninsula, such as the following:

- Development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) will provide a mechanism for the people of the Dampier Peninsula to consider the future of tourism in the Dampier Peninsula. This Strategy will consider the way the Dampier Peninsula is accessed and promote the conservation of environmental and heritage values of the area. The Strategy, along with other mechanisms such as the Cultural Heritage Management Plan, will also provide appropriate mechanisms to address possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.

- Commercial proponents will be required to develop a plan to manage the interaction between a large scale construction workforce and the communities of Broome and the Dampier Peninsula. This will include policy and procedures to manage access to Broome and the region by the construction workforce at the accommodation camp, including access to recreational fishing and tourism in the region. Any recreation activities undertaken on rest days will be actively managed (e.g. guided tours with Aboriginal tour operators and/or fishing tour operators), which will benefit local Indigenous tourism operators whilst managing uncontrolled visitor access. The managed-access construction camp and workforce behaviour policies will also manage potential impacts to the region's tourism brand.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group and through this mechanism; the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

2.10 Police, Justice, Social Needs and Services

Generic Question ID: 1181 Sub ID [212, 134] Raised by [S212 Q2828]

Part 5 Section 2.10: Police, Justice, Social Needs and Services - "…the arrival of the Precinct workforce…would create an increase or even the inception of particular social problems. As a result, a Precinct condition is that all commercial proponents provide policing and security services at the Precinct". What about Broome itself? How will the commercial proponents contribute to the safety and well-being of the Broome community? Considering it will be the epicentre of such issues.

Although the projected population increase due to development of the Browse LNG Precinct is expected to be small, it can be expected that any population increase would contribute to the crime rate, based on average criminal activity per head of population nationally. Existing issues such as homelessness and poverty may lead to increases in crime if not managed. It is also possible that, particularly under a high development scenario, a perception of increased wealth in the town may develop and may render some people vulnerable targets for theft and property damage. This is within the context of pressures that will already be placed on police and justice services as a result of the anticipated population increase, even without Precinct development.

As noted in the Strategic Assessment Report (**SAR**), the crime rates in the Kimberley are amongst the highest in regional Western Australia (**Part 5, Section 2.10**). In recognition that any impacts from the Precinct would be on the already stressed services in Broome, the State Government has made a commitment in the SAR to address existing deficits in the Broome Social Services Strategy. This will be an across government initiative to increase capacity of services such as health, education, child care, counselling, therapeutic and emergency

services to prevent further pressure. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

At the Precinct itself, it is correct that commercial proponents will be required to ensure appropriate primary health care, emergency, security and police services are provided to the Precinct and construction camp without detracting from service provision to Broome. The development of a Precinct Health, Emergency Services, Policing and Security Strategy will be required prior to construction.

In addition, preventing any further impact on the crime rate will be addressed in a number of ways. For example, the use of a managed-access construction camp and a FIFO workforce will minimise interaction between the workforce and local communities. In addition, there will be measures to limit substance abuse by workers to protect the safety of the workers and the general population. A policy of limiting FIFO workforce layover time in Broome may substantially mitigate potential increases in substance abuse from the workforce population. Additionally, the existing practice in the resources industry of compulsory random alcohol and drug testing may also limit the prevalence of substance misuse by Precinct workers in the town.

Another way in which an increase in crime can be avoided is to ensure that local people (Traditional Owners, Indigenous and non-Indigenous) are able to secure employment and business opportunities associated with the Browse LNG Precinct. This will in turn will help them deal with rising living costs, avoid growing inequality with non-Indigenous people, and minimise many potential social costs such as drug and alcohol abuse, rising crime rates, and growing problems with mental illness and youth suicide. Strategies aimed at improving the education and employment status of Indigenous people include the following:

- implementation of education, training and employment strategies to increase local employment in both construction and operational phases of the Precinct in order to retain benefits and promote residence within the Kimberley;
- implementation by the commercial proponents of an Indigenous Workforce Development Strategy;
- a local purchasing strategy for labour, services, and materials during construction and operation; and
- developing, where relevant, emerging Indigenous businesses.

Proposed modifications to, and clarification of, governance arrangements to ensure delivery of SAR requirements are detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1340 Sub ID [195, 111] Raised by [S195 Q975]

Part 5 Section 2.10.3: The submitters neighbour is a policeman and has had to do 17 straight shifts because of manning issues. He told the submitter that even with more police they could never hope to keep up with the influx of people, drugs, money and violence. The workers should be kept in camp for their entire roster.

A managed-access construction worker camp will minimise the potential negative socio-economic impacts of allowing workers to live in Broome (e.g. increased cost of living and housing prices, impacts on tourism). This decision was made in response to community concerns and the findings identified in the Social Impact Assessment (**Appendix D**) and Aboriginal Social Impact Assessment (**Appendix E-3**). All construction workers will be required to live at the camp. In addition, commercial proponents will be required to implement measures to manage workforce behaviour including a code of conduct for workers that will help ensure appropriate interaction between Precinct workers and the community. Measures to limit the interaction between Precinct workers and the community when they are not at work will also be implemented.

It is important to strike the right balance between protecting the communities of Broome and the Dampier Peninsula from impacts and ensuring the personal well-being of Precinct workers. Commercial proponents will provide a respectful and healthy living and working environment for Precinct workers at the camp, and the camp will meet the regulatory requirements (e.g. Western Australia's *Construction Camp Regulations 2004*).

It will also be important to monitor the effectiveness of the managed-access camp over time. The policy of separation was agreed in consultation with stakeholders and the community. While the camp will assist in the management of a number of socio-economic impacts, it does limit some opportunities for Broome. For example, while Precinct workers could increase business sustainability by spending money in Broome during the tourist off-seasons, this policy of separation will limit their impact on local spending. However, it is possible that community perceptions will change over time and the community will ask for changes to the level of separation between Precinct workers and the community. The effectiveness of this management measure will be monitored as part of the social monitoring program.

Regarding crime, it can be expected that any population increase would contribute to the crime rate, based on average criminal activity per head of population nationally. Existing issues such as homelessness and poverty may lead to increases in crime if not managed. It is also possible that, particularly under a high development scenario, a perception of increased wealth in the town may develop and may render some people vulnerable

targets for theft and property damage. This is within the context of pressures that will already be placed on police and justice services as a result of the anticipated population increase, even without Precinct development.

Among the measures in the SAR to prevent additional pressures on the local police services is the requirement that commercial proponents prepare a Precinct Health, Emergency Services, Policing and Security Strategy prior to construction. This will ensure appropriate primary health care, emergency, security and police services are provided to the Precinct and construction camp without detracting from service provision to Broome.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1182 Sub ID [212] Raised by [S212 Q2830]

Part 5 Section 2.10.1: "…a perception of increased wealth in the town may render some people as vulnerable targets" Sound as though class division will widen and "the gap" will become more gaping! Reference to class disparity and the implementation of a caste-system! I am sure that animosity will occur if people are cast from their land and access to culture while a small minority get rich on their sufferance.

As this submission acknowledges, the wages of Browse LNG Precinct workers would be substantially higher than those offered in existing industries in Broome, such as the tourism and hospitality sector. While these higher wages would be a benefit to local people who are directly or indirectly employed by the Precinct, the SAR acknowledges the potential negative impacts of wage discrepancy, which have occurred elsewhere in Australia. The creation of a community of "haves" and "have nots" was among the concerns of the local community. Measures to boost local employment and education and training opportunities will ensure that the local benefits of the Precinct are maximised. Commercial proponents will be required to develop education, training and employment strategies to increase local (Indigenous and non-Indigenous) employment in both construction and operational phases of the Precinct. In addition, commercial proponents are required to develop strategies to maximise local economic benefits. This will maximise LNG related local employment and local industry participation over time and will include a local, regional and State purchasing strategy for labour, services, and materials during construction and operation.

Another concern expressed by the community was that wage discrepancy between the town and workers could lead to disharmony, negatively impacting sense of place and community character. Potential impacts to community identity will be managed, in part, by minimising the impact of the Precinct on Broome's sense of place. This will include measures to ensure the Browse LNG Precinct can co-exist with the existing industries in Broome (e.g. tourism) whilst the town retains its character (i.e. sense of place). The implementation of a managed-access construction camp, measures to manage workforce behaviour and policies to limit the interaction between Precinct workers and the community when they are not at work will also serve to limit changes to the existing character of Broome.

Finally, there were also concerns that the higher disposable incomes of Precinct workers could inflate the cost of living and increase housing and rent prices in Broome. The pressures on housing affordability and cost of living will be addressed through a number of management measures in the SAR, such as the following:

- use of a largely FIFO workforce during the construction phase;
- house FIFO workers at a managed access construction camp near the Precinct;
- restrict incentives to discourage construction workers from living in Broome;
- develop a strategy to discourage opportunistic workers and manage those that do arrive; and
- develop a specific housing strategy that ensures the provision of appropriate housing in Broome.

Commercial proponents will also be required to monitor local indicators of economic development such as cost of living, employment and business development. This monitoring will help flag any changes in the cost of living caused by the Precinct so impact management measures can be responsive. These strategies are further outlined in the Strategic Social Impact Management Plan, contained in **Part 5, Section 5** of the SAR.
To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. This proposed Precinct Governance arrangement has been the subject of numerous comments from both the community and State and Commonwealth environmental regulators. A number of modifications have subsequently been made to this and these are presented in detail in **Section 2.3** of the Response to Public Submissions Summary Report.

Generic Question ID: 1183 Sub ID [212] Raised by [S212 Q1092]

Part 5 Section 2.10.1: "The Aboriginal Legal Service (**ALS**) is operating at capacity." What will be done to crutch the system given the expectant rise in anti-social crimes? Can defendants expect a fair and timely trial? Can they expect to be sufficiently represented? Will a rise in population and crime rate and the diminished capacity of the ALS result in even higher rates of Aboriginal convictions and incarcerations?

Although the projected population increase due to development of the Browse LNG Precinct is expected to be small, it can be expected that any population increase would contribute to the crime rate, based on average criminal activity per head of population nationally. Existing issues such as homelessness and poverty may lead to increases in crime if not managed. It is also possible that, particularly under a high development scenario, a perception of increased wealth in the town may develop and may render some people vulnerable targets for theft and property damage. This is within the context of pressures that will already be placed on police and justice services as a result of the anticipated population increase, even without Precinct development.

As noted in the Strategic Assessment Report (**SAR**), the crime rates in the Kimberley are already high and the justice system is already operating at or near capacity. This includes the 'Aboriginal Legal Service WA' branch in Broome, which is funded by the Commonwealth Attorney-General's Department. This branch is already operating at capacity. In recognition that any impacts from the Precinct would be on the already stressed services in Broome, the State Government has made a commitment in the SAR to address existing deficits in the Broome Social Services Strategy. This will be an across government initiative to increase capacity of services such as health, education, child care, counselling, therapeutic and emergency services to prevent further pressure. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

A way in which an increase in crime can be avoided is to ensure that local people (Traditional Owners, Indigenous and non-Indigenous) are able to secure employment and business opportunities associated with the Browse LNG Precinct. This will in turn will help them deal with rising living costs, avoid growing inequality with non-Indigenous people, and minimise many potential social costs such as drug and alcohol abuse, rising crime rates, and growing problems with mental illness and youth suicide. Strategies aimed at improving the education and employment status of Indigenous people include the following:

- The implementation of education, training and employment strategies to increase local employment in both construction and operational phases of the Precinct in order to retain benefits and promote residence within the Kimberley.
- The implementation by the commercial proponents of an Indigenous Workforce Development Strategy.
- A local purchasing strategy for labour, services, and materials during construction and operation.
- Developing, where relevant, emerging Indigenous businesses.

In addition, measures to mitigate and manage impacts on health and well-being for Indigenous people are provided for in the agreements with Traditional Owners. This will contribute to the broader effort to improve the quality of life for Indigenous people in the Kimberley.

At the Precinct itself, preventing any further impact on the crime rate will be addressed in a number of ways. For example, the use of a managed-access construction camp and a FIFO workforce will minimise interaction between the workforce and local communities. In addition, there will be measures to limit substance abuse by workers to protect the safety of the workers and the general population. A policy of limiting FIFO workforce layover time in Broome may substantially mitigate potential increases in substance abuse from the workforce population. Additionally, the existing practice in the resources industry of compulsory random alcohol and drug testing may also limit the prevalence of substance misuse by Precinct workers in the town.

Commercial proponents will be required to address safety and security management, which includes a policy of obtaining police clearances for workers. As noted in the SAR, Broome District Police believe that the Precinct itself may require its own police post due to the size of the construction workforce. A decision has yet to be made as to whether the Precinct would be policed from Broome. If this were the case, additional resources would be allocated so Broome-based service delivery is not diminished.

To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

2.11 Community Identity and Sense of Place

Generic Question ID: 475 Sub ID [166] Raised by [S166 Q1390]

Shire of Broome Submission (1b): Expansion of youth engagement programs that promote community pride and citizenship, a matter raised in Council's resolution of 7 November 2008, has not been adequately addressed in the SAR **Part 5**.

The Social Impact Assessment (**SIA**) conducted as part of the Strategic Assessment for the Browse LNG Precinct, assessed the potential positive and negative social impacts associated with development of the Precinct over the anticipated lifespan of the Browse Basin gas fields, and proposed mitigation, management, monitoring and evaluation plans to manage the impacts identified. The SIA was conducted under the Terms of Reference endorsed by the Commonwealth and State Governments under the Strategic Assessment Agreement signed in 2008.

The social impact variables applied in the SIA reflected the key social issues identified during the scoping phase as potentially arising from the development of the Precinct. Broome's youth programs to promote community pride and citizenship are not considered a social impact issue associated with the proposed establishment of the Precinct.

However, the Broome Social Services Strategy will be a whole of Government initiative to address social services deficits in Broome. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

The Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) also does propose management mechanisms which will encourage and develop social participation and engagement within the region's youth. The Education, Training and Employment strategy intends to train a local workforce that can be deployed during Precinct construction, and will ensure the up-skilling of the regional workforce in the longer-term.

The State Government is also currently seeking input from both the Commonwealth Government and private industry in order to investigate the development of a construction, civil infrastructure and oil and gas industry Trade Training Centre in the Kimberley. Such an initiative would offer substantial opportunities for the region's youth, and ensure the adaptability and sustainability of the regional workforce in the region.

Generic Question ID: 485 Sub ID [166] Raised by [S166 Q1400]

Shire of Broome Submission (6): There is a need to provide resources for an Enhancement Scheme for the Chinatown town centre in order to protect and maintain the character of Broome.

The State Government acknowledges that Broome has a unique character that is closely related to the town's historical association with the pearling industry. This in part is what drove the State Government to conduct both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) as part of the Strategic Assessment process for the Browse LNG Precinct.

Potential impacts to the unique 'Broome feel' was a concern raised by many stakeholders engaged in both the SIA and ASIA processes. Accordingly, the Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5**, **Section 5** of the SAR, proposes the development and implementation of a Broome 'Sense of Place' Management Strategy, to retain the unique character and 'sense of place' of Broome during the development of the Precinct.

The purpose of this Strategy is to establish a clear plan, including community vision, heritage, spatial planning and sense of place guidelines, to maintain Broome's character, identity and sense of place. There is also scope for this strategy to combine with the tourism management plan, also proposed by the SSIMP, to increase knowledge available to the Shire of Broome for future town planning decisions, including redevelopment and revitalisation strategies. The State Government will conduct further consultation and engagement with local government and community stakeholders towards the development of these management strategies during the next phase of the project.

It is also important to note that community identity is not static and changes over time. Past natural increases in population brought with it changes to Broome's community identity. This is likely to continue with the population increases projected for Broome, regardless of the Precinct's development.

Generic Question ID: 1047 Sub ID [111] Raised by [S111 Q2147]

With an increasing presence of fly-in fly-out workers wearing uniforms at the airport terminals, they will stand out and take some of the colourfulness and atmosphere away from the airport. This will unnecessarily stigmatise mining workers.

The Tourism Impact Assessment (**TIA**) conducted as part of the Strategic Assessment process (**Appendix D-5**), identified the presence and visibility of the FIFO workforce as having a critical impact on the character and appeal of Broome. This is reflected by stakeholder concerns regarding tourism values, tourism branding and destination appeal. A key concern was the potential impact of behaviour by FIFO workers and their interaction with leisure tourists at points of intersection such as the airport, bars, restaurants and retail shopping areas. Suggestions were also made to minimise the visibility of construction workers (for example, the wearing of hard hats and high visibility safety jackets) in Broome. This view was supported by the TIA's resident survey in which 66% of surveyed residents agreed that Broome is a tourist town and did not want a FIFO culture to develop (**Appendix D-5**).

In response to these concerns, the State Government will require commercial proponents to implement measures to manage worker visibility when not at the Precinct or related areas (including at the airport) so as to not diminish the tourism value or 'feel' of surrounding communities. A managed-access construction camp will also minimise the potential negative socio-economic impacts of the workforce, on Broome's destination brand. In addition, commercial proponents will be required to implement measures to manage workforce behaviour including a code of conduct for workers that will help ensure appropriate interaction between Precinct workers and the community. A strategy will also be developed to maintain Broome's status as a tourism town and its character.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1184 Sub ID [212] Raised by [S212 Q1095]

Part 5 Section 2.11.1: There is a concern about lack of forward planning during growth periods to cope with change in demands.

A community concern identified during the Broome 'sense of place' workshop was the lack of forward planning during recent growth periods, leaving a system that was unable to cope with changes in demand. This concern was due to changes in the region occurring independently of the Precinct's existence, such as the high population growth rate in Broome in recent years, with related problems, such as deficient social service provision and lack of housing.

A strategic assessment was conducted at this level in order to avoid the problems that a lack of forward planning can create. There are considerable gas resources off the Kimberley coast and a high level of industry interest in developing these resources. This raises the potential for multiple and uncoordinated gas processing facilities to be developed along the Kimberley coast leading to unnecessary and significant social and environmental impacts.

In order to avoid such an outcome, the State Government has proposed a single multi-user LNG Precinct from which gas can be processed and transported. Through the Strategic Assessment process, the State Government has identified the potential high-level impacts of the Precinct and planning and management priorities that should be addressed in subsequent stages, should the development proceed. The central findings outlined in the Strategic Assessment Report are that the community will be able to cope with changes generated by the Browse LNG Precinct, and the environmental values of the Kimberley will be maintained, provided the mitigation, management and monitoring strategies are implemented.

To assist with delivery of the necessary environmental and social management measures, the Strategic Assessment Report proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

2.12 Impacts to Social Mix and Values

Generic Question ID: 46 Sub ID [4, 27, 39, 40, 70, 86, 95, 96, 108, 116, 117, 130, 133, 151, 159, 164, 173, 292, 293] Raised by [S4 Q64]

The huge influx of workers during construction ('up to 8.000') and running of the refinery and port and the necessary industrial activity associated with this industry will turn Broome into a 24-7, fly-in, fly-out "company town" where the residents who live there and tourists who visit will be the minority.

The Strategic Social Management Plan in **Part 5, Section 5** (http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf) outlines the strategies that commercial proponents are required to put in place to manage the potential social and economic impact on Broome and the surrounding area and to enhance the opportunities.

These strategies are aimed at avoiding many of the impacts that have occurred elsewhere (i.e. in the Pilbara Region) and managing those that do occur. The requirement for commercial proponents to house their construction workforce in a managed-access construction camp and to manage access to Broome and Dampier Peninsula will avoid many of the potential social impacts. A number of other social management measures are proposed such as minimising the number of transient or opportunistic workers arriving in the region and managing those who do arrive.

Other social management measures are aimed at retaining Broome's community identity or 'sense of place' and ensuring that Broome retains its status as one of WA's premier tourist destinations.

Generic Question ID: 271 Sub ID [39, 212] Raised by [S39 Q747]

The document fails to encapsulate the meaning of the term "sense of place". It does not mention hundreds of thousands of years of being interconnected with land and culture.

There are dozens of accepted definitions of the term "sense of place". In the context of this project, sense of place was defined through consultation and engagement with the community. This included a workshop with local stakeholders to identify key aspects of Broome's sense of place and potential impacts of the Precinct development.

Consultation and engagement with Traditional Owners helped define sense of place from an Indigenous perspective. The interconnectedness of land and culture was captured and acknowledged in the Strategic Assessment Report (**SAR**). **Part 5, Section 3.5** of the SAR states that:

"…the Traditional Owners of the James Price Point area and the wider Dampier Peninsula are part of an interconnected system of country, culture, people and places across the Dampier Peninsula and the wider HIA area. As such the development of the Plan has the potential to affect these interconnected values".

Whilst this interconnectedness is acknowledged, the assessment also concludes that in this regard impacts are more difficult to predict and quantify.

The State Government is committed to maintaining the sense of place of Broome and the Dampier Peninsula. This will require stringent management of impacts to Indigenous cultural and heritage matters, including sense of place. These are captured in a range of social and cultural heritage management measures including the Cultural Heritage Management Plan, and the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan). The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR proposes several mechanisms aimed at managing the sense of place of Broome and the broader West Kimberley community from both an Indigenous and non-Indigenous perspective. These mechanisms allow for the continuation of cultural practices and maintenance of cultural heritage values in the area. In addition, the implementation of a cross-cultural training strategy will promote the respect and appreciation of Indigenous country and heritage values among the wider workforce.

Generic Question ID: 766 Sub ID [200, 227] Raised by [S200 Q1786]

Broome has always been accepting of people who are "different". Broome residents, the police and business owners are often aware and tolerant of peoples differences. This won't be the case if Broome changes with the LNG development.

Broome's identity has emerged as a combination of natural and social factors. The multi-cultural nature of Broome contributes much to its unique identity and is different to the rest of Western Australia mainly because of the historical development of the pearling industry.

Community identity is not static and changes over time. The past increases in population brought with it changes to Broome's community identity. Whether or not the proposed Precinct proceeds, the projected population growth means that Broome will undergo significant change in the next twenty years. The SAR (**Part 5**, **Section 5.5.4.2.)** proposes the development of a management plan with the objective of retaining the unique character and 'Sense of Place' associated with Broome. This would include the Shire of Broome engaging the local community in development of a vision for the town to guide future planning.

Stakeholders at a number of Social Impact Assessment events expressed concern about the potential impact of the Precinct development on Broome's community identity. These concerns included the risks of sex, drugs and the potential moral shift in the town from a large FIFO workforce. The SAR identifies a number of strategies to manage the potential for any behavioural problems associated with the large number of FIFO workers during

the construction phase. These include:

- The decision to accommodate the FIFO construction workforce in a managed-access construction camp near the Precinct, rather than having them live in Broome.
- The implementation by commercial proponents of policies and procedures to manage Precinct worker access to Broome and the Dampier Peninsula.
- Management of worker behaviour including access to drugs and alcohol and unacceptable employee behaviour when visiting Broome and other areas in the Kimberley.
- The provision of cross-cultural training to construction workers on the project

In addition, commercial proponents will be required to develop strategies to discourage opportunistic workers and their families from coming to Broome in hopes of obtaining work.
To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1056 Sub ID [114, 102] Raised by [S114 Q2167]

There is concern that the sharing of culture and language (between Indigenous and non-Indigenous people) will disappear entirely as racist views start to predominate with new people in town

Potential changes to the unique "Broome feel" have been a major concern raised by almost all community stakeholders throughout the Strategic Assessment process for the Browse LNG Precinct. In the impact assessment, it was clear that multi-culturalism was a key component of Broome's identity strongly valued by the community. A potential rise in racism from new community members was also a concern for some community members consulted for the Aboriginal Social Impact Assessment (**ASIA**) (**Appendix E-3**). Although the development of the Precinct may result in some population growth, it is expected to be relatively small when compared to natural growth in Broome.

The extent of changes to the cultural makeup of Broome depends in part on the number of new employees that immigrate to Broome, and the cultural backgrounds of these employees and families. Even without the development of the Precinct, it is also important to note that community identity is not static and changes over time. The past increases in population brought with it changes to Broome's community identity, and this is likely to continue with the population increases projected for Broome, even in the absence of the project.

Changes to the Broome community would be captured in the management measures and social monitoring related to community identity and sense of place. Among these measures will be a management plan that will outline strategies to maintain Broome's character and status as a tourism town (i.e. sense of place). In addition, commercial proponents will operate a managed-access construction camp, implement measures to manage workforce behaviour and limit the interaction between Precinct workers and the community when they are not at work. Finally, the workforce will be required to undergo cultural awareness training as a condition of employment at the Precinct. Together these measures will ensure the workforce is respectful of the existing culture and minimise changes to the unique character of Broome.

To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 796 Sub ID [75] Raised by [S75 Q871]

Whilst **Part 5** of the SAR (**Section 2.12)** acknowledges community concerns (in relation to the change in population demographics from a family to a single male dominated society), mitigation strategies are absent/unclear.

As discussed in the Strategic Assessment Report (**SAR**) and reflected in this submission, the profile of the average LNG construction workforce is typically that of young single men, which has created a number of community concerns about workforce behaviour problems. As the construction phase will consist of a largely FIFO workforce, the increase in single males will be temporary. The smaller permanent workforce is likely to consist mainly of professional people and would match the current profile of Broome residents more closely than the construction workforce.

Potential negative impacts of the construction workforce will be minimised by limiting the interaction between the construction workforce and the communities of Broome and the Dampier Peninsula, and implementing policies and procedures to manage worker behaviour. **Part 5, Section 5** of the SAR describes the potential changes to the social mix and values of the region, and proposes the following measures outlined in the Strategic Social

Impact Management Plan in response:

- Commercial proponents will build a managed access construction camp near the Browse LNG Precinct. It is anticipated that construction workers would be limited, as far as possible, to the accommodation facility north of Broome in a self-contained camp where all requirements would be provided for the workers and access to and from the camp would be managed.
- Measures will be put in place to manage access to Broome and the Dampier Peninsula. Commercial proponents will develop and implement a management plan prior to construction to limit the interaction between the construction workforce and the Broome and Dampier Peninsula communities when they are not at work.
- Workforce behaviour policies and procedures, such as a code of conduct, will be developed and implemented prior to construction. This would help to alleviate the potential issues concerned stakeholders associated with a workforce dominated by single males.

To ensure delivery of the necessary construction workforce management measures, the SAR propose that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

3 Strategic Indigenous Impacts Assessment

Generic Question ID: 67 Sub ID [39, 66, 217, 212, 118, 223] Raised by [S39 Q349]

Indigenous benefits should be forthcoming and not contingent on the trade-off of land.

The delivery of services and benefits to regional and remote communities (both Indigenous and non-Indigenous) is a challenging issue that is the joint responsibility of the Commonwealth, State and local governments. This is the subject of an ongoing dialogue between communities and governments that is independent of this project, and there are numerous programs to improve service delivery in Broome and the Kimberley that will continue regardless of the development of the Precinct. The State Government is committed to closing the gap in the Kimberley.

The State Government believes that development of the Browse LNG Precinct will provide opportunities for new initiatives to improve the health, education, social and economic wellbeing of Indigenous people, and significantly reduce disadvantage across the broader Kimberley community. Education and training initiatives provided by the development of the Precinct, will facilitate the up-skilling of local people to work directly or indirectly on the Browse LNG Precinct, and will improve the capacity of skilled workers across the region. The skills acquired through training for jobs on the Precinct will also be able to be applied to non-project jobs. For example, following the establishment of the Precinct local workers could use their skills and experience to meet the additional demand for skilled employees (e.g. tradespeople to build new homes) generated by the projected natural population growth within the Shire of Broome and the West Kimberley. The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), identifies the State Government with the lead responsibility of addressing any gaps in social service delivery in the Kimberley region. In this regard, many synergies exist with the development of the Precinct.

In addition, there are also a number of benefits for Traditional Owners that are associated with the provision of land under an Indigenous Land Use Agreement or other land tenure agreement. These are linked to the provision of land, as they are benefits that will be delivered directly as a result of the project. The details of these Indigenous benefits were encapsulated in the Heads of Agreement between the State government, Woodside and the Kimberley Land Council on behalf of Traditional Owners in April 2009.

The Strategic Social Impact Management Plan is presented in **Part 5, Section 5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

Generic Question ID: 282 Sub ID [39, 203, 212, 136, 223] Raised by [S39 Q759]

How can Indigenous interests be protected (**p.104**) if the land is taken compulsorily? Indigenous peoples interests (the land, natural resources, spiritual connections to land) have largely been ignored or patronised by people who don't understand this different worldview.

The issue of worldviews is one of the reasons why the State Government conducted both an Aboriginal Social Impact Assessment (**ASIA**) along with a Social Impact Assessment (**SIA**) as part of the Strategic Assessment Report (**SAR**). Importantly, the terms of reference for the ASIA were developed in consultation with the KLC (authorised by the Goolarabooloo and Jabirr Jabirr (**GJJ**) native title claimants), and discussed in detail with the Traditional Owner Negotiating Committee (**TONC**) of the GJJ native title claim group. After due consideration of

the document, the TONC unanimously endorsed the Terms of Reference for the ASIA.

With respect to the land required for the Precinct, it remains the State Government's preference to secure access to the land through agreement with Traditional Owners. The State Government has been negotiating with the KLC, as authorised representatives of the Native Title claimants, to this end since January 2008.

A deadline for completing formal negotiations was established by all parties (KLC, Woodside and the State Government). Despite three extensions of the deadline, in July 2010 the Kimberley Land Council advised the State that agreement could not be reached due to divisions within the Native Title claimant groups. In September 2010, the State commenced a formal land acquisition process in accordance with the *Land Administration Act 1997* and the *Commonwealth Native Title Act 1993.*

This process does not remove the rights of affected people, and the relevant laws include objection periods and right to compensation. Under the *Land Administration Act 1997*, compulsory acquisition can only occur if it is consistent with the requirements of the *Native Title Act 1993.* In addition, the State must issue a Notice of Intention to Take (**NOITT**), to which affected persons have a 60 day objection period. Another objection period of 60 days would follow if a final taking order (which can only be issued in accordance with *Native Title Act 1993* is issued by the Minister for Lands. Affected people have a right to compensation under this process.

The most current reporting of the status of this process is provided in **Section 2.5** of the Response to Public Submissions (i.e. this document).

Generic Question ID: 159 Sub ID [39, 212, 205, 215] Raised by [S39 Q360]

Where is the consideration of Aboriginal families who have hunted and gathered at the JPP area itself for generations? What do they stand to lose socially? Where is the recognition and reporting of this?

Part 5 of the Strategic Assessment Report (**SAR**) discussed that wild-caught fish and meats are a highly significant portion of the local economy for Indigenous people in the communities of the Kimberley, and also in Broome. Early European explorers observed Aboriginal family groups camped on the Peninsula from the mid-1600s and noted their semi-nomadic hunting and gathering lifestyle, use of marine resources and construction of wells to access fresh water. Although no quantitative data on the use of wild resources in the Area of Impact exists, archaeological and anthropological surveys have confirmed traditional use of the area. Engagement conducted for the Aboriginal Social Impact Assessment (**ASIA**) confirmed the importance of traditional hunting and gathering for local people. A summary of information on the use and value of wild resources to Aboriginal people is available in the ASIA, which is included as **Appendix E-3** of the SAR.

Due to the potential restriction of public access in some marine areas associated with the development of the Precinct, a Fishing Industry Impact Study (**FIIS**) was conducted as part of the strategic assessment process. The FIIS study, included in **Appendix D-4** of the SAR, noted that users were particularly concerned about potential over-fishing in some local areas.

The SAR proposes management and mitigation measures to address the potential impacts presented by development of the Browse LNG Precinct. For example, the Precinct Condition strategies included in the Strategic Social Impact Management Plan (**SSIMP**) require that commercial proponents operating at the Precinct demonstrate the application of best practice measures. These are to be implemented to minimise the impacts to coastal processes from onshore and near shore marine infrastructure.

Whilst studies conducted as part of the strategic assessment process concluded that the area of land required for the Precinct was not unique in terms of flora and fauna for fishing, hunting and gathering, the State Government has committed to maintain public access to James Price Point. As such, the State Government is currently working with the Shire of Broome, local government and Main Roads WA to determine the most appropriate road network around the Precinct. This road network will also maintain public access to the northern section of Manari Road.

Generic Question ID: 172 Sub ID [39, 212, 205, 215] Raised by [S39 Q369]

In the management and mitigation of potential impacts on cultural heritage, the BLNG Strategic Assessment Report details that the State and Woodside will 'where possible' work in a manner that avoids impacts on Aboriginal sites. Why is it assumed that the LNG project hold precedence over the Aboriginal sites?

Under the Heads of Agreement (**HoA**), the State and Foundation proponent (Woodside) have agreed to work with the Traditional Owners and the Kimberley Land Council to design, construct, operate, decommission and rehabilitate the land required for the Browse LNG Precinct in a manner that avoids impacts on Indigenous sites where possible. However, even when best practice approaches are employed, it is likely that there will be some residual impacts to heritage sites. Where impacts to Indigenous sites cannot be avoided, the State Government and Woodside have agreed to mitigate any impact, in accordance with the Studies Agreement, the current Heritage Protection Agreement (**HPA**) and any future heritage management plans. Under the HPA, all parties

have agreed to work together to achieve mutually acceptable outcomes. Any direct impacts to heritage sites will be compliant with the HPA and the *Aboriginal Heritage Act 1972* on advice from the Minister for Indigenous Affairs. They will also be conducted in accordance with the requirements of the *Environmental Protection Act 1986*.

Traditional Owners will be involved in the management of impacts on heritage. As part of the agreements reached with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP. To ensure delivery of the necessary heritage management measures, the SAR proposed that a Browse LNG Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Mitigation and monitoring measures outlined in **Part 5, Section 5** of the SAR under the Strategic Social Impact Management Plan will also go some way to addressing potential impacts related to cultural heritage. For example, the physical presence of the Precinct development will alter the visual amenity and landscape character of the James Price Point coastal area. To mitigate these impacts, a Visual Amenity Management Plan would be developed and implemented. This plan would include:

- techniques to be used to reduce visual impacts from facilities (e.g. use of building materials, colours and finishes that complement the surrounding landscape);
- siting of facilities to reduce visibility as reasonably practicable (including set back from the coastline of highly visible infrastructure); and
- retention of areas of landscape character significance (e.g. Sand Dunes/Pindan Cliffs), where possible.

There are also measures to protect Aboriginal heritage in the Heads of Agreement. The State has committed funding for 10 years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves will be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves is the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity. The State government is committed to developing arrangements, to allow access by Traditional Owners to some sites where possible. For example, the Lurujarri Heritage Trail would be impacted by the Precinct due to land restrictions around the LNG Precinct for safety reasons. However, arrangements are being considered that would allow guided walks on the Lurujarri trail with Traditional Owners to occur seasonally.

Generic Question ID: 281 Sub ID [39, 205, 215, 212] Raised by [S39 Q757]

There is no reason why Aboriginal workers from the Peninsula cannot work in a Pilbara location as FIFO workers, as this employment system is likely to be proposed for this site as well.

A rigorous site selection process for the Precinct was undertaken by the State Government which considered a range of development options, including floating LNG and sites in the Pilbara and Darwin, in addition to 43 sites in the Kimberley. The Commonwealth Government also commissioned a report by GHD to investigate the economic feasibility of alternative sites for the processing of Browse Basin gas reserves. The report found that economics dictate that any proposed site greater than 500km from the Browse Basin gas fields is prohibitively expensive to develop from a green field situation. The use of existing brown field facilities in the Pilbara, despite also being prohibitively expensive, would fail to realise the full potential of Browse Basin gas, as it would merely back-fill North West Shelf reserves. More importantly, this would also deny the social and economic benefits presented by its development to the people of the West Kimberley, the delivery of which is a commitment of State Government. Mechanisms to facilitate these social and economic benefits to the West Kimberley population are identified in the Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**).

Whilst some Indigenous workers are likely to have been willing to work on a FIFO basis if a site in the Pilbara was selected, this decision could have come with potentially significant detrimental social impacts. For example, as discussed in the Aboriginal Social Impact Assessment (**ASIA**), the absence of parents due to wage employment, especially where projects operate on a FIFO basis, can undermine traditional authority patterns in Indigenous communities. Participants in the ASIA felt that work at the Precinct would be a better option than FIFO in the Pilbara because it is closer to their communities. Although the impacts of FIFO arrangements for local Indigenous people will be avoided at the current site, the SAR acknowledges that there are still barriers for Indigenous people in dealing with long work hours, including a lack of training. These challenges will be addressed in the Indigenous Workforce Development Strategy proposed in the SSIMP, in line with the recommendations of the ASIA.

Generic Question ID: 63 Sub ID [7, 50, 200] Raised by [S7 Q77]

There is little evidence that the benefits noted on **ES-3** will come to fruition. The proponents in the Pilbara region have had ample opportunity to provide benefits and jobs to the Indigenous people but they have done very little e.g. the destruction of the Burrup rock art. It is likely that inflationary pressures caused by the burgeoning workforce will reduce the quality of life for most Aborigines in the Kimberley, just like it has in the Pilbara.

Facilitating Indigenous participation is a priority for the State Government. On 21 April 2009, the State Government, the Kimberley Land Council (**KLC**) and Woodside (as a potential Foundation Proponent) executed a Heads of Agreement (**HoA**) to establish the Browse LNG Precinct near James Price Point, subject to the ultimate execution of a formal Indigenous Land Use Agreement (**ILUA**) or, if an ILUA is not achievable in a reasonable timeframe, another form of binding agreement. Following achievement of the HoA with the KLC, the State and Woodside, the KLC and the Traditional Owner Negotiating Committee facilitated a large claim group meeting to ensure that native title claimants were updated and fully informed of the process to date.

The State Government's commitments as part of this broad agreement include:

- funding for Indigenous management of nature and heritage reserves;
- funding support for economic development, better housing and education and cultural preservation; and
- funding for a Kimberley Enhancement Scheme that will expand and improve existing government services, and facilities in the broader community.

The Strategic Assessment Report identifies a range of strategies as part of the Strategic Social Impact Management Plan (**SSIMP**), tailored towards the delivery of social and economic benefits to Traditional Owners associated with the Browse LNG Precinct. For example, as a condition of locating at the Precinct, commercial proponents are required to prepare management strategies, to the satisfaction of Precinct Management, to: Maximise education, training and employment opportunities for the local community to support the development of the LNG Precinct; and increase the Indigenous workforce and ensuring their development. The implementation of these management measures will be overseen by Precinct Management.

In addition, the Department of State Development is exploring a wide range of potential policy options to encourage local participation in construction and operational activities.

Further information on each of the proposed Strategic Social Impact Management Plan is outlined in Part 5 Section 5 of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

Generic Question ID: 974 Sub ID [224, 205, 215] Raised by [S224 Q1936]

KLC Submission: The DSAR does not directly address the nature of any Traditional Owner consent and in particular whether it given in a 'culturally appropriate manner' (**Part 1**, **p. 95**; **Part 5**, **p. 3-70 – 3-79**). This is a serious failure to address the Strategic Assessment ToR. In particular the DSAR: (a) fails to consider the implications for Traditional Owner consent of the WA Government's threat of compulsory acquisition and the associated short time imposed by Premier Barnett on negotiations for an 'in principle agreement' for the BLNG Precinct; and (b) mentions the fact that a funding agreement was signed with the KLC on 11 March 2009, but fails to mention the impact that absence of a funding agreement to that date had on the ability of the KLC and Traditional Owners to engage in negotiations in a culturally appropriate manner.

Informed consent has been addressed in the SAR (**Part 1**, **Section 10.2.6,** p. 95) with regard to the comprehensive site selection process that was undertaken by the Northern Development Taskforce.

Informed consent has been addressed in the SAR (**Part 1**, **Section 10.2.6**, **p. 95**) with regard to the comprehensive site selection process that was undertaken by the Northern Development Taskforce.

A range of studies, including flora, fauna, ethnobiological, archaeological, marine and others relating to the project have extensively involved Traditional Owner participation, the culmination of which is the cumulative generation of knowledge about the project and its possible impacts. Any consent given by Traditional Owner groups is therefore based, at least in part, on such information.

On 30 June 2011 the State Government, the Goolarabooloo Jabirr Jabirr native title claimant group and Woodside Energy Ltd finalised historic agreements to secure access to land for the establishment of the Precinct. The Traditional Owners agreed to relinquish their native title interests in the land and water required for the Precinct, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage management of the precinct. The Consultation continued throughout the negotiation process, and agreement to an ongoing management role by Traditional Owners, reflects the level of informed consent for the Precinct. The native title agreements are attached to the Response to Submissions

Summary Report in the supporting **Annexures**.

The Proponent contends that the KLC has been adequately funded for negotiations relating to the BLNG Precinct including Traditional Owner engagement both prior to, and following, the 11 March 2009 funding agreement.

Generic Question ID: 273 Sub ID [39, 212] Raised by [S39 Q749]

Despite 40 years of effort, the State still has difficulty in overcoming the barriers to Aboriginal employability.

It is an objective of the State Government to maximise the opportunities presented by the establishment of the Browse LNG Precinct, to substantially improve the education, health, social and economic well-being of Indigenous people and significantly reduce disadvantage within the Kimberley community. Historically, efforts to employ local Indigenous people on resource projects have produced mixed outcomes. This in part, is what drove the State Government to undertake both a Social Impact Assessment (**SIA**), and an Aboriginal Social Impact Assessment (**ASIA**) as part of the strategic assessment process for the Browse LNG Precinct. The SIA/ASIA process facilitated the consideration of social impacts within a process which typically focuses purely on environmental approvals.

The Strategic Assessment Report (**SAR**) discusses the significant socio-economic barriers that may need to be addressed in order for local people to realise the employment benefits associated with the development of the Browse LNG Precinct. Accordingly, the SAR recommends that several strategies be put in place to enable local people to take advantage of the direct and indirect employment opportunities generated by the project. These are:

- An Education, Training and Employment Strategy:
  - to maximise education, training and employment opportunities for the local community; and
  - ensure a coordinated approach to the range of education, training and employment strategies implemented to support the development of the LNG Precinct.
- An Indigenous Workforce Development Strategy:
  - to ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
  - develop and implement a strategy to increase the number of Indigenous workers on the project;
  - develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment;
  - provider opportunities for Indigenous people to work on cultural and environmental values relevant to precinct operation; and
  - develop appropriate workforce arrangements which include support for Indigenous workers.

Measures to mitigate and manage impacts on employment and business development opportunities for Indigenous people will be provided for in the ILUA or other land agreement negotiated with the Traditional Owners. The Heads of Agreement, signed by the State Government, Kimberley Land Council (**KLC**) and Woodside in April 2009, provides for an Education Development Fund to support scholarships and training programs upon signing of an ILUA or other land agreement.

The local employment strategies outlined in **Part 5** of the SAR, will link to existing programs to assist Indigenous people. Through the National Partnerships process, education, employment and training projects are being developed in an integrated “whole of life cycle” framework. Trade training projects are also being developed to ensure there is a dovetail approach between school based trades or vocational training and industry training. These projects are either funded, in development, or under discussion between the KLC and the State and Commonwealth Governments, and other partners.

The local employment strategies need to start well in advance of the Precinct establishment and be well co-ordinated to ensure a match between the skills required, the capacity of the training providers and the existing skills level of the potential trainees. If these barriers are addressed, the development of the Precinct presents considerable opportunities for local Indigenous employment, which will also increase the socio-economic well-being of local Indigenous people, and help alleviate and reduce disadvantage across the broader West Kimberley region.

Generic Question ID: 293 Sub ID [39] Raised by [S39 Q771]

(Annexure D) The ASIA recommends a household survey of indigenous families in the Peninsula to establish a baseline to monitor impact. This should be a priority as without a baseline there is likely to be no reliable means of measuring impacts over time.

Engagement with Traditional Owners has been a priority for the Western Australian Government throughout the strategic assessment process. The State Government is of the view that development of the Browse LNG Precinct will provide the opportunity for new initiatives to substantially increase the health, education, social and economic well-being of Indigenous people and considerably reduce disadvantage across the Kimberley region. This in part is what drove the State Government to conduct both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**). Significant work was undertaken during the SIA/ASIA process to establish baseline social data for both Indigenous and non-Indigenous members of the community likely to experience impacts resulting from the development of the Precinct.

Ongoing engagement with Indigenous communities on the Dampier Peninsula will clearly be an essential component of ensuring the successful delivery of the social and economic benefits presented by development of the Precinct. In addition to the significant work already conducted, the West Kimberley Socio-Economic Strategy proposed in the Strategic Social Impact Management Plan will also contribute to the ongoing collection of baseline data, against which the success of management mechanisms will be measured.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

In addition, under the project-level SIA being conducted by Foundation Proponent Woodside, face-to-face interviews with randomly selected households in Broome and the Dampier Peninsula are already being undertaken. This will also provide an opportunity for members of the community to learn more about Woodside's proposed project, and provide input on specific issues associated with the development of the Precinct.

Generic Question ID: 319 Sub ID [25] Raised by [S25 Q218]

Local Aboriginal people from the whole area, as many have family relations throughout the Kimberley, should have an opportunity to have their say; not limited by time pressure, hand outs and pay offs by a so called representative and without the threat of losing their say, their rights to education, health, proper living conditions and employment.

Development of the Browse LNG Precinct will provide an opportunity for new initiatives to substantially improve the education, health, social and economic wellbeing of Indigenous people, and significantly reduce disadvantage within the broader Kimberley community.

Accordingly, engagement with Traditional Owners has been a priority for the Western Australian Government throughout the strategic assessment process. In the project's early stages, the Northern Development Taskforce led a site selection process that placed a strong emphasis on the inclusion and engagement of Traditional Owners across the broader Kimberley.

Examples of the ongoing nature of consultation and mutual engagement process with Traditional Owners include:

- In January 2008 the State and the Kimberley Land Council (**KLC**) executed a Financial Assistance Agreement, to support the engagement process during site selection;
- Between March and July 2008 the KLC conducted a consultation program involving over 30 West Kimberley community and Traditional Owner Taskforce meetings;
- On 7 May 2008, in good faith and with mutual respect, the State and the KLC entered into a studies agreement to ensure that technical studies were conducted in an appropriate manner, and did not impact on heritage sites;
- On 11 March 2009 the State and the KLC executed a Negotiation Funding Agreement to facilitate ongoing negotiation and consultation with Traditional Owners;
- On 21 April 2009, the State, the KLC and Woodside Energy Ltd executed a Heads of Agreement to establish the Browse LNG Precinct near James Price Point, and outline a significant benefits package which featured new education and training initiatives;
- Following a comprehensive workshop with Traditional Owners on 14 August 2009, a series of technical, environmental and heritage questions were developed that ultimately formed the basis of the Traditional Owners' Information Package, later modified to produce a comprehensive Public Information Booklet hosted on the Department of State Development's website;
- On October 2009 the State and the KLC entered into a Funding Agreement to fund the KLC in order to meet the costs of the negotiations for an ILUA or related agreement, and other specified activities;

- On 13 November 2009 the State, the KLC and Woodside entered into a Heritage Protection Agreement to ensure appropriate account was taken of the Traditional Owners' views regarding heritage sites;
- Throughout 2010 funding was provided to facilitate and maintain Traditional Owner participation in studies, negotiations, consent determination and promotion of benefits negotiated in the Heads of Agreement; and
- In March 2011, the Department of State Development conducted information sessions and workshops at Indigenous communities on the Dampier Peninsula and south of Broome.

A comprehensive Aboriginal Social Impact Assessment (**ASIA**), which includes substantial studies into the potential impacts of the Precinct on Indigenous communities on the Dampier Peninsula, is included in **Appendices E1-E7** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/BrowseSAR.

Generic Question ID: 395 Sub ID [104] Raised by [S104 Q907]

DoH Submission: It is important that planning to respond to health needs for Aboriginal people is collaborative and coordinated across the region and groups. The peak health body in the Kimberley for Aboriginal health planning is the Kimberley Aboriginal Health Planning Forum (**KAHPF**) which includes representation from:

- Kimberley Aboriginal Medical Services Council (**KAMSC**), a regional Aboriginal Community Controlled Health Service (**ACCHS**), which represents five independently, incorporated ACCHS across the Kimberley;
- The Kimberley Area Health Service within WA Health; and
- The Kimberley Division of General Practice.

Therefore, DoH recommends that the Kimberley health sector is represented on the Social Management Committee, the decision for representation made through recommendation from KAHPF.

The Browse LNG Precinct is being progressed on the basis of the significant social and economic benefits it will provide to the local community of Broome and the broader West Kimberley population. Due to the high level of population growth experienced by the region over the last 30 years, many health services are operating at capacity. This has made the delivery of health services to remote Indigenous communities on the Dampier Peninsula particularly difficult.

It is agreed that responding to Indigenous health needs requires a collaborative and coordinated effort across the region and groups. At this point in time, the membership of the SMC will be designed to include primarily regionally based organisations (government / non-government, indigenous / non-indigenous) with a significant interest in the social and economic impact issues associated with the BLNG Precinct. However, the Department of State Development supports the Department of Health's recommendation that the Kimberley Aboriginal Health Planning Forum (**KAHPF**) be consulted regarding appropriate representation of the Kimberley health sector on a Social Management Committee or other committee established to oversight the Broome Social Services Strategy.

To ensure delivery of the necessary social management measures, the Strategic Assessment Report proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 480 Sub ID [166] Raised by [S166 Q1395]

Shire of Broome Submission (1g): A matter raised in Council's resolution of 7 November 2008 was the need to include the Shire of Broome as a key stakeholder in the implementation of any State Agreement Act or alternative mechanism relating to the development of the Precinct including:

I. Municipal rates for the Precinct to be assessed on improved value and paid in accordance with the *Local Government Act 1995*.

II. Allocation of sufficient resources to the Shire of Broome to enable the provision of adequate service levels.

III. Special disability factors to be applied to the Western Australian Local Government Grants Commission to recognise development upfront rather than with the normal four-year lag.

IV. Establishment of a Broome Enhancement Fund and Broome Industry Coordinating Committee to identify and alleviate service gaps that may result from the development of the resource sector.

These requirements have not been adequately addressed in the social impact assessment.

The concerns of the Shire of Broome and the broader West Kimberley community have been considered by the

State Government throughout the Strategic Assessment process for the Browse LNG Precinct, and will be considered holistically with other comments and considerations in the approvals process and beyond, should the project be approved.

The Shire of Broome is recognised as a key stakeholder with regards to the Precinct. To the extent that any potential State Agreement Act relating to the development of the Browse LNG Precinct is envisaged to impact upon the capacity of the Shire to maintain the interests of its residents, the State Government will engage with the Shire accordingly.

Generic Question ID: 513 Sub ID [232] Raised by [S232 Q1378]

The Aboriginal community members on the Dampier Peninsula believe that the people choosing the site of James Price Point for the LNG Precinct did not understand their culture. Did they know that the story line extends from Bardi country to Broome?

The State Government recognises that there are many sites of significant heritage and cultural value to Indigenous people on the Dampier Peninsula. The decision to locate the Precinct near James Price Point was made on the basis of consultation with Traditional Owners, and advice provided from the Environmental Protection Authority (**EPA**). It is known that a songline and other sites of significance to Indigenous people are present in the vicinity of the proposed Precinct site. The State and Foundation proponent, Woodside, have agreed to work with the Traditional Owners and the Kimberley Land Council to design, construct, operate, decommission and rehabilitate the Browse LNG Precinct in a manner that avoids impacts on Indigenous sites where possible. However, it is likely that there will be some residual impacts to heritage sites. Where impacts to Indigenous sites cannot be avoided, the State Government and Woodside have agreed to minimise any impact in accordance with the Studies Agreement, the Heritage Protection Agreement (**HPA**) and proposed future cultural heritage management plans. All Indigenous heritage sites, whether registered or not, are protected under the *Aboriginal Heritage Act 1972* (**AHA**).

As part of the Aboriginal Social Impact Assessment (**ASIA**), conducted as part of the strategic assessment process, the State Government commissioned a Heritage Impact Assessment (**HIA**) through the native title representative body, the Kimberley Land Council. The HIA evaluated the potential impacts of the Precinct on cultural values and Indigenous heritage (**Appendix E-4**). The HIA captures the view that Indigenous people view heritage sites as not just important on their own, but as components of an inter-connected landscape, seascape and sky that comprise 'Aboriginal country'. The HIA addressed impacts on Indigenous heritage and cultural relationships that exist from Bardi and Jawi country at the northern extremity of the Dampier Peninsula, the adjacent saltwater areas including parts of Yampi Peninsula, to Karajarri country, located south of Broome, as well as the Indigenous heritage and cultural relationships of all cultural groups in between.

The contents of the HIA report were authorised for public distribution by the Traditional Owners for the HIA area as well as other Traditional Law Bosses for the Kimberley. The draft HIA report was reviewed and approved by:

- a group of senior Aboriginal people authorised to speak, both at a local level and at a regional level, for the HIA area; and
- senior members of the Goolarabooloo/Jabirr native title group with relevant cultural knowledge and authority.

Traditional Owners will be involved in the management of any impacts on heritage. As part of the agreements with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP.

Generic Question ID: 518 Sub ID [232] Raised by [S232 Q1383]

The Aboriginal community members on the Dampier Peninsula wish to know what assistance will be given to the Community to manage the additional people travelling in and around the Peninsula?

During both the Social Impact Assessment (**SIA**) and the Aboriginal Social Impact Assessment (**ASIA**), it was clear that community stakeholders were very interested in the potential impacts associated with an increase in public accessibility to the Dampier Peninsula. While development of the Precinct will likely result in increased access to social and medical services and improved sustainability of Indigenous tourism businesses, it may also create potential issues such as an unsustainable influx of visitors. If not managed, this could lead to impacts on the local environment and local communities.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), proposes a number of strategies aimed at maximising the opportunities presented by the

development of the Precinct, and mitigating any potential negative impacts. These strategies include the requirement for commercial proponents to operate a managed-access construction workforce camp, to control interaction between the construction workforce and the local community, and a broader Dampier Peninsula access plan, to manage the impacts of any increase in recreational use.

Additionally, the Dampier Peninsula Planning Strategy will consider the way in which the Dampier Peninsula is accessed more generally, and will promote the conservation of environmental and heritage values in the area. It will also provide the mechanism for land reform and land transfers to Traditional Owners that will provide them with more control over access and use of land. The State Government will consult with the Traditional Owners in the further development of this Strategy which, together with other requirements such as the Cultural Heritage Management Plan, will provide appropriate mechanisms to address possible impacts of visitors accessing the area on local communities and cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.

Generic Question ID: 719 Sub ID [203] Raised by [S203 Q1694]

The SAR focused primarily on issues related to land and the environmental impact, and only has a brief section of the Aboriginal issues.

Due to the large volume of information generated from the Strategic Assessment process, each aspect of the assessment was provided as a condensed summary in the seven-volume Strategic Assessment Report (**SAR**). Although a summary of the Indigenous Impacts Report comprises only one section of the main body of the SAR, it has been a significant focus of the work the State Government has commissioned to date.

The six-volume Indigenous Impacts Report, including an Aboriginal Social Impact Assessment, is included as **Appendix** E of the SAR. In addition, although **Part 5, Section 3** of the SAR is devoted solely to Indigenous issues, these issues are integrated in other sections of the report as appropriate. For example, many impact management measures outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5)** will target Indigenous impacts and opportunities. Indigenous values are also discussed alongside the non-Indigenous values that may be affected by Precinct development in **Part 5**, **Section 4** of the SAR.

To ensure delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners can have a significant input into the environmental and social management associated with the Precinct.

Generic Question ID: 927 Sub ID [227] Raised by [S227 Q1988]

Paddy Roe (winner of the Order of Australia medal for his efforts in closing the gap between Indigenous and non-Indigenous people in the wider community) has been cast aside with what seems a judgement call from KLC backed by the State government to allow this project to go through.

The Kimberley Land Council (**KLC**) is the Native Title representative body for the region and is authorised to negotiate on behalf of the Goolarabooloo Jabirr Jabirr native title claim group under the instruction of the Traditional Owners Negotiating Committee (**TONC**) of the Goolarabooloo Jabirr Jabirr. Goolarabooloo Jabirr Jabirr is the only registered native title claim over the region. The process of decision making is a matter for the KLC and TONC.

The State Government, KLC and commercial proponents will continue to inform and engage with Traditional Owners and affected Indigenous people should the project be granted approval. Under the management measures outlined in the SAR (**Part 5, Section 5**), the State and commercial proponents will consult with Traditional Owners and affected Indigenous people as required in the development of management strategies on issues including: workforce behaviour and cross-cultural training; education, training and employment of Indigenous people; and recreation activities and access to the Dampier Peninsula. The State Government is also committed to ensuring that ongoing involvement and communication with Indigenous stakeholders is embedded in the governance arrangement at the Precinct. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 928 Sub ID [227] Raised by [S227 Q1989]

The Precinct will allow the rich to get richer while the wider community of the Kimberley suffers. None of this finance will go to the Goolarabooloo Corporation, the rightful custodians of this land.

The Goolarabooloo Jabirr Jabirr is the only registered native title claim over the region in question. On 30 June 2011 the Goolarabooloo Jabirr Jabirr Traditional Owners Negotiating Committee signed agreements to secure

access to the land proposed for the Browse LNG Precinct. Under the agreements, the State Government and Woodside have together committed to delivering about $1.5 billion of social and economic benefits to local Indigenous communities.

Further information is provided in **Section 2.5** of the Response to Submissions Summary Report.

Generic Question ID: 939 Sub ID [227] Raised by [S227 Q1986]

For seventeen years the Goolarabooloo people have been through the court systems to obtain native title. This native title claim is what allows these people to maintain their cultural activities and connection to the land. These people have been left a legacy to protect the Lurujarri songcycle of the Northern Tradition that runs from Njellanjellegun (Dampier creek) to Garyan (north of yellow river).

Under the Heads of Agreement (**HoA**), the State Government and Woodside have made the following commitment:

*"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement (**HPA**) and any future cultural heritage management plans."*

Through the HoA, the Goolarabooloo Jabirr Jabirr Native Title Claim Group have signified their belief that the LNG Precinct can be established and operated according to the principles of the HoA and the HPA, without compromising these heritage values. Under the HoA, the State Government had committed funding for ten years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves would be the protection of Indigenous cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.

Traditional Owners will be involved in the management of impacts on heritage. As part of the agreements reached with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP. To ensure delivery of the necessary heritage management measures, the SAR proposes that a Browse LNG Management Structure be established.

The Indigenous heritage sites along the Lurujarri Trail have been or are being recorded, and impacts on those sites will be avoided or minimised, in accordance with the HoA and the HPA. Access along the coast adjacent to the Browse LNG Precinct would be restricted for safety reasons, but arrangements are being considered that would allow Traditional Owners to have continued access to any heritage sites within this area.

Generic Question ID: 959 Sub ID [224] Raised by [S224 Q1922]

KLC Submission: One of the few specific measures identified by the SAR is its proposal to operate the BLNG Precinct construction camp as a 'managed-access' facility, which is consistent with an ASIA recommendation on this matter. The SAR describes this measure as the 'primary social mitigation measure' (**Part 1**, **p.88**) and as 'the overarching social impact mitigation measure' (**Part 5**, **p. 3-81**). The SAR assumes that this one measure will address a lot of the Precinct's social impacts, including impacts on Dampier Peninsula communities (**Part 5**, **pp. 3-12, pp. 30-31**), claiming that it 'will mitigate many potential negative impacts that could occur through the construction and operation of the Precinct' (**Part 5**, **p. 5-1**). There is no basis for these assumptions. Operating the construction camp as a managed access facility will do nothing to address issues such as population growth of Broome, increased visitor numbers to the peninsula, pressure on housing, services, cost of living, and the influence of rising incomes on social issues (e.g. substance abuse).

The managed-access construction camp is an important management measure that will mitigate a number of the social impacts. However, it is important to note that it is not the sole management measure, and that there are a range of other management measures that will be implemented that will complement, or be independent to, this management measure. Regarding the specific concerns identified in the submission:

- The use of a largely FIFO construction workforce, combined with providing sufficient accommodation for workers at the managed-access construction camp and the Local Living Strategy will discourage the large construction workforce from living locally. This will go a long way to reducing the contribution of the development to population growth due to the development. While the projected population growth of Broome is still expected to be high regardless of the project, addressing natural population growth is outside the scope of the SAR.

- In recognition that any impacts from the Precinct would be on the already stressed services in Broome, the State government has made a commitment in the SAR to address existing deficits in the Broome Social Services Strategy. In addition, commercial proponents will be required to develop a Precinct Health, Emergency Services, Policing and Security Strategy services required to service the BLNG Precinct do not impact on Broome services.
- The Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) will consider the way the Dampier Peninsula is accessed and promote the conservation of environmental and heritage values of the area. The Strategy, along with other mechanisms such as the Cultural Heritage Management Plans, will also provide appropriate mechanisms to address possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.
- To address additional pressures on housing and cost of living not alleviated by the use of FIFO workers, a managed-access construction camp and local living policies, a number of management measures will be implemented to address housing issues in Broome, such as:
    - Implementation by LandCorp of a land and housing management plan to ensure that the timely supply of land and housing to meet the needs of Broome and the project. The strategy is also intended to address short-term accommodation deficits, affordable housing, social housing and homelessness issues.
    - The commercial proponents are to implement a Transient Workforce Management Strategy to discourage these transient workers from moving to the region and manage those that do arrive.
    - Commercial proponents are also required to develop a program to monitor the effectiveness of local purchasing strategies. This will include local indicators of economic development such as cost of living, employment and business development.
- A policy of limiting FIFO workforce layover time in Broome may substantially mitigate potential increases in substance abuse from the workforce population. The required workforce behaviour policies, including the existing practice in the Industry of compulsory random alcohol and drug testing, should also limit the prevalence of substance misuse by Precinct workers in the town.

Refer to **Section 5, Part 5** of the SAR for a summary of the proposed management measures.

Generic Question ID: 965 Sub ID [224] Raised by [S224 Q1927]

KLC Submission: The BLNG Precinct would be managed by a Precinct Control Group (**PCG**), made up of State government agencies, LandCorp and Broome Port Authority. It would have no native title group representatives. Three support entities (a Social Management committee, BLNG Project Operations Coordination committee, and BLNG Precinct Management committee) would provide advice regarding aspects of its functions. Issues with this proposed management structure include:

- The controlling entity (the BLNG Precinct Control Group) has a primary focus on managing the BLNG Precinct, and not on managing wider social impacts. The agencies represented on it have no expertise in social impact management. It is consequently an entirely inappropriate entity to lead the management of social impacts.
- The Social Management Committee, which is supposed to focus on social impact management, is advisory only.
- The only Committees on which there is native title representation are advisory, which implies that Traditional Owners will not have decision-making powers in relation to the Precinct or to impact management. Yet as the ASIA Report documents, the ability of Traditional Owners to share in decision-making is an essential precondition for effective management of social and cultural impacts.

The Committees on which there is native title party representation also includes representatives from numerous other groups, which means that the voices of Traditional Owners may well be 'lost' on the Committees. The management structure proposed by the SAR manifestly fails to meet the ToR requirement to identify measures 'to avoid, minimise and mitigate for the ... Indigenous impacts of the Plan … ' (Clause 9)

The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

In responding to the above matter the Proponent also notes that the Precinct governance structure is only intended to address impacts related to the effects of the Precinct, including both environmental and social. It is

not appropriate for this structure to address wider, non-relevant social issues as there are other more appropriate forums to address such matters. Furthermore, the governance structure, including the Precinct Control Group, has an advisory role only. It is the Minister for State Development, as Proponent and recipient of any conditions set as part of the assessment process, who is responsible for the Precinct.

Generic Question ID: 971 Sub ID [224] Raised by [S224 Q1933]

KLC Submission: The ASIA recommendations constitute what the Strategic Assessment ToR refer to as a 'documented response resulting from the consultation' [in relation to the BLNG Precinct]. The above discussion calls into question whether the SAR has met the requirement of the ToR to indicate 'how the assessment and Report have addressed issues raised by the Consultation' where such a 'documented response' exists (Clause 11).

The information on Indigenous impacts presented in the Strategic Assessment Report (**SAR**) is a summary of what was reviewed by the Indigenous community in the Kimberley Land Council's Aboriginal Social Impact Assessment (**ASIA**). The SAR also contains a summary of the other impact assessments conducted as part of the Strategic Assessment process, including the broader Social Impact Assessment (**SIA**), Environmental Impact Assessment (**EIA**) and a range of specialist studies.

The purpose of the ASIA was to identify the actual, likely and potential impacts associated with the development of the Precinct, specifically on Indigenous people, and to identify management measures to ensure that the benefits associated with its development can be optimised. Accordingly, the management measures outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5**), and contained throughout the SAR, incorporate many of the recommendations set out in the ASIA reports.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

Generic Question ID: 1241 Sub ID [215] Raised by [S215 Q2794]

There are 75 recommendations arising from the ASIA. This collection of recommendations are previously flagged in individual section reports of the SIA, but are collated in **Part 5**, **Annexure C**. Why has there been no attempt to categorise the recommendations into content areas, which tends to make it a difficult task to focus on them in a coordinated manner in this section. It is noted that **Part 5**, **Annexure D** does provide individual content categorisations which can also be used to refer back to SIA sections. This does improve comprehension, but is still a more difficult process that it needs to be.

The State Government agrees that there is a need to provide further detail on how the ASIA recommendations are addressed in the SAR. Refer to **Section 4.9** of the Response to Submissions Summary Report for further details.

3.1 Introduction

Generic Question ID: 922 Sub ID [127, 149] Raised by [S127 Q1911]

Kimberley Development Commission: The reports' acknowledgement of a lack of engagement with the Yawuru people is of significant concern (**Part 5**, **Section 3.1.4**). A strategy to rectify this is required.

The State acknowledges that the Yawuru people are important stakeholders as the Traditional Owners of the area in and around the Broome Town site.

The State Government has commenced discussions with Nyamba Buru Yawuru and has agreed, together with the Commonwealth, to jointly fund an extensive *Household and Population Survey* to gain a better understanding of the profile of the Broome Indigenous community.

Consultations will be ongoing in order to overcome the previous lack of engagement. A summary of the proposed stakeholder consultation process moving forwards is documented in this Response to Submissions Summary Report **Section 3.2**.

Generic Question ID: 421 Sub ID [104] Raised by [S104 Q925]

The DoH identifies a number of issues for consideration within management strategies for Indigenous people on the Dampier Peninsula, including:

- Internal community roads (e.g. Djarindjin) need to be managed through a sustained maintenance program which ensures roads are sealed and repaired.
- Provide freight subsidy or supply assistance for nutritious food to be delivered to community stores as freight costs from Broome to Ardyaloon are equivalent to those from Perth to Broome.
- Housing is needed for visitors and workers; that is for both Indigenous visitors and service providers (e.g. medical).
- The development of a café/tea rooms at Ardyaloon adjacent to the store would provide employment opportunities for local residents and a business attraction in the community for the many visitors/tourists.
- Footpaths are needed in all communities to allow for safe walking. These should include trail paths to water sites for fishing and swimming.
- The establishment of a covered/shaded weatherproof sport and recreation centre, which includes basketball/netball courts and similar, would encourage physical activity. This could be modelled on the one at Roebourne.
- Emergency management, particularly fire fighting equipment, is required in the larger communities and a volunteer fire fighting base should be established which is connected to FESA for advice.

The State Government is of the view that development of the Browse LNG Precinct will provide the opportunity for new initiatives to substantially improve the education, health, social and economic well-being of Indigenous communities in the West Kimberley region. Accordingly, the issue of socio-economic conditions in Indigenous communities on the Dampier Peninsula has underpinned much of the engagement conducted with Traditional Owners, and was also addressed in the Heads of Agreement (**HoA**). On 21 April 2009, the State Government, the KLC (on behalf of the Goolarabooloo Jabirr Jabirr claimants) and Woodside (as a potential Foundation Proponent) executed the Heads of Agreement to establish the Browse LNG Precinct near James Price Point, subject to the ultimate execution of a land access agreement. Under the HoA, the State Government and Woodside have together committed to delivering a substantial social and economic benefit package to local Indigenous communities.

Among the socio-economic objectives of the Heads of Agreement are the following:

- reforming of Indigenous land tenure to help establish appropriate titles for home ownership and economic development in Dampier Peninsula communities;
- creating new economic opportunities, including business development and trade training;
- increasing funding to improve Government facilities and services for the wider community; and
- creating Traditional Owner controlled funds for economic development, housing, education and cultural preservation.

In order to facilitate these objectives the Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the SAR identifies a number of strategies. Among these is the Broome Social Services Strategy, which will be a whole of Government initiative to address social services deficits in Broome, including accessibility to those social services for Indigenous communities on the Dampier Peninsula. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

Generic Question ID: 515 Sub ID [232] Raised by [S232 Q1380]

The Aboriginal community members on the Dampier Peninsula advised that they did not think the Kimberley Land Council (**KLC**) had done a good job in providing them with information on the proposed Browse LNG Precinct at James Price Point. What is being done to improve this situation?

While the State Government cannot speak for the Kimberley Land Council (**KLC**), it is known that the organisation has devoted significant time and resources to consulting with affected Indigenous people and fulfilling its obligations as the Native Title representative body for the region. The KLC has also been active in commissioning and defining the Terms of Reference and preparing the six-volume Indigenous Impact Report (**SAR Appendix E**), funding for which was provided by State Government as part of the strategic assessment process. As part of this process, the KLC undertook consultations to ensure that the interests of Traditional

Owners and other Indigenous people in the West Kimberley were properly taken into account and reported in the Strategic Assessment Report (**SAR**). These assessments have identified the issues that need to be managed to ensure that Indigenous communities are equipped to take advantage of the opportunities created by the Precinct and to minimise the potential for negative impacts.

In addition, much of the KLC's resources have necessarily been devoted to representing the Native Title claimants in negotiations with the State and Commonwealth Governments and Woodside. These negotiations have been time consuming and are ongoing. However, they are essential to making certain that the Indigenous people on the Dampier Peninsula receive appropriate benefits from the establishment of the Browse LNG Precinct, on land near James Price Point. A key milestone in these negotiations is that the State and Woodside have entered into a Heads of Agreement (**HoA**) and a Heritage Protection Agreement (**HPA**) with the KLC. The HoA commits the State and Woodside to the delivery of a significant social and economic benefits package. The Commonwealth Government will continue to work closely with the State Government to ensure that the Kimberley region, including the Dampier Peninsula, is a priority area for program implementation.

The State Government, KLC and commercial proponents will continue to inform and engage with Traditional Owners and affected Indigenous people should the project be granted approval. Under the management measures outlined in the SAR (**Part 5, Section 5**), the State and commercial proponents will consult with Traditional Owners and affected Indigenous people as required in the development of management strategies on issues including workforce behaviour and cross-cultural training; education, training and employment of Indigenous people; and recreation activities and access to the Dampier Peninsula. The State Government is also committed to ensuring that ongoing involvement and communication with Indigenous stakeholders is embedded in the governance arrangement at the Precinct. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 656 Sub ID [120] Raised by [S120 Q1303]

ENGO Submission: **Part 5 Section 3.1.1** Terms of Reference. The Terms of Reference include whether impacts on Indigenous people are likely to be unknown, unpredictable or irreversible. Uncertainties remain about the extent and nature of the impacts on Indigenous people, especially since the scale of the proposed construction workforce has gone up significantly from when consultation for the Aboriginal Social Impact Assessment (**ASIA**) was conducted. Consultation occurred when it was thought the peak construction workforce would be only 2500 to 3500 workers. It is now thought that around 6000 workers will be needed. It is also important to recognise the unpredictability of the impacts on Indigenous people. The report says that the Indigenous heritage impacts are difficult to predict and quantify due to the interconnectedness of values, country, people and places across the Dampier Peninsula and the region.

Impacts associated with natural resource projects on Indigenous people are of their nature not entirely predictable. This in part is what drove the State Government to conduct both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) as part of the Strategic Assessment process for the Browse LNG Precinct.

As this submission acknowledges, the Terms of Reference for the Strategic Assessment require that the analysis include an assessment of whether any impacts on Indigenous people and heritage are likely to be unknown, unpredictable or irreversible. This information will be considered by both the State and Commonwealth Ministers when making a decision on the development of the proposed Precinct. Consistent with this requirement, discussion of each of the key social impacts includes, where relevant, the extent to which impacts are unknown, unpredictable and/or whether further investigation may need to take place.

As described in the Strategic Assessment Report (**SAR**), there are several social impacts on Indigenous people and heritage that are unknown, unpredictable or irreversible. For example, the cultural impacts that might result from the disturbance of the site are generally known, based on similar experiences with other large resource developments. However, the extent of the different types of cultural impacts is somewhat unpredictable. Social and economic impacts are generally known, but the extent of those impacts is also somewhat unpredictable. The ASIA highlights the fact that the peak construction workforce may be larger than the entire Indigenous population of Broome and the Dampier Peninsula. The ASIA goes on to state that "this raises the possibility that, in the absence of an effective and ongoing regime for impact monitoring and management, the LNG Precinct could create serious, adverse and irreversible cultural and social impacts" (**SAR Appendix E-3**). These impacts culminated in the 75 specific recommendations in its ASIA (**SAR Part 5**, and the supporting **Annexure**), which were captured in a range of management strategies outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5** of the SAR).

To address the uncertainty associated with predicting impacts on Indigenous communities, the ASIA highlights the importance of effective implementation of the management measures outlined in the SAR, and an ongoing monitoring program to ensure these measures are working. In addition, the ASIA recommended that the SAR include a strong focus on addressing existing social and economic disadvantage of Indigenous people if it is to

comply with this aspect of the Terms of Reference. This recommendation is based on the knowledge that the nature of impacts depends to a large extent on whether or not these existing social conditions are addressed. Existing conditions for Indigenous people will be addressed by a range of measures outlined in the Strategic Social Impact Management Plan; for example, those aimed at addressing social service and housing deficiencies and through the education, training and employment of Indigenous people.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Beyond these management measures, ongoing social monitoring and governance will play a critical role in addressing the complex social impacts resulting from the project, including those impacts for which impacts are considered unknown, unpredictable or irreversible in the SAR. The Department of State Development has incorporated this recommendation by including a Social Management Committee in the proposed governance structure, whose role will be to ensure implementation of the management plans, including associated monitoring programs. This will ensure that the management measures are effectively addressing Indigenous impacts, and help identify any areas in which changes are required.

Generic Question ID: 658 Sub ID [120] Raised by [S120 Q1304]

ENGO Submission: Part 5 Section 3.1.4 Overview of Potential Impacts on Indigenous People and Culture. The report says that discussions with Traditional Owners to date indicate that no heritage sites or values exist and would be affected to a degree that would require the development not to proceed. This is highly questionable. Joseph Roe and some Yawuru Traditional Owners, for example, have made a number of public statements to the contrary.

This section of the SAR (**Part 5**, **Section 3.1.4**) also notes the following: "….further work is required to completely understand the heritage landscape of the Precinct site. This would include survey work and the development of management plans in consultation with the Traditional Owners to manage specific localised impacts. These activities would be subject to compliance with the terms of the Heritage Protection Agreement by the commercial proponents".

Generic Question ID: 764 Sub ID [200] Raised by [S200 Q997]

Part 5 Section 3.1. Very few Indigenous people will become involved in the negotiation and comment on the proposed Precinct. Additionally, there will be many people who do not comment because they are too busy with life challenges (e.g. with DV, health issues, poverty, homelessness, alcohol and drug issues, abuse etc.). These people are the ones who will be most negatively affected should the Precinct goes ahead.

It is acknowledged as an inevitability, that not everyone in the community would have had a chance to provide comment on the Strategic Assessment Report (**SAR**). This is particularly true for remote Indigenous communities, many of which may not have internet access.

In recognition of the particular impacts that would affect Indigenous people, the State commissioned the Aboriginal Social Impact Assessment. This ASIA included extensive community consultation, particularly with the communities on the Dampier Peninsula.

The Environmental Protection Authority received many submissions from organisations that work for or with Indigenous communities in Broome and the Dampier Peninsula on issues such as health, education and training, and economic development. Additionally, in March 2011, the Department of State Development visited several Indigenous communities on the Dampier Peninsula to compile comments and concerns regarding the development of the Precinct. These comments and concerns were entered into the comment process as formal submissions, and are included in this Response to Submission.

The majority of these submissions highlighted the socio-economic conditions of disadvantage facing many Indigenous people in these areas. They also highlighted the significant barriers that must be overcome for Indigenous people to be in a position to take advantage of the opportunities generated by the Browse LNG Precinct.

Development of the Browse LNG Precinct will provide the opportunity for new initiatives to improve the education, health, social and economic well-being of Indigenous people, and substantially reduce disadvantage across the West Kimberley region. Accordingly, the State Government is committed to working with the Indigenous community and these organisations to put in place management plans tailored to significantly reduce these barriers.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR proposes the development and implementation of several strategies aimed at maximising the opportunities and benefits for Indigenous communities, presented by the development of the Precinct.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 941 Sub ID [224] Raised by [S224 Q1164]

KLC Submission: The KLC is of the view that, in general, the DSAR has failed to take into account the findings and recommendations of the Indigenous Impacts Reports. Furthermore, the management and mitigation measures proposed to address the impacts of the Plan and actions or classes of actions under the Plan, cannot be justified by reference to the findings and recommendations of the impact assessment reports

The **SAR Part 5, Section 3** discusses the ASIA including the Indigenous impact assessment prepared by the KLC. While many mitigation and management measures relevant to the Precinct were incorporated into this Strategic Social Impact Management Plan (**SSIMP**), others related to negotiations with respect to land access which were subsequently concluded on 30 June 2011. Now that the outcomes are known the responses to the ASIA recommendations are tabulated in **Section 4.7.9** of the Response to Submissions Summary Report.

Generic Question ID: 954 Sub ID [224] Raised by [S224 Q1918]

KLC Submission: The DSAR has adopted very few of the findings or recommendations of the Indigenous Impacts Reports. This failure to adopt the findings and recommendations of the assessment reports commissioned for the purposes of the Strategic Assessments is not cogently or consistently explained in the DSAR. Rather, the rejection of the findings and recommendations appears to be the result of a generalised adversarial response to the KLC commissioned reports. If the Proponent is of the view that the findings and recommendations in the Indigenous Impacts Reports are not justifiable, or the assessments and reports themselves do not meet the requirements of the ToR, the Proponent should undertake further assessments for the purposes of the Strategic Assessment. Otherwise, there does not appear to be any basis (consistent with the requirements of impact assessment) for the findings and recommendations of the Indigenous Impacts Report to be generally disregarded.

As with all of the specialist studies, the experts conducting the studies made recommendations to manage the predicted impacts. The implementation of these recommendations is at the Proponent's discretion, as the party responsible for managing the project's impacts. In this case, the ASIA identified 75 recommendations, many of which were captured as part of the broader Social Impact Assessment, as they aligned with the strategic-level mitigation and management measures proposed by DSD. Where possible, the ASIA recommendations were included in the high-level strategies in **Part 5**, **Section 5**. As this submission highlights, some of the KLC recommendations were not dealt with to the level of detail contained in the ASIA recommendations. However, the State was transparent in publishing the full six-volume Indigenous Impacts Report in full (**Appendix E**) and by acknowledging in the SAR that all recommendations were not implemented.

It is noted that at the time or writing the SAR, the State was engaged in negotiations with KLC to establish a package of benefits in exchange for land access for the Precinct. On 30 June 2011 historic agreements were signed between the State Government, Woodside and the Goolarabooloo Jabirr Jabirr (**GJJ**) native title claimant group. Many of the issues raised in the ASIA recommendations have now been addressed through this package; however at the time of writing it was not appropriate to commit to those things which were still subject to negotiation. **Section 4.7.9** of the Response to Submissions Summary Report indicates how the ASIA recommendations have been addressed.

The Precinct is at an early stage of development without confirmed commitment from the potential Foundation Proponent. Likewise, government responsibilities have therefore been allocated at a high level and it is expected that a whole of government approach will be required to address some of the identified impacts. As planning progresses, the recommendations in the Indigenous Impacts Reports can be addressed in more detail. The involvement of Traditional Owners in the governance structure of the Precinct will help ensure that these recommendations are implemented in subsequent stages of development, where possible.

Generic Question ID: 957 Sub ID [105] Raised by [S105 Q2226]

KLC Submission: The SAR does identify what it calls management 'strategies', but many of these are in fact not strategies at all, but rather simply express or reformulate goals without any indication of how these will be achieved. For example, in relation to management of impacts on marine resources, the approach is to 'minimise, mitigate and manage the impact of the BLNG Precinct on marine resources ...'. This is a goal. No indication is given as to how this can be achieved (**Part 5**, **p. 3-7**). The same applies to strategies in relation to Education, Employment and Training, Housing, Marine Resources, and other key impact issues or areas (**Part 5**, **p. 3-6 – 3.7**, **p.3-25**). This is an entirely inadequate response to the requirements of the ToR. It is also an inadequate response to issues that the ASIA shows are of great concern to Traditional Owners and other

affected Indigenous people (Aboriginal Social Impact Assessment (**ASIA**) Report, **pp. 80-81**, **142-46**, **187-88**).

In the Strategic Assessment Report (**SAR**), the Department of State Development (DSD) sets forth a range of commitments to put in place management plans to ensure that any negative impacts are minimised to the extent feasible and potential benefits are realised by local communities. The reliance on management plans is reflective of the strategic nature of the assessment.

The State Government is committed to ensuring the benefits of the project are realised by the West Kimberley communities, and that the potential negative socio-economic and environmental impacts of the Precinct development are managed. This will require both successful implementation of the management measures and effective monitoring that allows these management measures to be changed as the need arises. The next phase of work by DSD and the Foundation Proponent (i.e. Woodside) will be at the project level and will focus on the development and implementation of these management plans.

There are a number of mechanisms that will ensure delivery on the commitments made in the SAR. For example, the proposed Governance structure will provide a mechanism to ensure these management measures are implemented. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. Stakeholders representing a range of interests will be part of this management structure. This includes representation of Traditional Owners in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the environment and social management associated with the Precinct. Stakeholders in the Aboriginal community will continue to be consulted during the process of developing and implementing these plans.

The State Government and Foundation Proponent have also made a range of commitments in negotiations with Traditional Owners. On 30 June 2011 the Goolarabooloo Jabirr Jabirr native title claimant group gave its consent to the BLNG Precinct and agreed to surrender their native title rights and interests in the land and waters required for the Precinct in return for substantial benefits valued at over $1.5 billion and continuing engagement in the management of the Precinct, including environmental, social and heritage management. Details of the agreements are summarised in the Response to Submissions Summary Report **Section 1.2.4 Benefits to Traditional Owners and** supporting Annexures.

More information on how the ASIA recommendations have been addressed can be found in **Section 4.7.9** of the Response to Submissions Summary Report.

Generic Question ID: 963 Sub ID [224] Raised by [S224 Q1925]

KLC Submission: The SAR indicates that 'a broad range of agreements with Indigenous people will be implemented and mitigation measures adopted to protect cultural values, improve underlying social issues and provide for socioeconomic benefits ...' (**Part 1**, p. 90; **Part 5**, 3-7). No information is provided on parties to these agreements, their content, or their current status. In fact neither an Indigenous Land Use Agreement with the Traditional Owners of James Price Point, nor any final agreement with the Governments of Australia and Western Australia regarding improvement of underlying social issues, have been concluded at this point in time. It is therefore inappropriate for the SAR to rely on such agreements to address social impacts. The appropriate approach is that adopted in the Indigenous Impacts Report, which is to identify the full range of mitigation and management measures required. These may subsequently be addressed in 'agreements with Indigenous people'. To the extent they are not, other mechanisms would be required to address them. The same point applies to the SAR's use of the Dampier Peninsula Land Use and Infrastructure Plan as a basis for addressing potential impact, at a time when the development of that plan is still under way and it does not exist even in draft form.

The Proponent contends that it is quite appropriate to rely upon confidential negotiations being progressed to respond to recommendations where relevant. While details remain confidential subject to the conclusion of negotiations, the State has been clear as to the level of benefits being offered and its continuing commitment to the benefits package.

The Goolarabooloo Jabirr Jabirr native title claimants have agreed a $1.5billion package offered together with the Foundation Proponent. Benefits over the life of the foundation project include:

- funds to establish businesses and investment;
- funds for joint ventures;
- funds for the building of homes for GJJ and other Indigenous people;
- funds for education initiatives;
- land for housing and businesses;
- funds to support initiatives to address the social impacts of the Precinct;
- direct employment through the construction and operation of the Precinct;
- indirect employment through businesses maintaining and servicing the Precinct;

- State Government (Port Authority and LandCorp) and proponent training programs;
- State Government (Port Authority and LandCorp) and proponent employment obligations and targets;
- contract and tendering opportunities for GJJ businesses;
- funds to enable Traditional Owners of the Kimberley to support, promote and protect Aboriginal culture and heritage;
- reform of Indigenous land tenure on the Dampier Peninsula to allow for home ownership and create economic development opportunities; and
- funds for the creation and joint management of conservation areas with the State Government (**DEC**).

There will be a commensurate expansion of benefits if other LNG proponents take up land in the Precinct.
The agreements also carry a requirement for the State and commercial proponents to develop, and become party to, Cultural Heritage Management Plans.

A range of other mitigation and management measures are identified in the SAR which have been developed at a strategic level. Other recommendations of the Indigenous Impacts Report may be addressed at a project specific level, and the SAR makes these available, together with an expectation of further dialogue between Traditional Owners and commercial proponents.

Similarly, with respect to the Dampier Peninsula Planning Strategy (DPPS, formerly the Dampier Peninsula Land Use and Infrastructure Plan), the State considers it quite appropriate to clearly indicate where it will address impacts by means of this tool. The DPPS is a State Government instrument to apply good planning outcomes within State policy settings. While community consultation is a key feature of the DPPS, this is not at the expense of the State's policy position where relevant.

Generic Question ID: 972 Sub ID [224] Raised by [S224 Q1934]

KLC Submission: The SAR is highly misleading in the way it describes the ASIA's engagement with Yawuru people. It refers to 'the exclusion of the Yawuru people from effective engagement by the ASIA process ...' (**Part 5**, **p.3-5**). In fact as the ASIA Report spells out in detail (**pp. 32-33**), the ASIA did engage in various ways with Yawuru people. It was with or through the Yawuru Native Title Corporation that the ASIA was unable to engage, despite a number of efforts to do so.

While the SAR did not describe the KLC's attempts to engage Yawuru people in the SAR report, it does however acknowledge that the parties explored engagement options on a number of occasions. The purpose of this statement was not to discount the work that KLC did to engage Yawuru people; rather, it was made as a statement of limitation to be considered in reading the report. More details on KLC's efforts to engage Yawuru people have been provided in the Response to Submissions document (see QID 1799).

3.2 Indigenous Agreements and Funding Commitments

Generic Question ID: 498 Sub ID [232] Raised by [S232 Q1362]

The Aboriginal community members on the Dampier Peninsula requested that something positive should be done now for the people by both Woodside and the State. They do not want promises just on paper. When will the economic benefits be seen in the communities?

The State Government acknowledges that the process of planning the proposed Browse LNG Precinct has been long, and that the community is eager to see the State deliver on its commitments. The process of planning the Precinct began in 2008, and has required negotiation with Traditional Owners throughout the process. On 21 April 2009, the State Government, the Kimberley Land Council (on behalf of the Goolarabooloo Jabirr Jabirr claimants) and Woodside (as a potential Foundation Proponent) executed a Heads of Agreement (**HoA**) to establish the Precinct near James Price Point. The HoA provides the framework to deliver a significant social and economic benefits package to local Indigenous communities. The State Government, in progressing the Browse LNG Precinct, is committed to the delivery of these benefits following the successful execution of land access arrangements.

As of May 2011, Woodside has started to implement some of its commitments to the delivery of the social and economic benefits made under the HoA. For example, Woodside currently has 18 local Indigenous trainees from the Kimberley working on the Browse LNG Precinct project, and employs a further 10 local Indigenous people as full time employees. Such examples are likely to significantly expand during the next phases of the Precinct's development process.

In addition to the process of negotiating with the Traditional Owners, the State Government has undertaken comprehensive impact assessments to consider potential environmental, social, economic, heritage and strategic impacts of the Precinct and identify management measures to address these impacts. These assessments are documented in the Strategic Assessment Report (**SAR**). The SAR will be submitted to the

relevant State and Commonwealth Government authorities for assessment of the Precinct proposal, under the *Environmental Protection Act 1986* (**EP Act**) and *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). If this project gains approval, then the State can begin developing the management measures outlined in the SAR, which will assist in the coordinated and effective delivery of benefits to Indigenous people.

Generic Question ID: 509 Sub ID [232] Raised by [S232 Q1374]

The Aboriginal people on the Dampier Peninsula can see no sign of an early commitment in improving the communities. When is the commitment, prior to the establishment of the LNG Precinct, going to be actioned?

The State Government acknowledges that the process of planning the proposed Browse LNG Precinct has been long, and that the community is eager to see the State deliver on its commitments. The process of planning the Precinct began in 2008, and has required negotiation with Traditional Owners throughout the process. On 21 April 2009, the State Government, the Kimberley Land Council (on behalf of the Goolarabooloo Jabirr Jabirr claimants) and Woodside (as a potential Foundation Proponent) executed a Heads of Agreement (**HoA**) to establish the Precinct near James Price Point. The HoA provides the framework to deliver a significant social and economic benefits package to local Indigenous communities. The State Government, in progressing the Browse LNG Precinct, is committed to the delivery of these benefits following the successful execution of land access arrangements.

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In addition to the process of negotiating with the Traditional Owners, the State Government has undertaken comprehensive impact assessments to consider potential environmental, social, economic, heritage and strategic impacts of the Precinct and identify management measures to address these impacts. These assessments are documented in the Strategic Assessment Report (**SAR**). The SAR will be submitted to the relevant State and Commonwealth Government authorities for assessment of the Precinct proposal, under the *Environmental Protection Act 1986* (**EP Act**) and *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). If this project gains approval, then the State can begin developing the management measures outlined in the SAR, which will assist in the coordinated and effective delivery of benefits to Indigenous people.

Generic Question ID: 522 Sub ID [232] Raised by [S232 Q1388]

The Aboriginal community members on the Dampier Peninsula believe that the Kimberley Land Council (**KLC**) has been consumed with negotiations instead of getting communities ready. Why has the KLC not assisted the communities to prepare for the LNG Precinct?

The negotiations that the Kimberley Land Council (**KLC**) has undertaken with the State and Commonwealth Governments and Woodside have been time consuming and are ongoing. However, they are also essential to making certain that the Indigenous people on the Dampier Peninsula receive appropriate benefits from the establishment of the Browse LNG Precinct on land near James Price Point.

The State Government and Woodside have entered into a Heads of Agreement (**HoA**) and a Heritage Protection Agreement (**HPA**) with the KLC. Together, these agreements commit the State Government and Woodside to the delivery of a significant social and economic benefits package.

Additionally, in 2009 the Commonwealth Government, through the Minister for Indigenous Affairs, advised the KLC that Indigenous communities and citizens in the West Kimberley can expect to be a major beneficiary of increased resources to be delivered through the National Partnerships Process. The Commonwealth Government will continue to work closely with the State Government to ensure that the Kimberley region receives the necessary priority in program implementation. Under the Indigenous Remote Service Delivery National Partnership, the Commonwealth is proposing that the Dampier Peninsula be included as one of the 26 priority remote service delivery locations.

The KLC was also been active in commissioning and defining the Terms of Reference for the Aboriginal Social Impact Assessment (**ASIA**) and Heritage Impact Assessment (**HIA**). These assessments have identified the issues that need to be managed to ensure that Indigenous communities are equipped to take advantage of the opportunities created by the Precinct (i.e. jobs) and to minimise the potential for negative impacts (i.e. Precinct workforce behaviour management).

Generic Question ID: 659 Sub ID [120] Raised by [S120 Q1305]

ENGO Submission: **Part 5 Section 3.2.2** Commonwealth Commitments to the West Kimberley Region of WA. Commonwealth funding commitments for the West Kimberley - see **Table 3-1** - are not tied to whether the LNG development proceeds or not, so this should be stated in the text.

It is correct that the Commonwealth Government commitments outlined in this section (**Section 3.2.2** of **Part 5)** are not tied to development of the Precinct. Whilst this distinction could have been made clearer in the text of the SAR, summarising existing commitments to the community is common practice in impact assessment. This provides context on how the existing or baseline social conditions may change in the future and informs the development of management activities for the proposed Precinct, ensuring they complement planned efforts by the Commonwealth government to improve the social status of communities in the West Kimberley.

Generic Question ID: 895 Sub ID [217] Raised by [S217 Q1888]

Why is something so huge in impact and so much a concern of many (not just those living in this immediate area) left up to three groups (Indigenous Land Use Agreement between State, Foundation Proponent and Traditional Owners) to decide on the benefits to a relative few.

Agreements with Traditional Owners are on the basis of recognition of their rights under the Commonwealth *Native Title Act 1993*. Benefits and opportunities in this regard would be distributed widely to address the poverty and disadvantage experienced particularly by some sections of the community.

Consultation with the broader community has also been extensive, and will be ongoing. Consultation is discussed in **Part 2, Section 9**. Ongoing stakeholder engagement is discussed further in the Response to Submissions Summary Report **Section 3.2.**

It should also be noted that the benefits arising from the Precinct are very broad. These are discussed in greater detail in the Response to Submissions Summary Report **Section 1.2.**

Generic Question ID: 944 Sub ID [224] Raised by [S224 Q1915]

KLC Submission: Negotiation of the Indigenous Land Use Agreement/s (**ILUA**) is ongoing. It is inappropriate and significantly misleading for the DSAR to refer to an ILUA or other agreement with Traditional Owners or native title parties as the source of any management, mitigation or safeguard measure required by the ToR and assessments when no such agreement exists at present.

The Proponent contends that it is quite appropriate to rely upon confidential negotiations being progressed to respond to recommendations where relevant, and where it is the stated intention to reach such an Agreement. Notwithstanding, on 30 June 2011 historic agreements were signed between the State Government, Woodside and the Goolarabooloo Jabirr Jabirr (**GJJ**) native title claimant group.

Generic Question ID: 973 Sub ID [224] Raised by [S224 Q1935]

KLC Submission: The SAR states that the Commonwealth informed the KLC that the West Kimberley will benefit from 'increased resources' during 2009-2013, and has 'projected investment' of $341 million in the West Kimberley (**Part 5, p. 3-8**). In fact, despite numerous engagements with Traditional Owners and the KLC, the Commonwealth has failed to identify 'increased resources' of anything like this amount. The SAR is thus misleading about the nature and extent of the Commonwealth commitment.

The commitments quoted in this submission relate primarily to funding to be delivered under the Indigenous Remote Service Delivery National Partnership Agreement between the Commonwealth and State Government. As an example of how this is manifest in the Kimberley, funding for Indigenous housing in the West Kimberley is currently being provided under this Agreement. The NPA process is separate from the proposal to establish the Browse LNG Precinct near James Price Point and thus is outside the scope of the Strategic Assessment Report (**SAR**).

The NPA is administered through the Commonwealth Government's Department of Families, Housing, Community Services and Indigenous Affairs (**FAHCSIA**). Information on issues regarding Indigenous home ownership and NPA lease arrangements is available on the FAHCSIA website: http://www.fahcsia.gov.au/sa/indigenous/pubs/housing/indig_home_ownership/Pages/default.aspx

The State Government will continue to liaise with FAHCSIA to ensure the delivery of benefits under this Agreement, to assist in its efforts to close the gap on Indigenous disadvantage in remote Western Australia.

In addition to the process of negotiating with the Traditional Owners, the State Government has undertaken comprehensive impact assessments to consider potential environmental, social, economic, heritage and strategic impacts of the Precinct and identify management measures to address these impacts. These

assessments are documented in the Strategic Assessment Report (**SAR**). The SAR will be submitted to the relevant State and Commonwealth Government authorities for assessment of the Precinct proposal, under the *Environmental Protection Act 1986* (**EP Act**) and *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). If this project gains approval, then the State can begin developing the management measures outlined in the SAR, which will assist in the coordinated and effective delivery of benefits to Indigenous people.

3.3 Relevant Legislation

Generic Question ID: 976 Sub ID [224] Raised by [S224 Q1938]

KLC Submission: The SAR adopts management and mitigation measures for archaeological impacts that are limited to the requirements of the *Aboriginal Heritage Act 1972 (WA)* (**AHA**) and the HPA. The deficiencies in the AHA from the perspective of Traditional Owners are set out in detail in the HIA Report. Furthermore, the SAR does not identify any reason why, having regard to the findings of the Aboriginal Archaeological Site Avoidance Survey, the ToR are satisfied by mere compliance with the AHA and the HPA. That is, the Proponent appears to have misunderstood the requirements of the ToR such that it believes no management or mitigation arrangements in addition to existing contractual and legal requirements are necessary to meet the requirements of the ToR.

The cultural heritage assessment and Government approvals process is necessarily bound to the *Aboriginal Heritage Act 1972 (WA)* (**AHA**) and the HPA. The HPA in this regard is the agreement between the WA Government, the KLC acting for the Traditional Owners, and the Foundation Proponent, specifying the processes to be followed for the initial heritage surveys and assessment process, to gain Government heritage approvals for the project and to minimise impacts on cultural heritage assets and values from the development of the Precinct.

As described in the SAR, the heritage management processes for the BLNG Precinct development also are intended to satisfy the standards of the *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984* with respect to heritage protection, and the EPBC Act with respect to the management of National Heritage values.

However, there are substantial, additional heritage management processes that have been agreed to and which are being developed beyond these legislative requirements. In particular, the HPA requires the development and implementation of a comprehensive Cultural Heritage Management Plan (**CHMP**) for BLNGP developments, and this requirement also is reflected in the BLNG Project Agreement and the role of the proposed Precinct Management Committee. The CHMP framework development is currently in progress between the parties to the BLNG Project Agreement.

Most of the heritage "safeguard and mitigation measures" recommended in the KLC's Heritage Impact Assessment (**HIA**) report are captured in these agreed processes, while other elements are included in other measures which have been agreed for cultural heritage management in relation to the development, as outlined in **Part 5**, **Section 3.5.5**. Some specific mitigation and monitoring measures for cultural heritage management also are recorded in **Part 5**, **Section 5**, for example in relation to a Managed Access Construction Camp, organised recreational activities and cultural awareness training.

In addition, **Part 5, Section 3.5.5** of the SAR notes that the KLC is engaged in a planning process that is aimed at putting in place a management regime to deal with the potential impacts identified in this report. The Dampier Peninsula Planning Strategy (formerly the Land Use and Infrastructure Plan) is intended to define areas of cultural, environmental and heritage significance and to apply appropriate land tenure and land management arrangements that will allow for the management and enforceability of access arrangements.

Furthermore, Ranger programs are being developed, guidelines are being developed for tourism and cross-cultural awareness, and the HIA recommendation will also inform the ILUA which is being developed and negotiated for the BLNG Precinct.

Some of the HIA's recommended "safeguard and mitigation measures" involve Commonwealth Government responsibilities such as National Heritage Listing and resolution of native title claims, which are beyond the scope of the SAR.

3.4 Potential Socio-Economic Impacts on Indigenous People

Generic Question ID: 1189 Sub ID [39, 212, 205, 215, 211] Raised by [S212 Q1096]

Part 5 Section 3.4.4: Despite the SIA raising many negative concerns as to whether the Precinct will be beneficial for employment and economic development in the area it still concludes the project will be beneficial. There is nothing in this snapshot report to concretely back this up. There are positive claims, however these are speculative and not guaranteed. Those most likely to benefit are not presently living in the Kimberley, hence, why base it here?

The key finding of the SAR is that the development of the Precinct would be an overall benefit to the local economy, bringing a range of economic development and employment opportunities. For example, it would bring opportunities to supply services to the Precinct, as well as a greater availability of training and employment opportunities for local residents. The development of the Precinct would increase and secure the economic resilience of the area well into the future, by introducing another economic sector.

In addition to providing opportunities for the community as a whole, the Precinct would bring substantial employment opportunities and economic benefits specifically for Indigenous people, as identified in the Aboriginal Social Impact Assessment (**ASIA**). For example, there would be increased opportunities in education, training and employment, including the development of training networks, scholarships and apprenticeships. Targeted employment of local Indigenous people would also facilitate employment and business opportunities.

At the same time, the SAR discusses the significant socio-economic barriers that will need to be addressed in order for local people to realise the employment benefits presented by the Precinct. The State Government knows that overcoming these barriers is essential if the local community is to be able to take advantage of the direct and indirect employment opportunities resulting from the establishment of the Precinct. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, will help to ensure benefits are realised through stringent management strategies including:

An Education, Training and Employment Strategy:

- to maximise education, training and employment opportunities for the local community; and
- ensure a coordinated approach to the range of education, training and employment strategies implemented to support the development of the Browse LNG Precinct.

An Indigenous Workforce Development Strategy:

- To ensure a coordinated approach to the range of Indigenous education, training and employment strategies;
- To develop and implement a strategy to increase the number of Indigenous workers on the project;
- To develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment;
- To provide opportunities for Indigenous people to work on cultural and environmental values relevant to precinct operation; and
- To develop appropriate workforce arrangements and that includes support for Indigenous workers.

Funding and implementation of these strategies will be a key focus in the next phase of the project. These programs will be delivered through the Indigenous Land Use Agreement (ILUA) or other land agreement negotiated with the Traditional Owners, the framework for which has been agreed in the signed Heads of Agreement (**HoA**). The HoA also provides for an Education Development Fund to support scholarships and training programs upon signing of an ILUA or other land agreement. In addition, the Social Management Committee, which is part of the proposed Precinct Governance Structure, will ensure the implementation of these strategies.

The local employment strategies in the SAR will link to existing programs to assist local people to overcome barriers. Through the National Partnerships process education, employment and training projects are being developed in an integrated “whole of life cycle” framework. Trade training projects are being developed to ensure there is a dovetail approach between school based trades or vocational training and industry training. These projects are either funded, in development, or under discussion between the Kimberley Land Council, the Commonwealth and State Governments and other partners.

The local employment strategies need to start well in advance of the Precinct establishment and be well co-ordinated to ensure a match between the skills required, the capacity of the training providers and the existing level of the potential trainees. If these barriers are addressed, the development of the Precinct represents considerable economic opportunities for the people of the West Kimberley.

Generic Question ID: 1203 Sub ID [39, 205, 215, 212] Raised by [S39 Q361, S205 Q2696]

A number of submissions raise similar points regarding youth development:

- **Part 5 Section 3.4.4.8**: In general the youth section of the BLNG Strategic Assessment Report appears to be primarily focused on youth in communities, with little mention of Broome youth. Anecdotally, many youths in Broome who complete high school already have good opportunities for engagement with the community, employment, and further education. Obviously there is disengagement factors associated with some Broome youth. Is it considered likely that the BLNG Precinct will improve the opportunities for these youth?
- Very little apparent detail re: what active engagement measures will be undertaken by government and commercial proponents for Aboriginal people to provide opportunity to address the impact development will have on youth in the Broome and the wider community.

The potential impact of Precinct development on the Aboriginal youth in Broome and Dampier Peninsula communities was a key impact category in the Aboriginal Social Impact Assessment (**Appendix E-3**). These potential impacts and opportunities are summarised in **Part 5, Section 3.4.4.8** of the SAR. Participants and youth groups felt that development of the Precinct would have serious, negative impacts on youth if they are not actively engaged and in particular given meaningful employment and opportunities. In addition, a primary concern amongst key informants to the ASIA was that increased access to higher disposable incomes amongst young people would lead to higher rates of substance abuse and potentially increase the already high rates of youth suicide. Although most of these concerns applied to both Broome and the Dampier Peninsula, there was particular concern that communities in the Dampier Peninsula would see an increase in alcohol and drug abuse, especially amongst youth if the Precinct led to increased access. At the same time, stakeholders also felt that the Precinct offered opportunities for youth (e.g. an increase in funding for recreation and additional education, training and employment opportunities). Active engagement by Government and commercial proponents with Indigenous people was seen as providing an opportunity to address existing issues amongst Indigenous youth.

The Precinct is expected to improve opportunities for youth both in the Dampier Peninsula communities and in Broome. The ASIA recommended that the government expand funding for recreation and other youth activities and fund measures for the KLC and Traditional Owners to develop measures to provide greater support and recognition to Indigenous youth. These are provided for in the Heads of Agreement. In addition, Indigenous youth will benefit from the education, training and employment opportunities that will be facilitated by development of the Precinct. These measures are outlined in the Education, Training and Employment and Indigenous Workforce Development Strategies (**Part 5, Section 5**).

Generic Question ID: 166 Sub ID [39, 212, 153] Raised by [S39 Q363]

The SAR **Part 5, Section 3.4.5** refers to the "employment and business opportunities that may arise, through targeted employment of local Indigenous people". The SAR summarised the ASIA findings that "to realise these opportunities, the companies involved in the LNG Precinct and their contractors must be committed to employ local people; that Indigenous people should have priority and that companies must be held accountable if they fail to do so". How will this be enforced after other companies have "failed to do so" in other parts of WA?

It is a specific objective of the State Government to maximise the opportunities presented by the establishment of the Browse LNG Precinct, to substantially improve the education, health, social and economic well-being of Indigenous people and significantly reduce disadvantage within the Kimberley community. Historically, efforts to employ local Indigenous people on resource projects have produced mixed outcomes. This in part is what drove the State Government to undertake both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) as part of the strategic assessment process for the Browse LNG Precinct.

Significantly, on 6 May 2011 the Goolarabooloo Jabirr Jabirr Traditional Owners agreed to give consent for the taking of land for the Browse LNG Precinct. Traditional Owners acknowledge the significance of this decision as life-changing, noting that it places them in the best possible position, creating long-lasting change for Aboriginal people in the Kimberley by providing jobs and training as well as business development opportunities and greater access to health, education and housing.

To ensure delivery of the necessary environmental and social management measures and strategies, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Significantly Traditional Owners are now represented at all levels of the Governance arrangements. An adaptive management approach will be taken to ensuring delivery of the range of commitments from the Precinct.

Generic Question ID: 968 Sub ID [224, 205, 215] Raised by [S224 Q1930]

KLC Submission: The inadequacy of the SAR's response to the ASIA recommendations is well illustrated by the SAR response to issues affecting youth. The ASIA identified major social issues affecting youth, and showed how the BLNG Precinct might make the situation worse in the absence of specific measures to address existing problems and equip young people to benefit from the BLNG Precinct. The SAR accurately summarises the ASIA's discussion of these points. However its proposed 'Mitigation and Management Measures – Youth' (**Part 5**, **p. 3.32**) entirely ignores the ASIA recommendations to deal with the problems identified. Instead the SAR states that the key mitigation and management measures to address youth issues will involve 'restricting contact between the Precinct workers and the residents of Broome and the Dampier Peninsula'. No justification is given as to why this response is even relevant to the problems identified, let alone likely to provide a basis for managing them. The SAR's discussion of Social Service Delivery and Infrastructure (**Part 5**, **p. 3.35**) provides another example of the SAR ignoring ASIA recommendations and proposing mitigation and management measures that are entirely inadequate.

The Mitigation and Management Measures - Youth, to which the submission refers, is a response to the previous discussion in **Part 5, Section 3.4.4.8** on issues currently affecting youth. The Aboriginal Social Impact Assessment (**ASIA**) identified increased access to drugs and alcohol as a concern, and cited that the presence of workers on the Peninsula could potentially increase availability of alcohol, drugs and undesirable behaviours among the local community. Workforce management is a means to manage the issue. Other Precinct conditions noted in the same Section included:

- provision of health services for the Precinct in a manner that does not impact on services in Broome;
- an Education, Training and Employment Strategy to maximise education, training and employment opportunities for the local community; and
- an Indigenous Workforce Development Strategy.

Each of the provisions highlighted above addresses particular concerns of the Impact Assessment; however it is noted that the Precinct also cannot be a panacea for all issues affecting the region.
More information on how DSD has addressed the ASIA recommendations can be found in the supporting **Annexure - ASIA Recommendations** of the Response to Submissions Summary Report (ASIA Recommendations 68, 69, 74).

Generic Question ID: 1188 Sub ID [205, 215, 212] Raised by [S212 Q2835]

Part 5 Section 3.4.4: Statement made that local small manufacturing and construction base may benefit if it manages to successfully tender for contracts to supply Precinct. Flow on effect may include businesses becoming larger with greater capacity to deal with larger clients and projects. Does this mean there are more large projects planned for the Kimberley? Or are they assuming local business will relocate to the Pilbara? There is also no guarantee that local businesses will be successful

Additional large development projects that may occur in the Kimberley region are outside the scope of the Strategic Assessment. However, it is correct that the Strategic Assessment Report highlighted the potential long term flow-on benefits of employing local businesses in the development of the Browse LNG Precinct, including both an increase in business income and the capacity of local businesses to deal with large clients and projects. In this instance the majority of opportunity actually lies with being able to take on larger Precinct related contracts as there is staged expansion or new LNG processors come to the Precinct. This will encourage sustained growth of opportunities associated with the development of the Precinct over many years.

In addition, the Kimberley economy has already seen significant growth in some resource development sectors over the past decade and it is reasonable to expect that in the short to long-term the Kimberley's growth opportunities will continue to be underpinned by both its resource and tourism sectors. The emergence of LNG operations offers the region significant economic and population growth potential for local businesses.

The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry. Subsequently, the local manufacturing and construction base would grow through contracting to supply goods and services to the Precinct. This would result in flow-on benefits of increased business income and an increase in the capacity of local businesses to deal with large clients and projects. This increased capacity can be utilised to generate an expanded customer base beyond the LNG sector (e.g. retail and hospitality sectors).

In addition to local procurement policies, the State Government has a critical leadership role to play in championing and assisting the capability of local businesses to participate in development of the Browse LNG Precinct. Guided by the *Building Local Industry Policy 2009*, the State Government will support maximising opportunities for local industry, ensuring they have full, fair and reasonable opportunities to supply major

projects.

Generic Question ID: 1194 Sub ID [205, 215, 212] Raised by [S205 Q2671]

Part 5 Section 3.4.4.4: Already 40% of income derived from production in the Kimberley is not retained in the region. Does the State understand that this is likely to increase with FIFO operations at the BLNG Plant?

Precinct development it has demonstrated an exceptionally high growth rate, with a 4.7% per annum population increase from 1976 to 2006. Broome is currently experiencing the effects of this significant population growth with the demand for many services outstripping supply. Whilst the population is expected to grow regardless of the Precinct development, it is notable that population projections do not explicitly model economic activity.

While the Browse construction workforce will be largely comprised of FIFO workers, there are still a number of ways in which the local and regional economy will benefit. A key objective of State Government in establishing the Precinct is to provide opportunities for local employment and economic development. The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry.

Subsequently, the local manufacturing and construction base would grow through contracting to supply goods and services to the Precinct. This would result in flow-on benefits of increased business income and an increase in the capacity of local businesses to deal with large clients and projects. This increased capacity can be utilised to generate an expanded customer base beyond the LNG sector (e.g. retail and hospitality sectors). Education, training and employment opportunities associated with Precinct employment would also generate a pool of skilled people in the region. Skills acquired through training for jobs on the Browse LNG Precinct can also be applied to non-project jobs, which can assist in addressing the lack of skilled workers in Broome noted by many businesses.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a number of strategies aimed at improving service provision within the region, and maximising the benefits associated with the Precinct for the local community.

Generic Question ID: 1196 Sub ID [205, 215, 212] Raised by [S205 Q2677]

Part 5 Section 3.4.4.5: The potential Impact of BLNG Precinct on education and training identified in the SIA includes the loss of skilled trainers to BLNG industry. Is this situation likely to cause serious short term damage to existing TAFE / RTO programs? (i.e. trainers with experience in the Kimberley and established relationships with local people are difficult to replace easily).

It is unlikely that the Browse LNG Precinct will damage existing education and training programs in the Kimberley. The education and training programs discussed in the SAR will complement existing vocational training programs and can assist in strengthening the programs by increasing their capacity and expanding the curricula. For example, the limited trade facilities at Kimberley TAFE, lack of appropriate courses and the availability of places on courses were criticisms raised in consultations with education stakeholders. While TAFE indicated it is currently addressing these issues, the development of the Precinct brings an opportunity to bolster these programs and provide targeted vocational training that will provide the skills that are needed in the industry.

Generic Question ID: 1197 Sub ID [205, 215, 212] Raised by [S205 Q2678]

Part 5 Section 3.4.4.5: The potential impact of BLNG Precinct on education and training states that there will be "fewer places available at the secondary school in Broome for students from communities". Why is this the case?

This statement in the Strategic Assessment Report (**SAR**) references one of the stakeholder concerns highlighted in the Aboriginal Social Impact Assessment (**ASIA**) (**Appendix E-3**). This concern was reflected in consultations with the manager of Broome Residential College, who was concerned that the Precinct would bring an influx of people competing for accommodation. If this was the case, the manager was concerned that some Indigenous families whose children already attend secondary school in Broome as day students may have to return to the communities, and there may be an increased need to have children in safe accommodation, both of which could increase the need for boarding facilities. Broome Residential College provides boarding facilities for secondary school students attending either Broome Senior Secondary School (42 student quota) or St Mary's Catholic Secondary School (30 student quota). This school has limited capacity (72 beds) and a 12-month waiting list with the exception of young people at risk, who are under the care of the Western Australian Department of Child Protection and considered top priority. The majority of the students, who are Indigenous, are on Abstudy, and it is their first time away from home. There are plans to double Broome Residential College's capacity.

Although this was a stakeholder concern, the social impact assessment determined through a review of secondary school enrolments that there is some capacity to cope with projected increases in population. In relation to the 13-17 years age group, the maximum projected direct and indirect population increase attributable to the Precinct development and operation over the next 30 years is between 55 and 135 students. There are currently two secondary schools in Broome, the public Broome Senior High School and the Catholic St Mary's College. According to the then Broome Department of Education and Training, the current Broome Senior High School has the capacity to double the current enrolment of around 500 students. While there is spare secondary schooling capacity to cope with projected increases in population, a current issue that will be exacerbated by additional population is a perceived need for an independent private school to reduce the need to send children to boarding school in Perth when private schooling is the preferred option.

It should also be noted that the Anglican Schools Commission of Western Australia (**ASCWA**) recently announced that it plans to develop land in Broome so it can open a new private school by the end of the decade.

Generic Question ID: 1198 Sub ID [205, 215, 212] Raised by [S205 Q2679]

Part 5 Section 3.4.4.5: The potential impact of BLNG Precinct on education and training refers to "Education and training opportunities including additional schools and trade training centres". Where would they place additional schools and trade centres? Are the new schools to accommodate children of new workers moving into the Kimberley?

Part 5, Section 3.4.4.5 of the SAR highlights the key findings from the Aboriginal Social Impact Assessment (**ASIA**) (**Appendix E-3**). Among these findings was that key informants from education and training agencies interviewed for the ASIA felt that development of the Browse LNG Precinct could potentially facilitate the provision of additional schools and trade training centres; scholarships and sponsorships; and a range of training programs that are more directly industry related. This is not a reference to impact management of additional population growth in Broome; rather, it refers to one of the potential benefits of the Precinct development.

The State Government is committed to delivering fundamental economic and social change to the West Kimberley through development of the Precinct near James Price Point, and one of the ways in which this will be done is through the provision of new education and training opportunities. This will help ensure that local people have the education and skills to take advantage of direct and indirect employment opportunities resulting from the Precinct. To this end, commercial proponents are required to develop education, training and employment strategies to increase local employment in both construction and operational phases of the Precinct over time, in order to retain benefits within the Kimberley. These additional education and training opportunities will complement the existing and planned educational and training programs of other parties (e.g. other State Government departments).

Additionally, the strategic Social Impact Assessment (**Appendices D-1 to D-3**) looked at the potential impact of population growth, resulting from development of the Precinct, on existing schools in Broome. The assessment determined that population growth could be significant enough to place some additional resourcing demands on present primary school services, although the new primary school proposed at Broome North may, to some extent, accommodate this increase in demand. At the secondary school level, there appears to be some capacity to cope with projected increases in population.

The capacity of Broome schools to cope with the development will be ensured through development of the Broome Social Services Strategy. This will be a whole of Government initiative to address social services deficits in Broome, including education services. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits, and will engage with the community to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

Generic Question ID: 1202 Sub ID [205, 215, 212] Raised by [S205 Q2695]

Part 5 Section 3.4.4.8: The undertaking that it is a BLNG Precinct condition to develop an Education, Training and Employment Strategy and an Indigenous Workforce Development Strategy (**Part 5**, **Section 5**) appears to be a repeated "panacea" to predicted issues with youth. This section appears to be an area that warrants scrutiny as it is referred to frequently. How will the education, training and employment strategy be closely monitored?

There are a number of ways in which potential impacts of the Browse LNG Precinct development on youth will be managed. As this submission notes, youth will benefit from the education, training and employment opportunities that will be facilitated by development of the Precinct. These measures include the Education, Training and Employment and Indigenous Workforce Development Strategies. Additional measures that will

manage the impacts on youth include focus on restricting contact between the Precinct workers and the residents of Broome and the Dampier Peninsula. The relevant management measures (see **Part 5**, **Section 5**) include the requirement for commercial proponents to:

- administer a controlled-access construction workers camp;
- manage worker access to Broome and the Dampier Peninsula;
- manage worker behaviour including access to drugs and alcohol and unacceptable employee behaviour when visiting Broome and other areas in the Kimberley; and
- provide health and emergency services required to service the BLNG Precinct in a manner that does not impact upon the provision of these services in Broome.

Implementation of these measures will be a requirement of commercial proponents locating in the Precinct. To assist with delivery of these strategies, the Strategic Assessment Report (**SAR**) proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

The State Government will establish lease conditions and monitor the development of the Precinct to ensure that commercial proponents comply with the management measures outlined in the SAR. Monitoring information will be made publicly available in annual reports, ensuring accountability to the public. The State Government and commercial proponents will also seek feedback from the community on a regular basis to determine if changes to mitigation and management are required. Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval.

In addition to managing the potential impacts on youth, the development of the Precinct will also facilitate opportunities for youth. For example, the ASIA recommended that the government expand funding for recreation and other youth activities and fund measures for the KLC and Traditional Owners to develop measures to provide greater support and recognition to youth (see **Recommendations 68 and 69,** and the supporting **Annexures**). These are provided for in the Heads of Agreement.

Generic Question ID: 1195 Sub ID [205, 215] Raised by [S205 Q2673]

Part 5 Section 3.4.4.4: There is recognition that, for Aboriginal businesses to gain out of BLNG Precinct development, there will need to be considerable examination of barriers to Aboriginal employability in impact areas. Does the State realise that it has had forty years to work on barriers to Indigenous employment in the Pilbara and there are still many problems?

The State recognised from an early stage that to avoid some of the challenges experienced in other areas a different approach was required. Thus for the first time in a project of this nature, substantial work was done in developing a Social Impact Assessment (**Appendices D-1** to **D-3**) and an Aboriginal Social Impact Assessment (**Appendices E-1** to **E-6**), the findings of which are summarised in the SAR.

Accordingly the SAR discusses the significant socio-economic barriers that need to be addressed in order for local people to realise the employment benefits of the Browse LNG Precinct. The State Government acknowledges that overcoming these barriers will be essential if the local community is to be able to take advantage of the direct and indirect employment opportunities resulting from the establishment of the LNG Precinct. Several strategies to ensure that benefits are realised are included in the management measures outlined in the Strategic Social Impact Management Plan (**SAR Part 5, Section 5**)**:**

- An Education, Training and Employment Strategy: to maximise education, training and employment opportunities for the local community and ensure a coordinated approach to the range of education, training and employment strategies implemented to support the development of the BLNG Precinct.
- An Indigenous Workforce Development Strategy: that will assist with developing a coordinated approach to the range of Indigenous education, training and employment strategies; develop and implement a strategy to increase the number of Indigenous workers on the project; develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment; provide opportunities for Indigenous people to work on cultural and environmental values relevant to Precinct operation; and develop appropriate workforce arrangements and that includes support for Indigenous workers.

Funding and implementation of these strategies will be a key focus in the next phase of work. These programs will be delivered through the land access agreement negotiated with the Traditional Owners. The agreement provides for an Education Development Fund to support scholarships and training programs upon signing of the land access agreement. In addition, the proposed Precinct Governance Structure will ensure the

implementation of these strategies.

The local employment strategies in the SAR will link to existing programs to assist local people to overcome barriers. Through the National Partnerships process education, employment and training projects are being developed in an integrated "whole of life cycle" framework. Trade training projects are being developed to ensure that there is a dovetail approach between school based trades or vocational training and industry training. These projects are funded, in development or under discussion between the KLC, DEEWR, DSD, DIA and other State and Commonwealth government agencies and other partners.

The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, the Traditional Owners can have significant input into the environmental and social management measures proposed in the SAR.

Generic Question ID: 1201 Sub ID [205, 215] Raised by [S205 Q2687]

Part 5 Section 3.4.4.6: The BLNG ASIA states that "systematic baseline data on the health status of Indigenous people in the area of impact was not able to be located". If the health of these people is a serious issue, shouldn't there be a thorough process followed to establish baseline data? What does the ASIA know about the health of other Aboriginal communities who are located adjacent to large industrial developments (e.g. Roebourne)?

Noting the lack of baseline health data, one of the recommendations (Recommendation 65) in the Aboriginal Social Impact Assessment (**ASIA**) states:

Indigenous health audit of the Area of Impact prior to the commencement of activities under the Plan; undertake health surveys of relevant populations required to fill gaps in base line data.

Expanded funding (secure and long term) for relevant health and social welfare programs, including those currently provided by NGOs and Indigenous organisations.

The State Government's response to this recommendation is already underway as part of the Community Health National Partnership Agreement.

Selection criteria employed during the site selection process for the Browse LNG Precinct, placed considerable weighting on limiting proximity to permanent settlements, in order to avoid potential impacts on human health. Accordingly, the option of North Head was rejected because of out-stations being located within 10km of the suggested site. Experience from LNG processing plants near Karratha and Darwin, which are both located within 20km of permanent settlements, indicate that there is likely to be no significant risk to the health of the Broome or Beagle Bay communities, which are both over 45km away from the Browse LNG Precinct site.

Regardless of these considerations during site selection, the SAR still addresses the issue of potential impacts on human health from the development of the Precinct (**Part 5, Section 4.9**) and provides a range of management measures to ensure these impacts are minimised.

Potential impacts on human health more broadly are discussed further in **Section 4.7.8** of the Response to Submissions Summary Report.

Generic Question ID: 493 Sub ID [232] Raised by [S232 Q1357]

Aboriginal community members on the Dampier Peninsula wondered if there was anything different in the Browse LNG Precinct Strategic Assessment Report, from what was detailed in the Kimberley Land Council's (**KLC**) Aboriginal Social Impact Assessment (**ASIA**)? The Aboriginal community members believe that the KLC's ASIA contained all the information.

The information on Indigenous impacts that is presented in the Strategic Assessment Report (**SAR**) is a summary of what was already reviewed by the Indigenous community in the Kimberley Land Council's Aboriginal Social Impact Assessment (**ASIA**). The SAR also contains a summary of the other impact assessments conducted as part of the Strategic Assessment process, including the broader Social Impact Assessment (**SIA**), Environmental Impact Assessment (**EIA**) and a range of specialist studies.

The main difference between the ASIA and the SAR is in the scope of the two documents. The purpose of the ASIA was to identify the actual, likely and potential impacts associated with the development of the Precinct specifically on Indigenous people, and to identify management measures to ensure that the benefits associated with its development can be optimised.

The scope of the SAR however, was much broader. The SAR contains detailed technical and environmental studies, and provides a holistic assessment of potential impacts associated with the development of the

Precinct. The SAR is also the document that will be submitted to the State and Commonwealth Governments, for assessment of the Precinct proposal under the *Environmental Protection Act 1986* (**EP Act**) and *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**).

Generic Question ID: 660 Sub ID [120] Raised by [S120 Q1306]

ENGO Submission: **Part 5 Section 3.4.1**. Overview. The key finding of the ASIA is that the Precinct is likely to have a major impact on Aboriginal people and that underlying socio-economic disadvantages will affect the way that development opportunities and benefits would be taken up. There may be inequities in the distribution of impacts between Indigenous and non-Indigenous people. There is insufficient detail provided on these potential distributive impacts in the SIA. Who is likely to benefit and who will lose from the development of the LNG Precinct? The proposed management and mitigation measures, which essentially comprise the development of more strategies and plans, do not alleviate concerns that inequities in the local community will widen.

While the Precinct offers Indigenous people in the West Kimberley a unique opportunity to substantially alleviate existing social pressures, the existing deficiencies in housing, education, health status and employment and training limit the extent to which Indigenous communities in the West-Kimberley can take advantage of the opportunities generated by new projects. Reducing these long standing barriers will require a concerted effort on the part of the State Government, commercial proponents and the Indigenous community. The extent to which these barriers are successfully managed will in large part shape the nature of the socio-economic impacts on Indigenous communities as a result of the Browse LNG Precinct.

It is important that these efforts are successful so that Indigenous people can receive an equitable share in the potential benefits arising from the Browse LNG Precinct. As noted in the Aboriginal Social Impact Assessment (**ASIA**), failure to do so could further marginalise Indigenous people, increase existing social inequalities, and create serious negative social impacts if Indigenous people:

- do not gain access to the associated economic opportunities;
- suffer the impact of rising housing and living costs; and
- experience declining access, level or quality of public services.

The Strategic Assessment Report (**SAR**) includes proposals to prepare and implement a range of management plans to reduce the barriers to Indigenous people realising the benefits of the project and to minimise the potential for negative impacts. These include the following:

- The SAR (**Part 5, Section 5.4.7**) proposes the development and implementation of an education, training and employment management plan that ensures a coordinated approach and maximises opportunities for the local community. This will require a collaborative approach between the commercial proponent(s), state and commonwealth agencies and the community. The plan will need to include a range of strategies to reduce the existing barriers to Aboriginal education, training and employment.
- The West Kimberley Socio-Economic Strategy will be an across government initiative to address social services deficits. It is planned to address social service issues in the West Kimberley with two, five and ten year strategic plans and will be developed in close consultation with the community. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.
- The issue of socio-economic conditions in the Dampier peninsula is also addressed in the Heads of Agreement (**HoA**) signed in April 2009 by the State Government, the KLC (on behalf of the Goolarabooloo Jabirr Jabirr claimants) and Woodside (as Foundation Proponent). Under the HoA, the State Government and Woodside have together committed to delivering about $1.5 billion of social and economic benefits to local Aboriginal communities. Among the socio-economic objectives of the HoA are the following:
    - reforming of Indigenous land tenure to help establish appropriate titles for home ownership and economic development in Dampier Peninsula communities;
    - creating new economic opportunities, including business development and trade training;
    - increasing funding to improve Government facilities and services for the wider community; and
    - creating Traditional Owner controlled funds for economic development, housing, education and cultural preservation.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 661 Sub ID [120] Raised by [S120 Q1307]

ENGO Submission: **Part 5 Section 3.4.2** ASIA Process for Identifying and Assessing Potential Impacts. There is an assumption that Broome will be less affected than the small Aboriginal communities on the Dampier Peninsula. This is justified solely on the basis of the location of the workers' accommodation camp. However, this conclusion assumes that the contingency accommodation camp for 600 workers will not be required on the outskirts of Broome.

As stated in the Strategic Assessment Report (**SAR**), the Aboriginal Social Impact Assessment (**ASIA**) assumed that the small Aboriginal communities on the Dampier Peninsula may be subject to greater or more intense social impacts than Broome. In the ASIA, it is argued that the Dampier Peninsula is not, on all accounts, part of the 'secondary impact area'. Rather, the ASIA includes the Dampier Peninsula in its defined "Area of Impact" based on an assumption that the people of the Dampier Peninsula may experience some impacts more acutely or at least at the same level as people in Broome. This assumption is based on the characteristics of these communities and of the project, rather than the location of the workers' accommodation camp, for example:

- Whilst all Indigenous populations in the Area of Impact experience socio-economic disadvantage (e.g. low levels of school attendance and post-school qualifications, low incomes), this disadvantage is particularly acute for Indigenous communities of the Dampier Peninsula. This can make them more vulnerable to some social impacts from the development.
- If access to the Peninsula is increased, there is potential for a range of negative impacts due to an unmanaged increase of visitor numbers. This would be felt more acutely on the Peninsula than in Broome, where current visitor numbers are much higher.
- Given the scale of the LNG Precinct, including the fact that its construction workforce will far exceed the combined population of the Dampier Peninsula communities, and its proximity to those communities, the ASIA notes that small Indigenous communities on the Dampier Peninsula should not be any less subject to impact than will Broome.
- The LNG Precinct may have significant effects on native title interests and on Indigenous sites and culture, and that many of the Indigenous people who hold these interests and/or are custodians for sites reside in the Dampier Peninsula.

While the Woodside temporary workers camp is outside the scope of the Strategic Assessment, it is subject to the relevant planning legislation. The Western Australian *Planning and Development Act 2005* establishes the legislative basis for State and local planning. Under this legislation, Broome Shire's *Town Planning Scheme No. 4* provides the planning framework to guide the future development of Broome. The *Town Planning Scheme No. 4* provides for a range of local planning policies, including "Transient Workers Accommodation" (Local Planning Policy 8.8) (http://www.broome.wa.gov.au/council/pdf/policy/88.pdf). This planning policy relates to a "temporary or intermittent workforce employed on one or more finite projects in or based in the Shire of Broome". The policy provides a number of assessment criteria to enable the council to assess Transient Workers Accommodation proposals.

More information on the differences between the predicted social impacts in Broome and on the Dampier Peninsula can be found in the ASIA (**Appendix E-3**).

Generic Question ID: 662 Sub ID [120] Raised by [S120 Q1308]

ENGO Submission: **Part 5 Section 3.4.4.3** Housing and the Cost of Living. There are a number of mitigation and management measures outlined to deal with the issue of increased housing costs and the overall cost of living for Indigenous people. It is not clear whether these will be adequate given the scale of the housing availability problem outlined in the preceding discussion. Where does low cost public and private housing fit into the Broome North development, for instance? We note the comments of the President of the Real Estate Institute of Australia, David Airey, that the pressure on housing prices in Broome will be intense and the LNG precinct would have a 'maximum effect' not a minimal one as argued in the Strategic Assessment report.

LandCorp's development of Broome North has considerably altered the Broome housing landscape. The development includes the provision of land for social housing but the relevant agencies will need to allocate funding for the construction of housing.

The existing housing landscape will need to be addressed in addition to each proponent's close management of its accommodation requirements in order to prevent more serious social housing issues developing in Broome.

As described in the Strategic Assessment Report (**SAR**), LandCorp (as the State's facilitator of land development) and the Department of Housing will develop an overall land and housing management strategy that:

- provides an understanding of current housing issues in Broome;
- addresses short-term accommodation deficits, affordable housing, social housing and homelessness issues.
- manages the impacts of the Precinct development on local and regional housing;
- identifies potential impacts on different types of housing during the different phases of Precinct construction;
- monitors housing supply and demand; and
- ensures timely release of land for housing and corresponding construction capability.

To ensure delivery of the necessary housing and general social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 663 Sub ID [120] Raised by [S120 Q1309]

ENGO Submission: **Part 5 Section 3.4.4.4** Economic, Employment and Enterprise Development. From the discussion of employment benefits it appears that the area's Aboriginal people face more barriers, especially on the Dampier Peninsula, than there will be opportunities from the LNG development. It is not clear how many of the construction or operational workforce are likely to be Indigenous, or come from the local area.

As this was a strategic-level assessment, specific project-level indicators and targets were not established. These will be established in the next stage of planning, when more details of the required worker profile for specific projects are known. Commercial proponents, with State government leading on the area of education, will be required to develop an Indigenous education, training and employment management plan. This must occur prior to construction and include relevant targets and performance indicators. There are a number of mechanisms included in the strategic management plan that will insure these indicators are monitored and reported. The monitoring results will be reported to the proposed Precinct Governance structure to ensure that management measures are maximising Indigenous workforce development opportunities. As with all management measures outlined in the SAR, should monitoring indicate that these targets are not being met, additional measures would be implemented.

Although some potential negative economic impacts were identified in the SAR (e.g. increased workforce competition, increases in cost of living), the development of the Precinct would be a net benefit to the local economy, bringing a range of economic development and employment opportunities. For example, it would bring opportunities to supply services to the Precinct as well as a greater availability of training and employment opportunities for local residents. The development of the Precinct would increase the economic resilience of the area by introducing another economic sector.

In addition to providing opportunities for the community as a whole, the Precinct would bring substantial employment and economic benefits specifically for Aboriginal people, as identified in the Aboriginal Social Impact Assessment (**ASIA**). For example, there would be increased opportunities for education, training and employment, including the development of training networks, scholarships and apprenticeships. Targeted employment of local Indigenous people would bring employment and business opportunities.

At the same time, the SAR discusses the significant socio-economic barriers that need to be addressed in order for local people to realise the employment benefits of the BLNG Precinct. The State government knows that overcoming these barriers is essential if the local community is to be able to take advantage of the direct and indirect employment opportunities resulting from the establishment of the LNG Precinct. Several strategies to ensure benefits are realised are included in the management measures outlined in the SAR (**Part 5**, **Section 5**)**:**

- An Education, Training and Employment Strategy: to maximise education, training and employment opportunities for the local community and ensure a coordinated approach to the range of education, training and employment strategies implemented to support the development of the LNG Precinct.
- An Indigenous Workforce Development Strategy: to ensure a coordinated approach to the range of Indigenous education, training and employment strategies; develop and implement a strategy to increase the number of Indigenous workers on the project; develop or link to existing programs to assist Indigenous people to overcome barriers to education, training and employment; provider opportunities for Indigenous people to work on cultural and environmental values relevant to precinct operation; and,

develop appropriate workforce arrangements and that includes support for Indigenous workers.

Funding and implementation of these strategies will be a key focus in the next phase of work. These programs will be delivered through the land access agreement negotiated with the Traditional Owners, the framework for which has been agreed in the signed Heads of Agreement (HoA). The HoA provides for an Education Development Fund to support scholarships and training programs upon signing of the land access agreement. In addition, the proposed Precinct Governance Structure will ensure the implementation of these strategies.
The local employment strategies in the SAR will link to existing programs to assist local people to overcome barriers. Through the National Partnerships process education, employment and training projects are being developed in an integrated "whole of life cycle" framework. Trade training projects are being developed to ensure there is a dovetail approach between school based trades or vocational training and industry training. These projects are funded, in development or under discussion between the KLC, DEEWR, DSD, DIA and other State and Commonwealth government agencies and other partners.

The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, the Traditional Owners can have significant input into the environmental and social management measures proposed in the SAR.

Generic Question ID: 664 Sub ID [120] Raised by [S120 Q1310]

ENGO Submission: **Part 5 Section 3.4.4.7** Social Concerns Related to Environmental Impacts. There is no assessment of the threats posed by the Precinct to Indigenous access to marine resources. Concerns are raised but there is no analysis of the level of risk. The intention is that construction workers would only be able to fish when participating in organised tours. This seems rather unlikely to be sustained over a period of a few years.

The Department of Fisheries' commissioned report "Impact of the proposed Kimberley LNG Precinct on Customary Fishing in the Vicinity of James Price Point" (**SAR Appendix D-4**), examined the fishing practices of Indigenous people likely to be affected by the Precinct Plan. This report found that there are cultural values associated with customary fishing that would be affected if the fishing at James Price Point declines as a result of the development. However, it appears likely that customary fishing would not stop as a result of the development but would continue elsewhere. On this basis, it can be concluded that the cultural values associated with fishing activities can be maintained notwithstanding the development of the Precinct.

Access to James Price Point itself would be maintained from Broome via the Precinct access road and an unsealed track around the Precinct itself. This access would be controlled within the context of management mechanisms proposed under the Strategic Social Impact Management Plan (**SAR Part 5, Section 5**). These include:

- the Recreation Management Strategy; and
- management plans developed in consultation with the Traditional Owners for the proposed conservation reserve that is to surround the Precinct area.

Additionally, as a condition of locating at the Precinct, commercial proponents will be required to incorporate monitoring and adaptive management into their operations. All such management mechanisms will include contingency measures and remedial actions to be triggered should monitoring indicate that performance measures or targets have not been achieved or are not likely to be achieved.
To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 665 Sub ID [120] Raised by [S120 Q1311]

ENGO Submission: **Part 5 Section 3.4.4.11** Social Impacts from Internal Conflict Around Gas Development. The ASIA recommended a BLNG Precinct Indigenous Social Impact Monitoring and Management Board but this was rejected in favour of other mechanisms by the WA Government. How will these other mechanisms based on the ILUA and the Social Management Group include the concerns of Dampier Peninsular and Broome (especially Yawuru) Aboriginal people?

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Effective governance mechanisms are important for involving interested and/or affected stakeholders in the management and mitigation of impacts, particularly those requiring the input of multiple stakeholders such as employment, housing, infrastructure and services. Timely and transparent communication of information regarding environmental management will be particularly important for Traditional Owners and other Indigenous members of the community to be kept informed about environmental issues and management responses on Country.

The Precinct Governance arrangements have been designed to provide opportunities for the involvement of Traditional Owners and other Indigenous members of the community**.** These arrangements need to be further developed, and options for engaging Dampier Peninsula residents in governance will be explored in the next stage of planning. Strategies to facilitate this engagement will be appropriately documented, and will address non-Indigenous and Indigenous engagement and be developed in accordance appropriate State documents such as Engaging with Aboriginal Western Australians guide (http://www.dia.wa.gov.au/Documents/ReportsPublications/ConsultingCitizensSept2005.pdf).

The Indigenous communities of the Dampier Peninsula and Broome will also continue to be engaged during the development of the required management plans.

Generic Question ID: 915 Sub ID [171] Raised by [S171 Q1904]

DIA Submission: The KLC concluded from their Literature Review of Impacts of Resource Developments on Indigenous People that a key problem with agreements between Indigenous people and resource companies is a failure at the implementation stage (**Part 5**, **p. 3-14**). It is recommended therefore that consideration be given once again to establishing the Board as recommended in the ASIA. Alternatively, the composition of the recommended committees should be more closely looked at. Wider intergovernmental participation in monitoring the agreement as well as continued Traditional Owner involvement could assist to both ease the concerns of the Traditional Owners, and provide more surety that the agreement will be adhered to.

As noted in this submission, one recommendation of the Aboriginal Social Impact Assessment (**ASIA**) was the creation of a new legal entity, a BLNG Precinct Indigenous Social Impact Monitoring and Management Board, to ensure ongoing social impact monitoring and management. An additional institutional layer was not supported by the State Government as the proposed governance structure (**Part 6**, **Section 3**) contains both the BLNG Precinct Management Committee as well as the Social Management Group which is tasked with implementing the outcomes of the SIA and ASIA.

The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the environmental and social management measures associated with the Precinct.

Generic Question ID: 1064 Sub ID [69] Raised by [S69 Q567]

Indigenous businesses will be destroyed as will their environment, preventing self-determination.

The State Government is of the view that development of the Browse LNG Precinct will provide the opportunity for new initiatives to improve the health, education, social and economic well-being of Indigenous people and substantially reduce disadvantage in the Kimberley. While there are a number of potential negative impacts identified in the SAR, there would also be a number of opportunities for Indigenous businesses as a result of the development of the Precinct.

However, in order to realise this benefit, there would need to be considerable examination of barriers to Indigenous employability in the impact areas, and several management measures are proposed to address these barriers in the Strategic Social Impact Management Plan (refer to **Part 5, Section 5**). The focus of these measures is on minimising the negative socio-economic impacts and maximise the benefits resulting from Precinct development. The measures place emphasis on providing education, training and employment opportunities for local people, and include measures to develop Indigenous businesses. For example, the Local Benefits Strategy will include measures specifically targeted to develop, where relevant, emerging Indigenous businesses. The Indigenous Workforce Development and Education, Training and Employment Strategies will help Indigenous people take advantage of the direct and indirect employment opportunities offered by the Precinct. In addition, support for small businesses, particularly Indigenous, will be provided in the Access to Broome and Dampier Peninsula Management Plan to provide recreational, fishing and other tours for construction workers. Finally, the Heads of Agreement (HoA) also provides funding for the development of Indigenous enterprise.

In addition to fostering Indigenous businesses and employment of Indigenous people, there are measures to protect the environment from degradation. This protection applies to the design, construction, operation,

decommissioning and rehabilitation of the Browse LNG Precinct site. This includes a range of applicable State and Commonwealth environmental regulations, as well as the management measures outlined in the SAR (**Parts 3** and **4**) aimed at minimising the environmental impact of the Precinct development. The Precinct will also be required to meet any Ministerial conditions that may be attached to State and Commonwealth environmental approval. Finally, the Department of State Development will prepare and implement a closure and decommissioning strategy for the Browse LNG Precinct to provide a timely and consistent approach to removal or retention of plant and infrastructure, rehabilitation of disturbed areas and identification of contaminated areas. As outlined in the HoA, the land will be returned to the Traditional Owners, fully remediated, when it is no longer needed.

To assist with the delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group and through this mechanism; the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

Generic Question ID: 1185 Sub ID [212] Raised by [S212 Q2832]

Part 5 Section 3.4.4: Concerns are raised that higher skilled Aboriginal workers will be drawn away from communities and this will leave skill shortages in these communities.

It is possible that higher skilled Indigenous workers in the Dampier Peninsula and elsewhere will pursue the direct and indirect employment opportunities offered through development of the Browse LNG Precinct. The State Government and commercial proponents will encourage the employment of Indigenous workers, and will have management measures in place to ensure the employment opportunities for the local communities are maximised (**Part 5, Section 5**).

Education and training programs will ensure local people have the education skills to take advantage of direct and indirect employment opportunities resulting from the Precinct. This will help minimise any skill shortages that could occur as a result of these increased opportunities for skilled workers. Commercial proponents will be required to develop education, training and employment strategies to increase local Indigenous and non-Indigenous employment in both construction and operational phases of the Precinct. The strategies will be developed well in advance of the Precinct establishment and should be well co-ordinated to ensure a match between the skills required, the capacity of the training providers and the existing level of the potential trainees.

Beyond training targeted to the skills required at the Precinct, the State Government and the Foundation Proponent are also contributing to a broader effort to improve education and training in the Kimberley. This includes working with the relevant stakeholders, such as the Department of Education and Training and the Department of Training and Workforce Development, to improve coordination between existing programs, and expand the capacity and number of education and training programs offered in the Kimberley.

Generic Question ID: 1186 Sub ID [212] Raised by [S212 Q2833]

Part 5 Section 3.4.4: Anecdotal concerns raised that Aboriginal workers already paid high incomes FIFO of the Pilbara are failing to use income sensibly (high level of alcohol abuse etc).

A similar concern was expressed by key informants in the Aboriginal Social Impact Assessment (**Appendix E-3, Section 3.4.3**). Many participants in the ASIA were concerned that existing problems with illicit drug use would increase as a result of higher disposable income, easier road access between Broome and Dampier Peninsula communities, and the possibility that the Browse LNG Precinct would, particularly during its construction phase, become an additional channel for accessing illegal drugs. The ASIAs recommendations to avoid or minimise growth in alcohol and drug abuse are contained in **Section 4.4.7.2** of the ASIA. The State Government has responded to each of these recommendations to ensure that any increases in drug and alcohol use as a result of the development of the Precinct will be minimised. A summary of the ASIA recommendations and the State's management responses are provided in the table below.

ASIA Recommendation Management Response

Recommendation 42 The Proponent must apply a 'no drugs' policy to the LNG Precinct and the accommodation complex. Possession or sale of illicit drugs by Precinct workers must be grounds for summary dismissal.

- The worker code of behaviour and cross-cultural training measures will be used to manage the behaviour of FIFO workers when outside the Precinct on their rostered days off.
- The Foundation Proponent's Construction Camp Management Plan will include strategies for preventing

the consumption of illicit drugs in the camp including a testing program for drug use.

Recommendation 43 The Proponent must operate the LNG Precinct accommodation complex as a 'controlled access' facility, with access by Precinct Workers to the Area of Impact limited to travel to and from the LNG Precinct, and no public access to the camp. Traditional Owner access to the camp for environmental monitoring or other Precinct management activities will be governed by specific arrangements set out in a Precinct Management Plan or equivalent document. Commercial proponents will accommodate the construction workforce at a managed-access accommodation facility near the Precinct.

Recommendation 44 The State must supplement the resources available to WA police in the Area of Impact to enable them to address any increase in illegal activity, including sale of drugs and illicit trading of alcohol. Commercial proponents will be required to implement a Precinct Health, Emergency and Security Management Plan.

Recommendation 45 Responsible State and the Commonwealth authorities must provide additional funding to drug and alcohol education programs in schools and colleges, and to alcohol and drug abuse rehabilitation facilities, in the Area of Impact. This is already subject to the Government Alcohol and Drug Strategy.

To ensure that the additional demands generated by the Precinct do not exceed the delivery capacities of social services in the regional service centre of Broome, the DSD will prepare the Broome Social Services Strategy.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners can have significant input into the social management associated with the Precinct.

Generic Question ID: 1217 Sub ID [212] Raised by [S212 Q2851]

Part 5 Section 3.4.1: Mitigation and Management Measures focus on restricting contact between Precinct workers and residents of Broome and Dampier Peninsula. Is this is a recognition that Precinct workers will engage with youth in a negative way if allowed to meet?

A managed-access construction camp will minimise the potential negative socio-economic impacts of allowing workers to live in Broome (e.g. increased cost of living and housing prices, impacts on tourism, possible increase in anti-social behaviour.). This decision was made in response to community concerns and the findings identified in the Social Impact Assessment (**Appendix D**) and Aboriginal Social Impact Assessment (**ASIA**) (**Appendix E-3**).

Generic Question ID: 1218 Sub ID [212] Raised by [S212 Q1100]

Part 5 Section 3.4.1: There is an absence of any comparative data of impacts on youth in other areas subject to large resource developments.

The potential impacts of the Browse LNG Precinct development on youth were a key impact category discussed in the Aboriginal Social Impact Assessment (**Appendices E-1** to **E-6**). Although a discussion specifically focused on youth and how they have been impacted by large industrial developments elsewhere is not included in the SAR, comparative information is discussed more broadly throughout the report. Information on impacts arising from other resource developments (e.g. in the Pilbara) were among the sources of data that informed the Strategic Assessment. More detailed discussion of socio-economic impacts experienced due to resource development in other areas can be found in the SIA, particularly in **Section 10** of **Volume 1** (**Appendix D-1**) and in the ASIA (**Appendix E-3**).

Management strategies outlined in the SAR are aimed at avoiding many of the impacts that have occurred elsewhere and managing those that do occur. For example, stakeholders consulted for the ASIA were concerned that youth in Broome and the Dampier Peninsula would be negatively impacted by the development if they were not given meaningful employment and opportunities, which is a common criticism of other resource development projects. Acknowledging this concern, the State government has made development of Education, Training and Employment and Indigenous Workforce Development Strategies a requirement of commercial proponents locating at the Precinct (**Part 5, Section 5**). These strategies will provide measures to meaningfully involve youth in the opportunities arising from the Precinct. In developing these strategies, it will be beneficial to review management measures that have been implemented elsewhere. This will assist in identifying approaches that are and are not effective and in developing targets and performance indicators that are realistic.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG

Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Finally, it is important to note that, while drawing on the experiences of other areas can play an important role in an impact assessment, the utility of comparative data is limited by the context. For example, the status of Broome as an existing tourism town with limited mining development sets it apart from many other areas, such as the communities in the Pilbara that were established as mining communities. This context is an important consideration when drawing any comparisons between this development and developments elsewhere in an attempt to identify potential impacts and measures to manage those impacts.

Generic Question ID: 1219 Sub ID [212] Raised by [S212 Q2854]

Part 5 Section 3.4.1: There is no mention of "impact on non-Indigenous" Broome residents who live in Broome for reasons that are likely to be impacted upon by Precinct Development (e.g. many people have moved here from the Pilbara after deciding to leave towns dominated by industrial development and associated work forces).

As part of a best practice social impact assessment, it is appropriate to focus on vulnerable groups, which often experience social impacts more acutely than the rest of population. In this case, the Indigenous population of the West Kimberley were a significant focus in the Strategic Assessment. The section of the Strategic Assessment Report (**SAR**) referenced in this submission (**Part 5, Section 3**) provides a summary of the Strategic Indigenous Impact Assessment. Accordingly, it focuses on the predicted socio-economic impacts of the development of the Browse LNG Precinct specifically on the Indigenous population, as identified in the six-volume Indigenous Impacts Report (**Appendix E**).

The SAR includes a discussion of the common stakeholder (Indigenous and non-Indigenous) concern that there will be potential changes to the unique 'Broome feel'. Given that this was a major concern raised by almost all stakeholders, it was evident during the community engagement that managing the impact of the development on the character or lifestyle in Broome (i.e. 'sense of place') is important to the community. The concerns in this submission were echoed in the sense of place workshop, in which participants noted that there is no such thing as a 'Broome' Person, rather 'people come to Broome to be a Broome Person' and this includes those that have moved to Broome from the Pilbara. A further discussion of potential impacts on the character of Broome can be found in **Part 5, Section 2.11** of the SAR.

While recognising that community identity is not static and will change regardless of development of the Precinct, there are a number of measures outlined in **Section 5, Part 5** of the SAR to minimise the impact of the Precinct on Broome's sense of place. Among these measures will be a management plan that will include strategies to maintain Broome's status as a tourism town and its character (i.e. sense of place). In addition, commercial proponents will operate a managed-access construction camp, implement measures to manage workforce behaviour and limit the interaction between Precinct workers and the community when they are not at work. Together these measures will minimise changes to the unique character of Broome.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1224 Sub ID [212] Raised by [S212 Q1102]

Part 5 Section 3.4.5: Could there be more Indigenous involvement in assessment? (p.104) Indigenous people who have been involved in these processes have been perceived as being supportive of the project and have felt this as a conflict.

Indigenous consultation for the Browse LNG Precinct began in 2008 with the establishment of the Traditional Owners Taskforce to assist in the site selection process. This Taskforce also facilitated consultation with all coastal Aboriginal communities (including native title holders and claimants) and participated in technical, environmental and heritage studies. Site selection also included several dozen community and Traditional Owner meetings facilitated by the native title representative body, the Kimberley Land Council (KLC). Indigenous people were also consulted in preparation of the Indigenous Impacts Report undertaken by the KLC (**Appendix E**).

The State Government has undertaken the Strategic Assessment, including the Indigenous consultation, in a manner that is consistent with the Terms of Reference for the SAR (**Appendix A-3**). This means that in addition to consulting with Indigenous stakeholders more broadly, a range of good faith negotiations, consultation and engagement were undertaken specifically to obtain informed consent from Traditional Owners (i.e. the Goolarabooloo Jabirr Jabirr (**GJJ**) Native Title Claimants). This means that in order to meet this objective, a signed Indigenous Land Use Agreement under Part 2 Division 3 of the *Native Title Act 1993* between the State Government and the GJJ Native Title Claimants was required. Consultation with Traditional Owners resulted in a signed Heads of Agreement in 2009, which outlines substantial benefits and commitments to be provided to

the Indigenous communities of the West Kimberley region. In May 2010, Traditional Owner consent was reached through a multi-year engagement and negotiation processes with the native title claimants. The most up to date reporting of this matter is contained in **Section 2.5** of the Response to Submissions Summary Report.

As in any impact assessment, the involvement of Indigenous people in native title negotiations and stakeholder consultations for the Strategic Assessment does not imply they all support the development. The State Government is aware that some members of the community, including some members within the native title claimant group, do not support the development of the Precinct. The level of public support, including comments received during the public comment period, will be among the information considered by the EPA in the approvals process.

It should also be noted that the scope and intensity of community consultation varies with the stage of project planning. The SAR provides a high-level impact assessment at the Precinct level, rather than a detailed project-level impact assessment. There was no detailed project plan to assess for the site during this phase of work; however, there will be additional opportunities for engagement at the project level. Commercial proponents will undertake consultation with Indigenous and non-Indigenous stakeholders as required to develop management plans and impact assessments.

Should the Precinct be approved, community engagement will be an ongoing process throughout not only the planning for the Precinct but throughout its life. The forms of community engagement to occur post-project approval will be determined once the Precinct governance arrangements have been established. Under the management measures outlined in the SAR, an Engagement Plan to address non-Indigenous and Indigenous engagement will be developed should the project be approved.

Additionally, to assist with delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. This proposed Precinct Governance is presented in detail in **Section 2.3** of the Response to Public Submissions. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners can have significant input into the environment and social management associated with the Precinct.

Generic Question ID: 1430 Sub ID [75] Raised by [S75 Q874]

There are already considerable opportunities for Traditional Owners who wish to obtain employment in the mining industry - at Argyle, at Sally Malay, at Koolen Island for example. The low levels of Kimberley Aboriginal employment in these organisations is probably indicative of a reluctance of Aboriginal people to work in an industry that is destroying their country and culture as well as a failure of industry and/or government to provide realistic pre-employment training and mentoring programmes.

The State Government remains committed to delivering fundamental economic and social change to Indigenous communities in the West Kimberley through development of the Precinct at James Price Point. Although there are existing mines outside West Kimberley that could offer employment to Indigenous people, many of these employment opportunities are away from their families and employ fly in, fly out (**FIFO**) working arrangements. Whilst some Aboriginal workers would have been willing to work on a FIFO basis if a site in the Pilbara was selected, this decision could have come with potentially significant social impacts. For example, as discussed in the Aboriginal Social Impact Assessment (**ASIA**), the absence of parents due to wage employment, especially where projects operate on a FIFO basis, can undermine traditional authority patterns in Aboriginal communities. Participants in the ASIA felt work at the LNG Precinct would be a better option than FIFO in the Pilbara because it is closer to their communities.

Although the local Indigenous people can choose to obtain employment at the Browse LNG Precinct over FIFO arrangements elsewhere, there are other barriers that prevent Indigenous people from securing employment at the Precinct. This may include barriers that the State government cannot address, such as personal opposition to the Precinct development or the resource development industry. However, it also includes barriers that the State government and commercial proponents can help address, such as education, vocational skills and the cultural challenges of long work hours. Measures to address these challenges and ensure Indigenous people benefit from the Precinct development are included in the Indigenous Workforce Development Strategy. This strategy will provide measures not only to increase Indigenous employment at the Precinct, but also provide opportunities for Indigenous people to work on cultural and environmental values relevant to Precinct operation. The Education, Training and Employment Strategy will also help address common barriers for the Indigenous community and create a trained local workforce (**Part 5, Section 5**). Finally, an Indigenous Ranger program has been provided for in the Indigenous Land Use Agreement (**ILUA**). Support for an Indigenous ranger program was included in a number of the ASIA recommendations and supported by the Traditional Owners. This program will provide an opportunity for Indigenous people to work on country.

For a more detailed discussion on the barriers to Indigenous employment, refer to the ASIA (**Appendix E-3**).

3.5 Indigenous Cultural Heritage Values

Generic Question ID: 174 Sub ID [34, 39, 212, 205, 215, 99, 115] Raised by [S39 Q372]

The only way to protect the song lines is to not build the Precinct. This aspect of Indigenous culture which has been around for thousands of years, cannot simply be shifted to accommodate a short term (in the grand scale of cultural history) industrial project.

Part 5, Section 3.5.3 of the Strategic Assessment Report (**SAR**) summarises the results of the Heritage Impact Assessment for the Browse LNG Precinct area, and the potential impacts associated with Indigenous cultural heritage. Important cultural heritage sites along the west coast of the Dampier Peninsula are associated with the creation journeys of Ancestral Beings. The paths of these Dreamtime journeys, and the associated places and cultural beliefs, are often referred to as Dreaming tracks or song lines. The places and physical features associated with these cultural values are being identified and recorded according the requirements of the Heritage Protection Agreement (**HPA**), for the purpose of minimising impacts on these Aboriginal sites, as required by the Heads of Agreement (**HoA**).

HoA, the State and Woodside have made the following commitment: *"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans."*

Through the HoA, the Goolarabooloo Jabirr Jabirr native title claimants of the James Price Point area have signified their belief that the Precinct can be established and operated according to the principles of the HoA and the HPA, without compromising these heritage values. Under the HoA, the State had committed funding for 10 years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves would be the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.

In addition to the significant cultural heritage sites of the Jabirr Jabirr Traditional Owners near James Price Point, this coastline is also used for cultural tourism and educational purposes. The Roe family (also known as the Goolarabooloo people) conducts seasonal walking tours from Minyirr to Coloumb Point, which visit several of the cultural heritage sites (mythological and archaeological sites) along the coast. This itinerary is known as the Lurujarri Trail, or Lurujarri song line. The Indigenous heritage sites along the Trail are being recorded, and impacts on those sites will be avoided or minimised, in accordance with the HoA and the HPA. Access along the coast adjacent to the Precinct would be restricted for safety reasons, but arrangements are being considered that would allow Traditional Owners to have continued access to any heritage sites within this area, and which would allow guided walks to occur seasonally.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), recommends the development and implementation of a number of management mechanisms aimed at maintaining Indigenous cultural heritage at the Precinct site. Conditions proposed under the SSIMP include the requirement that commercial proponents wishing to operate at the Precinct develop and implement Cultural Heritage Management Plans.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 10 Sub ID [1, 28, 36, 93, 203, 227, 228] Raised by [S1 Q11]

The Precinct will result in the destruction of culturally and archaeologically significant sites, including songlines and dinosaur footprints.

The considerable site selection process conducted for the Browse LNG Precinct included inputs by the State Government, the Commonwealth Government, Traditional Owners, and industry. Extensive consultation with Traditional Owners during the site selection process was managed by the Kimberley Land Council (**KLC**) as the representative body for the many Indigenous groups in the region. This involvement was critical in order to limit the potential impacts of the Precinct on areas of significance for Indigenous heritage.

Under the Heads of Agreement (**HoA**) the State Government and Foundation Proponent have agreed to work with the Traditional Owners and the Kimberley Land Council to design, construct, operate, decommission and rehabilitate the Browse LNG Precinct in a manner that avoids impacts on Aboriginal sites where possible.

Where impacts on Aboriginal sites cannot be avoided, the State government and Woodside have agreed to minimise any impact in accordance with the Studies Agreement, the proposed Heritage Protection Agreement (**HPA**) and any future heritage management plans. Under the HPA, all parties have agreed to work together to achieve mutually acceptable outcomes. Any direct impacts on heritage sites will be compliant with the HPA and the Aboriginal Heritage Act on advice from the Minister for Indigenous Affairs. They will also be conducted in accordance with the requirements of the *Environmental Protection Act* and the Terms of Reference for the Strategic Assessment.

This is a strategic-level assessment, and the extent to which the Precinct Plan will affect sites and values is understood in general terms. Significant work has already been undertaken to ensure that the Precinct site does not contain any heritage sites with such ethnographic significance that they would prevent the Precinct Plan proceeding. However, additional work (both archaeological and ethnographic) is underway at the more detailed project level and for specific developments within the Precinct which will further inform heritage protection and mitigation measures required for the project.

Mitigation and monitoring measures outlined in **Part 5**, **Section 3.5.5** of the SAR and those outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5**) will go some way to addressing potential impacts related to cultural heritage. Traditional Owners will be involved in the management of impacts, and all work will be done in accordance with the HPA and heritage protection legislation. As part of the agreements with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP.

To ensure delivery of the necessary heritage management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the management of heritage issues associated with the Precinct.

Generic Question ID: 1017 Sub ID [138, 87, 115, 136, 235, 226] Raised by [S138 Q2134]

There is a strong cultural connection and reconciliation values within the community. Law and culture is real and continuing today within the boundaries of the proposed gas precinct at James Price Point. The annual Lurujarri heritage listed cultural trail is open to the broader community. The heritage trail is a huge success with its reconciliation values and should be looked at as a leader and a focus point nationally concerning Indigenous future.

The Proponent recognises the unique cultural and Indigenous heritage values present on the Dampier Peninsula. Accordingly, funding was provided by the State Government to the Kimberley Land Council (**KLC**), to commission an Aboriginal Social Impact Assessment, to evaluate the potential impacts of the Precinct on the Indigenous communities in the West Kimberley. The ASIA contained a Heritage Impact Assessment (**HIA**), to identify potential impacts specifically on Indigenous heritage and cultural relationships that exist from Bardi and Jawi country at the northern extremity of the Dampier Peninsula, the adjacent saltwater areas including parts of Yampi Peninsula, to Karajarri country, located south of Broome, as well as the Indigenous heritage and cultural relationships of all cultural groups in between.

The importance and value of the Lurujarri Trail is acknowledged. The Roe family, who are the Goolarabooloo people, conduct seasonal walking tours from Minyirr to Coloumb Point, which visit several of the cultural heritage sites (mythological and archaeological sites) along the coast. This itinerary is known as the Lurujarri Trail, or Lurujarri song line.

Dreaming 'tracks' of Creation Ancestors are recorded in the HIA and other published sources as passing along the west coast of the Dampier Peninsula (e.g., HIA paragraphs 167-168). Heritage values and sites associated with these Dreaming Tracks are included in the scope of the detailed heritage surveys being conducted for the project area. Some of the same heritage sites and values have been incorporated into the Lurujarri Heritage Trail walking tours and associated brochure.

In the Heritage Impact Assessment (**HIA**) report by the KLC (**SAR Appendix E-4**) the Lurujarri Trail is described in Section 3.5 of the HIA *"Places of Historical Significance"* as *"a cross-cultural heritage interpretive trail"*, which passes through the traditional country of the Jabirr Jabirr, Ngumbarl, and Yawuru paragraphs 123-125, p. 87). With respect to cultural heritage values, the HIA notes that:

"The Lurujarri Trail extends from a portion of the Primary Research Area around James Price Point to the other Primary Research Area of Broome. It is of cultural and heritage value to several Aboriginal language groups whose countries fall within the HIA Area." (HIA paragraph 145; p. 95).

The Aboriginal heritage sites along the coastline followed by the Lurujarri Trail are being recorded through heritage surveys, and impacts on those sites will be avoided or minimised, in accordance with the HoA and the HPA. Access along the coast adjacent to the Browse LNG Precinct would be restricted for safety reasons, but arrangements are being considered that would allow Traditional Owners to have continued access to any heritage sites within this area, and which would allow guided walks to occur seasonally.

Generic Question ID: 124 Sub ID [16, 65, 70, 294] Raised by [S16 Q111]

The Project will ruin red rock landscapes and song lines sacred to Aboriginal people.

The Lurujarri Trail is a significant Goolarabooloo eight day song line walk which extends along the coast from Minyirr to Coloumb Point and past the BLNG Precinct site. The Lurujarri heritage trail has been identified by the Heritage Impact Assessment to be of ethnographic and archaeological significance.

The State and Foundation Proponent are working with Traditional Owners to ensure that cultural heritage issues at the proposed Precinct site are managed sensitively. Any activities on the BLNG Precinct site will need to comply with the relevant legislation that protects Aboriginal heritage.

The physical presence of the BLNG Development will alter the visual amenity and landscape character of the James Price Point coastal area. In addition, access around the BLNG Precinct would be restricted for safety reasons, however arrangements are being considered that would allow guided walks with Traditional Owners to occur seasonally.

The proposed Visual Amenity Management Plan will go some way to mitigating the landscape impacts from the Precinct infrastructure. The Plan would include:

techniques to be used to reduce visual impacts from facilities (for example, use of building materials, colours and finishes that complement the surrounding landscape);

siting of facilities to reduce visibility as much as reasonably practicable (including set back from the coastline of highly visible infrastructure); and

retention of areas of landscape character significance (e.g. Sand Dunes/Pindan Cliffs), where possible.

Under the Heads of Agreement (**HoA**), the State has committed funding for 10 years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves will be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves is the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.

Generic Question ID: 286 Sub ID [39, 165, 212, 223] Raised by [S39 Q763]

With reference to SAR **Section 3.5.3.3**, will the project affect the likelihood of the several areas of cultural significance currently on the review list for National Heritage gaining protection?

Under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), the Minister for Sustainability, Environment, Water, Population and Communities (the Minister) is responsible for the National Heritage List. The provisions of the EPBC Act and Environment Protection and Biodiversity Conservation Regulations govern the National Heritage listing process. The fundamental question that must be asked in all assessments for the National Heritage list is whether the place satisfies the statutory threshold of 'outstanding heritage value to the nation' for the reasons set out in the National Heritage criteria. The conclusion of whether or not a place satisfies the threshold must in each case be based on evidence and reasoned analysis of the evidence against the relevant criterion.

Should the Browse LNG Precinct achieve approval from the State and Commonwealth regulators, its establishment is independent of the Minister's decision about whether or not to include the values of the area in a National Heritage place. Should the area be included in a National Heritage place, the heritage provisions of the EPBC Act protects the values for which the area has been listed and an action that has a significant impact on the National Heritage values of a National Heritage place is prohibited, unless the person taking the action has the approval of the Minister or certain other requirements are met.

The Minister has yet to make his decision regarding the heritage status of the West Kimberley. Should the Minister attribute National Heritage listing to the area, and the Precinct achieves approval, any activity that might impact on national Heritage values will be subject to the provisions of the EPBC Act.

The Aboriginal Social Impact Assessment, conducted as part of the Strategic Assessment process, identified that potential sauropod footprints in the area also form part of the Dreamtime stories associated with the Lurujarri Trail, a significant Goolarabooloo eight day song line walk which extends along the coast from Minyirr to Coloumb Point and past the Precinct site. These Dreamtime stories talk about the Creator spirit Marrala, commonly referred to as Emu man, who is associated with the three-toed dinosaur footprints from Yinara to

Minyirr point.

The dinosaur trace fossils, captured in their ancient ecological environment in the Broome Sandstone, are being considered for inclusion in the National Heritage list for their natural heritage values. It is unclear whether the dinosaur footprints are also being considered for their cultural value as well. Nevertheless, as outlined in **Part 5** of the Strategic Assessment Report (**SAR**), further scientific and cultural field studies will be done to determine the level of scientific and cultural significance of the area subject to the Strategic Assessment and how best to mitigate and manage any impacts. This will be done in consultation with the Traditional Owners and any other people identified as having cultural knowledge of the area.

The management hierarchy would include the following:

- All possible measures will be taken to avoid impact on significant trace fossils. Where they are unable to be left in their natural context, measures would involve careful study in situ, a high-quality photographic record (along with other data such as GPS readings and measurements of any track-way sequences), and possibly a high fidelity latex peel replica. Technological advances such as laser scanning can also be used to secure scientific data without disturbing the original dinosaur tracks.
- Access around the Precinct would be restricted for safety reasons, but arrangements are being considered that could allow guided walks with Traditional Owners to occur seasonally thus maintaining connection to the song line walk.

The Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the SAR proposes a number of strategies aimed at mitigating and managing any potential impacts on the cultural and heritage values of the area associated with development of the Precinct. The State Government will also continue to engage directly with Traditional Owners throughout the process, to ensure that any potential impacts to culturally significant sites are minimised, or avoided all together where possible.

Generic Question ID: 287 Sub ID [39, 116, 234, 212] Raised by [S39 Q764]

The identified list of potential national heritage values does not discuss the Lurajarri trail, the unbroken songlines and undisturbed sites on cultural significance.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), the Minister for Sustainability, Environment, Water, Population and Communities (the Minister) is responsible for the National Heritage List. The provisions of the EPBC Act and Environment Protection and Biodiversity Conservation Regulations govern the National Heritage listing process. The fundamental question that must be asked in all assessments for the National Heritage list is whether the place satisfies the statutory threshold of 'outstanding heritage value to the nation' for the reasons set out in the National Heritage criteria. The conclusion of whether or not a place satisfies the threshold must in each case be based on evidence and reasoned analysis of the evidence against the relevant criterion.

Should the Browse LNG Precinct achieve approval from the State and Commonwealth regulators, its establishment is independent of the Minister's decision about whether or not to include the values of the area in a National Heritage place. Should the area be included in a National Heritage place, the heritage provisions of the EPBC Act protect the values for which the area have been listed and an action that has a significant impact on the National Heritage values of a National Heritage place is prohibited, unless the person taking the action has the approval of the Minister or certain other requirements are met.

The Minister has yet to make his decision regarding the heritage status of the West Kimberley. Should the Minister attribute National Heritage listing to the area, and the Precinct achieves approval, any activity that might impact on National Heritage values will be subject to the provisions of the EPBC Act.

The Aboriginal Social Impact Assessment (**ASIA**), conducted as part of the Strategic Assessment process, identified that potential sauropod footprints in the area also form part of the Dreamtime stories associated with the Lurujarri Trail, a significant Goolarabooloo eight day song line walk which extends along the coast from Minyirr to Coloumb Point and past the Precinct site. These Dreamtime stories talk about the Creator spirit Marrala, commonly referred to as Emu man, who is associated with the three-toed dinosaur footprints from Yinara to Minyirr point.

The dinosaur trace fossils, captured in their ancient ecological environment in the Broome Sandstone are being considered for inclusion in the National Heritage list for their natural heritage values. It is unclear whether the dinosaur footprints are also being considered cultural value as well. Nevertheless, as outlined in **Part 5, Section 4.2** of the Strategic Assessment Report (**SAR**), further scientific and cultural field studies will be done to determine the level of scientific and cultural significance of the area subject to the Strategic Assessment and how best to mitigate and manage any impacts. This will be done in consultation with the Traditional Owners and any other people identified as having cultural knowledge of the area.

For example:

- All possible measures will be taken to avoid impact on significant trace fossils. Where they are unable to be left in their natural context, measures would involve careful study in situ, a high quality photographic record (along with other data such as GPS readings and measurements of any track-way sequences), and possible a high fidelity latex peel replica. Technological advances such as laser scanning can also be used to secure scientific data without disturbing the original dinosaur tracks.
- Access around the Precinct would be restricted for safety reasons, but arrangements are being considered that could allow guided walks with Traditional Owners to occur seasonally thus maintaining connection to the song line walk.

The Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the SAR proposes a number of strategies aimed at mitigating and managing any potential impacts on the cultural and heritage values of the area associated with development of the Precinct. The State Government will also continue to engage directly with Traditional Owners throughout the process, to ensure that any potential impacts to culturally significant sites are minimised, or avoided all together where possible.

Generic Question ID: 1322 Sub ID [235, 236, 226] Raised by [S235 Q3236]

The Precinct will dislocate a dynamic and maintained ancient Songline that is a continuum from tens of thousands of years ago, until the present day involving ceremonial and land management practices essential to the spiritual and physical health and safety of this stretch of country and its people. This Northern Traditional Song Cycle emanates near One Arm Point in the north, to way south of Broome, at La Grange. The Song Cycle system is made up of Law Grounds, increase sites and seasonal camping places, along a connected route between waterplaces. The position of Law-grounds is related to the presence of specific significant vegetation, the mamara spirit trees - necessary for their particular function in this ceremony. The song cycle system cannot be translocated elsewhere, cut in half or put on hold. The Law and Song Cycles of Walmadan are not ancient history but present day fact. If the Precinct goes ahead our country is gone forever, our country holds our Heritage, including our burial sites, and most importantly the Song Cycle that runs through this country from the north of the Dampier Peninsular, south Bidyadanga, the area below Roebuck Bay.

Part 5, Section 3.5.3 of the Strategic Assessment Report (**SAR**) summarises the results of the Heritage Impact Assessment for the Browse LNG Precinct area, and the potential impacts associated with Indigenous cultural heritage. The places and physical features associated with these cultural values are being identified and recorded according to the requirements of the Heritage Protection Agreement (**HPA**), for the purpose of minimising impacts on these Aboriginal sites, as required by the Heads of Agreement (**HoA**).

Under the HoA, the State Government and Woodside have made the following commitment: *"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans."*

Through the HoA, the Goolarabooloo Jabirr Jabirr native title claimants of the James Price Point area have signified their belief that the Precinct can be established and operated according to the principles of the HoA and the HPA, without compromising these heritage values. Under the HoA, the State had committed funding for ten years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves would be the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.

In addition to the significant cultural heritage sites of the Jabirr Jabirr Traditional Owners near James Price Point, this coastline is also used for cultural tourism and educational purposes. The Roe family (also known as the Goolarabooloo people) conducts seasonal walking tours from Minyirr to Coloumb Point, which visit several of the cultural heritage sites (mythological and archaeological sites) along the coast. This takes place along the Lurujarri Trail referenced in the submission. The Indigenous heritage sites along the Trail are being recorded, and impacts on those sites will be avoided or minimised, in accordance with the HoA and the HPA. Access along the coast adjacent to the Precinct would be restricted for safety reasons, but arrangements are being considered that would allow Traditional Owners to have continued access to any heritage sites within this area, and which would allow guided walks to occur seasonally.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the SAR, recommends the development and implementation of a number of management mechanisms aimed at maintaining Indigenous cultural heritage at the Precinct site. Conditions proposed under the SSIMP include the requirement

that commercial proponents wishing to operate at the Precinct develop and implement Cultural Heritage Management Plans.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 167 Sub ID [39, 212] Raised by [S39 Q364]

The SAR expresses "Support for cultural pursuits, through greater acknowledgement and recognition of Indigenous Cultural Heritage" (**p. 105**). How can this be so when those cultural pursuits are likely to be the very land and sea which the Precinct will destroy?

The comprehensive Aboriginal Social Impact Assessment (**ASIA**), conducted as part of the strategic assessment process, included consultations with Native Title groups and with other affected Indigenous people living in Broome, Derby and the Dampier Peninsula. Although ASIA participants identified potential negative impacts, they also identified significant potential opportunities (short-term and long-term) for Indigenous people across the region, should the project go ahead. One of these opportunities is stronger support for cultural pursuits, through greater acknowledgement and recognition of Indigenous Cultural Heritage.

The Heads of Agreement, signed in April 2009 between the State Government, Kimberley Land Council and Woodside, provides for the development of a Cultural Heritage Management Plan (**CHMP**) to appropriately manage heritage sites in and around the Precinct and for the State to financially support a Cultural Preservation Fund over 16 years in order to sponsor and support the enhancement and protection of Indigenous cultural heritage in the Kimberley region.

The Strategic Social Impact Management Plan (**SSIMP**) outlined in Part 5, Section 5 of the Strategic Assessment Report (**SAR**), proposes a number of strategies to limit the impact of the Browse LNG Precinct, and maximise the many opportunities associated with its development.

Generic Question ID: 169 Sub ID [39, 212] Raised by [S39 Q366]

How can Indigenous sites (i.e. Lurajarri Heritage Trail, archaeological sites and sites with ethnographic significance) be managed and protected when they are destroyed?

Under the Heads of Agreement (**HoA**) the State and Foundation Proponent (Woodside) have agreed to work with the Traditional Owners and the Kimberley Land Council to design, construct, operate, decommission and rehabilitate the land required for the Browse LNG Precinct in a manner that avoids impacts on Indigenous sites where possible. However, even when best practice approaches are employed, it is likely that there will be some residual impacts to heritage sites. Where impacts to Indigenous sites cannot be avoided, the State Government and Woodside have agreed to mitigate any impact, in accordance with the Studies Agreement, the current Heritage Protection Agreement (**HPA**) and any future heritage management plans. Under the HPA, all parties have agreed to work together to achieve mutually acceptable outcomes. Any direct impacts to heritage sites will be compliant with the HPA and the *Aboriginal Heritage Act 1972* on advice from the Minister for Indigenous Affairs. They will also be conducted in accordance with the requirements of the *Environmental Protection Act 1986*.

Traditional Owners will be involved in the management of impacts on heritage. As part of the agreements reached with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP. To ensure delivery of the necessary heritage management measures, the SAR proposes that a Browse LNG Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Mitigation and monitoring measures outlined in **Part 5, Section 5** of the SAR under the Strategic Social Impact Management Plan will also go some way to addressing potential impacts related to cultural heritage. For example, the physical presence of the Precinct development will alter the visual amenity and landscape character of the James Price Point coastal area. To mitigate these impacts, a Visual Amenity Management Plan would be developed and implemented. This plan would include:

- techniques to be used to reduce visual impacts from facilities (for example use building materials, colours and finishes that complement the surrounding landscape);
- siting of facilities to reduce visibility as reasonably practicable (including set back from the coastline of highly visible infrastructure); and

- retention of areas of landscape character significance (e.g. Sand Dunes/Pindan Cliffs), where possible.

There are also measures to protect Indigenous heritage in the Heads of Agreement. The State has committed funding for ten years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves will be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves is the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.
For example, the Lurujarri Heritage Trail would be impacted by the Precinct due to land restrictions around the LNG Precinct for safety reasons. However, alternative arrangements are being considered that would allow guided walks on the Lurujarri trail with Traditional Owners to occur seasonally.

Generic Question ID: 926 Sub ID [227, 100] Raised by [S227 Q1984]

The Precinct area is sacred and should be kept as a whole. There are many sacred grounds, places of rye, of births, grave sites, camp sites, mittens, which have been used for tens of thousands of years.

Previous Aboriginal heritage surveys along the west coast of the Dampier Peninsula have recorded numerous coastal archaeological sites, including shell middens and camp sites. None of these sites has yet been dated, but the midden sites are associated with the current coastline, and might have been originally occupied as long ago as five to six thousand years before present. Significant cultural sites also have been recorded and registered by the Department of Indigenous Affairs. Some of these recorded heritage sites are located in the vicinity of James Price Point.

Comprehensive heritage surveys are required to record all Aboriginal Heritage sites in the vicinity of the LNG precinct. Under the Heads of Agreement (**HoA**), the State and Woodside have made the following commitment:

"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans."

Through the HoA, the Jabirr Jabirr Traditional Owners of the James Price Point area have signified their belief that the LNG Precinct can be established and operated according to the principles of the HoA and the HPA, without compromising these heritage values. Under the HoA, the State had committed funding for ten years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves would be the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.

Heritage surveys being undertaken to identify and record all Aboriginal Heritage sites along the coastal zone in the vicinity of the LNG precinct will assist planning for infrastructure designs which minimise impacts upon Aboriginal Heritage sites. Proposed development plans must also receive authorisation under Section 18 of the *WA Aboriginal Heritage Act 1972* for disturbance to any Aboriginal Heritage sites identified by these heritage surveys.

Generic Question ID: 1228 Sub ID [212] Raised by [S212 Q2889]

Part 5 Section 3.5.4: "sourcing of construction resources and associated activities…may occur in the area that extends beyond the proposed BLNG Precinct and possibly beyond the …HIA area." Will a new HIA be commissioned to cover these new areas? "(the sourcing of construction materials) …is likely to have impact on the cultural and heritage values of the HIA area and the wider Kimberley region if not mitigated and managed in a culturally appropriate way." How will this happen given "limited analysis" of the current HIA? Furthermore, how will these areas be protected given that the current HIA does not extend to these areas?

Under the Heads of Agreement, the State Government and Woodside have made the following commitment: *"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans."*

Regardless of their location within or outside of the Browse LNG Precinct and associated development areas, all sources of construction materials (such as sand, gravel, rock, etc.) are subject to the provisions of the Western Australian *Aboriginal Heritage Act 1972* (**AHA**). Quarries, laydown areas etc. are subject to heritage assessment under the AHA, for the protection of Aboriginal Heritage Sites. The disturbance of any Aboriginal heritage sites in the pursuit of such activities in Western Australia requires the authorisation of the Minister,

pursuant to an application under Section 18 of the AHA, and accompanied by the reporting of a comprehensive heritage assessment and Traditional Owner consultation process.

Even with respect to the Browse LNG Precinct itself, further detailed heritage surveys are being conducted to ensure that all Indigenous heritage sites are identified and recorded as part of the Section 18 assessment process required by the AHA, and agreed to in the Browse Heritage Protection Agreement. While the Heritage Impact Assessment (**HIA**) and Strategic Assessment Report (**SAR**) have a broad, strategic assessment framework, these detailed surveys provide the basis for detailed design planning to minimise heritage impacts, for application under the AHA to disturb a site where this cannot be avoided, and for Cultural Heritage Management Plan (**CHMP**) development to provide heritage protection for sites, discovery procedures for new sites, and Traditional Owner participation in all aspects of heritage management.

Generic Question ID: 1323 Sub ID [149, 235] Raised by [S235 Q3237]

In a Mining Wardon Court decision on 20 August 1991 (on the hearing of an application for exploration licences by Terrex Resources NL), Dr JA Howards SM accepted expert evidence that the entire coastal strip has a high density of Aboriginal Archaeological sites of great cultural significance.

The west coast of the Dampier Peninsula and the coastline near James Price Point was the subject of several detailed Aboriginal Heritage surveys in the 1980s, conducted in conjunction with a local Elder who wanted to record and protect the Lurujarri Trail sites (Akerman, 1981; Bradshaw and Fry, 1989; O'Connor, Nyanyar 1989; Kalotas, 1989). As a result of these surveys, a series of archaeological and mythological sites along the coast were recorded and registered under the WA *Aboriginal Heritage Act 1972*.

The coastline does have a high density of coastal archaeological midden sites and mythological sites. However, this is a series of discrete locations with archaeological sites, or topographic features which have mythological significance. It is not a single, continuous heritage site along the entire coastline. The cultural and archaeological significance of these sites varies according to their content and state of preservation in the case of archaeology, and their specific cultural associations and meaning in the case of mythological sites. The majority of the sites are archaeological shell middens, which have a high density along sandy stretches of the Kimberley coastline in general.

The Mining Warden's decision in the Terrex case referred to the high density of Aboriginal heritage sites which had been reported in these heritage surveys, and in a follow-up, confidential report (Green, 1991) prepared in conjunction with the Kimberley Land Council (**KLC**), as the Warden is required to take into account a range of environmental and heritage factors in considering such cases. This particular decision from the Mining Warden's Court (Howard, 1991) also was considered to be controversial in its treatment of heritage factors, as reviewed in the Australian Mining and Petroleum and Law Association (**AMPLA**) Bulletin (Vol. 11, (4) 1992).

Because those original heritage surveys were conducted over 20 years ago, with a single Aboriginal Elder, new heritage surveys are being conducted in relation to the Browse LNG Precinct and any additional ground-disturbance areas, according to protocols in the Heritage Protection Agreement (**HPA**) involving the KLC on behalf of the Traditional Owners, the State Government, and the Foundation Proponent, Woodside. The initial phase of these surveys is reported in the KLC Heritage Impact Assessment Report (SAR **Appendix E-4**) and the Aboriginal Archaeological Site Avoidance Survey Report (SAR **Appendix E-5**). The purpose of these heritage surveys is to provide the necessary, up-to-date heritage site information for the required Section 18 Application to use the land (WA *Aboriginal Heritage Act 1972*), to provide data to assist planning and design work for the Precinct development which minimises any disturbance to Aboriginal Heritage sites, and to further inform the development of Cultural Heritage Management Plans (**CHMP**s) for long term heritage site management and protection.

As described in the SAR, the heritage management processes for the Precinct development is subject to a Heads of Agreement with Traditional Owners, in which they affirm that the Precinct can be developed at this site without serious impacts upon heritage values. The Precinct development is also subject to a Heritage Protection Agreement between the State, The Traditional Owners (represented by the KLC) and Woodside, which directs compliance with the WA *Aboriginal Heritage Act 1972*, the standards of the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* with respect to heritage protection, and the *Environment Protection and Biodiversity Conservation Act 1999* with respect to the management of National Heritage values.

While the James Price Point area certainly has important cultural heritage values, the HIA (p. 6) states that:

- *"The conclusion of the HIA is that the impacts of the Plan on Aboriginal heritage (including cultural landscapes), matters of NES [national environmental significance], and Indigenous environmental values are not likely to be significant if the plan includes the recommended safeguard and mitigation measures identified in Section 6 of this report."* (HIA p. 5).

Under the Heads of Agreement, the State and Woodside have made the following commitment: *"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans."*

Generic Question ID: 288 Sub ID [39] Raised by [S39 Q765]

The HIA found that the sourcing of construction materials is likely to have impact on the cultural and heritage values of the HIA area and the wider Kimberley region if not mitigated and managed in a culturally appropriate way. How will this happen given "limited analysis" of the current HIA? Furthermore how will these areas be protected given that the current HIA does not extend to these areas?

Activities outside the HIA area would still be subject to the requirements of the State *Aboriginal Heritage Act 1972* which protects Indigenous heritage sites in Western Australia. All sites are protected under the *Aboriginal Heritage Act 1972* whether or not they are recorded on the Register of Aboriginal sites. As detailed in Section 17 of the *Aboriginal Heritage Act 1972*, it is an offence to knowingly disturb an Aboriginal site in any way without authorisation from the Department of Indigenous Affairs (**DIA**). If disturbing a site is unavoidable, consent to proceed may be given by the State Minister for Indigenous Affairs on recommendation of the Aboriginal Cultural Heritage Committee (**ACMC**).

In February 2008 the Australian and Western Australian governments agreed to undertake an assessment of the West Kimberley to identify its National Heritage (and potential international heritage) values. The then responsible Commonwealth Minister subsequently asked the Australian Heritage Council to commence an assessment of the West Kimberley and to provide its advice.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Ac**t), the Minister for the Environment, Heritage and the Arts (**the Minister**) is responsible for the National Heritage listing process. The provisions in the EPBC Act and Environment Protection and Biodiversity Conservation Regulations govern the National Heritage listing process. The fundamental question that must be asked in all assessments for the National Heritage list is whether the place satisfies the statutory threshold of 'outstanding heritage value to the nation' for the reasons set out in the National Heritage criteria. The conclusion whether a place satisfies the threshold or not must in each case be based on evidence and reasoned analysis of the evidence against the relevant criterion.

In relation to the potential impact of the Precinct Plan on National Heritage Places, the Australian Heritage Council found in its preliminary assessment of National Heritage values that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reached the threshold required for National Heritage listing. It did however note that:

The Broome Sandstone preserves the only extensive evidence of dinosaurs from the western half of the Australian continent. Tracks made by a number of different dinosaur species are preserved in mid-Cretaceous sandstone at Gantheaume Point.

In the final assessment report and advice to the Minister, the area recommended for National Heritage listing includes the stretches of Broome Sandstone along the western length of the Dampier Peninsula, including at James Price Point, as these areas also have evidence of dinosaurs. In response to this inclusion, details of further mitigation and management measures have been included in Section 4.8 of the Response to Public Submission (i.e. this document).

The Minister has yet to make his decision regarding the heritage status of the west Kimberley.

The Australian Heritage Council's Guidelines for the Assessment of Places for the National Heritage List provides additional information on the assessment process, criteria and thresholds: http://www.environment.gov.au/heritage/ahc/publications/pubs/nhl-guidelines.pdf

Generic Question ID: 512 Sub ID [232] Raised by [S232 Q1377]

The Aboriginal community members on the Dampier Peninsula believe that there are significant heritage concerns about using James Price Point for the LNG Precinct. Why does the State not respect the culture and why did the people involved in choosing the site not seek information about the stories of the land?

The State Government recognises the unique cultural and Indigenous heritage values present on the Dampier Peninsula. Accordingly, funding was provided by the State Government to the Kimberley Land Council (**KLC**), to commission an Aboriginal Social Impact Assessment, to evaluate the potential impacts of the Precinct on the Indigenous communities in the West Kimberley. The ASIA contained a Heritage Impact Assessment (**HIA**), to identify potential impacts specifically on Indigenous heritage and cultural relationships that exist from Bardi and

Jawi country at the northern extremity of the Dampier Peninsula, the adjacent saltwater areas including parts of Yampi Peninsula, to Karajarri country, located south of Broome, as well as the Indigenous heritage and cultural relationships of all cultural groups in between.

The draft HIA report was reviewed and approved by:

- a group of senior Aboriginal people authorised to speak, both at a local level and at a regional level, for the HIA area; and
- senior members of the Goolaraboolo Jabirr Jabirr native title group with relevant cultural knowledge and authority.

Under the Heads of Agreement, the State and Woodside have made the following commitment:

"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans."

As part of the agreements with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed by State Government in consultation with Goolaraboolo Jabirr Jabirr native title claimants that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Commercial proponents wishing to locate at the Precinct will be required to develop a CHMP as a condition of locating at the Precinct.

It should also be noted that the development will not directly impact on James Price Point itself and that access to the point will be maintained.

Generic Question ID: 667 Sub ID [120] Raised by [S120 Q1313]

ENGO Submission: **Part 5**, **Section 3.5.4**. Assessment of Potential Impacts on Cultural Heritage Values. **Tables 3.8-3.10** are not very readable as reproduced in the online document. This is very poor practice in a document released for public comment. What can be read in the tables is that the Kimberley Land Council's (**KLC**) own analysis of the potential impacts on cultural values differs substantially from the original scoping document and that there is a much higher likelihood of impacts from stressors such as terrestrial wastes and discharges, restricted access and the physical presence of the Precinct.

The purpose of scoping in impact assessment is to provide an initial identification of potential impact issues that warrant further analysis during technical studies. The technical studies (the Heritage Impact Assessment is an example) provide additional information and a clearer understanding of the significance of these impact issues. The technical analyses may reveal that the impact issues identified in the scoping phase are more or less significant than originally thought or that the nature of the impacts is somewhat different to that anticipated.

With respect to the readability of **Tables 3.8-3.10**, while the quality of the scanned tables was less than ideal, this was unavoidable as the tables were taken directly from the KLC Heritage Impact Assessment Report (**Tables 6**, **7** and **8**).

Generic Question ID: 909 Sub ID [171] Raised by [S171 Q1898]

DIA Submission: DIA Heritage section should also be consulted regarding some of the land tenure options. If land is given Protected Area status under the AHA, which is suggested as an option (**p. 3-55**, **Part 5**), this may result in significant barriers to management as the Protected Area is in the exclusive use and occupation of the Minister for Indigenous Affairs.

Part 5, Section 3.5.5 of the Strategic Assessment Report (**SAR**) notes that the WA State Government has committed to develop a Dampier Peninsula Infrastructure Plan and associated conservation reserve in collaboration with the Kimberley Land Council (**KLC**) and Traditional Owners. This Plan is intended to define areas of cultural, environmental and heritage significance and to then apply appropriate land tenure and land management arrangements for management and access arrangements for these areas. Examples of tenure options mentioned in the SAR included Protected Areas (S19 *Aboriginal Heritage Act 1972*).

As stated in **Part 5, Section 3.5.5** of the SAR, the development of the Dampier Peninsula Planning Strategy (formerly named Dampier Peninsula Infrastructure Plan) and conservation reserve and associated land tenure arrangements will involve the Western Australian Department of Planning, the Department of Indigenous Affairs, the Department of Environment and Conservation, and the KLC and Traditional Owners, to ensure that appropriate management and land tenure decisions are made.

Generic Question ID: 948 Sub ID [224] Raised by [S224 Q1916]

KLC Submission: The Heritage Protection Agreement (**HPA**) is a tripartite agreement subject to confidentiality constraints. As a party to the agreement, the KLC is at least as familiar with its provisions and operation as the Proponent. The KLC does not believe that the HPA is relevant to the management of heritage impacts of the BLNG Precinct during operations and decommissioning. The HPA may have limited relevance during construction. Overall, it is inappropriate for the Proponent to rely on an agreement such as the HPA which cannot be reviewed and checked against the requirements of the ToR. Furthermore, as a party to the agreement KLC submits that the HPA is not sufficiently relevant, and is manifestly inadequate, to address the cultural heritage impacts of the BLNG Precinct, as identified in the Indigenous Impacts Reports.

Under the Heads of Agreement (**HoA**) the State agreed to work with the Traditional Owners and the Kimberley Land Council to design, construct, operate, decommission and rehabilitate the land required for the Browse LNG Precinct in a manner that avoids impacts on Indigenous sites where possible. The State agreed to mitigate any impact, in accordance with the Studies Agreement, the current Heritage Protection Agreement (**HPA**) and any future heritage management plans. Under the HPA, all parties agreed to work together to achieve mutually acceptable outcomes. Any direct impacts to heritage sites will be compliant with the HPA and the *Aboriginal Heritage Act 1972* on advice from the Minister for Indigenous Affairs. They will also be conducted in accordance with the requirements of the *Environmental Protection Act 1986*.

Traditional Owners will be involved in the ongoing management of impacts on heritage. As part of the agreements reached with the Traditional Owners reflected in the HPA, a Cultural Heritage Management Plan (CHMP) is being developed that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Additionally, each commercial proponent seeking to establish a project within the Precinct will be required to develop a CHMP.

Generic Question ID: 975 Sub ID [224] Raised by [S224 Q1937]

KLC Submission: The Heritage Impact Assessment (**HIA**) recommends 12 separate detailed and specific 'safeguard and mitigation measures' in accordance with the ToR. The SAR does not adopt any of the recommendations of the HIA Report. These responses are not adequate and do not result in a Draft Report that meets the requirements of the ToR. The detailed and specific safeguard and mitigation measures recommended in the HIA Report should be adopted by the Proponent and incorporated into the Plan.

The HIA contains 15 recommended safeguard and mitigation measures for Aboriginal Heritage, finalisation of the master plan, compliance with the HPA and ILUA (or other Traditional Owner agreement), a regional Cultural Heritage Management Plan (**CHMP**), and Commonwealth and State Government addressing of regional impacts, including National Heritage List values.

The SAR (**Part 5**, **Section 3.5.1**) notes that the HIA takes a *"comprehensive and geographically extensive approach …. to describe all potentially affected cultural heritage values rather than those perceived to be 'directly' affected because of both the interconnectedness of values and the perceived uncertainty of potential impacts of the Plan. The HIA response to the general nature of the findings is to identify a number of process related management initiatives, which accordingly have informed the strategies outlined in **Section 3.5.5**."*

The SAR provides a detailed summary of the findings of the HIA in **Section 3.5**, **Part 5**. Because of the stated uncertainty regarding the significance of potential impacts, the HIA recommends that adaptive safeguard and mitigation measures be developed which include future assessment of currently unknown impacts and appropriate measures to ensure that any such impacts, once identified, are appropriately managed. An integrated approach to management involving Traditional Owners is recommended as appropriate to ensure that numerous sources of impacts, and impacted matters, are dealt with in a coordinated manner. These findings are taken into account in the management and mitigation measures outlined in the SAR, and the potential impacts assessment Tables are reproduced in the SAR directly from the HIA (SAR **Tables 3.8-3.10**).

The SAR focuses on the requirements of Commonwealth and State Aboriginal Heritage protection legislation, the HPA, and the commitment for proponents to develop and operate in compliance with a Cultural Heritage Management Plan in cooperation with the Indigenous Traditional Owners. It is acknowledged that the HIA takes a broader view both in relation to "adaptive arrangements for potential impacts on Aboriginal heritage and Cultural values" (HIA Section 5.5 [250]), and to the scope for the proposed CHMP.

"While the breadth of the KLC HIA Report, the culture-scapes of the West Kimberley and the possible indirect impacts on broader cultural values described in the HIA will be considered, the Strategic Assessment and Precinct Plan focuses on the Precinct area and land management of the Dampier Peninsula region."(SAR **Part 5**, **Section 3.5.5**).

Much of the content of the HIA "safeguard and mitigation measures" is captured by these agreed processes, while other elements are included in other measures which have been agreed for cultural heritage management

in relation to the development, as outlined in **Part 5**, **Section 3.5.5** and below.

Some specific mitigation and monitoring measures for cultural heritage management also are recorded in **Part 5**, **Section 5**, for example in relation to a Managed Access Construction Camp, organised recreational activities and cultural awareness training.

In addition, **Part 5, Section 3.5.5** of the SAR notes that the KLC is engaged in a planning process that is aimed at putting in place a management regime to deal with the potential impacts identified in this report. The Dampier Peninsula Land Use and Infrastructure Plan is intended to define areas of cultural, environmental and heritage significance and to apply appropriate land tenure and land management arrangements that will allow for the management and enforceability of access arrangements.

Furthermore, Ranger programs are being developed, guidelines are being developed for tourism and cross-cultural awareness, and the HIS recommendation will also inform the ILUA which is being developed and negotiated for the LNG Precinct.

Taken together, these measures effectively capture the majority of the recommendations expressed in the HIA. The only discrepancies are those already noted above in relation to Precinct-based or region-wide focus, and the proposed breadth of the heritage agenda beyond the scope of heritage protection legislation. However, these issues are incorporated substantially in the HPA, and the further, collaborative development of the ILUA and CHMP frameworks to which the parties are committed. Some of the HIA's recommended "safeguard and mitigation measures" involve Commonwealth Government responsibilities such as National Heritage Listing and resolution of native title claims, which are beyond the scope of the SAR.

Generic Question ID: 1106 Sub ID [234] Raised by [S234 Q2548]

The sites that currently are registered with the heritage system should not be interfered with in any form.

Most of the Indigenous heritage sites in this area were recorded and registered in 1988-1989, based upon archaeological surveys of sites that were visible on the surface along the coast at the time, and anthropological consultation with one Aboriginal Elder. These site registrations remain current, but current best-practice standards, Department of Indigenous Affairs (**DIA**) heritage assessment guidelines, and the Traditional Owners Heritage Committee represented by the Kimberley Land Council (**KLC**) all require that new, up-to-date heritage surveys take place for the assessment of the Browse LNG Precinct.

During the last 20 years, wind and water erosion may have revealed additional sites or further archaeological evidence at existing sites, requiring re-mapping of these sites or the addition of new site records. Anthropological consultation with the full Traditional Owner group may also reveal new sites of cultural significance or additional site information that needs to be recorded.

The updated heritage site information will form the basis for planning work for Precinct and infrastructure design work to minimise disturbance to significant heritage sites and values, and for assessment by the Western Australian Minister for Aboriginal Affairs of whether or not to allow disturbance to sites under Section 18 of the WA *Aboriginal Heritage Act 1972* where impacts cannot be avoided by the proposed development. The updated heritage data will also provide the basis for framing Cultural Heritage Management Plans (**CHMP**s) to be agreed and implemented by the Traditional Owners, State Government, and proponents, to protect heritage sites and manage and minimise heritage impacts during construction, operations, and eventual decommissioning of the Browse LNG Precinct.

The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* also provides additional safeguards for the protection of Aboriginal heritage Sites, and the *Environment Protection and Biodiversity Conservation Act 1999* provides a framework for the recognition and management of national heritage values.

Generic Question ID: 1225 Sub ID [212] Raised by [S212 Q2883]

Part 5 Section 3.5.3: The submitter is concerned that "…there are no places currently protected under the ATSIHP Act within JPP or the HIA area.

The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (**ATSIHP Act**) has a different role to the registration and protection of Aboriginal Heritage sites under the Western Australian *Aboriginal Heritage Act 1972*, or the nomination of national heritage values for an area under the terms of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Aboriginal heritage sites in Western Australia are protected by State legislation (SAR **Part 5**, **Section 3.3.3**), where those sites or places meet the criteria in Section 5 of the *Aboriginal Heritage Act 1972*. Some kinds of Aboriginal Heritage Sites can also be provided protection through the ATSIHP Act, which is intended for assisting with the preservation and protection of places, areas and objects of particular significance to Indigenous Australians (SEWPaC 2010: 3). The stated purpose of the Act is the *'preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects*

that are of particular significance to Aboriginals in accordance with Aboriginal tradition' (Section 4).

The ATSIHP Act was introduced to enable the Commonwealth to protect significant Aboriginal areas and sites when State or Territory law does not provide effective protection. From a policy perspective, the Australian Government's view is that Australia's state and territory governments have the primary responsibility for laws to protect these areas and objects. When the ATSIHP Act was introduced, it was intended that Commonwealth declarations would be made as a last resort in cases when state or territory laws do not provide effective protection (SEWPaC 2010: 3).

The Commonwealth Minister can only take action following receipt of an application by or on behalf of Aboriginal or Torres Strait Islander people to protect a specified area from injury or desecration. The application can be made orally or in writing and does not have to adhere to any particular prescribed formalities. Areas with significant Aboriginal heritage value that are under threat of injury or desecration may be protected if the Minister makes a declaration to that effect. These declarations can be made on either an emergency, interim basis or on a permanent basis. A declaration will contain provisions for and in relation to the protection and preservation of the area from injury or desecration and it is an offence to contravene the terms of a declaration.

The ATSIHP Act has not been invoked by Traditional Owner applications for any sites on the western Dampier Peninsula to date because protection of Aboriginal Heritage sites has been managed through the WA *Aboriginal Heritage Act 1972*. The major Aboriginal Heritage sites were recorded in this area to provide for their recognition and protection in 1988-90, in heritage surveys sponsored by the WA Government at the request of a local Aboriginal Elder.

The Aboriginal Traditional Owners have entered into an agreement with the State Government that the Browse LNG Precinct can be developed at the preferred site near James Price Point without compromising heritage values, and the protocols for achieving this outcome are captured in the Browse Heritage Protection Agreement, involving the KLC on behalf of the Traditional Owners, the State Government, and the Foundation Proponent, Woodside.

Generic Question ID: 1226 Sub ID [212] Raised by [S212 Q2886]

Part 5 Section 3.5.4 "The HIA states that in respect of those potential impacts that have been identified significant uncertainty exists in relation to the scale, duration and permanence of those impacts". It is not acceptable to deface sites of cultural significance period. Therefore how can this proposal go ahead if the impacts on heritage are largely unknown? In saying so, the state government is effectively admitting to a flawed and uninformed process, one which it has labelled in the media as being one of "worlds best practice".

Both the Strategic Assessment Report (**SAR**) and the Heritage Impact Assessment (**HIA**) (**SAR Appendix E-4**) have been scoped at the strategic planning level, and do not incorporate detailed analysis of infrastructure plans (which are not yet completed), or impact assessments of individual heritage sites. In terms of best-practice heritage management standards, these reports have operated at a strategic assessment level, and planning of infrastructure designs and heritage management measures to minimise and mitigate any heritage impacts constitute a separate, and much more detailed phase of the project development. Wherever possible, the goal of the following, detailed planning stages of the project is to take account of heritage information being recorded, verified, and updated through new field research, in order to design and locate infrastructure as far as possible to avoid impacts to heritage sites. Mitigation of any unavoidable heritage impacts and protection of heritage sites and values in general is the subject of the Cultural Heritage Management Plan (**CHMP**) regime specified in the HPA, currently being developed jointly by the Traditional Owners (represented by the KLC) together with Woodside, and the State Government.

The HIA acknowledges that the major source of uncertainty surrounding the identification of details of heritage impacts relates to the fact that the master planning process for the Browse LNG Precinct and its initial development is still in progress (HIA p. 4). The HIA report also states that:

"The conclusion of the HIA is that the impacts of the Plan on Aboriginal heritage (including cultural landscapes), matters of NES [national environmental significance]*, and Indigenous environmental values are not likely to be significant if the plan includes the recommended safeguard and mitigation measures identified in Section 6 of this report."* (HIA p. 5).

As described in the SAR, the heritage management processes for the Browse LNG Precinct development is subject to a Heads of Agreement with Traditional Owners, in which they affirm that the Precinct can be developed at this site without serious impacts upon heritage values. The Precinct development is also subject to a Heritage Protection Agreement (**HPA**) between the State Government, the Traditional Owners (represented by the KLC) and Woodside. This agreement directs compliance with the *Aboriginal Heritage Act 1972* (WA) and the standards of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth) with respect to heritage protection, and the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) with respect to the management of National Heritage values.

In addition, there are substantial, additional heritage management processes that have been agreed to and which are being developed beyond these legislative requirements. In particular, the HPA requires the development and implementation of a comprehensive Cultural Heritage Management Plan (**CHMP**) framework for developments within the Precinct, and this requirement also is reflected in the land access agreement negotiations in progress, and the role of the proposed Precinct Management Committee. Both the land access agreement and CHMP framework development are currently in progress between the parties to the HPA, as specified in that agreement.

Most of the heritage "safeguard and mitigation measures" recommended in the KLC's Heritage Impact Assessment (HIA) report are captured in these agreed processes, while other elements are included in other measures which have been agreed for cultural heritage management in relation to the development, as outlined in **Part 5, Section 3.5.5**. Some specific mitigation and monitoring measures for cultural heritage management also are recorded in **Part 5, Section 5**, for example in relation to a Managed Access Construction Camp, organised recreational activities and cultural awareness training.

In addition, **Part 5, Section 3.5.5** of the SAR notes that the KLC is engaged in a planning process that is aimed at putting in place a management regime to deal with the potential impacts identified in this report. The Dampier Peninsula Land Use and Infrastructure Plan is intended to define areas of cultural, environmental and heritage significance and to apply appropriate land tenure and land management arrangements that will allow for the management and enforceability of access arrangements.

Generic Question ID: 1227 Sub ID [212] Raised by [S212 Q2887]

Part 5 Section 3.5.4: "…there are no Aboriginal heritage issues that will prevent the establishment of the BLNG in the vicinity of JPP and the construction and operation of the BLNG Precinct and other proponents". How can this be conclusive if the document also states that the plan is "…subject to further development…?" It also does not take into account areas currently awaiting heritage protection.

Through the Heads of Agreement (**HoA**), the Jabirr Jabirr Traditional Owners of the James Price Point area have signified their belief that the Browse LNG Precinct can be established and operated according to the principles of the HoA and the Heritage Protection Act (**HPA**), without compromising the heritage values of the area. Under the HoA, the State Government has committed funding for ten years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves would be the protection of Indigenous cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity. These factors represent the strategic planning and assessment level at which the Strategic Assessment Report (**SAR**) and its associated reports operate.

The western coast of the Dampier Peninsula has had comprehensive heritage surveys previously conducted in the 1980s, by archaeologists, anthropologists and a local Aboriginal Elder. The strategic level assessments contained in the SAR and the Heritage Impact Assessment (**HIA**) reports are based upon the results of these surveys and the cultural knowledge of the contemporary Traditional Owners.

On a more detailed planning level, additional comprehensive heritage surveys are required to record all Indigenous heritage sites in the vicinity of the Precinct. Under the HoA, the State Government and Woodside have also made the following commitment:

"The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans."

Heritage surveys being undertaken to identify and record all Indigenous heritage sites along the coastal zone in the vicinity of the Browse LNG precinct will assist planning for detailed infrastructure designs which minimise impacts upon Indigenous heritage sites. Proposed development plans must also receive authorisation under Section 18 of the *Aboriginal Heritage Act 1972* (WA) for disturbance to any Indigenous heritage sites identified by these heritage surveys.

These further heritage surveys will also record any substantial changes to the heritage inventory previously recorded, particularly due to the covering or uncovering of coastal dune sites during cyclone seasons. The updated heritage survey results will be used to inform the Cultural Heritage Management Plan (**CHMP**) framework which is currently being developed jointly by the Traditional Owners, Woodside, and the State Government.

Generic Question ID: 1230 Sub ID [212] Raised by [S212 Q2891]

Part 5 Section 3.5.4: "…the concentration of registered sites within this radius (150km of JPP) is significantly less than that in the rest of the area." The document goes on to conclude that based on the HIA "…the proximity of rock art and engraving sites, particularly on the Dampier Peninsula, is unknown." As a supporting argument, this issue calls for a more extensive and conclusive HIA and does not sustain the argument that JPP is a place of little cultural heritage. Many sites go unregistered and unnamed as it is not culturally appropriate for those who have not undergone tradition lore to view or even be aware of such sites.

The Heritage Impact Assessment (**HIA**) report considered recorded heritage sites both in the local area around James Price Point and the Browse LNG Precinct site, as well as in a broader focus within a 150km radius.

Indeed, the west coast of the Dampier Peninsula was subject to several comprehensive heritage surveys during the 1980s, conducted in conjunction with a local Aboriginal Elder. This included the recording and registration of both archaeological and cultural (mythological, ceremonial sites), and some of these site records are confidential because of their cultural associations. This is one of the best-recorded regions in the Kimberley in terms of heritage site recording.

Even so, additional cultural heritage surveys are being conducted under the terms of the Heritage Protection Agreement (**HPA**) with contemporary Traditional Owners, to ensure that all heritage sites in the vicinity of the Precinct are recorded. This information will be used to assist design planning for the Precinct development to minimise heritage impacts, and for Cultural Heritage Management Plan (**CHMP**) development for future site management and protection.

Most heritage sites on the western Dampier Peninsula are concentrated along the coast, with relatively few sites occurring inland. No rock art sites have been recorded near the Browse LNG Precinct site. Rock art sites can only occur in areas with suitable rocky outcrops and overhangs, and such features are very rare along this coast and its hinterland. No suitable rock outcrop areas for rock art occur within the Precinct boundary, and any nearby sites which might not have been previously identified would be recorded through the current round of additional cultural heritage surveys.

While the James Price Point area certainly has cultural heritage values, the HIA (p. 6) states that:

- *"The conclusion of the HIA is that the impacts of the Plan on Aboriginal heritage (including cultural landscapes), matters of NES [national environmental significance], and Indigenous environmental values are not likely to be significant if the plan includes the recommended safeguard and mitigation measures identified in Section 6 of this report."* (HIA p. 5).

As described in the Strategic Assessment Report (**SAR**), the heritage management processes for the Browse LNG Precinct development is subject to a Heads of Agreement with Traditional Owners, in which they affirm that the Precinct can be developed at this site without serious impacts upon heritage values. The Precinct development is also subject to a Heritage Protection Agreement between the State Government, the Traditional Owners (represented by the KLC) and Woodside. This agreement directs compliance with the *Aboriginal Heritage Act 1972* (WA) and the standards of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth) with respect to heritage protection, and the *Environment Protection and Biodiversity Conservation Act 1999* with respect to the management of National Heritage values.

Generic Question ID: 1231 Sub ID [212] Raised by [S212 Q2892]

Part 5 Section 3.5.4: "…it would appear unlikely that a large number of significant rock art galleries would occur within range of the BLNG precinct.." Based on what information? The self proclaimed "limited analysis" of the HIA? Given that the State Government in this document concedes that "…the proximity of rock art and engraving sites, particularly on the Dampier Peninsula, is unknown", how can it then state in the same section that it is unlikely that they're there at all?

As both the Strategic Assessment Report (**SAR**) and the Heritage Impact Assessment (**HIA**) record, no Indigenous rock art sites have been recorded in proximity to the Browse LNG Precinct site. There is a low probability that rock art sites occur in the vicinity of the Precinct area, and an extremely low probability that a large number of significant rock art sites occur in this area for three main reasons:

1. The Aboriginal Traditional Owners have indicated that the Browse LNG Precinct can be developed at this location without serious impacts to their cultural heritage, through the Heads of Agreement.
2. Comprehensive heritage surveys have been conducted in the 1980s and in 2009-2011 for this area.
3. Suitable rock outcrops and overhangs for rock art are very rare along the western Dampier Peninsula and hinterland.

In relation to the second point, comprehensive heritage surveys were conducted along the western Dampier Peninsula coast in the late 1980s, in conjunction with a local Aboriginal Elder, with the specific purpose of recording and protecting significant heritage sites associated with the Lurujarri Trail. No rock art sites were recorded during these surveys. Neither was any rock art site recorded from recent heritage surveys specifically conducted in relation to the Precinct. These surveys have been conducted by the Kimberley Land Council (**KLC**) with the Jabirr Jabirr Traditional Owners. Further heritage surveys will be conducted in the near future in relation to associated infrastructure areas outside of the Browse LNG Precinct, and any Aboriginal heritage sites will be recorded and protected from impacts as far as possible.
In relation to the third point, Aboriginal rock art can only occur on suitable rock surfaces, and sites with paintings require surface rock outcrops of suitable stone types (most commonly sandstone), as well as overhang or rock shelter features which allow fragile paintings to survive hot summers and wet season rainfall. The western Dampier Peninsula coastline consists of coastal sand dunes, backed by vine thicket and fresh-water soaks and swamps. Inland of this coastal zone is the Pindan woodland zone, which consists of flat to undulated country with sand and clay surface soils (see SAR **Appendix E6 Biogeography Report** for detailed descriptions). Rock outcrops of any sort are extremely rare in this area, and are only found on the inland reaches of seasonal watercourses. This kind of topographic feature does not occur in the Browse LNG Precinct area, and any such feature that may be impacted outside of the Precinct would be subject to prior heritage survey to identify and record any cultural heritage sites.

Generic Question ID: 1232 Sub ID [212] Raised by [S212 Q1106]

Part 5 Section 3.5.4: **Table 3-8**, **Table 3-9** and **Table 3-10** that have been directly extracted from the KLC Heritage Impact Assessment report are illegible.

The purpose of scoping in impact assessment is to provide an initial identification of potential impact issues that warrant further analysis during technical studies. The technical studies (the Heritage Impact Assessment is an example) provide additional information and a clearer understanding of the significance of these impact issues. The technical analyses may reveal that the impact issues identified in the scoping phase are more or less significant than originally thought or that the nature of the impacts is somewhat different to that anticipated.

With respect to the readability of **Tables 3.8-3.10**, we agree that the quality of the scanned tables on the U-engage platform was less than ideal, however it should be noted that access to the originals of these Tables in the ASIA report is available online at: http://www.dsd.wa.gov.au/documents/Browse_SAR_Appendix_E-4.Pdf.

3.6 Potential Impacts on Aboriginal Heritage Sites - Archaeological

Generic Question ID: 1204 Sub ID [212, 205, 215] Raised by [S205 Q2702]

Part 5 Section 3.6.3: Results of Archaeological Survey - The SAR states that "…a mitigative strategy to manage Aboriginal archaeological material potentially located off-shore should be developed". Why is this strategy not in place already, if we are to judge how satisfactory it is?

To ensure that the proposed Precinct Plan can be implemented consistently with the requirements of the *Aboriginal Heritage Act 1972 (WA)* (**AH Act**) and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (**ATSIHP Act**), the Strategic Assessment included: a Heritage Impact Assessment (**Appendix E-4**); a review of existing Aboriginal registered site information available at the Department of Indigenous Affairs (**DIA**); and an Aboriginal Archaeological Site Avoidance survey. This Survey was conducted of the Precinct area with the Goolarabooloo Jabirr Jabirr native title claimants. All survey work undertaken to date has been consistent with the Heritage Protection Agreement (**HPA**) and other arrangements that are in place with the KLC and the Traditional Owners.

Significant work has already been undertaken to ensure that the Precinct site does not contain any heritage sites with such ethnographic significance that they would prevent the Precinct Plan proceeding. The extent to which the Precinct Plan will affect sites and values is understood in general terms. However, these surveys were conducted for the purposes of the high-level strategic assessment, thus more detailed work will be required. The specifics of the site are yet to be studied and understood in detail and additional work will need to be completed before any construction begins (e.g. surveys for the Foundation Proponent's plant layout). This work will be conducted under the heritage agreements with the Traditional Owners and the KLC.

The Archaeological Site Avoidance Survey was land-based (**Part 5, Figure 3-5**). The sites in the DIA register do extend offshore (**Part 5, Figure 3-4**), and it is possible that other archaeological material will be encountered offshore. As stated in the SAR, a mitigative strategy to manage Aboriginal archaeological material potentially located offshore will be developed. This plan will be developed in consultation with Goolarabooloo Jabirr Jabirr native title claimants and could include measures such as pre-disturbance surveys of the intertidal area and monitoring of activities. Any disturbance of those sites would be done in accordance with the AH Act and the agreements the State has with the Traditional Owners. Although this strategy has not been developed, DSD has

outlined the principles that will be applied in managing potential impacts on Aboriginal heritage sites. These principles are embedded in the management and mitigation measures in **Section 3.6.4, Part 5**:

- If the State passes on or delegates any authority to other parties to conduct operations in the BLNG Precinct area it will also pass on any relevant obligations to those parties. If it does not, those obligations are assumed to remain with the State.
- All employees and contractors to be advised that the identified sites within the Precinct are Aboriginal archaeological sites to which the AH Act applies and must be avoided unless appropriate consents are in place.
- All ground disturbing work in the vicinity of registered sites will not be undertaken until sites are identified and recorded to an appropriate level of detail.
- Further archaeological survey work will be conducted as required to ensure that any works that are commenced are conducted in accordance with the requirements of the applicable heritage legislation.
- Prior to disturbing any sites, in accordance with the HPA, the State and Woodside or other future commercial proponents will:
    - consult with the Goolarabooloo Jabirr Jabirr native title claim group and its representatives on those plans;
    - not disturb sites without appropriate consents under the AH Act given by the Minister for Indigenous Affairs. Applications for these consents will be submitted following consultation with the Goolarabooloo Jabirr Jabirr native title claim group and its representatives;
    - record the sites to the level of detail in accordance with the DIA Guidelines before disturbance and conduct an archaeological site significance assessment made by a suitably qualified archaeologist as required under Section 18 of the AH Act;
    - subject to conditions imposed by AH Act consents, enable salvage to occur as agreed after consultation with the native title claimants.

To assist with the delivery of the necessary Indigenous heritage management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the management of heritage issues associated with the Precinct.

Generic Question ID: 171 Sub ID [39] Raised by [S39 Q368]

The document identifies that proximity and extent of rock art and engravings sites on the Dampier Peninsula is unknown, yet makes the unsubstantiated comment that it is unlikely they are there at all.

The air quality study undertaken to inform the Strategic Assessment Report (**SAR**) was conducted with close reference to the DEC Air Quality and Air Pollution Modelling Guidance Notes, and was reviewed by the DEC Air Quality Branch. The study include emissions such as nitrogen dioxide, sulphur dioxide, and chemicals collectively known as Volatile Organic Compounds (**VOC**) such as benzene, toluene, ethylbenzene and xylene that will be produced by processing natural gas into LNG.

While no significant studies have yet been undertaken by any government or non-government agency to investigate the extent of Indigenous rock art and rock engraving sites on the Dampier Peninsula, the DIA Indigenous Sites Register lists only three Indigenous rock art/rock engraving sites. The closest of these sites is at the Dampier Downs Homestead, located 143km south east of the Precinct site. From the air quality and dispersal modelling undertaken as part of the SAR, along with the substantial distance of the Precinct from registered rock art sites, it is considered highly unlikely that Precinct activities will have any negative impact upon Indigenous rock art and engraving sites on the Dampier Peninsula.

The Burrup Rock Art Monitoring Program provides some insight into some of the potential effects of processing natural gas into LNG on known Indigenous rock art and engraving sites. In February 2009, SKM produced a report for the Burrup Rock Art Monitoring Committee, outlining the outcomes of a range of environmental studies commissioned by DSD. The studies were conducted in response to concerns expressed regarding the perceived adverse impacts of industrial emissions to air on Indigenous rock art. The report provided updated information to baseline studies conducted in 2004/2005 also for the Burrup Rock Art Monitoring Committee, and concluded four years of study.

The studies found that background nitrogen dioxide and sulphur dioxide levels measured in 2008 were very similar to those measured in 2004, suggesting very little evidence of a gradient associated with industrial development on the Burrup Peninsula. The study also found that sulphur dioxide deposition within the Burrup

area was unlikely to cause any adverse effects to rock or rock art on the Peninsula.

The report also contained the outcomes of an artificial fumigation and deposition study, to explore the effects of nitrogen dioxide and sulphur dioxide, along with numerous other air pollutants, on the quality and colour of Indigenous rock art and engravings. This study used fumigation chambers and exposed replica rock art engravings to a number of chemical pollutants including nitrogen oxide, sulphur oxide, ammonia, xylene, benzene and toluene, and reported no changes to the rock surface colour from pollutant concentrations likely to be expected with industrial activity.

It is acknowledged that in contrast to the Burrup geology, Kimberley geology tends to be less resistant to physical and chemical weathering (SAR **Appendix E-4**, **p.116**). However, it is also important to note that the Burrup rock art studies considered sites within much closer proximity (25km) of industrial activity than sites on the Dampier Peninsula (143km).

The full list of studies conducted as part of the Burrup Rock Art Monitoring Program can be viewed online at: http://www.dec.wa.gov.au/content/view/6039/2137/

Generic Question ID: 373 Sub ID [27] Raised by [S27 Q249]

James Price Point and surrounding area is an archaeological "hot spot" abundant in "Kimberley Points", unique tools that have been fashioned from stone and glass. It is also abundant in shell middens and sites that are evidence of human habitation reaching back to prehistoric times.

Previous Aboriginal heritage surveys along the west coast of the Dampier Peninsula have recorded numerous coastal archaeological sites, including shell middens. Such sites occur at environmentally suitable locations all along the coastline, including the James Price Point area. The type of artefacts known as “Kimberley Points” are characteristic of the inland Kimberley region and have not been recorded for archaeological sites in the western Dampier Peninsula (e.g., Akerman 1975; Bradshaw and Fry 1989; Eureka 2010).

Comprehensive heritage surveys are required to record all Aboriginal Heritage sites in the vicinity of the LNG precinct. Under the Heads of Agreement (HoA), the State and Woodside have made the following commitment: *“The State as operator of the LNG Precinct and Woodside will work with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the LNG Precinct in a manner that where possible avoids impacts on Aboriginal sites, including (without limitation) song lines, or minimises any impact on Aboriginal sites in accordance with the Studies Agreement (dated 7 May 2008), the proposed Heritage Protection Agreement and any future cultural heritage management plans.”*

Through the HoA, the Traditional Owners of the James Price Point area have signified their belief that the LNG Precinct can be established and operated according to the principles of the HoA and the HPA, without compromising these heritage values. Under the HoA, the State had committed funding for ten years for the creation of conservation and heritage reserves on the Dampier Peninsula. These reserves would be jointly managed by the Department of Environment and Conservation and Traditional Owners. The purpose of the reserves would be the protection of Aboriginal cultural heritage sites and song lines, protection of areas of environmental sensitivity and rehabilitation of degraded lands leading to the restoration of biodiversity.

Heritage surveys being undertaken to identify and record and assess Aboriginal Heritage sites along the coastal zone in the vicinity of the LNG precinct will assist planning for infrastructure designs which minimise impacts upon Aboriginal Heritage sites. Proposed development plans must also receive authorisation under Section 18 of the *WA Aboriginal Heritage Act 1972* for disturbance to any Aboriginal Heritage sites identified by these heritage surveys.

Generic Question ID: 905 Sub ID [171] Raised by [S171 Q1894]

DIA Submission: The Executive Summary states that four registered sites were identified within the Project Area (**Part 1**, **p. ES-92**). However, this is inconsistent with a reference in another area of the report that refers to only three sites (**Part 5, p. 3-57**). This requires amendment.

There does not appear to be any inconsistency between the text on **Part 1**, **p. ES-92** and **Part 5**, **p. 3-58**. Both state that “Only four registered sites were identified within the Project Area”.

Generic Question ID: 906 Sub ID [171] Raised by [S171 Q1895]

DIA Submission: It is stated that further archaeological survey work will be conducted as required to ensure that any works commenced are conducted in accordance with the requirements of the applicable heritage legislation (SAR **Part 1**, **ES-92**). It may be of assistance for the document to explicitly state that ethnographic surveys of the areas will take place where required and Section 18 processes under the *Aboriginal Heritage Act 1972* (**AHA**) will be complied with (**ES-92**).

Part 5, Section 3.3.3 of the Strategic Assessment Report (**SAR**) summarises the relevant provisions of the Western Australian *Aboriginal Heritage Act 1972* (AHA) in relation to the development of the Browse LNG Precinct. It is noted that site identification surveys are usually conducted for land development, and that if sites are identified that cannot be avoided, then consent under Section 18 of the AHA is required.

Part 5, Section 3.6.4 of the SAR refers specifically to the requirement for site significance assessments and Section 18 authorisations under the AHA for archaeological sites, while also anticipating additional ethnographic survey work for the Precinct in conjunction with the KLC *"… to ensure compliance with the HPA and the AH Act".*

The Proponent acknowledges the requirement for ethnographic as well as archaeological surveys, and that the current **Section 3.6.4** is misleading in its focus on archaeological. In fact, the preparation of Section 18 applications under the AHA requires the conduct of both archaeological and ethnographic (anthropological) site-identification surveys of the area concerned. This requirement is reflected in the Heritage Protection Agreement (**HPA**), which specifies that both archaeological and anthropological components must be included in the site identification surveys and that AHA notices will be lodged in relation to the LNG Precinct (Section 3). Sections 4, 5, and 6 of the HPA further requires that Work Program Clearance (**WPC**) heritage surveys will be conducted in relation to proposed ground disturbance activities, and specify the protocols for conducting those surveys.

All actions and activities under the HPA are required to comply with the AHA (SAR **Part 5, Section 3.5.5**).

DIA Guidelines for the preparation of Aboriginal heritage survey reports, Section 18 applications, and Aboriginal site records – which incorporate the requirement for ethnographic surveys as well as archaeological surveys, are incorporated as Schedule 2 to the HPA.

3.7 Potential Impacts on Indigenous Environmental Values

Generic Question ID: 170 Sub ID [39, 212] Raised by [S39 Q367]

What will be done to protect the resources harvested by Aboriginal communities in the precinct area? Will this resource continue to be available to these communities?

The Strategic Assessment Report (**SAR**) identified that vegetation types found at the Browse LNG Precinct site are well represented outside of the area to be cleared. Studies conducted as part of the strategic assessment process also found that vegetation likely to contain gubinge (the main species targeted for commercial sales of "bush tucker") and large areas of habitat will continue to be present within the local area. The highest local impact to plant and animal species harvested by Indigenous communities will result from the initial vegetation and habitat clearing associated with construction of the Precinct and associated infrastructure. It is likely that the species significant to Indigenous people will continue to be available outside of the immediate clearing area. **Part 4**, **Section 2.5** provides more detailed information on the impact of the Precinct to species of significance to Indigenous cultural practice.

The SAR proposes a number of mitigation measures to address potential impacts to plant and animal species harvested by Indigenous communities. Harvest locations of significant species will be identified in consultation with the Traditional Owners prior to clearing. The State Government will also continue to engage with Traditional Owners to support the development of appropriate responses, which contribute to the cultural and heritage values of the region.

Generic Question ID: 977 Sub ID [224] Raised by [S224 Q1939]

KLC Submission: The recommendations in the Ethnobiological Report have not been taken into account in the SAR, which pays no regard to differentiated management arrangements for different zones or phases of operation. The SAR should adopt the recommendations of the Ethnobiological Studies Report. Otherwise, the SAR should identify the grounds on which each of those recommendations are not appropriate or justified.

The results of the KLC Ethnobiological Report (SAR **Appendix-E6**) are summarised in SAR **Part 5**, **Section 3.7**, and **Part 4**, **Section 2.5**.

Chapter 7 of the Ethnobiological Report addresses potential BLNG Precinct impacts and management for the environment and traditional resource use in terms of three environmental zones (Marine, Shoreline and Dunes, Mainland), and with respect to a construction and operations phase and a decommissioning phase. A detailed series of potential impacts and mitigation measures are proposed for each zone and phase. These recommendations have not been ignored, and indeed have been identified in the SAR as requiring capture in the detailed management plans for the Precinct development. However, the Strategic Social Impact Management Plan (**SSIMP**) presented in **Part 5,Section 5** of the SAR has the broader goal of providing a strategic framework from which more detailed management strategies may be developed, once more specific planning information is available for the development of the Precinct and the associated impacts which require

management and mitigation.

*"The SSIMP provides strategic direction for the future development of the project-level management plans. The specific nature of some of the ASIA recommendations were not appropriate to capture at this stage and could be used in the further development of the strategies and plans outlined in this document. Further information is provided in the supporting **Annexure**."* (SAR **Part 5**, **Section 5.1**).

The supporting **Annexures** of the SAR summarises the 75 recommendations developed in the ASIA, and provides a table showing how these recommendations are addressed in the SSIMP and other agreements.

The SSIMP provides a broad, overarching framework, within which the detailed management plans for specific projects, including monitoring and evaluation, should be prepared by the commercial proponents or relevant party in collaboration with Government, stakeholders and community within the specified time frame. Management strategies will consist of:

- a series of measures to enhance the project's benefits and minimise the adverse effects;
- a plan to manage the identified impacts and adverse effects;
- clear performance targets, performance measures, key performance indicators, reporting and governance arrangements as well as the response to the target shortfall;
- a plan to monitor the identified impacts and adjust the management plan as needed; and
- measures to evaluate the effectiveness of the management measures.

This is the context in which the detailed recommendations of the Ethnobiological Report will be captured.

Generic Question ID: 1268 Sub ID [142] Raised by [S142 Q2937]

Indigenous plants are important for cultural and medicinal reasons, so much is known, so much not known, but once gone, it is gone forever. Up to 10,000ha is not insignificant. In fact, clearing any of it is wrong.

Whilst studies conducted as part of the strategic assessment process concluded that the area of land required for the Browse LNG Precinct was not unique in terms of flora and fauna for fishing, hunting and gathering, the State Government has committed to maintain public access to James Price Point. As such, the State Government is currently working with the Shire of Broome local government and Main Roads WA to determine the most appropriate road network around the Precinct. It is unlikely that there will be significant impacts on the ability of Indigenous communities to continue traditional hunting and gathering practices as part of their objective to maintain their connection to country and traditional knowledge.

The area of vegetation to be cleared is up to 3,037 ha, not up to 10,000 ha. This is a very small proportion of similar vegetation that occurs on the Dampier Peninsula.

Through the Browse Heads of Agreement (**HoA**), the Jabirr Jabirr Traditional Owners of the James Price Point area have signified their belief that the BLNG Precinct can be established and operated according to the principles of the HoA and the Heritage Protection Agreement, without compromising key cultural heritage values. The protection and continued access to Indigenous plants which are significant for traditional culture will be addressed through a range of cultural heritage and environmental management measures, under the framework developed in the SAR, through the land access agreement currently being negotiated for the project area, and through associated measures such as the Cultural Heritage Management Plan currently being developed by the Foundation Proponent, Woodside, with the KLC and Traditional Owners and the State Government.

3.8 Customary Fishing

Generic Question ID: 668 Sub ID [120] Raised by [S120 Q1314]

ENGO Submission: **Part 5**, **Section 3.8.1.3**. Results of the Customary Fishing Study. James Price Point is a good place to catch Maori sea perch and turtle and has an extensive reef system that makes it attractive for customary fishers. These benefits will be lost if the LNG Precinct proceeds. There is inadequate discussion about the impacts of this potential loss. It is not sufficient simply to note the fishers will likely go elsewhere. It needs to be emphasised that the concerns about losing access to this site was the dominant attitude amongst customary fishers, notwithstanding the equal space given to the comment made by the 'younger person' that people will eventually adapt to the industrial structure on the site.

The value of customary fishing for Indigenous people and community concerns about the potential impacts of the proposed Precinct on these activities were discussed in the SAR. Many varieties of reef, near-shore and offshore fish species are caught by line, spear and/or trapped in man-made or natural fish traps in the area of the proposed Precinct. The relatively large and accessible reef system and accessibility at James Price Point

makes it particularly attractive to customary fishers. This reef extends south of the point, potentially into the area that is likely to be required for use by the proposed Precinct. In addition, much of the fishing done is land based or close to shore, and facilities at the Precinct would restrict access to these areas. The SAR concludes that the proposed Precinct is likely to affect customary fishing in the immediate vicinity of the Precinct.

The SAR discusses community concerns regarding the Precinct's potential impacts on customary fishing (**Part 5, Section 3.8.1.4**). Predicted impacts on customary fishing are summarised in **Part 5, Section 3.8** of the SAR. More detailed information on customary fishing can be found in the Customary Fishing report (Big Island Research, 2010, http://www.fish.wa.gov.au/docs/op/op093/fop93.pdf) and in the Indigenous Impacts Report and ASIA (**SAR Appendix E**).

Restriction of access for customary fishers is a necessary health and safety measure. However, the State government has developed management measures to ensure cultural values associated with fishing activities can be maintained through continued customary fishing elsewhere along the coast. Management measures relating to the protection of customary fishing values are described in **Part 5, Section 3.8.1.5** of the SAR. There are a range of management measures that will be implemented to protect wild resources and maintain Indigenous access to fishing, from those that protect the marine environment (e.g. Invasive Marine Species management) to those that restrict recreational fishing access for visitors and Precinct workers (e.g. managed access construction camp and the Recreation Management Strategy). Protection of "exclusion zones" where only Indigenous residents of the Dampier Peninsula are permitted to harvest wild resources will also be explored in the development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan).

3.9 Traditional Owner Informed Consent and Consultation

Generic Question ID: 130 Sub ID [17, 59, 149] Raised by [S17 Q142]

If the SAR is to genuinely canvass the social effects of the site it needs to assess the breach of the UN Declaration on the Rights of Indigenous Peoples by the state government's compulsory acquisition of the land.

Article 10 of the UN Declaration on the Rights of Indigenous Peoples provides:

- *Indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior and informed consent of the Indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return.*

The Traditional Owners of the land at James Price Point have given their consent to the BLNG Precinct and have agreed to relinquish their native title interests in 3,500ha of land and water, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage management at the Precinct. The 3,500ha of land and water required for the Precinct represents 1.5 per cent of the total Goolarabooloo Jabirr Jabirr native title claim group area (251,500ha of land and water).
The area required for the Precinct is comprised entirely of unallocated Crown land, and includes the seabed out to the three nautical mile (**Nm**) State territorial limit. The area is subject to a registered claim under the Commonwealth *Native Title Act 1993* (**NTA**) by the Goolarabooloo Jabirr Jabirr native title claimant group. Development of the Precinct cannot proceed without appropriate land tenure under the *Land Administration Act 1997 (WA)*, which requires that the native title rights and interests over the area be acquired.

The State Government's preference has always been to reach an agreement, and the decision of the Goolarabooloo Jabirr Jabirr native title claimant group came after four years of consultation and negotiation. When the Precinct closes, the land will be returned to the Traditional

Generic Question ID: 1205 Sub ID [205, 215, 212] Raised by [S205 Q2704]

The BLNG SIA states that "Further refinement of the site was achieved following extensive consultation with Traditional Owners." But, the report states that "…the Traditional Owners assert that they did not have access to detailed information in the Precinct proposal." (**Part 5,Section 3.9.4.1**) The SIA states "While the matters raised by the KLC were all acknowledged and carefully considered, they were but part of the mix of factors that required consideration in selecting a suitable site to establish an LNG precinct." Why did the Traditional Owners or the KLC not have much say in the site selection and is it correct that they had limited information on which to base their decisions?

The "further refinement" noted in the SIA refers to the final identification of a footprint in the vicinity of James Price Point following the announcement of the broader James Price Point area as the State's preferred location.

The key considerations which factored in the determination of the footprint included engineering (e.g. detailed bathymetry), environmental (e.g. distribution of monsoon vine thickets), and heritage. Traditional Owners were

integral to the final site selection, which came down to balancing constraints north or south of James Price Point. Relevant information was shared with Traditional Owners throughout, including a full day workshop on 14 August 2009 which included State appointed engineering consultants to answer technical questions. The information available at the time was, in the State's view, adequate for the site identification purpose. A substantial Public Information Booklet containing significant technical, environmental and heritage information was also prepared which remains available on the Department's website. See **Part 5**, **Section 3.9.7** for more information.

Generic Question ID: 1206 Sub ID [212, 205, 215] Raised by [S205 Q2705]

Part 5 Section 3.9.4.1: Within the BLNG SIA relating to Traditional Owners' participation in the final site selection; it states that "…the state Government's commitments as part of this broad agreement include: where possible, avoiding or minimising impact on Aboriginal sites." There should be no impact to Aboriginal sites! At what cost are they losing their culture? This site should not be located here.

Under the Heads of Agreement (**HoA**) the State Government and the Foundation Proponent, Woodside, have agreed to work with the Traditional Owners and the Kimberley Land Council to design, construct, operate, decommission and rehabilitate the Browse LNG Precinct in a manner that avoids impacts on Indigenous sites where possible. However, as is common with industrial developments, even when best practice approaches are employed; it is likely that there will be some residual impacts on heritage sites. Where impacts on Indigenous sites cannot be avoided, the State Government and Woodside have agreed to minimise any impact, in accordance with the Studies Agreement, the proposed Heritage Protection Agreement (**HPA**) and any future heritage management plans. Under the HPA, all parties have agreed to work together to achieve mutually acceptable outcomes. Any direct impacts on heritage sites will be compliant with the HPA and the *Aboriginal Heritage Act 1972* on advice from the Minister for Indigenous Affairs. Works will also be conducted in accordance with the requirements of the *Environmental Protection Act 1986*.

The mitigation and monitoring measures outlined in the SAR (refer to **Part 5, Section 3.5.5** and **Section 5**) will go some way to addressing potential impacts related to cultural heritage. Traditional Owners will be involved in the management of impacts, and all work will be done in accordance with the HPA and heritage protection legislation. As part of the agreements with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed that will document how vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP.

It should also be noted that a considerable funding package for strengthening of Indigenous cultural heritage and awareness of this has been negotiated as part of the agreement with Traditional Owners to provide access to the site. This would aim at increasing the strength of Indigenous culture, particularly among younger Indigenous people.

To assist with delivery of the necessary heritage management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. The proposed BLNG Precinct Management Structure itself (**Part 6, Section 3**), will provide another important mechanism to monitor, manage and report on any potential cultural heritage impacts through the Precinct Management Committee. Traditional Owners will have representation on this committee, and will play a key role in monitoring compliance with cultural heritage management requirements. Heritage impacts will be monitored and incorporated within the Annual Reports developed by the governance groups and submitted to the Minister.

Generic Question ID: 1207 Sub ID [205, 215, 212] Raised by [S205 Q2706]

Part 5 Section 3.9.11: Within the BLNG SIA, it attempts to satisfy informed consent and consultation requirements of the Precinct Plan. The report notes that the Traditional Owners assert that they did not have access to detailed information in the Precinct proposal and the KLC has claimed that this was because Woodside, State agencies and their consultants did not respond to some requests for information, and in part because the information available at the time was of a broad, conceptual nature and did not afford them the level of detail they sought. With this situation, how can anyone be approving this Precinct plan? Detailed proposals for the plant layout within the LNG Precinct were not available, and the environmental and heritage studies were not completed when the James Price Point selection was made.

The Strategic Assessment's purpose is to provide a high-level and holistic impact assessment that describe maximum potential environmental impacts rather than a detailed project-level assessment. The SAR strives to present realistic but conservative expectations regarding the characteristics of the development concept even though there is some uncertainty regarding the ultimate design, operation, scale and timing of specific developments within the Precinct. The Browse LNG Precinct proposal is based on the State establishing a

single site where a number of LNG projects (commercial proponents) could subsequently establish facilities. The Precinct is to be assessed as a "strategic proposal" pursuant to Section 38 of the *Environmental Protection Act 1986*.

Subsequent to any approval of the strategic Precinct proposal, commercial proponents must refer their project-level proposals to the Environmental Protection Authority for assessment as derived proposals. The derived proposals mechanism is described in the Response to Submissions Summary Report at **Section 2.2**. Through governance and commercial arrangements the State will also ensure that commercial proponents meet any conditions set for the Precinct (e.g. through lease conditions).

The State Government remains committed to the principle of informed consent. Since January 2008, the State Government has worked with the Kimberley Land Council (**KLC**), as the Native Title Representative Body for the Goolarabooloo Jabirr Jabirr native title claimant group, to secure access to the land required for the Browse LNG Precinct. On 6 May 2011, the registered native title claimants voted to support the establishment and operation of the Browse LNG Precinct at James Price Point, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage management at the Precinct. Significantly, the State agreed that Traditional Owners should participate in all levels of project Governance, providing a meaningful and ongoing oversight role throughout the life of the Precinct.

Further information about the Native Title Agreement process is provided in **Section 2.5** of the Response to Submissions Summary Report. The revised Governance structure is described in the Response to Submissions Summary Report, **Section 2.3**.

Generic Question ID: 1209 Sub ID [205, 215, 212] Raised by [S205 Q2709]

Part 5 Section 3.9.11: Premier Barnett has said that sending the Browse LNG Precinct to the Pilbara would take away all the development opportunities it creates for the Kimberley and the Indigenous people. If the Premier is genuine about this statement, why not pipe the LNG to the Pilbara and give the extra funding to the Kimberley Indigenous population?

The site selection process is discussed in further detail in the Response to Submissions Summary Report **Section 4.2** and the benefits of the project are discussed in **Section 1.2**. The site selection process confirms some fundamental technical and economic challenges in piping gas to the Pilbara which could lead to reserves not being developed. If the reserves are not developed, there will be no economic benefit from them to distribute to anyone.

Furthermore, many benefits relate to opportunities the Precinct would create, rather than direct financial returns, so it would not be realistic to simply return extra funding to the Indigenous population. Traditional Owners have expressed a desire for economic reform with opportunities for training and jobs rather than a continuation of the widespread welfare dependency which is currently the experience of many in the community. The governance structure around the Precinct, and commitments to Traditional Owners through the native title agreements, aim to deliver such opportunities. The native title agreements are discussed further in **Section 2.5** of the Response to Submissions Summary Report.

Generic Question ID: 298 Sub ID [165, 66] Raised by [S165 Q802]

There is a failure of 'Due Process' in obtaining the consent of the Traditional Owners. The statutory agreement entered into by the Federal and WA State governments required the informed consent of the Traditional Owners to be obtained in a culturally appropriate manner. Soon after his election Premier Barnett removed the requirement for informed consent, although at that time he ruled out compulsory acquisition of the land. In September 2010 Premier Barnett formally commenced compulsory acquisition proceedings covering just over 10,000 hectares - about three times the area the Premier originally said would be required.

Engagement with Traditional Owners has been an ongoing priority for the State Government throughout the Strategic Assessment process starting in mid-2007. In the early stages of the Browse LNG Precinct proposal, a site selection process was initiated which placed a strong emphasis on the inclusion and engagement of Traditional Owners.

After a preferred site was identified in December 2008 the engagement process continued with the recognised Native Title claimants of the site identified and in April 2009 a Heads of Agreement was signed which established in-principle support for the reaching of a land use agreement with respect to the location identified for the Precinct.

On 6 May 2011 an historic agreement was reached between the State Government, the Goolarabooloo Jabirr Jabirr native title claimant group, and Woodside as a potential Foundation Proponent. Traditional Owners agreed to relinquish their native title interests in the 3500ha of land and water required for the Precinct, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage

management at the Precinct.

The agreement establishes a unique and comprehensive regime of benefits both for Traditional Owners of the Precinct site, and also to Indigenous communities across the Dampier Peninsula. Benefits are valued at more than $1.5billion over the life of the Foundation Proponent's project, with the potential for further comparable benefits from any subsequent proponent that commits to the Precinct. When the Precinct is no longer required the land will be remediated and returned to Traditional Owners.

The most current reporting of the status of this process is provided in Section 2.5 of the Response to Submissions Summary Report.

The State Government will continue to facilitate Traditional Owner participation and ensure that the interests and views of Traditional Owners are represented at all stages.

Generic Question ID: 1208 Sub ID [205, 215] Raised by [S205 Q2707]

Part 5 Section 3.9.11: While the Traditional Owners continued to participate in the proposed BLNG Precinct process, IFPIC was not achieved for consultation beyond that point for various reasons. Most importantly because the State Government indicated that while it would consult with Traditional Owners regarding measures for impact mitigation and community benefits, the existing site selection process involving the Traditional Owner taskforce would be discontinued. Why is the BLNG Precinct process no longer transparent? It appears that the Government will proceed at all costs and develop the Kimberley even without the Traditional Owners giving consent.

The State's objective has and continues to be, to achieve the highest possible level Traditional Owner informed consent and to confer substantial benefits arising from the development of the Precinct to the region's Indigenous people. The State's process to achieve informed consent and details of its consultation are described in **Part 5,Section 3.9**. The Kimberley Land Council (**KLC**) also noted that the site selection process conducted between December 2007 and September 2008 embodied the principle of Indigenous Free Prior Informed Consent (**IFPIC**) to a substantial degree.

On 30 June 2011, informed consent was achieved between the Western Australian Government, Woodside Energy Limited and the Goolarabooloo Jabirr Jabirr (**GJJ**) native title claim group, when it agreed to relinquish native title interests in the area of land and water required for the Precinct, in return for substantial benefits for Indigenous people and continuing engagement in the environmental and cultural heritage management at the Precinct. In particular, the State agreed that Traditional Owners should participate in all levels of project Governance, providing a meaningful and ongoing oversight role throughout the life of the Precinct.

The revised Governance structure which has resulted is described in this Response to Submissions Summary Report, **Section 2.3**.

Generic Question ID: 457 Sub ID [44] Raised by [S44 Q1187]

There has been an inhumane approach to Indigenous people, the people of Broome, and surrounds, and the environment.

On 6 May 2011 the Goolarabooloo Jabirr Jabirr Traditional Owners agreed to give consent for the taking of land for the Browse LNG Precinct. Traditional Owners acknowledge the significance of this decision as life-changing, noting that it places them in the best possible position, creating long-lasting change for Aboriginal people in the Kimberley by providing jobs and training as well as business development opportunities and greater access to health, education and housing.

Generic Question ID: 579 Sub ID [120] Raised by [S120 Q1226]

ENGO Submission: The total area covered by the WA government's compulsory acquisition notification is five times larger than the government had previously indicated was required for the Browse LNG Precinct. It is also over five times the area of land stated in the Heads of Agreement, signed in April 2009, by the State Government, Woodside Energy and Traditional Owners, that gives in principle agreement to the project.

The total amount of land required for development of the Browse LNG Precinct, made up of the industrial land, workers accommodation area and light industrial area, is less than 2,500ha. An area of approximately 1,000ha of water to be vested in the port. These areas are consistent with earlier indications in the Heads of Agreement.

The Notices of Intention to Take cover a total area of around 7,500ha to allow for flexibility in the final determination of Precinct boundaries pending consideration of geotechnical and heritage surveys to allow for avoidance of impacts.

Generic Question ID: 669 Sub ID [120] Raised by [S120 Q1315]

ENGO Submission: **Part 5**, **Section 3.9**. Traditional Owner Informed Consent and Consultation. The Department of State Development (**DSD**) argues via a footnote to **Section 3.9.1** that the 'simple language' of "informed consent" was deliberately used in the Terms of Reference, rather than the language of the UN principle of free, prior and informed consent. The argument here is very weak and one of convenience rather than based on any robust moral or legal principle. The ASIA clearly outlined the very strong case for adopting the UN principle as the benchmark for gauging whether Traditional Owners have given their informed consent. Given that the Commonwealth has signed the UN Declaration on the Rights of Indigenous People (**UNDRIP**), the argument that the UN principle applies to the Browse LNG Precinct is even stronger. Environs Kimberley is committed to the principle of informed consent as outlined in the UNDRIP and in the joint position statement on Kimberley LNG Development with the KLC. As the ASIA points out, the consultation process has not met all the requirements of informed consent, especially regarding the threat of compulsory acquisition and the truncated timeline for decision-making. It should also be pointed out that the UN Declaration of Human Rights and the International Covenant on Civil and Political Rights also provide protection for the rights of people from arbitrary decisions by the state – see the discussion in KLC 157 (2010a).

The State Government is also committed to the principle of informed consent. It has always been the State Government's preference to secure the land via a land access agreement negotiated with Traditional Owners. Under the *Native Title Act 1993*, the process to reach a land access agreement does not provide for any arbitrary determination in the event that agreement cannot be reached. Unless time constraints are established to negotiate a successful land access agreement, then the negotiation period is infinite.

Since January 2008, the State Government has worked with the Kimberley Land Council (**KLC**), which represents the Native Title claimants, to secure access to the land required for the Browse LNG Precinct through a process of informed consent. A deadline for completing formal negotiations was established by all parties (KLC, Woodside and the State government). Despite three extensions of the deadline, in July 2010 the Kimberley Land Council advised the State that agreement could not be reached due to divisions within the Native Title claimant groups. In September 2010, the State commenced a formal land acquisition process in accordance with the *Land Administration Act 1997* and the *Commonwealth Native Title Act 1993.*

Although the compulsory acquisition process was initiated, the State Government continued its negotiations with the KLC and native title claimants. On 30 June 2011, the registered native title claimants signed agreements giving their consent to the establishment and operation of the Browse LNG Precinct at James Price Point, in return for substantial benefits for indigenous people and continuing engagement in environmental and cultural heritage management at the Precinct.

Generic Question ID: 670 Sub ID [120] Raised by [S120 Q1316]

ENGO Submission: **Part 5**, **Section 3.9.11**. Satisfying Informed Consent and Consultation Requirements of the Plan. DSD's argument is misleading and somewhat mischievous. Megan Davis is quoted out of context - she is a firm supporter of informed consent and argues that it should be enshrined in domestic law as well as have application in international law [Vincent Lingiari lecture, Charles Darwin University 2010]. The rationale for compulsory acquisition is primarily that Woodside would be unable to meet its commercial timeframes. This is a poor excuse indeed for deviating so markedly from the principle of informed consent

The submission references a section of the Strategic Assessment Report (**SAR**) that seeks to describe the meaning of informed consent, and the process undertaken by the State Government to achieve the informed consent of the Traditional Owners for the establishment of the Browse LNG Precinct. In this section, the quote from Megan Davis is included as one part of a discussion that defines the meaning of informed consent and the legal obligations of the State Government. Davis' quote seeks to clarify the standing of the United Nations Declaration on the Rights of Indigenous People (**UNDRIP**) in relation to Australian law, and is not meant to imply she does not support informed consent.

With respect to the land required for the Precinct, it has been the State Government's preference throughout the Strategic Assessment process to secure land access to the land through agreement with Traditional Owners. The State Government has been negotiating with the KLC, as authorised representatives of the Native Title claimants, to this end since January 2008.

A deadline for completing formal negotiations was established by all parties (KLC, Woodside and the State Government). Despite three extensions of the deadline, in July 2010 the KLC advised the State that agreement could not be reached due to divisions within the Native Title claimant groups. In September 2010, the State commenced a formal land acquisition process in accordance with the Land Administration Act 1997 and the Commonwealth Native Title Act 1993.

The process of compulsory acquisition does not remove the rights of affected people, and the relevant laws include objection periods and right to compensation. Under the *Land Administration Act 1997*, compulsory

acquisition can only occur if it is consistent with the requirements of the *Native Title Act 1993*. In addition, the State must issue a Notice of Intention to Take (**NOITT**), to which affected persons have a 60 objection period. Another objection period of 60 days would follow if a final taking order (which can only be issued in accordance with the Native title Act 1993) is issued by the Minister for Lands. Affected people have a right to compensation under this process.

Although the compulsory acquisition process was initiated, the State Government continued negotiations with Traditional Owners. Agreements were signed on 30 June 2011, ultimately registering the consent of the registered native title claimant group to the establishment and operation of the Browse LNG Precinct.

The most up to date information on the process to secure land access and informed consent is presented in more detail in Section 2.5 of the Response to Submissions Summary Report.

Generic Question ID: 1234 Sub ID [212] Raised by [S212 Q1110]

Part 5 Section 3.9.11: "The policy of the new State Government that placed time constraints on agreement making which, if not met, would oblige the government to consider Compulsory acquisition in order to meet the project's commercial timeframes. Under the NTA, if an ILUA cannot be reached, there is no set procedure in which to reach an ILUA." As there is no set procedure in which to reach an ILUA, the government has decided to acquire the land by force. This is an outrage! Informed Consent has not been given! The government should wait until IFPIC has been reached. The government gave them the land and now it wants it back to meet the project's commercial timeframes! It is time to start considering the alternative sites! The KLC expressed the view that because the process for reaching an agreement has not been concluded, the Traditional Owners have not yet given informed consent and therefore an ILUA cannot be reached. This means that any endorsement of the planning for the BLNG cannot be completed.

On 30 June 2011, historic agreements were signed between the State Government, Woodside and the Goolarabooloo Jabirr Jabirr (**GJJ**) native title claim group that ensures Western Australia and the Kimberley benefit from the development of the natural gas resources in the Browse Basin. The Traditional Owners of the land have agreed to relinquish their native title interests in the land and water required for the Precinct, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage management at the Precinct. The Precinct represents 1.5 per cent of the total GJJ native title claim area (251,500ha of land and water).

The agreements are discussed further in **Section 2.5** of the Response to Submissions Summary Report.

Generic Question ID: 1391 Sub ID [150] Raised by [S150 Q3158]

According to Mr Barnett the money from the sale of the land will profit all Aboriginal People. Why will the families or tribes that own the land have to share with all the Aborigines of the Kimberley?

The land required for the Browse LNG Precinct is comprised of unallocated Crown land subject to a registered claim under the Commonwealth *Native Title Act 199*3 by the Goolarabooloo Jabirr Jabirr (**GJJ**) native title claimant group. Development of the Browse LNG Precinct cannot proceed in the absence of the appropriate land tenure being granted under the Western Australian *Land Administration Act 1997*, with the granting of such tenure being subject to acquiring the native title rights and interests over the area of land required.

This means that, as the native title claimants for the area of land at James Price Point, agreement between the State Government and the GJJ claimant group was required to gain access to the land required for development of the Precinct. Under the negotiated agreement, the GJJ Traditional Owners will receive compensation for access to the land required for the Precinct. In addition to the compensation package, the GJJ supported the establishment of a regional benefits package to share the benefits and seek better long term outcomes through self-determined funds which would contribute to improvements in education, training, employment, health, housing and social conditions more broadly for the Indigenous communities of the Kimberley region.

More information on the native title agreements can be found in the supporting **Annexures** of the Response to Submissions Summary Report.

Generic Question ID: 1428 Sub ID [155] Raised by [S155 Q3399]

The government, who has given the Traditional Owner's land rights, are holding basic human rights as a carrot to be dangled to these people, who, if they decide against the mining in some of their most spiritually significant country, will have that land taken from them anyway.

The State Government is committed to the principle of informed consent. It has always been the State Government's preference to secure the land via a land access agreement negotiated with Traditional Owners. Under the *Native Title Act 1993*, the process to reach a land access agreement does not provide for any

arbitrary determination in the event that agreement cannot be reached. Unless time constraints are established to negotiate a successful land access agreement, then the negotiation period is indefinite.

Since January 2008, the State Government has worked with the Kimberley Land Council (**KLC**), which represents the Native Title claimants, to secure access to the land required for the Browse LNG Precinct through a process of informed consent. A deadline for completing formal negotiations was established by all parties (KLC, Woodside and the State government). Despite three extensions of the deadline, in July 2010 the Kimberley Land Council advised the State that agreement could not be reached due to divisions within the Native Title claimant groups. In September 2010, the State commenced a formal land acquisition process in accordance with the *Land Administration Act 1997* and the *Commonwealth Native Title Act 1993.*

Although the land acquisition process was initiated, the State Government continued its negotiations with the KLC and native title claimants. On 6 May 2011, the registered native title claimants voted to support the giving of their consent to the establishment and operation of the Browse LNG Precinct at James Price Point, in return for substantial benefits for indigenous people and continuing engagement in environmental and cultural heritage management at the Precinct.

The parties will work to finalise and execute agreements by the end of June 2011 that establish a unique and comprehensive regime of benefits both for Traditional Owners of the Precinct site, and also to Indigenous communities across the Dampier Peninsula and beyond.

3.10 Mitigation and Management of Indigenous Impacts

Generic Question ID: 1235 Sub ID [212, 205, 215] Raised by [S205 Q2712]

Part 5 Section 3.10.2: The BLNG Strategic Assessment Report states that "Social and economic impacts are generally known, but the extent of those impacts is also somewhat unpredictable". Why don't we ask the Aboriginal population in the Pilbara how the industrialisation has affected their lives? What funding for housing and education were they given? We have all seen the documentaries on TV; did it affect their lives positively? No. How about the jobs? No. What about the rest of the population in the Pilbara? Ask the educators if education has improved? No. Ask the physicians if Aboriginal health has improved as a result of industrialisation? No. How can the report say it's unpredictable! Is this what the BLNG is proposing for the community of Broome? If it's all so unpredictable and unknown, how can the community rely on this document for a clear picture of the future if this project goes ahead?

Part 5 Section 2.7: "Virtually all stakeholders supporting the Precinct stated they did so because they expected the development to provide employment for existing residents of Broome and the Dampier Peninsula, in addition to education and training opportunities for the younger generation within the impact areas. A key feature of the Heads of Agreement was the provision or funding of a range of education and economic development opportunities." Similar developments in the Pilbara have not delivered on this so why should be we believe it will solve these issues in the Kimberley?

The SAR summarises the predicted impacts of the Browse LNG Precinct development on Aboriginal people in Broome and the Dampier Peninsula (**Part 5, Section 3**). A more detailed discussion of these predicted impacts are included in the six-volume Indigenous Impacts Report (**Appendix E**), particularly in the Aboriginal Social Impact Assessment (**Appendix E-3**).

The State Government drew on the experiences of other regions that have been affected by industrial development, such as the Pilbara, in predicting the potential impacts from the Browse LNG Precinct development. While these experiences are useful in informing impact prediction and developing management measures, the broader context in which the industrial development will occur must also be considered. There are fundamental differences between the West Kimberley and the Pilbara. For example, the communities in the Pilbara were established as mining communities, whereas Broome is an existing town, and the towns have differing histories of development.

It is not uncommon for there to be areas of impact that are difficult to predict or quantify. In recognition of this, the Terms of Reference for the Strategic Assessment, as agreed between the State and the Commonwealth governments, requires identification of any areas in which impacts on Indigenous people and heritage are likely to be unknown, unpredictable or irreversible. This information will be considered by the Ministers when making an approval decision on the proposed Precinct. Consistent with this requirement, discussion of each of the key social impacts includes, where relevant, the extent to which impacts are unknown, unpredictable and/or whether further investigation may need to take place.

As discussed in the SAR, impacts on Indigenous people by their nature not entirely predictable. However, the types of potential impacts of large resource developments on Indigenous people are generally known at a level of detail that is sufficient to predict impacts of the Precinct development and develop appropriate management responses. The impacts arising from resource developments in the Pilbara were among those that informed the

Strategic Assessment. More detailed discussion of socio-economic impacts experienced due to resource development in the Pilbara can be found in the SIA, particularly in Section 10 of Volume 1 (**Appendix D-1**) and in the ASIA (**Appendix E-3**).

To address the uncertainty associated with predicting impacts on Indigenous communities, the ASIA highlights the importance of effective implementation of the management measures outlined in the SAR, and an ongoing monitoring program to ensure these measures are working. In addition, the ASIA recommended that the SAR include a strong focus on addressing existing social and economic disadvantage of Indigenous people if it is to comply with this aspect of the Terms of Reference. This recommendation is based on the knowledge that the nature of impacts depends to a large extent on whether or not these existing social conditions are addressed. Existing conditions for Indigenous people will be addressed by a range of measures outlined in the SAR; for example, those aimed at addressing social service and housing deficiencies and through the education, training and employment of Indigenous people.

Generic Question ID: 1210 Sub ID [205, 215, 212] Raised by [S205 Q2711]

Part 5 Section 3.10.2: The BLNG Strategic Assessment Report states that “The likely physical site impacts can be identified and work will be undertaken so that the impacts on Aboriginal Heritage are more fully understood”. To get this far in the process where the government is acquiring the land by force and then say that the site impact work “will” be undertaken in the future shows their lack of respect for the impacts to Aboriginal culture in this case. Shouldn’t the impact work have already been undertaken? The SAR also states “Impacts involving the disturbance of Aboriginal heritage sites at a site level tend to be irreversible but limited". Does the State understand that irreversible means that artefacts and history will be destroyed?

The considerable site selection process conducted for the Browse LNG Precinct included inputs by the State Government, the Commonwealth Government, Traditional Owners, and industry. Extensive consultation with Traditional Owners during the site selection process was managed by the Kimberley Land Council (**KLC**) as the representative body for the many Indigenous groups in the region. This involvement was critical in order to limit the potential impacts of the Precinct on areas of significance for Indigenous heritage.

Under the Heads of Agreement (**HoA**) the State Government and Foundation Proponent have agreed to work with the Traditional Owners and the Kimberley Land Council to design, construct, operate, decommission and rehabilitate the Browse LNG Precinct in a manner that avoids impacts on Aboriginal sites where possible. Where impacts Aboriginal sites cannot be avoided, the State government and Woodside have agreed to minimise any impact in accordance with the Studies Agreement, the proposed Heritage Protection Agreement (**HPA**) and any future heritage management plans. Under the HPA, all parties have agreed to work together to achieve mutually acceptable outcomes. Any direct impacts on heritage sites will be compliant with the HPA and the Aboriginal Heritage Act on advice from the Minister for Indigenous Affairs. They will also be conducted in accordance with the requirements of the *Environmental Protection Act*.

This is a strategic-level assessment, and the extent to which the Precinct Plan will affect sites and values is understood in general terms. Significant work has already been undertaken to ensure that the Precinct site does not contain any heritage sites with such ethnographic significance that they would prevent the Precinct Plan proceeding. However, there is still additional work that will need to be done at the more detailed project level and for specific developments within the Precinct.

Mitigation and monitoring measures outlined in **Section 3.5.5** of the SAR (**Part 5**) and those outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5**) will go some way to addressing potential impacts related to cultural heritage. Although not outlined at the level of detail this submitter would prefer, the State has described the process by which impacts on Aboriginal heritage sites will be minimised and managed. Traditional Owners will be involved in the management of impacts, and all work will be done in accordance with the HPA and heritage protection legislation. As part of the agreements with the Traditional Owners, a Cultural Heritage Management Plan (**CHMP**) is being developed that will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP.

To ensure delivery of the necessary heritage management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the management of heritage issues associated with the Precinct.

Generic Question ID: 1211 Sub ID [212, 205, 215] Raised by [S205 Q2713]

Part 5 Section 3.10.3: The BLNG Strategic Assessment Report states that "DSD engaged the KLC to undertake an archaeological and ethnographic heritage assessment to identify heritage sites and potential direct and indirect impacts of the Browse LNG Precinct (**Part 5 Section 3.5**) and further detailed work is to be undertaken". Shouldn't this have been done previously, so that the public can comment? This document is lacking a lot of key information.

Significant work has already been undertaken to ensure that the Precinct site does not contain any heritage sites with such ethnographic significance that they would prevent the development of the Precinct. This was a key factor during site selection. Traditional Owners were engaged very early on in the site selection process to ensure that sites of significant Indigenous heritage value were avoided.

This work also included the development of a Heritage Protection Agreement (**HPA**), a Heritage Impact Assessment (**SAR Appendix E-4**), a review of existing Aboriginal registered site information available at the Department of Indigenous Affairs (**DIA**) and an Aboriginal Archaeological Site Avoidance survey. This work was sufficient to ensure that the proposed Precinct Plan can be implemented consistently with the requirements of the *Aboriginal Heritage Act 1972 (WA)* (**AH Act**) and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (**ATSIHP Act**).

Heritage surveys were conducted for the purpose of the strategic assessment. However, as this is a strategic-level assessment, more detailed work will be required as specific project proposals are developed.

Although more detailed survey work will be required before development can proceed, the SAR does outline the principles that will be applied in managing potential impacts on Indigenous heritage sites. Under the Heads of Agreement (HoA), the State Government, as operator of the Browse LNG Precinct and the Foundation Proponent (Woodside) have committed to working with the Native Title Party and the KLC to design, construct, operate, decommission and rehabilitate the Browse LNG Precinct in a manner that avoids impacts on Aboriginal sites. All work will be conducted in consultation with the Traditional Owners and the KLC, and will comply with the relevant heritage legislation. The processes by which the commitment made in the HoA will be achieved are outlined in the management and mitigation measures in **Sections 3.5** to **3.10, Part 5**.

A key component of managing impacts to Aboriginal Heritage values is development and implementation of a Cultural Heritage Management Plan (**CHMP**), which will document how any vulnerable sites will be monitored, managed and protected during the construction and operational phases of the Precinct. Each proponent seeking to establish a project within the Precinct will be required to develop a CHMP. The proposed BLNG Precinct Management Structure (**Part 6, Section 3**) will provide an important mechanism to ensure effective management of impacts and public transparency. Commercial proponents will be required to monitor, manage and report on any potential cultural heritage impacts through the Precinct Management Committee. Information on heritage impacts will be monitored and incorporated within the Annual Reports developed by the governance groups and submitted to the Minister.

To assist with the delivery of the necessary Indigenous heritage management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, the Traditional Owners can have significant input into the heritage management measures associated with the Precinct.

Generic Question ID: 955 Sub ID [224, 153] Raised by [S224 Q1919]

KLC Submission: The management arrangements and structures suggested by the SAR to manage and mitigate social and cultural impacts are entirely inadequate because they:

- Fail to identify a governing entity capable of managing social impacts;
- Focus almost exclusively on the management of the Precinct rather than on wider social impacts; and
- Give Traditional Owners no role in decision-making, because the management committees on which they are represented are advisory only.

The SAR does not accept the ASIA's recommendations, many of which constitute 'specific measures' or 'specific management arrangements', but rather states that the recommendations will inform the later development of management strategies. The SAR assumes that a single measure, operating the BLNG construction camp as a 'managed-access' facility, will allow many potential social impacts to be avoided or mitigated. As detailed below, there is no basis for this assumption. The SAR's discussion of Indigenous Consent omits critical information and as a result does not adequately address the issue of whether Traditional Owners have provided their consent to the BLNG Precinct in a culturally appropriate manner.

As in all impact assessments, the purpose of the Strategic Assessment was to predict the impacts of the proposed development and describe management and mitigation measures to address those impacts. For this reason, the socio-economic management measures outlined in the SAR (**Part 5, Section 5**) focus on managing the impacts from the project. However, there are both Precinct-level management strategies and general management strategies outlined in the SAR. While the former focuses on the management measures that will be part of the lease conditions, the latter address the broader social impacts of the Precinct development (e.g. housing, social services, tourism impacts).

Under the proposed governance structure, the Social Management Committee will ensure the implementation of the Precinct-related social management plan.

The proposed Browse LNG Precinct Management Structure (**Part 6**, **Figure 3-3**) has been the subject of numerous comments from both the community and State and Commonwealth Government environmental regulators. A number of modifications have subsequently been made to this and these are presented in detail in **Section 2.3** of the Response to Submissions Summary Report. It is noted that Traditional Owners are now proposed members of all committees, including the Precinct Control Group. It is also noted that the only decision-making role is that of the Minister for State Development representing the Proponent. The governance structure can only be advisory in nature.

Concerns relating to the treatment of ASIA recommendations and the focus upon the 'managed access' construction camp are addressed in QID 1922 and QID 1918 respectively.

The issue of Indigenous Consent was complicated in the Strategic Assessment by the ongoing nature of native title negotiations. The Proponent is strongly of the view that it has acted both appropriately at all times, and with the strong intention of delivering a positive outcome for Traditional Owners at the same time as an effective operational Precinct. On 30 June 2011 the Goolarabooloo Jabirr Jabirr native title claimants signed agreements, giving their consent to the establishment and operation of the Browse LNG Precinct at James Price Point. This authorisation agreement demonstrates consent of the Precinct through a process managed by the Kimberley Land Council as the authorised representative body of the native title claimant group.

Generic Question ID: 388 Sub ID [104] Raised by [S104 Q904]

DoH Submission: DoH recommends that the mechanisms to be used for decision-making by Government, setting conditions arising from the SIA and the Aboriginal Social Impact Assessment (**ASIA**) and the outcomes and subsequent management requirements, should be made public.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**), proposes a number of management measures which have been informed by both the Social Impact Assessment (**SIA**) and the Aboriginal Social Impact Assessment (**ASIA**), to mitigate any potential social impacts associated with the development of the Precinct.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

In addition to governance and management arrangements at the Precinct, the State Government will monitor:

- the development of the Browse LNG Precinct by commercial proponents;
- progress on the implementation of State measures; and
- cumulative impacts of activities based on monitoring programs of individual commercial proponents.

This information will be collated in an annual Browse LNG Precinct implementation report prepared by the Precinct Management Group and will be made publicly available.

Generic Question ID: 942 Sub ID [224] Raised by [S224 Q1913]

KLC Submission: This approach to management and mitigation of social and cultural impacts is not consistent with the requirements of the ToR, which clearly stated that management and mitigation, or ‘safeguard’, measures must be detailed and specific (see ToR clauses 8 and 9).

DSD has provided a level of detail it believes is consistent with the Terms of Reference and allows the BLNG Precinct proposal to be assessed as a “strategic proposal” pursuant to Section 38 of the EP Act. A Strategic Assessment provides a high-level impact assessment rather than a detailed project-level impact assessment. The Social Impact Assessment (**SIA**) component, including management and mitigation measures, is consistent with this strategic level of assessment. The SAR strives to present the most realistic expectations regarding the characteristics of the development concept even though there is some uncertainty regarding the ultimate

design, operation, scale and timing of specific developments and management plans at the Precinct.

The State Government acknowledges that additional planning needs to take place to ensure effective management of potential impacts. If approved, work will include additional data collection and development of General and Precinct-level management plans as outlined in the SAR (**Part 5, Section 5**). Implementation of these management measures will be ensured through the proposed governance structure. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

The level of detail in the SAR will be considered by the State and Commonwealth Governments in the approvals process. If there is agreement that the BLNG Precinct proposal can be implemented, the Minister for Environment will issue a statement that the strategic proposal may be implemented and prescribe the implementation conditions to be applied.

Generic Question ID: 943 Sub ID [224] Raised by [S224 Q1914]

KLC Submission: The management and mitigation arrangements put forward in the DSAR, in particular in relation to social, heritage and cultural impacts on Indigenous people and culture, rely in large part on agreements that are in place, or are in the process of being negotiated, by the State, the Foundation Proponent, and the registered native title party for the Goolarabooloo Jabirr Jabirr native title claim, represented by the KLC. These agreements are:

- the Heads of Agreement (**HOA**) for the negotiation of an ILUA or ILUAs for the BLNG Precinct;
- the Heritage Protection Agreement (**HPA**); and
- the ILUA or ILUAs, as contemplated by the HOA.

A significant concern of the KLC is that these agreements (or the process for their ongoing negotiation) are subject to confidentiality constraints and as such it is not possible for the relevance and effectiveness of these agreements to be properly considered by any person reviewing the DSAR.

The consequence of this is:

- the Commonwealth and State Ministers cannot consider these proposed measures or receive advice on whether or not these agreements are relevant to and effective for managing or mitigating the impacts of the BLNG Precinct, as identified in the impacts assessment reports and in accordance with the requirements of the ToR; and
- it is not possible for any stakeholder or member of the public to address the adequacy of these proposed management and mitigation measures.

Reliance on these agreements (or proposed agreements) therefore does not satisfy the ToR, which requires:

- detailed and specific management and mitigation measures; and
- an opportunity for public comment on those measures, as incorporated into the DSAR.

The references noted above were written with the knowledge that the State, the KLC and the Traditional Owners were continuing to consult on the content of the proposed agreements to protect cultural values, improve underlying social issues and provide for socio-economic benefits and to cover other significant matters that the parties agree to include therein.

On 30 June 2011 the State Government, the Goolarabooloo Jabirr Jabirr native title claimant group and Woodside Energy Ltd finalised agreements to secure access to land at James Price Point, north of Broome, for the establishment of a Liquefied Natural Gas (**LNG**) precinct to process gas from the Browse Basin Gas reserves. The State concurs with the need to maintain transparency with respect to native title agreements for the Precinct. Refer to **Section 2.5** of the Response to Submissions Summary Report for a summary of key aspects of these agreements, and location of these documents.

Generic Question ID: 962 Sub ID [224] Raised by [S224 Q1924]

KLC Submission: There is no provision in the SAR for Traditional Owner or independent review of impacts or impact management, to establish whether predicted impacts are of the magnitude expected; whether unanticipated impacts have occurred; or whether management responses are proving effective. The only monitoring of social impacts, and the only review of implementation of impact mitigation measures, would be done by DSD in consultation with other government agencies (**Part 1**, **p. 12**). This approach is entirely inadequate, especially in a situation where DSD has acted for the Proponent (the Minister for State Development) for development of the BLNG Precinct.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, the Traditional Owners can have significant input into the environment and social management associated with the Precinct and the subsequent monitoring and reporting of this.

Generic Question ID: 970 Sub ID [224] Raised by [S224 Q1932]

KLC Submission: The SAR's suggestion that the existence of Environmental Regulations represents an appropriate response to ASIA recommendations on the environment is an inadequate and inappropriate response which misunderstands one of the purposes of an impact assessment process; namely, to identify impacts that will not be acceptable if managed solely through existing regulatory processes. Kimberley Aboriginal people do not accept, on the basis of many decades of experience, that existing State regulation is capable of protecting their land and sea country.

The Strategic Assessment is a legislatively based impact assessment process, the purpose of which is to conduct a systematic evaluation of the Precinct proposal, its impacts, and the proposed measures to reduce any negative impacts that might otherwise result. The Native Title Agreements which were finalised on 30 June 2011 provide further measures to address the concerns of Traditional Owners with respect to the management of environmental impacts. These measures are addressed in the Response to Submissions Summary Report and in the supporting **Annexure** (ASIA Recommendations) and in **Section 2.3** (Governance Issues).

4 Direct Social Surrounds and Socio-economic Factors

Generic Question ID: 131 Sub ID [39, 114, 205, 215, 212] Raised by [S39 Q358]

Does the Social Assessment consider that there may be social impacts for many other non-indigenous residents who utilise the coast around the James Price area?

There are a number of potential impacts associated with the development of the Browse LNG Precinct on marine and onshore users, that are discussed in **Part 5**, **Sections 4.5**, **4.6**, **4.7**, and **4.8** of the Strategic Assessment Report (**SAR**). The SAR found that whilst there are no people living permanently within a 10km radius of the proposed Browse LNG Precinct, the area planned for the Precinct is a popular informal recreation area for residents of Broome and the Dampier Peninsula, as well as tourists. Day trips and informal camping at James Price Point are popular pastimes among some locals, particularly during the school holidays with many people camping and participating in recreational fishing. There is also at least one tourism operator presently using the land features around James Price Point for photography class purposes.

The restricted marine areas associated with the construction and operation of the Precinct would to a certain extent constrain the access of commercial and recreational marine users in and around James Price Point. Due to the restriction of public access in some marine areas associated with the development of the Precinct, a Fishing Industry Impact Study (**FIIS**) was conducted as part of the strategic assessment process. The FIIS study, included in **Appendix D-4** of the SAR, noted that marine users were particularly concerned about potential over-fishing in some local waters. Additional impacts discussed in the FIIS and the SAR more generally, include potential impacts on marine habitat, water quality and amenity, all of which may have an impact on marine biota and ecosystems that are utilised and valued by these stakeholders.

The SAR proposes management and mitigation measures to address each of these impacts. Most of these impacts are expected to be residual impacts to marine users, and are expected to be low to very low following implementation of management measures. For example, the Precinct Condition strategies included in the Strategic Social Impact Management Plan (**SSIMP**), require that commercial proponents demonstrate the application of best practice measures in their operations. These are to be implemented to minimise the impacts to coastal processes from onshore and near shore marine infrastructure. The Broome Port Authority will also be established as the statutory Port Authority for the Browse LNG Precinct and associated port area, and will prepare a Browse LNG Precinct Environmental Management Plan for the port area.

In addition, the State Government recognises the importance of involving marine users in the management and mitigation of impacts. The State Government will therefore prepare and implement an Engagement Plan to manage all interactions with public users of the marine environment in and around the Precinct, including recreational users and tourism operators.

In terms of on-shore access and use of the area, the importance of maintaining access to James Price Point itself and to Manari Road to the north of the Precinct has been recognised and will be provided for.

The Strategic Social Impact Management Plan is outlined in Part 5, Section 5 of the Strategic Assessment

Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

The Fishing Industry Impact Study is included in Appendix D-4 of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Appendix_D-4.pdf

4.1 Relevant Factor: Environmental Heritage and Conservation Areas

Generic Question ID: 320 Sub ID [25, 116, 118, 228] Raised by [S25 Q219]

The national heritage claim for the Kimberley should be rezoned to include the areas where industry could profit; those areas where mining would be possible should be carved out of the investigated and possibly protected area.

The National Heritage List protects National Heritage values within its boundaries. Therefore, activities can continue if they do not have a significant impact on these values. This has been recognised under the EPBC Act.

Generic Question ID: 327 Sub ID [28, 48, 57, 155] Raised by [S28 Q277]

The Kimberley should be nominated for world heritage listing.

The World Heritage listing is a matter for the United Nations Educational, Scientific and Cultural Organisation (**UNESCO**). The Western Australian Government will continue to abide by all State and National legislation.

It is noted that under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), the Minister for Sustainability, Environment, Water, Population and Communities is responsible for the National Heritage List. Although the region has been nominated for listing, a decision has not yet been made in this regard. Should the area be listed as a National Heritage place, the heritage provisions of the EPBC Act will protect the values for which the area has been listed. Any action that has a significant impact on these values would then require the approval of the Minister. Activities can continue if they do not impact on these values.

Generic Question ID: 925 Sub ID [227, 234, 95, 124] Raised by [S227 Q1981]

The area impacted by the Precinct was designated as the Waterbank Structure in 1989, which was to make the whole coastal area reserved for recreation and cultural activities, as it would be as a National park standing. This was to protect the cultural integrity of the songcycle. This same area in the early 1990s was originally designated as the Dampierland National Park from Barred Creek upwards to the end of the Peninsula, based on a proposal done by CALM, the Botanical Society and the Museum of Western Australia, those responsible for the listing of the Sacred Aboriginal Sites and the significant dinosaur footprints and fossils.

As discussed in the SAR (**Part 5, Section 4.1**), the area in which the proposed Precinct would be located near James Price Point has been included in past proposals for expanded reserves. As this submission acknowledges, in 1991 CALM (now DEC) proposed increasing the size of Coulomb Point Nature Reserve to 112,800 hectares and declaring it a National Park (i.e. Dampierland National Park). The Park would include a greater number of the ephemeral lakes and fresh water springs, such as Wonganut Springs, and increase the representation of coastal and riverine environments and of low-level pindan on through-drained soils. This proposed reserve was also included in the Department of Land Administration's (now LandGate) *Waterbank Structure Plan* with the purpose of the reserve broadened to include Aboriginal heritage. This area included the James Price Point area where the Browse LNG Precinct is proposed. While the Waterbank Structure Plan remains a good reference document, it has lost its currency over the years given the changes in economic, social and environmental considerations in the Broome area, subsequent planning efforts and changing Indigenous interest groups.

The State Government committed in the SAR to facilitate the establishment of additional nature reserves and/or national parks within the Dampier Peninsula to secure representative vegetation of the Peninsula in reserves, protect fauna habitat of rare and specially protected fauna and to protect Aboriginal culture and heritage through the implementation of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan). The decision on whether to establish the Dampierland National Park and its location will be in accordance with an Indigenous Land Use Agreement with the Goolarabooloo Jabirr Jabirr Native Title Claimants. Mitigation measures will be implemented to avoid impacts on terrestrial conservation areas from indirect activities associated with development of the Precinct, including:

- fire and weed management in and around Coulomb Point Nature Reserve and any other nature reserves established in the vicinity of the Plan area in collaboration with the DEC;
- DEC to monitor visitor numbers to Coulomb Point Reserve camping area; and

- DEC to develop a management plan for the Coulomb Point Reserve.

A Management and Monitoring Strategy for Vegetation of Medium to High Conservation Significance will also be implemented, which will inform all future commercial proponents wishing to locate at the Precinct of requirements for detailed management plans.
To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1212 Sub ID [212, 205, 215] Raised by [S205 Q2715]

Part 5 Section 4.1.1. The decision on whether to establish the Dampierland National Park, or any alternative reserve options currently the subject of consultation as part of the development of the Dampierland Use Management Plan, is one to be determined by the Government as part of negotiations to secure access to the BLNG Precinct with the Goolarabooloo Jabirr Jabirr Native Title Claimants. Is that the trade off? The Native Title Claimants might regain access to their ancestral land if the land at James Price Point is handed over. Why does it have to be one or the other?

The Goolarabooloo Jabirr Jabirr (**GJJ**) native title claim group authorised an agreement with the Western Australian Government, and Woodside Energy Limited as a potential Foundation Proponent, on 6 May 2011. Traditional Owners have agreed to relinquish their native title interests in the land and water required for the Browse LNG Precinct, in return for substantial benefits for Indigenous people and continuing engagement in environmental and cultural heritage management at the Precinct.

While the Dampier Peninsula Planning Strategy (formerly the Land Use and Infrastructure Plan) provides a process to establish appropriate land uses across the Dampier Peninsula, the Native Title Agreement is a distinct and separate process whereby funding can be secured through economic development and applied to the joint management of conservation areas, and the promotion and protection of Aboriginal culture and heritage. These opportunities recognise and value the important cultural knowledge that Traditional Owners possess, while providing meaningful roles through employment and training which would not otherwise be available.

Generic Question ID: 1213 Sub ID [212, 205, 215] Raised by [S205 Q2720]

Part 5 Section 4.1.6.5: With regard to the Kimberley National Heritage Assessment, it is expected that the west Kimberley region will be formally included on the National Heritage List for a range of natural and cultural values. While the specific nature and distribution of these values has yet to be formalised, it is unlikely that the James Price Point coastal area will be considered to be representative of the outstanding environmental heritage and conservation values for which the region might feasibly be listed. This seems like a trade off. If the BLNG Precinct is approved, the rest of the Kimberley will be listed as National Heritage. For how long? Will it be until another project comes along for the Mitchell Plateau?

The draft National Heritage List nomination from the Australia Heritage Council (**AHC**) includes the intertidal Broome Sandstone formation of the western Dampier Peninsular coastline under the category B –"rare or endangered aspects of Australia's natural and cultural history". The details of this nomination are:

- The Dampier Coast dinosaur tracks have outstanding heritage value to the nation under criterion (b) as the best and most extensive evidence of dinosaurs from the western half of the continent, some of which are unknown from body fossils; for the diversity and exceptional sizes of the sauropod prints; and the unique census of the dinosaur community that they provide.
- The fossil human footprint sites of the Dampier Coast have outstanding heritage value to the nation under criterion (b) as one of only three documented human track sites in Australia and the only documented evidence of human tracks from the west coast of Australia.
- The dinosaur tracks of the Dampier Coast have outstanding heritage value to the nation under criterion (b) for providing a rare, if not unique, documented coincidence of scientific interpretation of ancient dinosaur tracks with Indigenous Australian tradition.

The fossil human footprint site referred to in the nomination is near Lombadina, well to the north of the James Price Point area. The extent of dinosaur track fossils in the vicinity of the Browse LNG Precinct area is still under investigation. **Section 4.2** of **Part 5** of the SAR describes the presence of dinosaur footprints and the results of two WA Museum surveys conducted so far (Siversson 2010a; 2010b), specifically to identify these features in the vicinity of the BLNG project area. These fossils occur on the Broome sandstones in the lower intertidal zone, and are difficult to locate and access because they are most often under water, and may frequently also be

buried under sand or mud. The Museum studies were conducted because of previous research on the western shoreline of the Dampier Peninsula particularly as reported by Thulborn *et al* 1994.
Information provided in a confidential submission on the SAR is believed to have informed the Australia Heritage Council's recommendation. This provided evidence of dinosaur footprints and trackways in the vicinity of the Precinct. Without giving specific locations these were described to be *"at the point itself, one is at a short distance to the north, and one of the sites illustrated is closer to the "southern pipeline crossing".* Some images provided with the submission support this information with the shoreline shown in the background being characteristic of cliffs at the point itself. This somewhat sporadic distribution of footprints and trackways is consistent with earlier descriptions provided by experts in the field:

"the footprint sites (plural) do extend over 80 to 100 km of coast. No, it is not a single exposure, not one continuous trackway surface. It is a series of sites, many of them rather small, with stretches of beach (and sometimes very long stretches of beach) intervening" (Thulborn 1997).

This submission also provided advice on the proposed management response should footprints or trackways be identified in future surveys at locations likely to be disturbed by the development of the Precinct.

Additional paleontological and heritage survey work is being carried out to ensure that fossil footprint sites in the vicinity of the BLNG Precinct area are recorded and their scientific and cultural significance is established. Because the fossils occur in the Broome sandstones in the lower inter-tidal zone, and often may be concealed by sand or mud, it is possible that further examples may be discovered during construction activities (**SAR Part 5, Section 3.5.3.2**, **p. 3-43**).

The future status of the Kimberley National Heritage List nomination generally, should it be successful, is governed by the terms of the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*.

Generic Question ID: 1214 Sub ID [212, 205, 215] Raised by [S205 Q2721]

Part 5 Section 4.1.8: The EPA objective for heritage largely relates to historical and cultural associations, environmental heritage. However, after management and mitigation measures have been applied, the BLNG Precinct Project would not result in significant impact to the nearby Coulomb Point Nature Reserve and is likely to facilitate the establishment of conservation reserves on the Dampier Peninsula. Why must there be a trade of one for the other? How does a BLNG Precinct in any way enhance historical or cultural associations, regardless of environmental heritage?

Part 5, Section 4.1 of the SAR describes the potential impact of the development of the Browse LNG Precinct on environmental heritage and conservation areas, and the measures that will be implemented to mitigate those impacts (refer to summary in **Table 4.1-2**). In addition to managing these impacts, the State Government has committed funding for 10 years, for the creation of conservation and heritage reserves on the Dampier Peninsula as part of the regional benefits package outlined in the Heads of Agreement (**HoA**). These reserves would be jointly managed by the Department of Environment and Conservation (**DEC**) and Traditional Owners. The purpose of these reserves is: to achieve secure protection of representative vegetation on the Dampier Peninsula; to protect habitat of rare and specially protected fauna; and to protect Indigenous culture and heritage.

The HoA provides additional measures to protect, manage and promote Indigenous culture and heritage, including development of a Cultural Heritage Management Plan (**CHMP**) to appropriately manage heritage sites in and around the Precinct. The State Government will also financially support a Cultural Preservation Fund over 16 years, in order to sponsor and support the enhancement and protection of Indigenous cultural heritage in the Kimberley region.

The above measures do not imply that the establishment of conservation reserves could not occur without development of the Browse LNG Precinct. Rather, they highlight the areas in which the regional benefits package will facilitate the establishment of additional nature reserves and/or national parks within the Dampier Peninsula. These measures will complement existing plans by the Department of Planning, Department of Indigenous Affairs (**DIA**) and DEC to develop a Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) in collaboration with the KLC and Traditional Owners. The location of any conservation and heritage reserves established as a result of this project will give due regard to this strategy.

Generic Question ID: 284 Sub ID [39, 212] Raised by [S39 Q761]

James Price Point - heritage value. This section mentions the heritage assessment by AHC and states "there was insufficient evidence to demonstrate that they reach the very high threshold required for National Heritage listing". (**p.106**) The document should include the criteria which sets this "very high threshold" so that there is transparency.

The National Heritage List has been established to list places of outstanding heritage significance to Australia. It includes natural, historic and Indigenous places that are of outstanding national heritage value to the Australian nation. In February 2008 the Australian and Western Australian governments agreed to undertake an assessment of the West Kimberley to identify its National Heritage (and potential international heritage) values. The then responsible Commonwealth Minister subsequently asked the Australian Heritage Council to commence an assessment of the West Kimberley and to provide its advice.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), the Minister for the Environment, Heritage and the Arts (the Minister) is responsible for the National Heritage List. The provisions in the EPBC Act and Environment Protection and Biodiversity Conservation Regulations govern the National Heritage listing process. The fundamental question that must be asked in all assessments for the National Heritage list is whether the place satisfies the statutory threshold of 'outstanding heritage value to the nation' for the reasons set out in the National Heritage criteria. The conclusion whether a place satisfies the threshold or not must in each case be based on evidence and reasoned analysis of the evidence against the relevant criterion.

In relation to the potential impact of the Precinct Plan on National Heritage Places, the Australian Heritage Council found in its preliminary assessment of National Heritage values that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reached the threshold required for National Heritage listing. It did however note that:

The Broome Sandstone preserves the only extensive evidence of dinosaurs from the western half of the Australian continent. Tracks made by a number of different dinosaur species are preserved in mid-Cretaceous sandstone at Gantheaume Point.

In the final assessment report and advice to the Minister, the area recommended for National Heritage listing includes the stretches of Broome Sandstone along the western length of the Dampier Peninsula including at James Price Point, as these area also have evidence of dinosaurs. In response to this inclusion, details of further mitigation and management measures have been included in **Section 2.4** of this Response to Public Comment.

The Minister has yet to make his decision regarding the heritage status of the west Kimberley.

The Australian Heritage Council's Guidelines for the Assessment of Places for the National Heritage List provides additional information on the assessment process, criteria and thresholds. http://www.environment.gov.au/heritage/ahc/publications/pubs/nhl-guidelines.pdf

Generic Question ID: 290 Sub ID [39] Raised by [S39 Q768]

The SAR **Section 4.1.6.5** implies that listing the rest of the west Kimberley as National Heritage is contingent upon the LNG Precinct being approved. This is not an acceptable trade-off.

The National Heritage List has been established to list places of outstanding heritage significance to Australia. It includes natural, historic and Indigenous places that are of outstanding national heritage value to the Australian nation. In February 2008 the Commonwealth and State Governments agreed to undertake an assessment of the West Kimberley to identify its National Heritage (and potential international heritage) values. The then responsible Commonwealth Minister subsequently asked the Australian Heritage Council to commence an assessment of the West Kimberley and to provide its advice.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), the Minister for the Environment, Heritage and the Arts (**the Minister**) is responsible for the National Heritage List. The provisions in the EPBC Act and Environment Protection and Biodiversity Conservation Regulations govern the National Heritage listing process. The fundamental question that must be asked in all assessments for the National Heritage list is whether the place satisfies the statutory threshold of 'outstanding heritage value to the nation' for the reasons set out in the National Heritage criteria. The conclusion whether a place satisfies the threshold or not must in each case be based on evidence and reasoned analysis of the evidence against the relevant criterion. Listing is not contingent on the approval of the Precinct.

In relation to the potential impact of the Precinct Plan on National Heritage Places, the Australian Heritage Council found in its preliminary assessment of National Heritage values that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reached the threshold required for National Heritage listing. It did however note that:

The Broome Sandstone preserves the only extensive evidence of dinosaurs from the western half of the Australian continent. Tracks made by a number of different dinosaur species are preserved in mid-Cretaceous sandstone at Gantheaume Point.

In the final assessment report and advice to the Minister, the area recommended for National Heritage listing includes the stretches of Broome Sandstone along the western length of the Dampier Peninsula, including at

James Price Point, as these areas also have evidence of dinosaurs. In response to this inclusion, details of further mitigation and management measures have been included in Section 4.8 of the Response to Public Submissions (i.e.. this document).

The Minister has yet to make his decision regarding the heritage status of the west Kimberley.

The Australian Heritage Council's Guidelines for the Assessment of Places for the National Heritage List provides additional information on the assessment process, criteria and thresholds: http://www.environment.gov.au/heritage/ahc/publications/pubs/nhl-guidelines.pdf

Generic Question ID: 294 Sub ID [165] Raised by [S165 Q717]

The EPA in its 2008 Section 16(e) report on the Kimberley LNG Precinct recommended that the SAR and The National Heritage Listing occur in parallel to support ecologically sensitive development and ensure that the environmental and cultural values of the area are properly managed and protected. However, the decision on the National Heritage Listing assessment has been postponed until 30 June 2011 to enable further consultation on important environmental and cultural values with the Indigenous people, land owners and other users. The general public currently does not have access to the results of the assessment and until that is available no recommendations should be made on the environmental impacts of the James Price Point proposal.

Generic National Heritage listing response

The National Heritage List has been established to list places of outstanding heritage significance to Australia. It includes natural, historic and Indigenous places that are of outstanding national heritage value to the Australian nation. In February 2008 the Australian and Western Australian governments agreed to undertake an assessment of the West Kimberley to identify its National Heritage (and potential international heritage) values. The then responsible Commonwealth Minister subsequently asked the Australian Heritage Council to commence an assessment of the West Kimberley and to provide its advice.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), the Minister for the Environment, Heritage and the Arts (**the Minister**) is responsible for the National Heritage List. The provisions in the EPBC Act and Environment Protection and Biodiversity Conservation Regulations govern the National Heritage listing process. The fundamental question that must be asked in all assessments for the National Heritage list is whether the place satisfies the statutory threshold of 'outstanding heritage value to the nation' for the reasons set out in the National Heritage criteria. The conclusion whether a place satisfies the threshold or not must in each case be based on evidence and reasoned analysis of the evidence against the relevant criterion.

In relation to the potential impact of the Precinct Plan on National Heritage Places, the Australian Heritage Council found in its preliminary assessment of National Heritage values that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reached the threshold required for National Heritage listing. It did however note that:

The Broome Sandstone preserves the only extensive evidence of dinosaurs from the western half of the Australian continent. Tracks made by a number of different dinosaur species are preserved in mid-Cretaceous sandstone at Gantheaume Point.

In the final assessment report and advice to the Minister, the area recommended for National Heritage listing includes the stretches of Broome Sandstone along the western length of the Dampier Peninsula, including at James Price Point, as these areas also have evidence of dinosaurs. In response to this inclusion, details of further mitigation and management measures have been included in **Section 2.4** of the Response to Public Comment.

The Minister has yet to make his decision regarding the heritage status of the west Kimberley.

The Australian Heritage Council's Guidelines for the Assessment of Places for the National Heritage List provides additional information on the assessment process, criteria and thresholds: http://www.environment.gov.au/heritage/ahc/publications/pubs/nhl-guidelines.pdf.

Generic Question ID: 494 Sub ID [232] Raised by [S232 Q1358]

The Indigenous people on the Dampier Peninsula expressed concern about the Marine Park proposals. They said that they hadn't been consulted on the Marine Park proposals and asked that details of the proposals be sent to them at the prescribed Body Corporate for Bardi Jawi Minumbel.

The creation of the Kimberley Wilderness Parks, incorporating the four new marine parks, was announced in October 2010 as a key component of the State Government's Kimberley Science and Conservation Strategy. This was outside of the scope of the Browse LNG Precinct, although further information can be found in **Part 3** of the SAR **p. 1-132** to **1-134** inclusive.

DSD has requested that the Broome office of Department of Environment and Conservation provide the Bardi Jawi PBC with details of the marine parks proposal and the planning and consultative processes which have been undertaken.

Generic Question ID: 666 Sub ID [120] Raised by [S120 Q1312]

ENGO Submission: 3.5.3.2. Indigenous Cultural Values in the Balance of the HIA Area (p. 11 21). The Heritage Impact Assessment concludes that the Precinct may have consequences for Indigenous heritage of the Dampier Peninsula and further afield e.g. Lurujarri Trail. Why did the Lurujarri Trail not meet national heritage criteria and why was this not identified as potentially of national heritage value?

The heritage values of the region were assessed against the criteria for National Heritage listing. The HIA considered the potential heritage values of the HIA area and this report sets out the possible values. As part of the assessment of the Kimberley region for possible inclusion on the National Heritage List, the James Price Point locality was assessed by the AHC for possible national heritage values. Following its preliminary assessment, the AHC found that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reach the very high threshold required for National Heritage listing. The AHC subsequently released a map of the area it considered might have national heritage values, which did not include James Price Point. (SAR **Part 5**, **Section 4.1**).

Subsequently DSD has been informed that, in its final report to the Minister for the Environment, the AHC included the coastal Broome Sandstone of the Dampier Peninsula for its values associated with dinosaur footprints and trackways.

The Roe family (who call themselves the Goolarabooloo people) conduct seasonal walking tours from Minyirr to Coloumb Point, which visit several of the cultural heritage sites (mythological and archaeological sites) along the coast. This itinerary is known as the Lurujarri Trail, or Lurujarri song line.

Dreaming 'tracks' of Creation Ancestors are recorded in the HIA and other published sources as passing along the west coast of the Dampier Peninsula (e.g., HIA paragraphs 167-168). Heritage values and sites associated with these Dreaming Tracks are included in the scope of the detailed heritage surveys being conducted for the project area. Some of the same heritage sites and values have been incorporated into the Lurujarri Heritage Trail walking tours and associated brochure.

In the Heritage Impact Assessment (**HIA**) report by the KLC SAR (**Appendix E-**4) the Lurujarri Trail is described in Section 3.5 of the HIA *"Places of Historical Significance"* as *"a cross-cultural heritage interpretive trail"*, which passes through the traditional country of the Jabirr Jabirr, Ngumbarl, and Yawuru (HIA paragraphs 123-125, p. 87). With respect to cultural heritage values, the HIA notes that:

"The Lurujarri Trail extends from a portion of the Primary Research Area around James Price Point to the other Primary Research Area of Broome. It is of cultural and heritage value to several Aboriginal language groups whose countries fall within the HIA Area." (HIA paragraph 145; p. 95).

The Aboriginal heritage sites along the coastline followed by the Lurujarri Trail are being recorded through heritage surveys, and impacts on those sites will be avoided or minimised, in accordance with the HoA and the HPA. Access along the coast adjacent to the LNG Precinct would be restricted for safety reasons, but arrangements are being considered that would allow Traditional Owners to have continued access to any heritage sites within this area, and which would allow guided walks to occur seasonally.

Generic Question ID: 672 Sub ID [120] Raised by [S120 Q1317]

ENGO Submission: **Part 5**, **Section 4.1.5** Source of Potential Impact. Non-routine marine and terrestrial discharges are considered unlikely to have an impact on environmental heritage (including Coulomb Point Nature Reserve), though this statement needs to be compared with the KLC's assessment of likely impacts on Indigenous heritage (KLC 2010b).

The Heritage Impact Assessment (**HIA - Table 6**) provides a summary of the potential impacts on Cultural Values. With respect to non-routine marine discharges, the HIA indicates that "culturally appropriate management and mitigation measures which provide for Traditional Owner involvement in development and implementation of those arrangements are recommended. These arrangements should also provide for ongoing monitoring and assessment".

In terms of the potential impact of non-routine terrestrial discharge events, the HIA states that the "rationale for the risk assessment should also take into account the likelihood of waste discharges over the life of the project in an area subject to monsoonal rainfall." It goes on to recommend "culturally appropriate management and mitigation measures", including "arrangements that continue throughout the development and operation of the LNG Precinct."

There is broad agreement to manage impacts on Indigenous cultural values in culturally appropriate ways

including the involvement of Traditional Owners in the development and implementation of mitigation and management measures. These management measures are captured in a range of heritage and environmental management measures including the Cultural Heritage Management Plan, the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) and relevant land access agreement. These agreements allow for the continuation of cultural practices and maintenance of cultural heritage values in the area.

Generic Question ID: 1238 Sub ID [212] Raised by [S212 Q2915]

Part 5 Section 4.1.6: The potential impacts of the BLNG Precinct on potential places of environmental heritage significance, such as the Kimberley, are dependent on the values for which those places have been listed and the extent to which these values might be affected by the development. The main value is no industrialisation and therefore a pristine marine and terrestrial environment. Those qualities cannot co-exist with an LNG Precinct at James Price Point.

The Strategic Assessment Report (**SAR**) assesses the potential impact of the Browse LNG Precinct development on environmental heritage, consistent with the relevant legislation (i.e. the *Australian Heritage Council Act 2003*; *Environment Protection and Biodiversity Conservation Act 1999*; and the *Conservation and Land Management Act 1984* (**WA**)). **Part 5, Section 4.1** of the SAR describes the potential impact of the development of the Browse LNG Precinct on environmental heritage and conservation areas, and the measures that will be implemented to mitigate those impacts (refer to summary in **Table 4.1-2**).

Development of the Precinct does not preclude protection of environmental heritage and conservation areas in the Kimberley. The regional benefits package will facilitate the establishment of additional nature reserves and/or national parks within the Dampier Peninsula. In addition to managing impacts, the State Government has committed funding for ten years, for the creation of conservation and heritage reserves on the Dampier Peninsula as part of the regional benefits package outlined in the Heads of Agreement (**HoA**). These reserves would be jointly managed by the Department of Environment and Conservation (**DEC**) and Traditional Owners. The purpose of these reserves is: to achieve secure protection of representative vegetation on the Dampier Peninsula; to protect habitat of rare and specially protected fauna; and to protect Indigenous Australian culture and heritage. These measures will complement existing plans by the Department of Planning, Department of Indigenous Affairs (**DIA**) and DEC to develop a Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) in collaboration with the Kimberley Land Council (**KLC**) and Traditional Owners. The location of any conservation and heritage reserves established as a result of this project will give due regard to this strategy.

In addition, the West Kimberley is currently being assessed to identify its National Heritage (and potential international heritage) values. Under the *Environment Protection and Biodiversity Conservation Act 1999* (the **EPBC Act**), the Minister for the Environment, Heritage and the Arts (the Minister) is responsible for the National Heritage List. The provisions in the EPBC Act and Environment Protection and Biodiversity Conservation Regulations govern the National Heritage listing process. The fundamental question that must be asked in all assessments for the National Heritage list is whether the place satisfies the statutory threshold of 'outstanding heritage value to the nation' for the reasons set out in the National Heritage criteria. The conclusion whether a place satisfies the threshold or not must in each case be based on evidence and reasoned analysis of the evidence against the relevant criterion. Listing is not contingent on the approval of the Precinct.

In relation to the potential impact of the Precinct Plan on National Heritage Places, the Australian Heritage Council found in its preliminary assessment of National Heritage values that, while James Price Point had heritage values, there was insufficient evidence to demonstrate that they reached the threshold required for National Heritage listing. It did however note that:

- *The Broome Sandstone preserves the only extensive evidence of dinosaurs from the western half of the Australian continent. Tracks made by a number of different dinosaur species are preserved in mid-Cretaceous sandstone at Gantheaume Point.*

In the final assessment report and advice to the Minister, the area recommended for National Heritage listing includes the stretches of Broome Sandstone along the western length of the Dampier Peninsula, including at James Price Point, as these areas also have evidence of dinosaurs. In response to this inclusion, details of further mitigation and management measures have been included in **Section 4.8** of the Response to Submissions Summary Report.

The Minister has yet to make his decision regarding the heritage status of the West Kimberley.

Generic Question ID: 1306 Sub ID [195] Raised by [S195 Q3224]

Part 5 Section 4.1.7: The DEC already have a poor record and are not experienced to cope - funding will be inadequate as usual.

Under the benefits package for Traditional Owners, the State has committed $1.5m funding annually for the establishment and joint management of reserves for the protection of cultural heritage and conservation.

In addition the Kimberley Science and Conservation Strategy aimed to conserve the region's natural and cultural values has been released with an initial $63 million budget over five years for DEC.

Generic Question ID: 1326 Sub ID [236] Raised by [S236 Q3285]

Development of the Precinct is at odds with responsible management of the Kimberley - more and more species of mammals are rapidly becoming extinct across northern Australia, and the Kimberley is a unique position to facilitate this by prohibiting large-scale industrial development in the area, and declaring the region protected.

The Proponent recognises the environmental value of the Kimberley region and its significance in terms of conservation and natural beauty. The Proponent also considers that the Browse LNG Precinct and the environment can successfully co-exist, while protecting the environmental values of the local region. The Strategic Assessment Report **Part 6**, **Section 2** provides a summary of the assessment of potential impacts to matters of National Environmental Significance (**NES**) and the management arrangements, safeguards and mitigation measures that will applied to prevent significant impacts on these matters.

The assessment of the impacts of matters of NES demonstrates that James Price Point is the best place in ensuring that most areas of environmental significance or sensitivity are avoided. Advice from the Environmental Protection Authority (**EPA**) supports that environmental risks and impacts are also likely to be manageable.

4.2 Relevant Factor: Palaeontology

Generic Question ID: 44 Sub ID [4, 27, 66, 93, 120, 116, 132, 292, 293] Raised by [S4 Q62]

A globally significant dinosaur footprint site extends along the Dampier Peninsula, and includes at least 15 types of dinosaur tracks representing every major group of the Dinosauria. The Strategic Assessment report concludes that the footprints at James Price Point will be destroyed by the project.

The Browse LNG Precinct is being progressed on the basis that the social and economic benefits it will generate can coexist with the environment and the unique cultural and heritage values of the Kimberley.

Two field surveys were undertaken by the Western Australian Museum to assess the fossil content of the Broome Sandstone around James Price Point. No significant dinosaur tracks or fossils were found during those surveys. The surveys did however find what scientists identified as potential sauropod underprints.

The potential sauropod underprints found and those likely to be impacted during the surveys are considered to be of low scientific/conservation importance, as they occur in rubbly rather than platform Broome Sandstone and have been severely degraded from natural wave erosion. More recent information provided in another submission to the SAR suggests that higher quality footprints occur at James Price Point itself and will not be impacted by the development.

More surveys will be carried out before any construction disturbs the Broome Sandstone. If it is necessary to disturb any paleontological resources, the appropriate action to take will be determined in consultation with Traditional Owners and the Western Australian Museum.

Part 5, Section 4 of the Strategic Assessment Report provides a more complete account of the palaeontology surveys undertaken, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

In addition, the EPA has recently requested additional surveys which will be undertaken prior to the completion of their assessment.

Generic Question ID: 1291 Sub ID [195, 106, 90, 132] Raised by [S106 Q2267, S90 Q2645]

A number of submissions identified the treatment of dinosaur footprints as a concern.

- In relation to paleontological impacts, recent surveys have been done by WA Museum (major sponsor is Woodside) at a time when tides where not appropriate, intertidal zones were not surveyed properly and a three day period used was not enough. The submitter asserts that there are an amazing range of dinosaur footprints in the area.

- DSD has accepted an inadequate study on the footprints at James Price Point instead of objectively looking at the wealth of alternative studies which have not only recognised the international importance of the footprints, but resulted in 86 scientists requesting the Australian Heritage Council include the trackways in their assessment of National Heritage Listing for the Kimberley. The AHC reversed its decision to leave James Price Point out of its initial assessment of Kimberley heritage values as a direct result of this submission and this action is indirect contrast with DSD's intention to either remove the footprints or destroy them in the proposed development.
- The inadequacy of the survey and assessment work conducted on the sauropod underprints is only enhanced by the statement (contained within the report) "...the significance depends to some extent on their true identity."
- There have been false promises that the dinosaur footprints would not be damaged, then later admitted that they could not be saved.

The two reports on dinosaur track fossils included in the SAR provide the results from two Western Australian Museum surveys of the intertidal zone in the vicinity of the BLNG Precinct. Visible fossil occurrences were recorded and reported. The reports indicated that there were probable sauropod underprints present at the locations identified.

The identification is tentative because there are possible, alternative origins for some of these features, such as fossil casts of tree stumps, or feeding traces produced by rays feeding on intertidal sand flats. (SAR **Appendix F-2, p. 4**). At this stage, the Museum experts considered the identification of the underprints as provisional rather than definitive.

The 2009 Museum survey was conducted at low tide, although those spring low tides were described as suboptimal (SAR **Appendix F-1**). The 2010 survey was conducted over a further two days at extreme low tide (SAR **Appendix F-2**). It was also noted that the southern part of the survey area was almost entirely covered by modern sand deposits, with the possibility that further imprints might be present under the sand.

Fossil dinosaur tracks have now been reported extensively along the west coast of the Dampier Peninsula. The Australia Heritage Council has recently nominated the intertidal zone of the entire west coast (Broome sandstone formation outcrops) for inclusion in the proposed Kimberley region national heritage listing under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This nomination comes under Category B – “rare or endangered aspects of Australia's natural and cultural history”, with the following description:

- The Dampier Coast dinosaur tracks have outstanding heritage value to the nation under criterion (b) as the best and most extensive evidence of dinosaurs from the western half of the continent, some of which are unknown from body fossils; for the diversity and exceptional sizes of the sauropod prints; and the unique census of the dinosaur community that they provide.
- The dinosaur tracks of the Dampier Coast have outstanding heritage value to the nation under criterion (b) for providing a rare, if not unique, documented coincidence of scientific interpretation of ancient dinosaur tracks with Indigenous tradition.

Information provided in a confidential submission on the SAR is believed to have informed the Australia Heritage Council's recommendation. This provided evidence of dinosaur footprints and trackways in the vicinity of the Precinct. Without giving specific locations these were described to be *"at the point itself, one is at a short distance to the north, and one of the sites illustrated is closer to the “southern pipeline crossing”".* Some images provided with the submission support this information with the shoreline shown in the background being characteristic of cliffs at the point itself. This somewhat sporadic distribution of footprints and trackways is consistent with earlier descriptions provided by experts in the field:
"the footprint sites (plural) do extend over 80 to 100km of coast. No, it is not a single exposure, not one continuous trackway surface. It is a series of sites, many of them rather small, with stretches of beach (and sometimes very long stretches of beach) intervening" (Thulborn 1997).

This submission also provided advice on the proposed management response should footprints or trackways be identified in future surveys at locations likely to be disturbed by the development of the Precinct. To date there has been no scientific publication or peer review relating to these discoveries, which could form the basis for effective conservation and management of the fossil sites.

Additional paleontological and heritage survey work is being carried out to ensure that fossil footprint sites in the vicinity of the LNG Precinct area are recorded and their scientific and cultural significance is established. Because the fossils occur in the Broome sandstones in the lower inter-tidal zone, and often may be concealed by sand of mud, it is possible that further examples may be discovered during construction activities (SAR **Part 5, Section 3.5.3.2**, **p. 3-43**).

The BLNG development also is committed to minimising impacts on dinosaur fossil sites. The SAR (**Part 5, Table 4.2.1**) proposes the following conditions for mitigating potential impacts on paleontological sites:

"For any derived proposal that may disturb offshore Broome Sandstone at the BLNG Precinct, the proponent of derived proposals shall conduct additional focused surveys at the most appropriate time of the year (lowest tide) of any areas not already surveyed potentially containing dinosaur footprints prior to disturbance of the Sandstone. This survey should be conducted in consultation with Western Australian Museum and the Traditional Owners in the company of an anthropologist and in accordance with any agreement between the State of Western Australia and the Traditional Owners. If footprints, or other fossils, are discovered in the planned disturbance area, their significance on either a scientific and/or ethnographic basis should be determined in consultation with the Traditional Owners. If they are of significant value any response should be determined in consultation with the Traditional Owners and the Western Australian Museum."

In addition to the proposed measures in the draft SAR a further measure is committed to, that will require the development of a Paleontological Resources Management Plan which will include consideration of the study methodologies noted in the submission and specify:

- Paleontological Methodology;
- Paleontological Identification;
- Paleontological Evaluation;
- Paleontological Mitigation Methodology and Plan; and
- Paleontological Mitigation Outcomes.

Details of this are included in **Section 4.8** in the Response to Submissions Summary Report.
To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 301 Sub ID [165, 170, 124, 223] Raised by [S165 Q807]

It is evident that insufficient consideration has been given to the internationally significant discovery of fossilised dinosaur tracks in the area by Dr Tony Thulborn.

Part 5, Section 4.2 of the Strategic Assessment Report (**SAR**) describes the presence of dinosaur footprints and the results of two WA Museum surveys conducted so far (Siversson 2010a; 2010b), specifically to identify these features in the vicinity of the Browse LNG Precinct project area. These fossils occur on the Broome sandstones in the lower intertidal zone, and are difficult to locate and access because they are most often under water, and may frequently also be buried under sand or mud. The WA Museum studies were conducted because of previous research in the area, particularly as reported by Thulborn et. Al. (1994). Unfortunately there has not been any detailed scientific publication of the discoveries of Thulborn et al (1994), or notification of the locations of those fossil sites, which would assist this assessment.

What was known from Thulborn's work was that "the footprint sites (plural) do extend over 80 to 100km of coast. No, it is NOT a single exposure, NOT one continuous trackway surface. It is a series of sites, many of them rather small, with stretches of beach (and sometimes very long stretches of beach) intervening" (Thulborn 1997).

Some dinosaur track fossils along the coast of the Dampier Peninsula also are known to hold cultural heritage significance for local Jabirr Jabirr Aboriginal Traditional Owners. Traditional Owners representatives accompanied the Museum's palaeontology field teams on their surveys as they did for other surveys undertaken (McWhae et al 1958; Thulborn 1998; SAR **Part 5**, **p. 3-43**, **4-15**).

Further paleontological and anthropological field survey work will be undertaken for the Browse LNG Project environmental and Indigenous heritage in accord with the condition proposed in the SAR:

For any derived proposal that may disturb offshore Broome Sandstone at the BLNG Precinct, the proponent of derived proposals shall conduct additional focused surveys at the most appropriate time of the year (lowest tide) of any areas not already surveyed potentially containing dinosaur footprints prior to disturbance of the Sandstone. This survey should be conducted in consultation with Western Australian Museum and the Traditional Owners in the company of an anthropologist and in accordance with any agreement between the State of Western Australia and the Traditional Owners.

If footprints, or other fossils, are discovered in the planned disturbance area, their significance on either a scientific and/or ethnographic basis should be determined in consultation with the Traditional Owners. If they are of significant value any response should be determined in consultation with the Traditional Owners and the Western Australian Museum.

The potential impacts of the Precinct on the scientific and cultural values of the fossil dinosaur tracks recorded to date have been addressed in **Part 5**, **Section 4.2** of the SAR. Further discussion is provided in **Section 4.8.1** of the Proponent's Response to Submissions Summary Report.

Generic Question ID: 346 Sub ID [34, 195, 235, 226] Raised by [S34 Q311]

Within this Country, ancient dinosaur footprints and feather traces attributed traditionally to creator emus being, Marcella remain in the reef that stretches from Minyirr (Broome) and Durule (Flat Rock, north of Walmadan) to Cape Leveque, a journey narrated in the Song Cycle. Archaeologists' awareness of sites where these three toed prints occur correlate with those of palaeontologists, who have identified them as those of the Pteropod Megalosaur opus brominisms. The fossilised dinosaur footprints are a part of the living song cycle and are of extreme significance to the Goolarabooloo Jabirr Jabirr people. Moreover, amongst these fossils, the world's only known Stegosaur footprints have been found. Between 1991 and 2009, Australian palaeontologists, Dr. Tony Thulborn (world expert in dinosaur locomotion and footprints) and Mr. Tim Hamley of the University of Queensland, and Italian dinosaur expert Dr. Giuseppe Leonardi were led by Paul Foulkes and made several research trips to photograph and analyse assemblages of footprints along an 80-kilometre "dinosaur track way " in this Kimberley region of Western Australia. Dr. Thulborn has termed it 'a scientific treasure, unparalleled anywhere else in the world.' The 'thousands of fossilised footprints left by at least a dozen species of dinosaurs which lived 115 to 120 million years ago represent the largest number of footprints, the greatest diversity of dinosaur types and the best footprint preservation ever found.' Dr. Thulborn has compiled a report for the National Heritage Assessment Committee.

The information presented in this submission was known and was considered in the implementation of paleontological studies undertaken as part of the development of the SAR.

Although these studies indicated that there would not be significant impacts on dinosaur trackways a number of management measures were identified in the SAR including further surveys and the determination of management actions in consultation with Traditional Owners and the WA Museum should any significant impacts be identified as likely.

Further details of this are included in **Section 4.8.1** in the Response to Submissions Summary Report.

Generic Question ID: 462 Sub ID [8, 97, 118, 134] Raised by [S8 Q1345]

Independent research in the area of James Price Point has produced very different findings to those that were undertaken as part of the SAR development. Dinosaur tracks are locally abundant and are sometimes so well preserved as to qualify as text book examples.

To date, very little published detail provides the locations of dinosaur tracks reportedly identified in the Broome sandstone. The submitter has provided additional information which clarifies possible locations somewhat, and it is acknowledged that there is evidence of footprints and trackways at James Price Point that were not identified in studies. This was mainly due to the targeting of surveys to cover areas likely to be directly impacted by the development, and to some extent time constraints created by tide requirements to access particular areas.

It should be noted that the footprints and trackways referred to in the submission as text book examples are not within the area to be impacted. Regardless of the likelihood of avoidance, a precautionary approach is taken with the requirement for further surveys in any areas to be impacted, and appropriate management and mitigation measures are to be put in place.

Details of this are included in **Section 4.8.1** in the Response to Public Submissions (i.e. this document).

Generic Question ID: 464 Sub ID [8, 62, 132] Raised by [S8 Q1347]

None of the studies on dinosaur footprints and tracks undertaken to inform the SAR were done by specialists in the field. Many footprints identified in these studies were described incorrectly and others were not identified at all.

Two of the studies were done by the Curator of Palaeontology at the WA Museum, Dr Mikael Siversson, who has co-authored a note of dinosaur footprints and also co-authored two papers on dinosaurs. While it is accepted that some footprints in the Broome Sandstone within the surveyed area were not located, it is noted that many were in fact identified as likely evidence of the presence of dinosaurs.

The principal concern raised with incorrect description of footprints related to differing terminology, a common issue in palaeontology (i.e. the use of the term "underprint" as opposed to "transmitted print" as preferred by the submitter),which does not affect the outcome of the studies.

In addition, some examples of missed identification provided in the submission are disputed. For example,

there is a remark that the potholes in one of the pictures in one of the study reports (Figure 1, Siversson 2010a) are textbook examples of sauropod trackways. However the characteristics of these features increasing in size in a seaward direction and merging near the edge of the platform suggests they were formed by rubble or shell spinning within them as the tidal cycle flows over (mortar and pestle like), gradually expanding the diameter of the pothole. Hence, they increase in size further offshore where there is more tide and wave activity. It is possible that these features may have started off as sauropod footprints; however that is difficult to confirm as the severe erosive action of the surf gradually increases the diameter of all holes, obliterating any impressions of digits that may have once been present.

It should also be noted that the last of the surveys were targeted at areas which were likely to have direct impacts from port construction activities and pipeline shore crossings. As such it did not focus on James Price Point itself which is where many of the footprints and trackways referred to in the submission are apparently located. Future surveys will be undertaken in areas not directly impacted, in support of management plans.

In addition, the EPA has recently requested additional surveys which will be undertaken prior to the completion of their assessment.

Generic Question ID: 463 Sub ID [8] Raised by [S8 Q1346]

Dinosaurian ichnology (the study of trace fossils of dinosaurs, including their footprints, teeth marks, droppings, eggs and nests) is an unusually specialised field of palaeontology.

It is acknowledged that dinosaurian ichnology is an unusually specialised field of palaeontology and experts in this field are limited in Australia. While this made the task of identifying an appropriate palaeontologist to undertake surveys difficult, a balanced outcome was ultimately achieved.

The surveys were conducted by the Curator of Palaeontology at the WA Museum, Dr Mikael Siversson, who in the course of his work examines fossils of all different groups and of all different ages and states of preservation, including ichnological specimens. Dr Siversson has also co-authored a note on a dinosaur footprint and co-authored two additional papers on dinosaurs in addition to numerous peer reviewed papers on other aspects of palaeontology.

A further study which will be subject to expert peer review will also be undertaken prior to the finalisation of their assessment.

Generic Question ID: 465 Sub ID [8] Raised by [S8 Q1348]

The submission provides confidential information on dinosaur tracks and other interesting features so far discovered at James Price Point. It indicates, without giving specific locations, that most items are at the point itself, one is at a short distance to the north, and one of the sites illustrated is closer to the “southern pipeline crossing”.

Prior to the undertaking of surveys for this project there was only general information regarding the potential presence of dinosaur footprints or trackways in the vicinity of James Price Point. The record of occurrence stated that "the footprint sites (plural) do extend over 80 to 100 km of coast. It is not a single exposure or a continuous trackway surface. It is a series of sites, many of them rather small, with stretches of beach (and sometimes very long stretches of beach) intervening" (Thulborn 1997).

The submitter has provided a confidential report which presents information in relation to the area around James Price Point. As noted in this submission most of the trackways and footprints are found at James Price Point itself which is over 1.5km from the port infrastructure shore crossings and will not be impacted upon.

Generic Question ID: 466 Sub ID [8] Raised by [S8 Q1349]

All three reports that were undertaken as part of the SAR recommended that any well preserved or “museum grade” dinosaur tracks coming to light in the future should be collected and lodged in an appropriate museum. Such a response is not necessarily desirable, even though it sounds like plain common sense.

The need for a flexible approach to the management of any tracks that are identified as being potentially impacted is acknowledged. Although the three reports undertaken for the Strategic Assessment Report (**SAR**) recommended collection and preservation in a museum, in the proposed management response documented in the SAR, the collection and lodgement in a museum is not specified:

For any derived proposal that may disturb offshore Broome Sandstone at the BLNG Precinct, the proponent of derived proposals shall conduct additional focused surveys at the most appropriate time of the year (lowest tide) of any areas not already surveyed potentially containing dinosaur footprints prior to disturbance of the Sandstone. This survey should be conducted in consultation with Western Australian Museum and the Traditional Owners in the company of an anthropologist and in accordance with any agreement between the

State of Western Australia and the Traditional Owners.

If footprints, or other fossils, are discovered in the planned disturbance area, their significance on either a scientific and/or ethnographic basis should be determined in consultation with the Traditional Owners. If they are of significant value any response should be determined in consultation with the Traditional Owners and the Western Australian Museum.

In addition to the proposed measures in the draft SAR a further measure is committed to, that will require the development of a Paleontological Resources Management Plan which will include consideration of the study methodologies noted in the submission and specify:

- paleontological methodology;
- paleontological identification;
- paleontological evaluation;
- paleontological mitigation methodology and plan; and
- paleontological mitigation outcomes.

Details of this are included in **Section 4.8.2** in the Response to Submissions Summary Report.

Generic Question ID: 467 Sub ID [8] Raised by [S8 Q1350]

The most enlightened and productive policy is to leave fossil prints in their natural context where their potential scientific value is undiminished. For the purposes of scientific recording and museum display the best solutions are careful study in situ, a good photographic record (along with other data such as GPS readings and measurements of trackway sequences), and best of all a high fidelity replica manufactured on the basis of a latex peel. Technological advances such as laser scanning will probably offer even better methods for securing scientific data without disturbing the original dinosaur tracks.

It is agreed that careful and comprehensive study of any significant footprints or trackways that may be affected by construction activities should be undertaken *in situ*. The Strategic Assessment Report (**SAR**) proposes additional focused surveys to be conducted in consultation with the Western Australian Museum and Traditional Owners. In addition to the proposed measures in the draft SAR a further measure is committed to, that will require the development of a Paleontological Resources Management Plan which will include consideration of the study methodologies noted in the submission and specify:

- Paleontological Methodology;
- Paleontological Identification;
- Paleontological Evaluation;
- Paleontological Mitigation Methodology and Plan; and
- Paleontological Mitigation Outcomes.

Details of this are included in **Section 4.8** in the Response to Public Submissions (i.e. this document).

Generic Question ID: 468 Sub ID [8] Raised by [S8 Q1351]

It is pertinent to mention that the Traditional Owners attach some importance to the dinosaur tracks of the Dampier Coast. The removal of any specimens would require negotiation.

The Aboriginal Social Impact Assessment, conducted as part of the Strategic Assessment process, identified that potential sauropod footprints in the area also form part of the Dreamtime stories associated with the Lurujarri Trail, a significant Goolarabooloo eight day song line walk which extends along the coast from Minyirr to Coloumb Point and past the Precinct site. These Dreamtime stories talk about the Creator spirit Marrala, commonly referred to as Emu man, who is associated with the three-toed dinosaur footprints from Yinara to Minyirr point.

The importance of dinosaur tracks to Goolarabooloo peoples is acknowledged in the draft Strategic Assessment Report (**SAR**). It is a requirement that any surveys be conducted in consultation with those people with appropriate cultural knowledge in the company of an anthropologist and in accordance with any agreement between the State Government and the Traditional Owners. Any removal of specimens or other management response would also be determined in consultation with the Traditional Owners.

Generic Question ID: 619 Sub ID [62] Raised by [S62 Q530]

Dinosaur footprints should all be protected under national heritage listing.

Decisions about the thresholds for national heritage values are made by the relevant Commonwealth Minister, based upon the advice of the Australian Heritage Council (**AHC**).

The palaeontology reports for the SAR indicate that the dinosaur underprints (ichnofossils) in the James Price Point coastal area do not have high scientific value. Additional paleontological and heritage survey work is being carried out to ensure that fossil footprint sites in the vicinity of the LNG Precinct area are recorded and their scientific and cultural significance is established. Because the fossils occur in the Broome sandstones in the lower intertidal zone, and often may be concealed by sand or mud, it is possible that further examples may be discovered during construction activities (SAR **Part 5**, **Section 3.5.3.2**, **p. 3-43**).

In its final report to the Minister for the Environment released on 30 June 2011, the AHC included the coastal Broome Sandstone formation of the Dampier Peninsula for its potential values associated with dinosaur footprints and trackways. The AHC included these under *criterion (b)*:

The place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural and cultural history.

The heritage values of these were described as:

- The Dampier Coast dinosaur tracks have outstanding heritage value to the nation under *criterion (b)* as the best and most extensive evidence of dinosaurs from the western half of the continent, some of which are unknown from body fossils; for the diversity and exceptional sizes of the sauropod prints; and the unique census of the dinosaur community that they provide.
- The fossil human footprint sites of the Dampier Coast have outstanding heritage value to the nation under *criterion (b)* as one of only three documented human track sites in Australia and the only documented evidence of human tracks from the west coast of Australia.
- The dinosaur tracks of the Dampier Coast have outstanding heritage value to the nation under *criterion (b)* for providing a rare, if not unique, documented coincidence of scientific interpretation of ancient dinosaur tracks with Indigenous tradition.

http://www.environment.gov.au/heritage/ahc/national-assessments/kimberley/index.html

Generic Question ID: 803 Sub ID [75] Raised by [S75 Q861]

The Australian Heritage Council has recommended inclusion of the fossilised dinosaur footprints found in the intertidal zone of the west coast of the Dampier Peninsula, which includes the James Price Point dinosaur footprints, in the area nominated for National Heritage listing. In part this is because the footprints have formed a trackway with no parallel in other parts of Australia. Obviously, contrary to the declaration in the SAR (**Part 1**, **p. ES-97**) that the "the relatively small amount of shoreline to be disturbed is considered of local rather than regional significance", destruction of part of the trackway reduces the value of the whole. The existence of this important piece of global heritage at the proposed Precinct location should be sufficient for a refusal to give approval for the development to occur.

Decisions about the thresholds for national heritage values are made by the relevant Commonwealth Minister, based upon the advice of the Australian Heritage Council (**AHC**). DSD has been informed that, in its final report to the Minister for the Environment, the AHC included the coastal Broome Sandstone formation of the Dampier Peninsula for its values associated with dinosaur footprints and trackways.

Further information is not yet available, but it is understood that a confidential submission provided detailed evidence of dinosaur footprints and trackways in the vicinity of the Precinct. Without giving specific locations these were described to be "at the point itself, one is at a short distance to the north, and one of the sites illustrated is closer to the southern pipeline crossing". Some images provided with the submission support this information with the shoreline shown in the background being characteristic of cliffs at the point itself. This somewhat sporadic distribution of footprints and trackways is consistent with earlier descriptions provided by experts in the field:

"the footprint sites (plural) do extend over 80 to 100km of coast. No, it is not a single exposure, not one continuous trackway surface. It is a series of sites, many of them rather small, with stretches of beach (and sometimes very long stretches of beach) intervening" (Thulborn 1997).

This submission also provided advice on the proposed management response should footprints or trackways be identified in future surveys at locations likely to be disturbed by the development of the Precinct.

The acceptance of new information regarding the likely presence of dinosaur footprints and trackways in the

vicinity of the Precinct requires a review of impacts and potentially of mitigation and management measures. As noted above the suggested locations for footprints and trackways in the submission are not within the likely area of impacts.

However there may be the potential for indirect impacts that were not taken into account, principally through the changes in coastal processes created by the establishment in infrastructure (e.g. breakwaters and jetties). **Part 7**, **Section 5** Supplementary Coastal Processes Modelling provides information on areas of likely shoreline erosion and accretion (see **Part 7**, **Figure 5-8**). This indicates a limited area of accretion of sands within approximately 500m north and south of the infrastructure. It also indicates reductions in sediment volumes for approximately 1km north of this which extends to James Price Point itself. Similarly to the South, reduction in sediment volumes extends some 2km.

From the general location information provided above it is therefore possible that at the Point itself there may be impacts that would result in the exposure of footprints and trackways caused by shoreline erosion. While there is little evidence of footprints or trackways to the south of the Precinct it is also possible that some may be exposed by shoreline erosion. As such changes to exposure are a routine part of natural processes often driven by cyclonic events; these indirect impacts are not considered to be significant. However the possible exposure of hitherto unsighted footprints or trackways may provide an opportunity for paleontological study and that possibility should be included in future management requirements.

Additional paleontological and heritage survey work is being carried out to ensure that fossil footprint sites in the vicinity of the LNG Precinct area are recorded and their scientific and cultural significance is established. Because the fossils occur in the Broome sandstones in the lower intertidal zone, and often may be concealed by sand or mud, it is possible also that further examples may be discovered during construction activities (SAR **Part 5**, **Section 3.5.3.2**, **p. 3-43**).

Generic Question ID: 1307 Sub ID [195] Raised by [S195 Q971]

Part 5 Section 4.2.4: Where else can you take kids on the beach and show them dinosaur footprints? This is our heritage and should be protected for everyone. They are determined to play them down. There are other people living up here besides Traditional Owners. A lot of Traditional Owners want them preserved but we saw what happens if you cross the Premier, they are scared if they don't agree they will get nothing. My daughter was born here - what about her heritage?

Fossil dinosaur tracks have now been reported extensively along the west coast of the Dampier Peninsula. The Australia Heritage Council has recently nominated the intertidal zone of the entire west coast (Broome sandstone formation outcrops) for inclusion in the proposed Kimberley region national heritage listing under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This nomination comes under Category B – “rare or endangered aspects of Australia's natural and cultural history”, with the following description:

- The Dampier Coast dinosaur tracks have outstanding heritage value to the nation under criterion (b) as the best and most extensive evidence of dinosaurs from the western half of the continent, some of which are unknown from body fossils; for the diversity and exceptional sizes of the sauropod prints; and the unique census of the dinosaur community that they provide.
- The dinosaur tracks of the Dampier Coast have outstanding heritage value to the nation under criterion (b) for providing a rare, if not unique, documented coincidence of scientific interpretation of ancient dinosaur tracks with Indigenous tradition.

National Heritage listings are intended to preserve significant heritage places and items for future generations of all Australians.

Additional paleontological and heritage survey work is being carried out to ensure that fossil footprint sites in the vicinity of the LNG Precinct area are recorded and their scientific and cultural significance is established. Because the fossils occur in the Broome sandstones in the lower inter-tidal zone, and often may be concealed by sand of mud, it is possible that further examples may be discovered during construction activities (**Part 5, Section 3.5.3.2, p. 3-43**).

Section 4.8.2 of the Responses to Public Submissions Summary Report provides further detail in relation to this issue.

Fossil sites identified to date in the vicinity of the Browse LNG Precinct site all occur at the lower end of the intertidal zone. Their locations are not available, and they are not accessible except at times of extreme low tides. Fossil sites which are more widely known and accessible to the public are located in the intertidal zone near the Cape Gantheaume lighthouse at Riddell Beach, north of Broome.

Generic Question ID: 1435 Sub ID [8] Raised by [S8 Q3404]

In relation to the report "Geology of James Price Point, Broome, Western Australia" done by Geological Survey of Western Australia (Anon, 2009) it is suggested that the images in the report indicate that surveys were conducted at sub-optimal tides and thus would not have been able to access dinosaur tracks only exposed at extreme low tides.

The report "Geology of James Price Point, Broome, Western Australia" (Anon, 2009) is a desk-top study of the geology at James Price Point supplemented with photographs taken from the shore. It does not suggest that any field survey was undertaken or intended for the preparation of the report. It does however note that there are known to be dinosaur footprints in the Broome Sandstone and does recommend that a detailed site assessment for dinosaur fossils and trace fossils be undertaken to determine management requirements.

Generic Question ID: 1436 Sub ID [8] Raised by [S8 Q3405]

In relation to the report "Preliminary report upon the Palaeontology (including Dinosaur Footprints) of the Broome Sandstone in the James Price Point Area, Western Australia" (AECOM, 2010c) it is commented that practically every publication on the Broome sandstone dinosaur tracks has grumbled about the constraints of time, tide and weather, but in this case the limitations seem to have been particularly severe. Given the size of the area to be covered it would not be possible to cover the area thoroughly in the space of a few hours.

As stated in the report "Preliminary report upon the Palaeontology (including Dinosaur Footprints) of the Broome Sandstone in the James Price Point Area, Western Australia" (AECOM, 2010c), field surveys were conducted on three days (3, 4 and 5 November 2009) over the intertidal zone between 3 km south and 1.2 km northeast of James Price Point. It is also noted in the report that most of the features identified as degraded sauropod underprints (or transmitted prints) were found between 3pm and 5 pm on 3 November which may have lead the submitter to believe that "a few hours" was the total time spent on field survey. These findings were reported to be located in the lowermost third of the intertidal zone within a 280m long and 30 m wide area.

It should also be noted that additional field surveys (Western Australian Museum, 2010) were done over two days in March/April 2010 to take advantage of spring low tides which allowed access to previously unsurveyed areas in the intertidal zone.

4.3 Relevant Factor: Colonial Heritage

4.4 Relevant Factor: Visual Amenity, Light and Landscape Character

Generic Question ID: 674 Sub ID [120, 203] Raised by [S120 Q1321]

ENGO Submission: **Part 5 Section 4.4.3.3** Impacts on Visual Amenity. It is noted with concern that users of the Lurujarri Trail will be impacted by views of the Precinct (considered to be major-severe impacts), as will users of recreational boats and cruise vessels.

DSD has undertaken measures at a strategic level to minimise visual impacts associated with the coastal users noted. These include siting the majority of LNG infrastructure approximately 1.5km from the coast, behind the dune formations. In addition, DSD intends to retain the majority of this dune formation with the exception of areas intended to accommodate the shore crossing/pipeline corridors. These measures should assist in reducing, but not avoiding, visibility of the Browse LNG Precinct to coastal users. At a project level, commercial proponents will be required to prepare a visual amenity management plan primarily focused on reducing the visibility of their developments to people utilising the James Price Point coastal area and broader Dampier Peninsula.

Generic Question ID: 1376 Sub ID [111, 117] Raised by [S111 Q2148, S117 Q2475]

A gas hub would be a visible blemish both day and night and will change our environment forever. It does not add to the beauty and freedom that people come to the Kimberley to experience.

Other submissions raised similar points:

The Precinct will be visually obtrusive established so close to Broome.

One of the key drivers in establishing an LNG precinct is to limit the impact of this industry on the Kimberley. By developing a single precinct in an appropriate location the natural values in the iconic parts of the Kimberley will be preserved, while providing the economic and social benefits of a new industry for the region.

Part 5, Section 4.4 of the SAR provides details of the visual, landscape and light impact assessment conducted of the Browse LNG Precinct. Within this Section, **Figure 4.4.3.5** to **4.4.3.7** provides viewshed analyses of the Precinct considering natural elevation but not taking into account the degree to which natural screening

elements such as trees and scrub will limit visibility.

The overall conclusions of the impact assessment were that the most significant light and visual impacts will be in close proximity to the Precinct at informal camping grounds and in the nearshore James Price Point coastal area with more glimpsed, distant views from nearfield receptors such as Willie Creek and Coconut Wells possible.

The landscape character assessment noted the majority of landscape character units being widely represented on Dampier Peninsula with none being typical of the more renowned areas of the Kimberley region such as the Mitchell Plateau or the Bungle Bungles.

The Department of State Development (**DSD**) has undertaken measures at a strategic level to minimise visual impacts associated with the coastal users noted. These include siting the majority of LNG infrastructure approximately 1.5km from the coast, behind the dune formations. In addition, DSD intends to retain the majority of this dune formation with the exception of areas intended to accommodate the shore crossing and pipeline corridors. These measures should assist in reducing, but not avoiding, visibility of the Precinct to coastal users. At a project level, commercial proponents will be required to prepare a visual amenity management plan primarily focussed on reducing the visibility of their developments to people utilising the James Price Point coastal area and broader Dampier Peninsula.

Generic Question ID: 155 Sub ID [23] Raised by [S23 Q183]

UWA Submission (Point 10): The Western Australian Minister for Environment clearly has a role to play in the environmental implications of the proposed development. It is noted in **Section 4.4, p. 218** where the 'Visual Amenity, Light and Landscape Character' of the proposed development is discussed that a 'rehabilitation plan to the satisfaction of the Minister' will be prepared. Given that social matters are of concern here, which Minister will be briefed about the socio-economic concerns that result from project implementation? In what way will the Minister in question be required to agree to, and/or be satisfied with, the social and economic rehabilitation that needs to occur if the development takes place? How will the likely social impacts to adult and young residents and Traditional Owners (**p. 216**) be addressed, and how and by whom will the 'buffer zones' be constituted? 'What form will these take and what part will Ministers other than the Minister for Environment be involved in the consequences of rapid, industrial social change where most of the benefits will be diverted elsewhere?

As this submission highlights, Western Australia has no legislation requiring attention to social issues apart from those closely linked to environmental matters under the Western Australian Environmental Protections Act, 1982 such as noise, dust, light spill, visual amenity, emissions and Aboriginal heritage. However, DSD will require that social impacts be addressed by commercial proponents and other parties. As outlined in the Strategic Social Impact Assessment Management Plan (**SSIMP**), commercial proponents who locate at the Precinct will be required to prepare comprehensive plans that outline the management measures they will use to address their social impacts.

Under the proposed management structure, these plans would need to be approved by and monitored by the Precinct's Social Management Committee. At this stage, the membership of the SMC will be designed to include primarily regionally based organisations (government / non-government, indigenous / non-indigenous) with a significant interest in the social and economic impact issues associated with the BLNG Precinct. The Social Management Committee will report outcomes to the Browse LNG Precinct Control Group and will be required to publish reporting. This Precinct Control Group reports to the Minister for State Development.

State Government supports the development of the LNG Precinct north of Broome because of the opportunities it presents for the West Kimberley. Accordingly, it has proposed a range of Precinct Condition Strategies and General Social Management Strategies to address the impacts and ensure the benefits are realised locally. For example, a range of strategies to retain local benefits have been included in the SSIMP. These strategies require that the commercial proponents provide local business and employment opportunities and monitor local indicators of economic development. Commitments to deliver benefits to Traditional Owners have also been outlined in the signed Heads of Agreement between the State Government, Woodside (as the most likely Foundation Proponent) and the Kimberley Land Council (representing the Native Title claimants).

B: how and by whom will the 'buffer zones' be constituted?

Buffer zones for the Browse LNG precinct will ensure appropriate separation distances between industrial and other land uses and minimise off-site impacts. Key considerations will include:

Proposed buffer areas for the BLNG Precinct will align with the principles and objectives of the State Industrial Buffer Statement of Planning Policy 4.1, as agreed on by the WAPC, in consultation with local government and other appropriate regulatory authorities.

Identification of the nature of off-site impacts which may affect more sensitive land uses (noise, smoke, dust, odour, vibration and light) or create potential risks, in line with WA EPA Guidance Statement No. 3 – Separation

Distances between Industrial and Sensitive Land Uses.

Identification of appropriate land uses that may be compatible within and surrounding the buffer area, and appropriate control measures to ensure that social amenity and heritage values in the vicinity of the Precinct Project Area are maintained.

Implementation of buffer zones for the Precinct will meet the national environment protection goals and other established environmental quality criteria, while recognising contributions from other existing sources. The buffer zones will acknowledge:

• environmental and social protection 'no go' areas;

• location of supporting infrastructure; and

• social, heritage and recreational user groups outside buffer zones.

The implementation of the buffer zones will be the responsibility of DSD with advice from LandCorp, DEC, and State Planning Commission.

Source: SAR **Part 5**, **Table 4.4-11**

Generic Question ID: 376 Sub ID [27] Raised by [S27 Q897]

The area is loved by sailors who have a deep affinity with the Kimberley coast and use Broome as a base and starting port.

The impact of the Precinct on visual amenity, light and landscape character was addressed as a relevant factor discussed in **Part 5, Section 4.4** of the Strategic Assessment Report (**SAR**). It is expected that visual and light impacts will be moderate or low-moderate for occupational marine users, including sailors, depending on the distance from the development. These impacts include views of the marine infrastructure, flare, dredge plume, storage tanks and vessels and tankers associated with the Precinct.

Relative to the extent of the Kimberley coast which covers many thousands of kilometres, the extent of visual impact from the Precinct is very small.

The SAR outlines the proposed management measures to address these potential impacts. For example, measures relating to visual impacts are detailed in **Part 5, Section 4.4**. With advice from Broome Port Authority and LandCorp, DSD will also prepare and implement an engagement plan to manage all interactions with public users of the marine and terrestrial environment in and around James Price Point prior to construction.

Generic Question ID: 673 Sub ID [120] Raised by [S120 Q1320]

ENGO Submission: **Part 5**, **Section 4.4.1.5**: Definition of Landscape Character Units and Definition of Landscape Receptors. What is the rationale for a 37km viewshed?

The rationale for the 37km viewshed was largely derived from the viewshed analyses that were conducted to support the SAR (see **Figure 4.4-4 to 4.4–6** in **Part 5, Section 4.4.4.3)**. These viewshed analyses are produced by adding an indicative 3D model of the proposed Precinct into the digital elevation model (**DEM**) of the surrounds in order to define the likely visibility of the proposed development.

Whilst not entirely related to the visual components of the development, one component of landscape character is the visual context of the surrounding landscapes. In many circumstances, the landscape character units defined in the SAR may extend beyond this 37km boundary. However, the potential impacts on landscape character are unlikely to extend a significant distance from the Precinct boundary. In view of this, the same visual boundary was used to determine the extent of study of landscape character units as for visual impacts.

Generic Question ID: 732 Sub ID [70] Raised by [S70 Q608]

The submitter is concerned that the glow will be visible 37-50km away, which will impact Coconut Well.

Part 5, **Figure 4.4-4** shows areas on the Dampier Peninsula from where the LNG plant may be directly visible. This indicates that the very top of the LNG tanks and the top of the columns may just break the horizon and be visible from Coconut Wells. However, this analysis excluded local obstructions that would be at Coconut Wells (such as shrubs in the distance), which would further reduce the visibility of facilities within the Precinct. The maximum angle of lighting from the proposed Precinct within the field of vision would be 6.5 degrees near Coconut Well (this increases to 13 degrees if the port is included, which wouldn't be visible, but would contribute to light glow). This compares to Broome which has a maximum angle within the field of vision of 26 degrees at the same location.

Based on this, some lights on the top of structures may be directly visible. Lights in the LNG Precinct will typically be shaded and directed downwards minimising any light glow. As a comparison, Broome would create a much larger glow with areas such as sporting fields, car parks and the airport having lights that won't all have

directed lighting and the viewable angle will be twice that of proposed BLNG Precinct.

The SAR has included a commitment to develop a Visual Amenity Plan which will include a lighting strategy to reduce light spill, sky glow and direct lighting from the BLNG Precinct (**Part 5**, **Table 4.4-13**).

4.5 Relevant Factor: Commercial Fishing

Generic Question ID: 1069 Sub ID [2, 106, 157, 195] Raised by [S157 Q2421]

WAFIC Submission: A high level of water quality is a critical factor in relation to commercial fishing, pearling and aquaculture operations. Dredging and the disposal of dredge spoil will result in increased suspended sediment within the area subject to marine construction activities and possibly beyond.

WAFIC Submission: **Part 3**, **Section 2.3.4.1** Impacts on Water Quality from Marine Site Disturbance and Excavation - Construction, dredging and spoil disposal are key concerns of the commercial fishing, pearling and aquaculture industries. There is acknowledgement of the modelling of water quality and turbidity undertaken in relation to construction, dredging and spoil disposal however there is still some concern about the extent of the marine area that will be affected. It is also noted that maintenance dredging was not incorporated into the modelling for the reason that the level and frequency of this is unknown at this stage.

Other submissions also raised similar points:

Increased turbidity and subsequent reduced light availability and smothering of benthic communities from the initial dredging operation and from ongoing maintenance dredging has been acknowledged as one of the impacts from the port development. The 'zone of influence' could extend from the Lacepede Islands to Broome. Any loss of habitat could affect the ecological balance in both state waters and Commonwealth waters adjacent to the port development.

Part 3, **Section 2.4.3** acknowledges the predicted impacts on benthic communities, demonstrating that permanent impacts on benthic communities will be restricted to the footprint of the 'indicative port area' (**Part 3, Figure 2.4-1**). It is important to note that a detailed dredging program was not simulated. Engineering design data required to accurately define the dredging activities required are currently underway as part of engineering studies. It has therefore been necessary to take a conservative approach to the sediment dispersion modelling.

Conservative assumptions built into the sediment dispersion model are outlined in **Section 3** of **Appendix C-13**. **Part 3, Section 2.4.3** acknowledges the predicted impacts on benthic communities, demonstrating that permanent impacts on benthic communities will be restricted to the footprint of the 'indicative port area' (**Figure 2.4-1**). Interrogation of this model is therefore likely to represent a maximum conservative estimate of the scale of impact. Nevertheless, whilst the removal of some benthic habitat can be expected to temporarily reduce benthic primary production in the local Precinct development area, it is not expected to impact on the general ecosystem function and integrity of the wider James Price Point coastal area, particularly given the prevalence of such habitat within the wider Canning Bioregion (e.g. north of Coulomb Point and south of James Price Point at Gourdon Bay).

It should be noted that the Zone of Influence (**Figures 2.3-2** to **2.3-5**) corresponds to the area in which changes in water quality may potentially be detectable (perhaps visually) but no environmental impacts are anticipated. The management measures presented in the SAR, including the preparation and implementation of a Dredging and Dredge Spoil Disposal Management Plan to the satisfaction of regulatory agencies, are central commitments to manage and monitor impacts on water quality and benthic communities in the vicinity of the development area.

Maintenance dredging requirements represent less than 5% of the initial capital dredging volume and therefore it is not anticipated that maintenance dredging activities will have a significant cumulative impact on marine receptors surrounding the currently predicted zone of high (permanent) impact. Preliminary estimates indicate that infill rates are estimated at 150,000 to 250,000 m3 per year requiring maintenance dredging every 2-5 years (depending on cyclone frequency, severity and location of infill with respect to required dredge depths) (refer **Part 7, Section 5.4**). The reader is encouraged to refer to SAR **Part 3**, and the technical **Appendix C-13**, for additional context for these conclusions.

Generic Question ID: 140 Sub ID [39, 205, 212] Raised by [S39 Q359]

Is there a recognition that all users of the marine environment around Broome stand to lose if there is damage to marine resources?

There are a number of potential impacts on marine users that are discussed in **Part 5**, **Sections 4.5**, **4.6**, **4.7** and **4.8** of the Strategic Assessment Report (**SAR**). For example, the restricted marine areas associated with the construction and operation of the Precinct would to a certain extent constrain the access of commercial and recreational marine users in and around James Price Point. Due to the potential restriction of public access in

some marine areas associated with the development of the Precinct, a Fishing Industry Impact Study (**FIIS**) was conducted as part of the strategic assessment process. The FIIS study, included in **Appendix D-4** of the SAR, noted that users were particularly concerned about potential over-fishing in some local areas. Additional impacts discussed in the FIIS and the SAR more generally, include potential impacts on marine habitat, water quality and amenity, all of which may have an impact on marine biota and ecosystems that are utilised and valued by these stakeholders.

The SAR proposes management and mitigation measures to address each of these impacts. Most of these impacts are expected to be residual impacts to marine users, and are expected to be low to very low following implementation of management measures. For example, the Precinct Condition strategies included in the Strategic Social Impact Management Plan (**SSIMP**), requires that commercial proponents demonstrate the application of best practice measures in their operations. These are to be implemented to minimise the impacts to coastal processes from onshore and near shore marine infrastructure. The Broome Port Authority will also be established as the statutory Port Authority for the Browse LNG Precinct and associated port area, and will prepare a Browse LNG Precinct Environmental Management Plan for the port area.

In addition, the State Government recognises the importance of involving marine users in the management and mitigation of impacts. Commercial proponents operating at the Precinct will therefore be required to prepare and implement a Management Plan, to manage all interactions with public users of the marine environment in and around the Precinct, including recreational users and tourism operators.

The Strategic Social Impact Management Plan is outlined in **Part 5**, **Section 5** of the Strategic Assessment Report and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

The Fishing Industry Impact Study is included in **Appendix D-4** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Appendix_D-4.pdf

Generic Question ID: 1016 Sub ID [141] Raised by [S141 Q2125]

The fishing industry, including recreational, tourism, and commercial, will irrevocably suffer due to the pollution from the Precinct.

There are a number of potential impacts on commercial and recreational fishing that are discussed in the Strategic Assessment Report (**SAR**). For example, the restricted marine areas associated with the construction and operation of the Browse LNG Precinct would constrain the access of commercial and recreational marine users in and around James Price Point. As a consequence of restricting access in some marine areas, the Fishing Industry Impact Study noted that users were concerned about potential over-fishing in some local areas as users seek alternative fishing areas. Additional impacts discussed in the SAR include the potential for invasive marine species, light emissions, noise and vibration, sediment deposition and turbidity, vessel movements and marine discharges. All of these have the potential to impact on marine habitat, water quality and amenity, affecting the quality of the resource utilised and valued by these stakeholders.

The State Government has identified a range of management and mitigation measures to address each of the key impacts to marine users. Most residual impacts to marine users are expected to be low to very low following implementation of these measures. The main measure to address marine use impacts from a social perspective is the Marine Resource Use Management plan that will minimise, mitigate and manage the impact of the LNG Precinct on marine resources including commercial, recreational and customary fishing activity in the James Price Point area.

There are also a range of management measures that will assist in the protection of the marine resources on which commercial and recreational fishers depend. For example, commercial proponents will be required to demonstrate application of best practice measures to minimise the impacts on coastal processes from onshore and near shore marine infrastructure. Invasive Marine Species (**IMS**) will be managed in accordance with international, State and Commonwealth legislation. Impacts from IMS will be mitigated through the implementation of measures to minimise incursions, support early detection and response, control and/or stop activities that are found to cause the introduction or spread of IMS when required. The Broome Port Authority will also be established as the statutory Port Authority for the Browse LNG Precinct and associated port area, and will prepare a BLNG Precinct Environmental Management Plan for the port area.

More information on the potential impacts of the Precinct on social values of marine resources can be found in **Part 5** of the SAR, including customary fishers (**Section 3.8**), commercial fishers (**Section 4.5**), aquaculture and pearling stakeholders (**Section 4.6**), tourists (**Section 4.7**) and sport and recreational users (**Section 4.8**). **Part 3** (**Section 2.5**) discusses the potential impact of the Precinct development on the environmental values associated with fish.

To assist in the delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance

arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1066 Sub ID [157] Raised by [S157 Q1977]

WAFIC Submission: The commercial fishing, pearling and aquaculture industries are accustomed to and support operating within a multi-user environment. Nonetheless, there is potential for conflict when another party's use of the marine environment adversely impacts on the rights and interests of pre-existing users. Industry's position is that resource sharing issues and conflicts are best addressed through mediation and comprehensive negotiated outcomes, but the general principle of compensating pre-existing users for significant losses should be respected.

The State Government acknowledges that commercial fishing, along with pearling and aquaculture, are important industries in the Broome/Dampier Peninsula region. A number of State and Commonwealth managed fisheries operate in the coastal inshore waters of the Kimberley.

Commercial fishing, aquaculture and pearling are discussed in the SAR **Part 5, Sections 4.5** and **4.6**. The SAR does identify a number of potential impacts on these industries, namely:

- invasive marine species (**IMS**);
- marine noise and vibration;
- sediment deposition and turbidity; and
- vessel movements.

In response, a number of mitigation and management strategies are proposed encompassing social, economic and environmental aspects. In many cases, these mitigation and management strategies are to be imposed on commercial proponents as conditions of operating at the Precinct. On this basis, the State Government considers that the Precinct can co-exist with existing industries in the Kimberley, including marine based industries such as commercial fishing (as reflected in the Fishing Industry Impacts Study SAR **Appendix D-4)**.

With an emphasis upon a cooperative approach, compensation may be considered as a last resort after management, mitigation, and mediation pathways have been exhausted.

Generic Question ID: 1067 Sub ID [157] Raised by [S157 Q2419]

WAFIC Submission: Commercial fishery feedback is that there are issues of concern about the potential impacts on intersecting fisheries, fish habitats and reliant commercial operations. In particular, concerns from members of the Broome Prawn Managed Fishery, Mackerel; Northern Demersal Scalefish and Pearl Oyster fisheries about impacts to resources targeted by commercial fishers as well as their operations. Other commercial fisheries may be impacted by the Browse LNG Precinct to a lesser extent. It is also possible that other commercial fisheries may be impacted on which are currently unknown.

The commercial fisheries that may be impacted by construction and operation of the Precinct were identified in the SAR. While there remains some uncertainty in relation to potential impacts it is generally considered that there is a low likelihood of impacts.

The Proponent and commercial proponents will continue to engage with commercial fishers to minimise the likelihood of impacts and to manage an impacts that do arise.

Generic Question ID: 1068 Sub ID [157] Raised by [S157 Q2420]

WAFIC Submission: The proposed Browse LNG Precinct will preclude access to the vicinity for some commercial fishers and will certainly have, at the very least, temporary impacts on fish habitats and fish stocks in the vicinity. Together, these factors may impact on the viability of commercial fishing operations.

Part 5, Section 4.5.4.2 of the Strategic Assessment Report (**SAR**) acknowledges that the construction and operation of the Precinct may restrict access for commercial fishing activities in and around the Precinct marine area. The SAR outlines a number of management mechanisms to mitigate potential negative impacts on the commercial fishing industries. In particular, as a condition of locating at the Precinct, commercial proponents will be required to prepare and implement a fishing industry mitigation and management strategy, in consultation with commercial and recreational fishing stake holders (Refer to **Part 5, Section 4.6.8**).

It is noted that this issue was initially raised in relation to perceived threats to prawn fishing viability due to access restrictions in the area west of the Precinct known as "the Box". Long term impacts are now considered unlikely as the area is a significant distance westwards of the Precinct (11 nautical miles from the coast).

Generic Question ID: 1071 Sub ID [157] Raised by [S157 Q2423]

WAFIC Submission: It remains difficult to estimate to what extent intersecting commercial fishing operations will be affected and this causes uncertainty for such businesses. The Department of State Development (**DSD**) and commercial proponent should continue working closely with intersecting and adjacent fishing operations to mitigate any impacts. The commercial proponent should also accept responsibility for compensating any adversely affected businesses.

It is acknowledged that while impacts on commercial fisheries are unlikely there is some uncertainty and some potential for impacts.

The Proponent and future commercial proponents will continue to engage with potentially affected commercial fishers to ensure that any potential effects are minimised and, if impacts are unavoidable, appropriate arrangements are put in place.

Generic Question ID: 1072 Sub ID [157] Raised by [S157 Q2424]

WAFIC Submission: The fishing industry has recently endorsed a draft and interim position on conflicts with the resource and petroleum sectors.

The draft fishing industry position on conflicts with the resource and petroleum sectors is noted.

While the SAR identifies that there are a number of potential impacts on commercial and recreational fishing associated with the Precinct, the Proponent has identified a range of management and mitigation measures to address each of the key impacts. These include:

- development of a Marine Resource Use Management plan;
- requirement for commercial proponents to demonstrate best practice measures to minimise impacts on coastal processes;
- measures to minimise incursions, support early detection and response, control and/or stop activities that are found to cause the introduction or spread of Invasive Marine Species (**IMS**) in accordance with international, State and Commonwealth legislation; and
- Establishment of the Broome Port Authority (**BPA**) as the Precinct's statutory authority - BPA will prepare a Port Environmental Management Plan.

More information on potential impacts of the Precinct on social values of marine resources can be found in **Part 5** of the SAR, including customary fishers (**Section 3.8**), commercial fishers (**Section 4.5**), aquaculture and pearling stakeholders (**Section 4.6**), tourists (**Section 4.7**) and sport and recreational users (**Section 4.8**). **Part 3** (**Section 2.5**) discusses the potential impact of the Precinct development on the environmental values associated with fish.

Most residual impacts on marine users are expected to be low to very low following implementation of these measures.

Generic Question ID: 1073 Sub ID [157] Raised by [S157 Q2425]

WAFIC Submission: The level of engagement and consultation with the commercial fishing, pearling and aquaculture industries about the Proposal, entailing most recently, the establishment of a Browse Marine Users Working Group, which comprises commercial fishing representation has been welcomed. Industry recommends that the DSD and the commercial proponent continue engaging with the commercial fishing, pearling and aquaculture industries through this Working Group and associated forums throughout the construction phase, and beyond. This will assist in the ongoing identification, assessment and communication of any impacts on the commercial fishing, pearling and aquaculture industries.

The recommendation is noted. The Proponent will continue to liaise with key stakeholders as required, and in the appropriate forum/s.

Commercial proponents will be required to develop, in consultation with industry stakeholders, an Invasive Marine Species Management Plan, Construction and Environmental Management Plans, and a Port Facilities Construction Management Plan.

Details of future stakeholder engagement are provided in **Section 3** of the Response to Public Submissions.

Generic Question ID: 1085 Sub ID [157] Raised by [S157 Q2433]

WAFIC Submission: The commercial fishing industry supports the establishment of the Dredging Management Advisory Group. There needs to be a mechanism through which the commercial fishing, pearling and aquaculture industries can provide input into the EPEMP and the recommendations of the Dredging Management Advisory Group.

The Proponent is committed to continued engagement and information sharing with the commercial fishing industry (i.e. WAFIC) on ongoing environmental management matters and will encourage future commercial proponents to similarly maintain an open dialogue with key fishing industry stakeholders. The BLNG Precinct Environmental Management Strategies will include a provision for continued stakeholder consultation.

Generic Question ID: 1090 Sub ID [157] Raised by [S157 Q2438]

WAFIC Submission: **Part 5**, **Section 4.5.1.1** Managed Commercial Fisheries - The draft SAR identifies a number of limited-entry trawl fisheries for prawns, as well as 'other significant fish species' including Spanish mackerel, barramundi, threadfin salmon, sharks and mudcrabs. This section needs to be amended to include species of fish targeted by commercial fishermen in the Northern Demersal Scale Fish Fisheries (for example red emperor and goldband snapper).

The list of species provided in **Part 5, Section 4.5.1.1** was not intended to be exhaustive, and it is understood that other species may be targeted by certain fisheries. The impact conclusions for this factor remain relevant irrespective of the inclusion of the red emperor or goldband snapper to this list.

Generic Question ID: 1091 Sub ID [157] Raised by [S157 Q2439]

WAFIC Submission: **Part 5**, **Table 4.5-2:** The draft SAR (and **Table 4.5-2**) relays key issues identified by the Fishing Industry Impact Study (**FIS**) undertaken by Big Island Research (2009). Since then, commercial fishing representatives at a Marine Users Workshop re-evaluated these issues on 5 June 2010, where additional 'concerns were also identified. The draft SAR should ensure it takes into account those issues and concerns registered with the commercial proponent and the DSD following the release of the FIS. For example, commercial mackerel fishermen have recently raised concerns about the effects of the desalination plant on fish. This concern is not listed in the table. As such, the table should be qualified by the fact that it is a 'working draft'.

The Proponent notes the additional concerns raised following the 5 June 2010 Marine Users Workshop. However, it believes that the management and mitigation measures proposed adequately address those concerns and that ongoing dialogue through the Marine Users Working Group will ensure demonstration and adaptation of this as necessary.

The Strategic Assessment Report (**SAR**) provides a high-level and holistic impact assessment rather than a detailed project-level impact assessment. The Fishing Industry Impact Study (**Appendix D-4**), aspects of which are incorporated into the main body of the SAR, is consistent with this strategic level of assessment. The SAR strives to present the most realistic expectations regarding the characteristics of the development concept even though there is some uncertainty regarding the ultimate design, operation, scale and timing of specific developments at the Precinct.

If approval is granted by the Western Australian Minister for Environment then a statement will be issued which prescribes the implementation conditions to be applied. This does not automatically grant approval to any specific projects within the Precinct. Commercial proponents wishing to construct and operate LNG facilities within the Precinct must refer their project-level proposals to the Environmental Protection Authority requesting that their proposal be declared a derived proposal. The EPA will declare it as a derived proposal if:

- The proposal was identified in the strategic proposal that has been assessed by the EPA;
- A decision was made that the strategic proposal could be implemented.

Commercial proponents would need to demonstrate an adequate level of consultation with stakeholders as part of their referral.

See **Section 2.2** of the Response to Submissions Summary Report for further information on the Derived Proposal process.

Generic Question ID: 1093 Sub ID [157] Raised by [S157 Q2449]

WAFIC Submission: **Part 5**, **Section 4.5.4.3** Potential impacts on commercial fishing due to restricted areas - The draft SAR infers that the vicinity of the BLNG Precinct is 'near' mackerel grounds as opposed to intersecting with mackerel grounds (and therefore asserts that the loss of navigation routes is unlikely as it is limited to the port area, see **Part 5**, **p.4-88**). It is important to note that the proposed port area intersects with an area of the Mackerel Managed Fishery. As such, the loss is not 'unlikely' but indeed, tangible.

It is acknowledged in the SAR that there may be some localised navigational restrictions around the Precinct Port Area during construction and operations. However, these restrictions, which will be consistent with the *Port Authorities Act 1999* and managed by the Broome Port Authority, will not unduly inhibit or restrict the movement of commercial mackerel fishing vessels from the wider managed fishery grounds.

Generic Question ID: 1094 Sub ID [157] Raised by [S157 Q2450]

WAFIC Submission: **Part 5**, **Section 4.5.4.3** Potential impacts on commercial fishing due to restricted areas - The draft SAR states that the James Price Point is not 'critical' to the collection activities of the specimen shell and marine aquarium commercial fishers. However, members of these fisheries feel that the increasing loss of access to the coastline due to the plethora of coastal resource sector developments is indeed 'critical' to the viability of their businesses. The cumulative impacts should be acknowledged as critical.

While the concern about general restrictions of access to the coastline within the vicinity of the Precinct Development are valid and assessed in the SAR (**Part 5**, **Section 4.8.4.8**), it should be acknowledged that the local coastline likely to be restricted to shell collection and marine aquarium fishers, in proportion to the hundreds of kilometres of unrestricted coastline within the Kimberley and Pilbara regions, is very localised in extent.

It has been noted that James Price Point and its surrounding coastline is accessed seasonally by self-drive tourists and by Broome residents for camping and recreation activities, however the Proponent has no information to indicate the area is being frequented by commercial shell collectors or marine aquarium fishermen relative to other areas along the coastline. Access to the coastal areas to the north and south of the Precinct area will be maintained, while ensuring appropriate separation distances from adjacent land uses in accordance with State planning policies and buffer zone requirements.

One of the key strategic objectives of the BLNG Precinct is to minimise the risk of '*ad hoc*' LNG developments along the coastline, by having a single co-located Precinct. This is one of the key outcomes to address the concern raised by this submission in regard to increasing loss of access to the coastline from various developments.

Generic Question ID: 1095 Sub ID [157] Raised by [S157 Q2451]

WAFIC Submission: **Part 5**, **Section 4.4.4** Potential impacts on commercial fishing due to marine noise and vibration - the draft SAR acknowledges that the impact of vessel noise and large propeller turbulence on prawn distribution is unknown but fails to commit to undertaking research. We consider that such research should be undertaken.

It is acknowledged that the general impacts on prawns from underwater noise emissions and propeller wash are not well characterised in the current literature. Irrespective, from an impact assessment perspective, there is unlikely to be an overlap between significant noise generating activities (i.e. blasting, piling or dredging) and the Broome Prawn Managed Fishery area. Similarly, the water depth at the Broome Prawn Managed Fishery area (>25 m deep) informs the conclusion that there will be no impact on the seabed from propeller wash. Thus, no impacts to prawns within the managed fishery area from the Precinct development are anticipated.

Generic Question ID: 1096 Sub ID [157] Raised by [S157 Q2452]

WAFIC Submission: **Part 5**, **Section 4.4.4** Potential impacts on commercial fishing due to marine noise and vibration – It is noted that the Maxima and Gigas seismic programs referred to by the draft SAR and undertaken at Scott Reef focused on reef fish species and did not test the impacts of seismic programs on prawns, pearl oyster or commercially targeted, demersal fish. More targeted research needs to be undertaken in order for the commercial fishing industry to have confidence that the findings at Scott Reef apply to commercially targeted species. The commercial fishing industry would be pleased to discuss with the DSD and the commercial proponent options for funding and progressing such research.

As noted in **Part 5, Section 4.5.4.4**, seismic surveys associated with the upstream development of the Browse project (Maxima, Gigas, Tridacna seismic surveys) have been referred and assessed as part of the Commonwealth environmental approvals process under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). Seismic activities are outside the scope of the Strategic Assessment

Report (**SAR**) relevant to the 'downstream' Precinct development. The submitter is encouraged to participate in the public consultation process in the Upstream environmental assessment in regard to the work undertaken at Scott Reef, and the consideration of future research opportunities to better understand the impacts of seismic programs.

Generic Question ID: 1097 Sub ID [157] Raised by [S157 Q2453]

WAFIC Submission: **Part 5, Section 4.5.4.5** Potential impacts on commercial fishing due to marine discharges - The draft SAR (including the supplementary information in **Part 7**) notes that non-routine marine discharges such as accidental spills or leaks from the BLNG Precinct facilities or associated vessels will be subject to oil spill procedures or emergency response plans. The commercial fishing industry has suffered the effects of oil spills elsewhere in the Kimberley (Montara accident in August 2009) with little, if any, acknowledgement of the impact on their operations. It is important to note that the use of dispersants used as to respond to accidental spills has also had adverse impacts on fish and marine life. We support the development of oil spill contingency planning and urge the State and Woodside to consult with the commercial fishing, pearling and aquaculture industries about the details prior to their finalisation. An upfront, in-principle commitment to compensate any commercial fishing, pearling and aquaculture businesses who suffer losses as a result of an oil spill should be provided.

The State will consult with relevant stakeholders with respect to the development of the Broome Port Authority Emergency Response Plan. It is noted that, in general, the Precinct will boost the region's capacity to respond to any emergencies as they arise, while not adding significantly to the underlying risks, which are small.

With respect to the matter of compensation, the scenarios are too diverse to provide such a commitment. It is the responsibility of the party that causes an adverse impact to pay any compensation as appropriate. Impacts may occur from a range of shipping, exploration or development operations, many of which occur in Commonwealth waters and consequently are outside of the State's jurisdiction.

Section 4.4.1 of the Response to Submissions Summary Report provides further discussion about emergency response plans for the Precinct.

Generic Question ID: 1098 Sub ID [157] Raised by [S157 Q2454]

WAFIC Submission: **Part 5**, **Section 4.5.4.7** Potential impacts on commercial fishing due to site disturbance and excavation and physical presence - The draft SAR notes that a feedstock pipeline will be installed through a portion of the 'Box' (limits of the Broome Prawn Fishery) and notes a number of potential impacts. It is not known what is meant by 'interference with and exclusion of pearling vessels'. Is the SAR meaning to refer to 'prawn trawl vessels'. Trawl vessels will be precluded from fishing over the pipeline during and after it has been installed. Other fishing and pearling vessels will be restricted access during the construction phase only.

The comments are noted. The Proponent acknowledges that the sentence in **Part 5, Section 4.5.4.7** should read that the feedstock pipeline will be installed through a portion of the Box, outside of the 3nm boundary. Potential impacts from the presence of this permanent infrastructure are:

- creation of artificial habitat and modification of existing habitat;
- localised disturbance to current and hydrodynamic processes; and
- interference with and exclusion of prawn trawl vessels.

Generic Question ID: 1099 Sub ID [157] Raised by [S157 Q2455]

WAFIC Submission: **Part 5, Section 4.5.4.8** - Potential impacts on commercial fishing due to vessel movements - The draft SAR argues that vessel movements associated with the Precinct are not likely to occur in the vicinity of the Lacepede Islands where mackerel fishing is known to occur. The BLNG Precinct Proposal area intersects with the Mackerel Managed Fishery and thus poses a direct impact to fishermen utilising the area. To clarify, mackerel fishing is not limited to the Lacepede Islands and when mackerel fishermen refer to the islands they refer to them as a landmark to describe an area 'northwest and south of the islands along the coast' as opposed to just the islands themselves.

It is acknowledged in the SAR (**Part 5, Section 4.5.4.8**) that there may be some localised navigational restrictions around the Precinct Port Area associated with an increase in marine vessel traffic. However, these restrictions, which will be consistent with the *Port Authorities Act 1999* and managed by the Broome Port Authority, will not unduly inhibit or restrict the movement of commercial mackerel fishing vessels from the wider managed fishery grounds.

The anticipated level of vessel movements associated with operations at the Precinct is considered unlikely to have a significant impact on existing commercial fisheries in the region.

Nevertheless, the Proponent and future commercial proponents will continue to engage with potentially affected commercial fishers to ensure that any potential impacts are minimised and that appropriate management arrangements are put in place.

4.6 Relevant Factor: Aquaculture and Pearling

Generic Question ID: 615 Sub ID [101] Raised by [S101 Q885]

Pearl Producers Association (**PPA**): Of specific concern to PPA has been the reliance in the SAR on the Fisheries Impact Study carried out by Econsearch and Big Island Research. It is clearly stated several times in the 'fisheries impact study' that assessment of the impact of the development of the LNG precinct on the fishing and pearling industry was difficult to quantify as the detailed research on the environmental impacts had yet to be carried out.

The PPA strongly recommends that the Fishing Impact Study be revisited once additional modelling work (noted in the FIS) has been completed to reassess the key findings against this scientific information.

The 'Fishing Management Plan' required by the SIA should include and address results of additional water quality modelling work proposed to be undertaken once the offshore infrastructure design parameters are determined, to ensure that any potential impacts on fishing activities such as pearling are mitigated. This document should be prepared in consultation with the marine users group (already established and meets on a regular basis in Broome) and the Department of Fisheries. A key issue will be timing of the work and interpretation of results, so meaningful mitigation measures are put in place.

Generic Question ID: 676 Sub ID [120, 156] Raised by [S120 Q1322]

ENGO Submission: **Part 5 Section 4.6.8.1** Category C Activities. It is somewhat dubious that residual impacts of marine discharges on pearling and aquaculture are considered low, despite being directly offshore from James Price Point. Residual impacts of the physical presence of the Precinct and associated infrastructure are, however, considered high, which is also of major concern.

The Strategic Assessment Report (**Part 3, Section 2.3.4 and Part 5, Section 4.6.4.2**) discusses the potential impacts from routine wastewater discharge into the marine environment. It was acknowledged that the primary impact associated with wastewater discharges during construction and operations is the potential to produce a localised zone of reduced water quality within the Browse LNG Precinct port area (i.e. Low Ecological Protection Area 'mixing zone').

Wastewater discharge modelling presented in **Part 7, Section 2** demonstrated that the active mixing zone is predicted to remain within 300 metres of the discharge location. Given the dynamic nature of the receiving environment at James Price Point, such discharges would be rapidly mixed through the water column such that any contaminants entering receiving waters or deviations in water quality above background would not be detectable, except within the immediate mixing zone (<300m from the discharge point). Additionally, the SAR commits future precinct proponents to achieving the relevant ANZECC/ARMCANZ 2000 Water Quality Guidelines, as agreed with EPA.

While the wastewater will be treated prior to discharge, it is acknowledged that heavy metals may be present in low concentrations in the final discharged effluent as dissolved mineral salts. Metals oxidise at the seabed surface and will form insoluble precipitates. The amount of precipitate is very low, and these precipitates will be spread widely under the local tidal regimes. While it is possible that routine discharges may result in a localised impact on marine sediment quality, the SAR concludes that acceptable environmental outcomes are achievable as potential impacts would be localised and the quality of discharged water would be managed and monitored to ensure compliance with the ANZECC/ARMCANZ 2000 guidelines.

In relation to physical presence, **Part 5, Section 4.6.4.5** of the SAR notes three key impacts which have the potential to directly and indirectly affect pearling operations associated with this aspect, largely associated with the presence of subsea infrastructure through an active pearling lease:

- creation of artificial habitat and modification of existing habitat – affecting community assemblages and potentially the habitat that supports pearl production;
- localised disturbance to current and hydrodynamic processes - potentially affecting seabed features, bathymetry and water quality; and
- interference with and exclusion of pearling vessels – thereby affecting the operability of the pearl farm.

The impact assessment conclusions on pearling and aquaculture operations stated in the SAR have been based on the assessment process summarised above. Ongoing consultation with pearling operators will continue as commercial proponents advance their developments in order to ensure pearling operators are not

significantly disadvantaged.

Generic Question ID: 1070 Sub ID [157, 142] Raised by [S157 Q2422]

WAFIC Submission: There will be direct impact on the pearling industry given that the Proposal's current design entails a pipeline route through a longstanding pearl farm lease area.

DSD acknowledges that there will be direct and indirect impacts on the pearling industry (particularly Clipper Holdings) associated with the following aspects, largely associated with pipeline construction and operation:

- vessel movements;
- invasive marine species;
- light emissions – marine;
- marine discharges (including non routine events);
- sediment deposition and turbidity;
- marine noise and vibration; and
- marine site disturbance and excavation.

Ongoing consultation with pearling operators will continue as commercial proponents advance their developments in order to provide a solution that does not significantly disadvantage the pearling operators.

Generic Question ID: 425 Sub ID [101] Raised by [S101 Q772]

Pearl Producers Association: **Table 1-27**, **p. 1-133**, sets out the 'environmental values and quality objectives of the marine resources for the Kimberley'. PPA proposes that an additional value be included under the Fishing and Aquaculture section to acknowledge that 'pearls are of the highest quality to export.'

It is acknowledged that the marine environment around Broome produces high quality pearls that are a significant export commodity.

The Environmental Quality Objectives listed in **Part 3** of the SAR, **p. 1-133** are based on the Pilbara Water Quality Consultation Outcomes published by the Department of Environment 2006. The entry in **Table 1-27**, for Fishing and Aquaculture (social use value) include the statement "*Water quality is suitable for aquaculture purposes*". As pearling is an aquaculture activity, it is expected that a range of water quality issues affecting pearling are likely to be a key focus of these objectives already without further need for refinement or definition. Social values are a key focus of these objectives and it is envisaged that key stakeholders will have input into the refinement of these objectives if they are tailored specifically for the Kimberley.

Generic Question ID: 429 Sub ID [101] Raised by [S101 Q773]

Pearl Producers Association: The SAR **Section 2.2.3.1** (**p.2-21**) sets out that the dredging and disposal of dredge spoil would result in increased suspended sediment and sediment deposition within the area around the marine construction activities, although this impact is expected to be localised to the areas of disturbance and as such is considered to be low. However PPA notes that the SAR (**p.2-19**) sets out that detail of the dredging campaign is yet to be finalised. This makes it difficult for the pearling industry to make informed comments.

Commercial proponents will be undertaking detailed engineering investigations to determine locations to be dredged, types of dredging equipment, timing and techniques. However, in order to provide a basis for understanding the impacts from dredging, a dredging impact assessment process was undertaken in close consultation with the OEPA. This is presented in the SAR (**Part 3**, with full details in **Appendix C-13**). This strategic dredging impact assessment was based on conservative assumptions in relation to a range of considerations such as: percentage of fines; duration of dredging; etc; primarily based on experience from similar dredging programs and the known characteristics of the James Price Point coastal area. This process was, however, rigorous enough to define the likely maximum impacts of dredging.

DSD expects more detailed engineering design, focused dredge plume modelling and impact assessment to be conducted by commercial proponents as part of the derived proposal process in line with s39 B of the *Environmental Protection Act 1986* (**EP Act**). In addition, commercial proponents will also be required to commence sea dumping permit applications associated with dredge spoil disposal through Commonwealth legislative processes. They will also be required to consult with pearling operators that could be affected by dredging operations.

Commercial proponents will also define appropriate management techniques and technologies to minimise potential dredging impacts in their DSDMPs, which will be submitted for consideration and assessment by the State and Commonwealth regulatory authorities.

Details of the derived approvals process and associated stakeholder engagement through this is detailed in **Section 2.2** of the Response to Submissions Summary Report.

Generic Question ID: 431 Sub ID [101] Raised by [S101 Q774]

Pearl Producers Association: Of concern is the SAR commentary (**Section 2.3.4.1**, **p. 2-37**) that the greatest spatial extent of plumes is predicted to occur during summer/spring conditions, where the concentrations of total suspended sediment due to dredging and spoil disposal activities are predicted to reach 10mg/L above background in an area extending from Quondong Point to just south of Coulomb Point and approximately 14km seaward. PPA requires greater consultation with the Clipper Pearls and Paspaley Pearling companies on the modelling on this specific issue.

Further dredge plume modelling undertaken by commercial proponent's to support the derived proposal process will allow the refinement of impact predictions based upon the selected dredging campaign. Woodside, as Foundation Proponent, is engaged with detailed consultations with affected pearling operators as part of the Marine Users Working Group, and through individual discussions with operators. DSD will communicate this expectation to other relevant commercial proponents.

Generic Question ID: 433 Sub ID [101] Raised by [S101 Q775]

Pearl Producers Association: The Dredging and Dredge Spoil Disposal Management Plan and Port Facilities Construction Environmental Management Plan will be a critical factor in the co-existence of the pearling industry and the LNG precinct. PPA strongly recommends that Pearling representation be imbedded in the mitigation and management strategy (**Section 4.6.8, p.4-124**) through membership of the Dredging Management Advisory Group process to be established to oversee and review the dredging and port construction management plans.

It is acknowledged that potential impacts from marine site disturbance and excavation can be mitigated by the application of management and mitigation measures such as the implementation of a Dredging and Dredge Spoil Disposal Management Plan (**DSDMP**) demonstrating the application of management techniques and technologies to minimise potential dredging impacts, a Port Facilities Construction Environment Management Plan (**PFCEMP**) and associated ecological and water quality monitoring. Both Management Plans specifically provide for appropriate stakeholder consultation during their development and before their implementation. The ultimate composition of the Dredging Management Advisory Committee will be determined by the relevant Port Authority (e.g. Broome Port Authority) in consultation with regulators.

To ensure delivery of the necessary environmental management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 434 Sub ID [101] Raised by [S101 Q776]

Pearl Producers Association: PPA would recommend that Invasive Marine Pests management plans also be to the satisfaction of the Minister for Fisheries who has legislative responsibility for IMP management in Western Australia.

In **Part 3** of the Strategic Assessment Report (**SAR**), **Table 2.4-5**, **p. 2-78**, 'Proposed Environmental Conditions for the Strategic Proposal Potentially Affecting Benthos Including BPP', Condition M4.1 (Invasive marine species) notes that "*Proponents of derived proposals shall prepare and implement an Invasive Marine Species Management Plan, to the satisfaction of the Western Australian Minister for Environment on advice from and in consultation with the Department of Fisheries,...".* The Department of Fisheries is the designated authority for the Minister of Fisheries and would be providing expert advice, as noted by PPA.

Generic Question ID: 435 Sub ID [101] Raised by [S101 Q777]

Pearl Producers Association Submission: PPA notes under **Part 3**, **Section 2.5.4.4**, **p2-9**6 that references are made to physiological damage assessments for fish from close exposure to high intensity noise sources from pile driving or blasting. There is no reference to research applied to pearl oysters.

Published research on the effects of noise on invertebrates and planktonic organisms (including oyster spat) is extremely sparse and almost exclusively considers the effects of geophysical survey (McCauley 1994), particularly the use of 'airguns' in seismic surveys (Vella et al. 2001). However the general consensus is that there are very few effects, either physiological or behavioural, unless the organisms are very close (within 10m) to the noise source (Vella et al. 2001). It should also be noted that seismic programs are not within the scope of the Strategic Assessment. More specific data using mussels and periwinkles have indicated no detectable long term effects after exposures at a distance of 0.5m from a 229dB source (Kosheleva 1992 in Woodside 2002). Research has shown that piling or dredging occurs over a lower noise pressure range of 130 to 190dB (Vella et

al. 2001). Therefore, it is considered that noise from construction activities is unlikely to impact on pearl oysters. The presence of oysters on pylons on wharfs and in shipping channels also attests to minimal effects from general operations.

Generic Question ID: 436 Sub ID [101] Raised by [S101 Q778]

Pearl Producers Association: It is noted that both the DSD and the principle proponent remain unclear as to what the optimum turbidity threshold levels are with regards to the P.maxima pearl oyster, making a determination of both lethal and sub-lethal concentrations difficult to ascertain. Based on the level of accurate modelling that needs to be correlated to the final determination of the FEED, it is remains unclear on the extent of the impacts excavation and dredging will have on the pearl leases located in close proximity to the Precinct. It is extremely important that pearl oyster optimal growth AND pearl quality impacts need to be addressed simultaneously when determining the impacts of TSS and turbidity outputs during the construction phase and maintenance dredging activities.

Although optimum turbidity (in terms of suspended sediment) thresholds have not been widely investigated for *Pinctada maxima* (or any other pearl species), the only available published research suggests that they have a wide tolerance range to suspended material. As turbid water contains substantial fractions of inorganic material, it has usually been considered a disadvantage to filter feeding organisms occurring in these waters. However adaptive strategies such as preferential ingestion of organically-rich particles and effective digestive mechanisms allow maximum energy gains under turbid conditions (see also **Part 5**, **p. 4-106** of SAR documentation). *P. Maxima*, in particular, is considered well-adapted to environments with high suspended particulate matter (**SPM**) due to its high ingestion rate and digestive ability. Optimum SPM for *P. maxima* was recorded by Yukihira *et al.* (1999, 2006) in Queensland at between 3 to 15 mg l-1, although the environments in which they occurred varied naturally from 2 to 60 mg l-1. It is this published material that informed the identification of turbidity levels above optimal conditions that could affect pearl growth. Anecdotal evidence may exist regarding *P. maxima* and turbidity in the Kimberley but there has been no research worldwide properly addressing the aspect of pearl quality and SPM. It should be noted however, given that the strategic water quality and sediment dispersion model outputs predict that only a small area of Clipper Holdings lease area would experience small elevations above background TSS, it is unlikely that pearl operations would experience water quality differences which differ from those normally experienced in the Region.

Regardless of these predictions there is ongoing consultation with those pearl operators in the vicinity of the Precinct that may be affected and this is likely to result in further studies and monitoring over time.

Generic Question ID: 601 Sub ID [101] Raised by [S101 Q780]

Pearl Producers Association: PPA does not agree with the comment on p4-97 that "there is a limited pearling and aquaculture presence in the Precinct area...". This particular area (Quondong Pt to Coulomb Pt) has been a significant contributor to the production of high quality pearl exports in WA for over 15 years and is identified as a crucial area for both high quality pearl production and the holding of juvenile pearl oysters immediately after release from the land based hatchery.

The importance of the Quondong Pt to Coulomb Pt area as a significant contributor to the production of high quality pearl exports and a holding of area for juvenile pearl oysters is acknowledged.

There may have been an inconsistent use of the term ‘Precinct Area’ in regards to referring to aquaculture leases in the SAR. In other sections of the SAR, the term applies to the indicative port area (e.g. **Figure 2.4-5**, **p. 2-73**) and the shipping channel. In this case there is one aquaculture lease (Clipper Holdings Pty Ltd) to the west and south of the access channel/port area of a total of seven leases and one lease application in the general vicinity.

Generic Question ID: 602 Sub ID [101] Raised by [S101 Q781]

Pearl Producers Association: The PPA wishes to expand on commentary on p4-101 that, as a result of the Global Financial Crisis, pearl farms have been forced to enter consolidation and "any such consolidation is likely to have a further depressing effect on the pearl industry'. This comment makes little economic sense and should be removed from the SAR documentation. This statement does not relate to the area under consideration. Paspaley Pearling Co has just been issued a new lease, so obviously the area is one selected for rationalisation.

Between 1970 and 1980 there was a rationalisation in the pearling industry in Australia, as fluctuating demand for pearls, caused by movements in the Yen-Dollar exchange rate prompted smaller farms to sell their operations to larger concerns. The SAR noted, based on the Global Financial Crisis and previous history, that lower prices for pearls would cause either the same trend or other financial hardships. For example, Arafura Pearls was placed into voluntary administration on 23 April 2011. The majority of information provided for this

commentary was from a study carried out by the WA Department of Fisheries (Big Island Research 2009) and other references quoted therein; referenced in the SAR documentation. It is understood that PPA provided input into the study undertaken by Big Island Research in 2009.

Generic Question ID: 607 Sub ID [101] Raised by [S101 Q783]

Pearl Producers Association Submission: PPA requires removal of comments such as in the last paragraph in **Part 5 p. 4-106**: "The organic substances excreted by the pearl oysters (faeces and pseudo faeces) and fouling organisms removed during routine cleaning are deposited on the sea bottom and their build-up eventually affects the chemical and physical state of the seabed and the adjacent water" which goes on to infer that pearl lease areas are regularly rested. This may apply to other industries overseas with much more intensive systems and in areas of much less tidal variations and currents. PPA seeks that all references to 'resting' or 'fallowing pearl lease areas' be removed from the SAR documentation as it is not relevant to the Australian pearling industry.

It is acknowledged that some of the information in the SAR related to the pearling industry represents generic operations in some circumstances and may not have direct relevance to all Kimberley-based operations. However, DSD believes that the presentation of this information does not affect the predicted outcome of impacts as presented in the SAR.

In particular it is acknowledged that the sentence "*The organic substances excreted by the pearl oysters (faeces and pseudofaeces) and fouling organisms removed during routine cleaning are deposited on the sea bottom and their build-up eventually affects the chemical and physical state of the seabed and the adjacent water*" is primarily based observations of non-Kimberley pearling operations and on the research of Crawford et al., 2003; Gifford et al., 2004. However, it is noted that this is particularly applicable for intensive operations (Shahidul Islam and Tanaka, 2004) which may be unlike operations in the Kimberley Region. In the absence of site specific information, this published literature and experience in pearling operations informed the queried statement.

The next sentences "*Periodic removal of the oysters to different part of the lease allows natural processes to process and remove these deposits. In subsequent cropping on 'fallowed' or 'rested' areas of the lease, the production of pearls with desirable quality increases*" describes general pearling operations (as noted by the submission) and not necessarily those in the James Price Point coastal area. A further sentence in the SAR documentation; "*Some operators have occasionally moved longlines, however, this grow out infrastructure usually remains in situ as it a complex and costly procedure to relocate. While resting the area, the longlines remain in the lease site which has been chosen for its specific geographic and water quality attributes*" (**p. 4-106**) would appear to address the concerns raised in this submission.

Generic Question ID: 608 Sub ID [101] Raised by [S101 Q784]

Pearl Producers Association: There is confusion in the first paragraph on **p. 4-107** with use of the terminology 'final make-up culture period'. This is not a term used in the Australian pearling industry and should be removed.

The Department of State Development acknowledges that the sentence "*During the final 'make-up culture' period, pearl oysters are shifted to places of potential quality pearl yielding grounds – grow-out areas such as those off James Price Point."* should read more appropriately as "*During the final culture period, pearl oysters are shifted to places of potential quality pearl yielding grounds – grow-out areas such as those off James Price Point.*"

Generic Question ID: 610 Sub ID [101] Raised by [S101 Q785]

Pearl Producers Association: PPA takes exception to commentary in the SAR **Part 5** on **p. 4-106** outlining research that is applied incorrectly to WA pearling operations suggesting "repeated culture on the same ground has been shown to negatively affect the quality of pearls (Southgate and Lucas, 2008).

The sentence in the SAR **Part 5** on **p. 4-106** states that "The pearl culture grounds also play a significant role in determining pearl quality, and repeated culture on the same ground has been shown to negatively affect the quality of pearls (Southgate and Lucas, 2008)." This statement is followed by the qualifier "However, this may depend on location and associated hydrographic and geomorphological processes". As these two sentences form their own paragraph with no reference to Western Australia, there would appear to be no implication that it applies to the James Price Point locality, incorrect or otherwise.

Generic Question ID: 611 Sub ID [101] Raised by [S101 Q884]

Pearl Producers Association: PPA notes that the State government has maintained a firm commitment to a profitable and sustainable pearling industry continuing in the Kimberley region.

The Browse LNG Precinct is being progressed on the basis that the social and economic benefits it will generate can coexist with the environment, the existing local economy and the unique cultural and heritage values of the Kimberley.

The Western Australian Government recognises the economic, social and cultural importance of the pearling industry in the Kimberley region and will continue to work with both the pearling industry and commercial proponents to ensure that potential impacts can be managed.

Please refer to SAR **Part 5**, **Section 4.6** (Aquaculture and Pearling) for a summary of the findings of the investigation into the Kimberley pearling industry, the potential risks posed by the development of the Browse LNG Precinct, and mitigation and management plans proposed to address these impacts. DSD will continue to work with the Pearling industry in the development of plans to address impacts.

Generic Question ID: 645 Sub ID [101] Raised by [S101 Q779]

Pearl Producers association: The offset approach is of concern to PPA given that 'environmental offsets' invariably impact other industries. In particular, the Gorgon offset for turtle losses through marine park protection of turtles proposed at 80 Mile Beach is a concern given the immediate offshore area of 80 Mile Beach is the home of the last commercial P.maxima pearl oyster wildstock fishing grounds in the world! In addition, PPA has concerns that the allocation of the environmental offsets in the documents contradicts the SAR making repeated references to very low impact of construction and ongoing operations

The issue of offsets has been more broadly seen as an area of concern to the State and accordingly an Offsets Policy is currently being drafted by the Sate with the objective of ensuring consistency of approach and level of offset between developments.

The 'Fishing Management Plan' required by the SIA should include and address results of additional water quality modelling work proposed to be undertaken once the offshore infrastructure design parameters are determined, to ensure that any potential impacts on fishing activities such as pearling are mitigated. This document should be prepared in consultation with the marine users group (already established and meets on a regular basis in Broome) and the Department of Fisheries.

A key issue will be timing of the work and interpretation of results, so meaningful mitigation measures are put in place.

Generic Question ID: 1100 Sub ID [157] Raised by [S157 Q2457]

WAFIC Submission: **Part 5**, **Section 4.6** Relevant factor: aquaculture and pearling - the SAR's assertion on **p. 4-97** that 'there is a limited pearling and aquaculture presence in the Precinct area' is not supported. This particular area (Quondong Point to Coulomb Point) has been a significant contributor to the production of high quality pearl exports in WA for over fifteen years and is crucial for holding juvenile pearl oysters immediately after release from the land based hatchery.

It is acknowledged that there may have been inconsistent usage of the term ‘Precinct Area’ in regard to referring to aquaculture leases in the Strategic Assessment Report (**SAR**). In other sections of the SAR, the term applies to the indicative port area (e.g. **Part 3, Figure 2.4-5**, **p. 2-73**) and the shipping channel. In this case there is one aquaculture lease (Clipper Holdings Pty Ltd) to the west and south of the access channel/port area of a total of seven leases and one lease application in the general vicinity.

Generic Question ID: 1329 Sub ID [182] Raised by [S182 Q3301]

The risk to the pearling industry has been down played with an assertion that invasive species are unlikely. The pearling industry has been largely free of diseases and parasites that have plagued the industry in other parts of the world. The submitter is concerned that "mitigating and management" practices will not prevent the industry from being infected by diseases and parasites that could be brought in and spread through increased shipping traffic (i.e. through contaminated bilge water or on the surface of marine vessels and equipment).

Sections of the SAR which discuss the potential impacts of invasive marine species (**IMS**) on marine factors include **Part 5, Section 4.6.4.1** and **Part 3, Section 2.8.3.5**. The Department of State Development (**DSD**) does not consider the proposed impacts to have been ‘downplayed’ in the SAR, rather the impact assessment has been based on the following:

- the bioregional setting of the James Price Point coastal area;

- the types of vessels that would travel to the Precinct;
- precedents for other types of LNG facility operations; and
- the likely introduction pathways.

The SAR recognises that the introduction of IMS could alter the existing marine ecosystem balance in the Canning Marine Bioregion if successful establishment occurs. Introductions may affect pearling and aquaculture by introducing fouling/competitive species and by causing the enforcement of quarantine controls which will restrict production/operations.

DSD is focussed on establishing a rigorous and enforced Precinct-wide quarantine management system aligned with the Precinct Port Environmental Management Strategy. The strategy will also include reviews, by relevant government departments, of Commercial Proponent Management Plans in order to ensure that prescribed management measures, incident response procedures, communication and long-term monitoring are in place prior to construction and operation.

To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

4.7 Relevant Factor: Tourism

Generic Question ID: 45 Sub ID [4, 24, 27, 35, 39, 45, 48, 58, 69, 70, 74, 87, 88, 97, 98, 99, 105, 118, 132, 133, 134, 140, 144, 156, 164, 182, 205, 207, 212, 215, 217, 218, 227, 228, 236, 292, 293] Raised by [S4 Q63]

A number of submissions raised similar points:

- The Precinct and influx of FIFO workers will result in irreversibly damage to the Kimberley tourism image of an unspoilt wilderness with a unique community identity and history.
- The studies of the impacts on tourism in the region are inadequate, and fail to consider the problems for tourism found elsewhere with similar projects.
- The Pilbara towns of Karratha, Wickham, Newman and Dampier were all built as mining towns. Is there any other Pilbara town that was initially built for tourism, and then had mining tacked on to it as is being proposed now for Broome?

The State recognises that tourism is one of the key industries in Broome and the Kimberley region. Together with Perth and Margaret River, Broome is one of Western Australia's iconic tourism destinations. As a result of concerns about the potential impact of the Precinct on Broome's tourism industry, a Tourism Impact Assessment (**TIA**) was conducted by an independent consultancy as part of the Strategic Assessment process.

The TIA, commissioned by Tourism WA and the Department of State Development, concluded that tourism and the development of the Precinct could coexist. It also pointed out that that tourism and mining have coexisted in the Kimberley since the 1950s. The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation, the means to maximise potential benefits, and mitigate and manage potential negative impacts.

The TIA described the current state of the tourism industry in Broome and the Kimberley region, and the potential implications associated with the development of the Precinct. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily coexist. The Strategic Social Impact Management Plan, outlined in **Part 5**, **Section 5** of the Strategic Assessment Report, proposes a Tourism Management Plan, with Tourism WA as the lead agency, to meet this recommendation.

The State will ensure that the tourism image is maintained by accommodating all LNG processing and export on a single, environmentally acceptable site which will prevent any ad hoc development on the Kimberley coastline. The Precinct will occupy a relatively small land area of 2,500 hectares which is 0.2 percent of the 1.4 million hectare Dampier Peninsula. The Precinct is located around 60km north of Broome and any visual impact or lightspill from the Precinct is not expected to extend to the Kimberley's iconic tourist destinations such as Broome and Cape Leveque.

With regards to lessons learnt from the Pilbara, as the submission acknowledges, there are fundamental differences between Broome and Pilbara towns such as Karratha, Wickham, Newman and Dampier. The unique character of Broome is closely related to it's historical development and strong links to the pearling, fishing, pastoral, and tourism industries. In contrast to many Pilbara towns, Broome has developed a diverse local economic base since its establishment in the 1880s. The economic base of many towns in the Pilbara continue to rely purely on the mining and natural gas industries upon which they were established, many of

which as recently as the 1960s.

A number of social management plans will be developed to avoid, mitigate and manage the potential impacts on tourism. These include, as a condition of locating at the Precinct:

- a managed access construction workforce camp close to the Precinct to control construction worker impacts on Broome and the Dampier Peninsula;
- managing construction worker access to Broome and Dampier Peninsula;
- managing worker behaviour so it does not have a negative effect on the surrounding areas.

Additional social management plans include:

- a strategy to ensure Broome retains its status as one of WA's premier tourist destinations;
- developing management arrangements for recreational activities, on the area surrounding James Price Point, to address local user and Traditional Owner concerns;

The Precinct is expected to deliver a large number of positive benefits to the tourism industry including an overall increase in air services, cheaper air services, new investment in facilities and services and greater opportunities for small businesses to provide tourism services to the precinct workers and their families.
A range of other measures will also be implemented to manage the impact of the development on the tourism industry, such as the Broome 'Sense of Place' Management Strategy and the implementation of a controlled-access construction camp. See **Part 5**, **Section 4.7.5** of the SAR for a description of the full range of management measures related to tourism.

To assist with the delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 2 Sub ID [1, 15, 53, 81, 86, 93, 100, 113, 141, 142, 146, 151, 153, 159, 203, 205, 215, 227] Raised by [S1 Q2]

The BLNG Precinct will cause significant damage to a $650 million per annum tourism industry.

Although dominated by the mining and resources industry, tourism is a significant contributor to the economy of the Kimberley. Accommodating all regional LNG processing and export activity on a single, environmentally acceptable site will prevent ad hoc development along the Kimberley coast.

The proposed Precinct will occupy a relatively small land area of 2,500 ha, which represents 0.006% of the total area of the Kimberley. Furthermore, the distance of the site from iconic tourist destinations such as Broome (60km), Cape Leveque (145km), Horizontal Waterfalls (225km) and the Bungle Bungle ranges (665km) means that the Precinct is unlikely to significantly impact the tourism industry in the Kimberley.

A Tourism Impact Assessment was conducted as a specialist study of the Social Impact Assessment. This report is contained in the Strategic Assessment Report as **Appendix D-6**. This report concluded that tourism could co-exist with the LNG Precinct development at James Price Point. The "Management of Tourism Impacts" Management plan (SIA **Volume 3**, **p.19**) has the` objective that "Broome retains its status as one of WA's premier tourism destinations" with the outcome that "the tourism image of Broome is maintained or enhanced and coexists with the LNG Precinct". It is expected that Tourism WA will lead the development of this strategy and management plan, supported by the Commercial Proponents and the Precinct management.

The Tourism Impact Assessment can be accessed at: http://www.dsd.wa.gov.au/documents/2Kimberley_LNG_Tourism_Impact.pdf

Volume 3 of the Social Impact Assessment can be accessed at: http://www.dsd.wa.gov.au/documents/100953_Volume3-website_version.pdf

Generic Question ID: 324 Sub ID [27, 28, 37, 49, 163, 154, 155, 142, 148, 153, 228, 236] Raised by [S28 Q265]

The region attracts local, national and international visitors every year, due to its stunning natural assets. These assets in the form of natural landscapes and ecosystems are worth more than any development can generate. Developing tourism in the Kimberley region instead of industry could be a better alternative to generating sustainable income from the region compared to short term gains from mining.

Tourism WA and the Department of State Development commissioned a Tourism Impact Assessment (TIA) as part of the Strategic Assessment process. The TIA concluded that tourism in the Kimberley and the Browse

LNG Precinct could co-exist. It also noted that tourism and mining had co-existed in the Kimberley since the 1950s.

The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation the means to maximise the potential benefits, and mitigate and manage potential negative impacts.

The TIA described the current state of the tourism industry in Broome and the Kimberley region, and the potential implications should the Precinct proceed. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily co-exist. As a result, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a tourism management plan, with Tourism WA as lead agency, to meet this recommendation.

It is the State Government's view that the Precinct can coexist with the tourism industry in Broome and in the Kimberley, due to the vast distances between the Precinct site and iconic destinations such as the Horizontal Waterfalls (225km), Mitchell Plateau (495km), and the Bungle Bungles (665km). The pristine nature of such destinations will remain, and their value will not be diminished.

Woodside's project-level SIA will include further investigations of the potential impacts of their project on the tourism sector within the Shire of Broome.

The Tourism Impact Assessment is included in **Appendix D-5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/8249.aspx

Generic Question ID: 215 Sub ID [39, 205, 215, 211, 212, 153] Raised by [S39 Q352]

The TIA does not provide projections of the value of the tourism industry into the future. What will the value be if the Kimberley remains relatively pristine vs. development at James Price Point?

Tourism WA and the Department of State Development commissioned a Tourism Impact Assessment (**TIA**) as part of the strategic assessment process. While the study did not provide projections of the value of the tourism industry into the future, it did note that tourism and mining had coexisted in the Kimberley since the 1950s, and concluded that tourism and development of the Precinct could co-exist. Visitors surveyed during the TIA concluded that a LNG Precinct 60km north of Broome would not deter them from visiting Broome again.

The TIA described the current state of the tourism industry in the Kimberley region and the potential implications should the Precinct proceed. The focus of the TIA was to quantify the potential impacts should the project proceed and identify through consultation the means to mitigate negative impacts where possible, and maximise potential benefits. These included the likelihood of increased commercial flights potentially helping improve tourists access to the region. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily coexist. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report, identifies a tourism management plan, with TourismWA as the lead agency, to meet this recommendation.

Woodside's project-level SIA will include further investigation of the potential impacts of its project on the tourism sector within the Shire of Broome.

The Tourism Impact Assessment is included in **Appendix D-5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/8249.aspx

The Kimberley is a vast area with regions of greater and lesser environmental and tourism value. The Precinct's location at James Price Point ensures that the more pristine areas of the northern Kimberley will be less likely to have LNG development. It is State Government's view that the Precinct can coexist with the tourism industry in Broome and in the Kimberley, due to the vast distances between the Precinct site and iconic destinations such as the Horizontal Waterfalls (225kms), Mitchell Plateau (495kms), and the Bungle Bungles (665km) meaning that the pristine nature of such destinations will remain. As such its value will not be diminished.

Generic Question ID: 353 Sub ID [34, 70, 211, 228, 235] Raised by [S34 Q318]

The impacts on tourism are not adequately addressed - particularly upon the Indigenous eco-tourism ventures on the Dampier Peninsula that are among the rare success stories of local traditional culture thriving in an educational and financially viable situation, within a western context.

Indigenous eco-tourism ventures will be compromised by continued development.

The Strategic Assessment Report (**SAR**) included a discussion of the potential impacts and management measures for the tourism industry as a whole, as well as on Indigenous tourism ventures specifically (**SAR Part 5, Section 2.9**). The strategic SIA of the proposed Browse LNG Precinct included a Tourism Impact Assessment (**TIA**) undertaken by Tourism WA and conducted by Kadar Pearson and Partners (**Appendix D-5**). As discussed in the TIA, tourism is an important industry to the Indigenous community, with approximately 20

Indigenous cultural tourism organisations operating in the Broome and Dampier Peninsula area, that offer a range of tourist activities from bush retreats to wilderness experiences, dreamtime and off-road tours. Indigenous tourism operators were among the stakeholders consulted for the TIA. In addition, the Aboriginal Social Impact Assessment (**ASIA**) undertaken by the Kimberley Land Council (**KLC**) (**Appendix E-3**), included a discussion of potential negative and positive impacts on Indigenous tourism ventures (see **Sections 3.4.12** and **3.5.3** in the ASIA).

As indicated in the SAR, the main finding is that the Precinct could co-exist with tourism although it may also negatively impact some tourism values. For example, visitors to Indigenous tourism operations in the Dampier Peninsula expect a remote natural experience and may be impacted by direct lighting, light spill from infrastructure lighting, the high pressure emergency flare (during flaring events), and sky glow though surrounding vegetation.

However, the potential impacts on tourism ventures are complex. For example, the possibility of sealing the Broome – Cape Leveque Road could benefit the Indigenous tourism operators who access various locations via this road. Whilst sealing the road could result in a number of positive benefits for Indigenous tourism ventures in the Dampier Peninsula, there are potentially negative impacts. For example, sealing the road could encourage an unsustainable influx of visitors impacting on the local environment, heritage sites and local communities. With appropriate management, it is also possible that visitor numbers can be increased whilst minimising negative impact on the social and natural environment. Such negative impacts, opportunities and management measures would need to be considered in the development of management plans that would occur in the next phase.

Several management measures outlined in the SAR will address tourism and tourism operators in the Dampier Peninsula, such as the following:

- Development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) will provide a mechanism for the people of the Dampier Peninsula to consider the future of tourism in the Dampier Peninsula. This Strategy will consider the way the Dampier Peninsula is accessed and promote the conservation of environmental and heritage values of the area. The Strategy, along with other mechanisms such as the Cultural Heritage Management Plan, will also provide appropriate mechanisms to address possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.
- Commercial proponents will be required to develop a plan to manage the interaction between a large scale construction workforce and the communities of Broome and the Dampier Peninsula. This will include policy and procedures to manage access to Broome and the region by the construction workforce at the accommodation camp, including access to recreational fishing and tourism in the region. Any recreation activities undertaken on rest days will be actively managed (e.g. guided tours with Aboriginal tour operators and/or fishing tour operators), which will benefit local Indigenous tourism operators whilst managing uncontrolled visitor access. The managed-access construction camp and workforce behaviour policies will also manage potential impacts to the region's tourism brand.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group and through this mechanism; the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

Generic Question ID: 678 Sub ID [120, 205, 215, 195] Raised by [S120 Q1323]

ENGO Submission **Part 5 Section 4.7.3.1** Sensitivity and Resilience:

The question is not whether tourism and industry can co-exist, but if they should.

ENGO Submission: 'The Tourism Impact Assessment identified that overall industry stakeholders and residents considered that the BLNG precinct could co-exist with tourism in the area'. This is a pointless statement - of course they can co-exist. The question is really, should they coexist? This statement needs further defence - how many people were surveyed and what was the level of response? The figures in the Executive Summary of the Strategic Assessment Report do not really support this statement - opinion is highly divided. Compare also with the following statement in the SIA: 'Furthermore, while the industry stakeholders, visitors and resident groups surveyed considered that the proposed development would have a negative impact on the Kimberley's reputation and image, half of those surveyed felt that the LNG development would increase the economic base and economic diversity of the region'. It is obviously possible for people to agree that a massive project will

increase the economic base, whilst believing this will have a negative impact on the Kimberley's image. It is misleading that these two positions are presented as some sort of either/or choice in order to support the earlier conclusion that the BLNG precinct could co-exist with tourism.

The question of whether resources development and tourism should co-exist is an important value question that should be considered in the planning for the region, but it is a question that requires a broader discussion than that involved in an impact assessment process for a specific development. The purpose of the tourism impact assessment is to profile the existing tourism industry, predict potential impacts and propose management measures to address those impacts.

A key issue KPP addressed in the tourism assessment was to gauge perceptions of the capacity of tourism and the LNG development to co-exist. The results reveal a range of views within the general community and in various sectors of the tourism industry. For example, just over 50 percent of respondents agreed that the two activities could co-exist while just over 45 percent did not believe that co-existence was possible. On the other hand, there was less division within other stakeholder groups. Marine tourism operators were among those that generally believed the two could co-exist, and aviation officials emphasised that the development had the potential to enhance air travel in the region to the benefit of tourism.

Although the scale of the LNG Precinct differs from the existing mining activity in the region, there is historical evidence to suggest that tourism and mining have been able to co-exist for some time. The two industries have co-existed in the Kimberley for over five decades, since at least 1959. However, the value question of whether both resource development and tourism have a role in the future of Broome is one that should be explored with the whole community as part of local and regional planning processes.

Generic Question ID: 125 Sub ID [16, 66, 294] Raised by [S16 Q112]

Although there is a is a low likelihood, accidents would have significant consequence (recent examples include the Varanus Island explosion, Montara explosion and Deep Water Horizon explosion and oil spill in the Gulf of Mexico).

Visitors to Australia will avoid the Kimberley if this project is allowed - particularly after an accident or spill, as we have seen in the Gulf of Mexico.

Although the development of the Precinct will increase the risk of an oil spill, these risks currently already exist from shipping moving along the coast and fuel imports that already occur through the Port of Broome. The estimated annual increase in the likelihood of spill reaching either Cable Beach or Roebuck Bay is estimated at one in 10,000 years.

Part 5, **Section 2.9.2**. outlines the key findings of the Tourism Impact Assessment that tourism industry stakeholders and Broome residents considered:

- The Precinct could co-exist with tourism although it may also have a negative impact on the Kimberley's reputation and destination image.
- A FIFO workforce may reduce the availability of short term visitor accommodation and have the potential to impact negatively on the tourism values, character and appeal of Broome.
- There would be an increased likelihood of greater access and use of the Dampier Peninsula by locals and tourists.

Generic Question ID: 442 Sub ID [44, 79, 150] Raised by [S44 Q415]

The potential of this region for tourism far outweighs the short term monetary gains which benefit overseas investment.

The State Government acknowledges the significant contribution made by the tourism industry to the regional economy of the Kimberley. Accordingly, Tourism WA and the Department of State Development commissioned a Tourism Impact Assessment (**TIA**) as part of the Strategic Assessment process for the Browse LNG Precinct. The TIA concluded that tourism in the Kimberley and the Browse LNG Precinct could coexist. It also noted that tourism and mining had coexisted in the Kimberley since the 1950s. The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation the means to maximise the potential benefits, and mitigate and manage potential negative impacts. The potential impacts on tourism are also summarised in **Section 4.7** in **Part 5** of the Strategic Assessment Report (**SAR**).

The TIA described the current state of the tourism industry in Broome and the Kimberley region, and the potential implications should the Precinct proceed. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily coexist. As a result, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a tourism management plan, with Tourism WA as lead agency, to meet

this recommendation.

The development of the Precinct also provides significant scope for the region to diversify and considerably increase its contribution to the State's economy, including in tourism-related sectors such as retail, hospitality and aviation. For example, as aviation officials in the TIA emphasised, development of the Precinct would increase air travel into the region, which would benefit tourism. In addition, it is likely that new employment opportunities with Broome-based contractors (for example laundry, catering, transport and trades-people) may generate an expanded customer base for the region's non-Precinct related businesses (such as retail and hospitality) and could also include opportunities for the establishment of new Indigenous business. In addition to increased spending associated with new employees and their families, an increase in average individual incomes from direct employees and contractors would also suggest a likely increase in local spending.

Development of the Precinct could also further develop tourism activities in the region through the management of construction workforce movements. Facilitating organised recreational activities throughout the construction phase of the Precinct could deliver a significant boost to tourism businesses in Broome, particularly during the off-season.

The Tourism Impact Assessment is included in **Appendix D-5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/8249.aspx.

Generic Question ID: 536 Sub ID [170, 124, 195] Raised by [S170 Q1419, S124 Q3095]

WWF & ACF Submission Section 12: There are concerns with the reliability of data in the Tourism Impact Assessment. The report notes that "The value of tourism has been historically difficult to measure." Although the report asserts that "KPP undertook a comprehensive qualitative and quantitative research process with a range of stakeholders, Broome residents, and visitors" (**Section 4.1**, **p. 70**) it also states "Kununurra, Derby, Fitzroy Crossing and Halls Creek respondents were not included as impacts for these towns had generally been rated as "no impact" and inclusion would skew the results." The validity of this exclusion is questionable. While the Broome LGA accounts for approximately half the population of the Kimberley, it should be recognised that the Kimberley population is highly mobile with many people from other parts of the Kimberley being regular visitors to Broome. It is likely that many of the people who don't live in the Broome LGA, but are residents of the Kimberley, would be impacted by the proposed LNG hub and should therefore be included in this assessment. In 2006, 42.1% of the entire Kimberley population were Indigenous and many of these have family residing in the Broome LGA. Thus, what impacts on their families impacts on them too?

A number of other submissions raised similar points:

Collection of data for the tourism report is flawed:

- Only 119 people in Broome were interviewed, all online - not allowing people without computer access to comment.
- The questions were leading (e.g. would you like to see cheaper airfares as a result of this development).
- The literature used, concluding that tourism and industry could live together, comes from industry sources, not from independent research.
- An independent Curtin University Report came to a contradictory conclusion from the SAR Report: that the gas hub would be detrimental to the tourism industry.

KPP's approach in the Tourism Impact Assessment (**TIA**) is consistent with that used by the Department of State Development (**DSD**) throughout the SIA process. A primary impact area was established based upon the area that could be expected to experience the majority of the social and economic impacts, including the effects on population, construction and operational workforce accommodation, service areas for supporting industries, infrastructure, employment and recreation; in addition to cultural and heritage impacts. In this case, the primary impact area extends from the James Price Point area to the township of Broome, the nearest population centre to the proposed Precinct. This definition does not mean that these are the only areas that will be impacted; rather it provides a focus for in-depth assessment of the socio-economic impacts.

Impacts on the broader Kimberley region are discussed in many areas of the TIA report. This submission questions the exclusion of certain areas of the Kimberley in the qualitative research phase specifically. During this phase, KPP conducted 192 in-depth interviews with stakeholders representing 14 "clusters" of interests. These interviews assisted KPP in developing propositions to be tested in the quantitative research phase. Several of these clusters represented stakeholders outside of the primary impact areas of Broome and James Price Point and in the area referenced by the submission. For example, clusters of stakeholders representing tourism operators and accommodation providers in the East Kimberley (cluster 14) and Derby and Fitzroy Crossing (cluster 13), as well as tourism associations (cluster 1) and community and special interest groups (cluster 3) representing the Kimberley were interviewed during this phase. Key findings of all interviews are

provided in **Section 4.2** of the TIA report (SAR **Appendix D-5**), and in more detail in Appendix 111 of the TIA. These discussions focus on Broome, but also include discussion of impacts on the Kimberley more broadly.

It is correct that stakeholders from Kununurra, Derby, Fitzroy Crossing and Halls Creek were not included in the more detailed analysis of the interviews that is provided in the summary of weighted perceptions (**Section 4.4** of the TIA). Since this data provided the basis of development of propositions to be used in the subsequent quantitative research components (i.e. resident and visitors surveys), this approach is consistent with the method applied by the DSD in the SAR, in which impacts are discussed broadly at a more regional level, but detailed analysis of impacts is limited to the primary impact area.

As a key gateway into the Kimberley, managing potential impacts to Broome's tourism industry will help address potential impacts to the tourism brand of the Kimberley as a whole. As outlined in the management measures contained in the SAR (**Part 5, Section 5**), Tourism WA will lead development of a Tourism Management Strategy that maintains or enhances the current tourism image of Broome, while providing a framework for ongoing development of the Browse LNG Precinct.

Generic Question ID: 981 Sub ID [151, 105] Raised by [S151 Q2108]

There has been no analysis of the effects this project might have on small business, particularly those tourism driven.

The Strategic Assessment Report (**SAR**) included a discussion of the potential impacts and management measures for the tourism industry as a whole, as well as on Indigenous tourism ventures specifically (**SAR Part 5, Section 2.9**). The strategic SIA of the proposed Browse LNG Precinct included a Tourism Impact Assessment (**TIA**) undertaken by Tourism WA and conducted by Kadar Pearson and Partners (**Appendix D-5**). As discussed in the TIA, tourism is an important industry to the Indigenous community, with approximately 20 Indigenous cultural tourism organisations operating in the Broome and Dampier Peninsula area, that offer a range of tourist activities from bush retreats to wilderness experiences, dreamtime and off-road tours. Indigenous tourism operators were among the stakeholders consulted for the TIA. In addition, the Aboriginal Social Impact Assessment (**ASIA**) undertaken by the Kimberley Land Council (**KLC**) (**Appendix E-3**), included a discussion of potential negative and positive impacts on Indigenous tourism ventures (see **Sections 3.4.12** and **3.5.3** in the ASIA).

As indicated in the SAR, the main finding is that the Precinct could co-exist with tourism although it may also negatively impact some tourism values. For example, visitors to Indigenous tourism operations in the Dampier Peninsula expect a remote natural experience and may be impacted by direct lighting, light spill from infrastructure lighting, the high pressure emergency flare (during flaring events), and sky glow though surrounding vegetation.

However, the potential impacts on tourism ventures are complex. For example, the possibility of sealing the Broome – Cape Leveque Road could benefit the Indigenous tourism operators who access various locations via this road. Whilst sealing the road could result in a number of positive benefits for Indigenous tourism ventures in the Dampier Peninsula, there are potentially negative impacts. For example, sealing the road could encourage an unsustainable influx of visitors impacting on the local environment, heritage sites and local communities. With appropriate management, it is also possible that visitor numbers can be increased whilst minimising negative impact on the social and natural environment. Such negative impacts, opportunities and management measures would need to be considered in the development of management plans that would occur in the next phase.

Several management measures outlined in the SAR will address tourism and tourism operators in the Dampier Peninsula, e.g.:

- Development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) will provide a mechanism for the people of the Dampier Peninsula to consider the future of tourism in the Dampier Peninsula. This Strategy will consider the way the Dampier Peninsula is accessed and promote the conservation of environmental and heritage values of the area. The Strategy, along with other mechanisms such as the Cultural Heritage Management Plan, will also provide appropriate mechanisms to address possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.
- Commercial proponents will be required to develop a plan to manage the interaction between a large scale construction workforce and the communities of Broome and the Dampier Peninsula. This will include policy and procedures to manage access to Broome and the region by the construction workforce at the accommodation camp, including access to recreational fishing and tourism in the region. Any recreation activities undertaken on rest days will be actively managed (e.g. guided tours with Aboriginal tour operators and/or fishing tour operators), which will benefit local Indigenous tourism

operators whilst managing uncontrolled visitor access. The managed-access construction camp and workforce behaviour policies will also manage potential impacts to the region's tourism brand.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 679 Sub ID [120] Raised by [S120 Q1324]

ENGO Submission: **Part 5 Section 4.7.4.4** Potential Impacts on Tourism due to Other Noise and Vibration. 'Operations by heavy helicopters would increase as Broome becomes the base for exploration and product well drilling in the Browse Basin'. The report does not indicate the scale this will be on and therefore the level at which this will affect Broome residents and visitors.

The Tourism Impact Assessment (**TIA**) identified aircraft movements as an additional source of noise associated with the Precinct with the potential to impact the amenity of tourists. In particular, the TIA noted the potential for increased helicopter activity and noise over the Cable Beach and Chinatown tourism precincts to impact on the character, ambience, holiday atmosphere and overall destination appeal of Broome.

Data on the expected number and timing of precinct-related helicopter movements were not known at the time the strategic assessment was conducted. This is also a cumulative impact issue as the Browse LNG Precinct and associated projects will be only one potential source of helicopter noise. Operations by heavy helicopters are expected to increase as Broome becomes the base for exploration and product well drilling in the Browse Basin. As noted in the SAR, helicopter companies have expressed a desire to work closely with the community, to minimise impacts associated with helicopter movements. An alternative airport site, 13 kilometres north-east of the Broome township, has been identified as a potential contingency if the current airport becomes capacity constrained, or other environmental factors (such as noise and amenity) impinge on the airport operations.

Tourism impacts will also be specifically addressed in the Tourism Management Strategy. TourismWA will lead the development of a strategy that maintains the current tourism image of Broome, while providing a framework for the ongoing development of the Precinct.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 751 Sub ID [70] Raised by [S70 Q622]

Were Dampier Peninsula Indigenous tourism operators consulted? The Submitter has witnessed high levels of concern from them in various forums, including Broome Shire meetings.

To maximise consultation with Industry stakeholders for the Tourism Impact Assessment (**TIA**), Kadar Pearson and Partners (**KPP**) conducted one-on-one, face-to-face interviews with stakeholders in 14 "clusters" or categories. Data collected in these interviews aided the development of propositions to be tested through the quantitative research phase. One of these clusters (Cluster 11) was comprised of fifteen Indigenous Operator organisations.

Indigenous tourism was also a point of discussion in the Indigenous Impacts Reports (**Appendix E**), as the Precinct development could increase access to the Dampier Peninsula. For example, the possibility of sealing the Broome - Cape Leveque Road could benefit the Indigenous tourism operators who access various locations via this road. Whilst sealing the road could result in a number of positive benefits for Indigenous tourism ventures in the Dampier Peninsula, tourist access needs to be managed to avoid an unsustainable influx of visitors impacting on the local environment, heritage sites and local communities. With appropriate management however, it is possible that Indigenous cultural tourism ventures could become more sustainable through increased visitor numbers as a result of this activity.

Consultation with Indigenous tourism operators will continue in the next stages of planning to assist with the management of any potential impacts of the Precinct development on their operations. Of particular interest to these stakeholders will be the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan), which will consider access to the Dampier Peninsula, which will have an impact on the future of tourism in the Peninsula. In addition, a tourism marketing strategy that maintains the current tourism image of Broome will be developed in consultation with all relevant tourism stakeholders prior to construction of the Precinct.

To assist with the delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A

commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

Generic Question ID: 801 Sub ID [75] Raised by [S75 Q863]

A 2010 tourism study conducted by the Curtin University Sustainable Tourism Centre contains a number of findings that contradict the SAR assessment. (P17 and 18 of the submission contains bullet point summaries of this).

This submission references the report commissioned by the Wilderness Society WA, the Conservation Council of WA and Environs Kimberley titled Kimberley Whale Coast Tourism: A review of opportunities and threats" prepared by Dr Michael Hughes of Curtin University Sustainable Tourism Centre. It is not uncommon for quantitative and qualitative research findings to differ from those found in a desktop review, particularly when they employ different methods. The aforementioned report is a critique based primarily on a desktop analysis of published reports and past research. The objective of Curtin University's report was to investigate the successful Kimberley tourism 'brand' and how this brand can be enhanced through marine protection and to determine, based on the desktop review, likely impacts on tourism of the proposed Precinct.

On the other hand, the Tourism Impact Assessment (**TIA**) undertaken by KPP for the Strategic Assessment of the Browse LNG Precinct was an impact assessment that focused on quantifying the potential negative and positive impacts of the proposed Precinct on the tourism industry in Broome and the West Kimberley region through quantitative and qualitative research with the potentially affected stakeholders. The TIA also sought to identify means to mitigate negative impacts where possible and to maximise potential benefits. Although Dr Hughes' critique is acknowledged, the TIA employed a number of methods beyond a desktop analysis, including qualitative and quantitative research and consultation with a range of tourism industry, visitor and community stakeholders.

Generic Question ID: 844 Sub ID [201] Raised by [S201 Q1810]

The atmosphere at the Broome airport is already dramatically different with the large numbers of FIFO workers arriving in the area.

The Tourism Impact Assessment (**TIA**) conducted as part of the Strategic Assessment process, identified the potential impact of behaviour by FIFO workers and their interaction with leisure tourists at points of intersection such as the airport, as a community concern.

It is envisaged that most construction workers would fly into Broome airport and then be bussed to the construction workforce camp. Commercial proponents will be required to implement transport management plans including managing airport FIFO transfers. This may include the development of specific facilities to accommodate FIFO transfers.

The SAR also proposes that Tourism WA lead the development of a Tourism Management Strategy as the main strategy to address potential impacts on the current tourism image of Broome.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 923 Sub ID [127] Raised by [S127 Q1912]

Kimberley Development Commission: The Board is concerned that the tourism data collection and assessment methodology contained with the Tourism Impact Assessment including multiplier assumptions and comparisons to Gross Regional Product, may require further work.

It should be noted that additional studies on tourism impacts will be part of the next stage of work by the State Government and Woodside. From the State Government side, Tourism WA will lead the development of a tourism management strategy with the objective of maintaining the current tourism image of Broome. The Kimberley Development Commission will be consulted as part of that planning process.

As part of its project-level Social Impact Assessment, Woodside has commissioned additional investigations on tourism impacts. This has been sub-consulted to Kadar Pearson & Partners Pty Ltd (**KPP**), the consultancy that undertook the specialist study of tourism impacts for the Strategic Assessment Report (**SAR**). The Kimberley Development Commission will be consulted as a stakeholder in the project-level Social Impact Assessment process.

Generic Question ID: 931 Sub ID [227] Raised by [S227 Q1994]

The tourism industry on the Dampier peninsula is an important ingredient in breaking down the barriers between non-indigenous and indigenous people.

The State Government acknowledges that tourism on the Dampier Peninsula can make positive contributions not only in terms of economic development but also social understanding. Through the provision of significant employment, training and job opportunities, as well as funding for cultural and other pursuits, the Precinct could have a similar benefit in terms of closing the gap between Indigenous and other Australians.

The key question identified through the Aboriginal Social Impact Assessment (**ASIA**) and Social Impact Assessment (**SIA**) is how access to the Dampier Peninsula by non-residents such as tourists and Precinct workers should be managed so that communities receive the benefits without the potential negatives. The Tourism Impact Assessment (**TIA**), also conducted as part of the Strategic Assessment process, found that sealing the Cape Leveque Road would improve visitor access and further opportunities for Indigenous tourism businesses. However, this activity also brings with it potential issues such as an unsustainable influx of visitors impacting on the local environment and local communities.

Several of the management plans described in the Strategic Social Impact Management Plan (**Part 5, Section 5** of the SAR) will address the issue of increased visitor access to the Dampier Peninsula. The Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan), together with mechanisms such as the Cultural Heritage Management Plan, will provide appropriate mechanisms to address the possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.

Precinct construction workers on their rostered days off are potential customers for tourism businesses on the Dampier Peninsula (e.g. chartered fishing). Commercial proponents will be responsible for the implementation of policies and procedures to manage Precinct worker access to the Dampier Peninsula and the provision of cross-cultural training to all construction workers on the project.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. This proposed Governance arrangement has been the subject of numerous comments from both the community and State and Commonwealth environmental regulators. A number of modifications have subsequently been made to this and these are presented in detail in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1046 Sub ID [111] Raised by [S111 Q2145]

The proposed hub will create light pollution. This can have a detrimental effect on some businesses, such as astronomy tours.

Part 5, Section 4.4 of the SAR provides details of the light impact assessment conducted for the Browse LNG Precinct. Within this Section, **Figure 4.4.3.5** to **4.4.3.7** provides viewshed analysis of the likely direct light emanating from the Precinct considering natural elevation but not taking into account the degree to which natural screening elements such as trees and scrub will limit visibility. This section also includes discussion on the likely impacts of skyglow on receptors on the Dampier Peninsula.

The overall conclusions of the impact assessment were that the most significant light impacts will be in close proximity to the Precinct at informal camping grounds and in the nearshore James Price Point coastal area. Glimpsed, distant views, in the instance of flaring events, from nearfield receptors such as Willie Creek and Coconut Wells are possible. Possible skyglow may be evident from these and more distant locations such as Broome.

The Department of State Development (**DSD**) and commercial proponents will continue to engage with tourism and other related business operators on Dampier Peninsula to evaluate means to reduce the visual and light impacts of the Precinct. As part of the derived proposal process, commercial proponents will be required to prepare a Visual Amenity Management Plan, primarily focussed on reducing the visibility of their developments to people in the James Price Point coastal area and broader Dampier Peninsula. This will include measures to reduce light spill and skyglow from their developments.

Generic Question ID: 1222 Sub ID [222] Raised by [S222 Q2846]

This development will pose a serious threat to the Kimberley's tourism industry which is a major component of the major local economy. The tourists spend money locally but a Commonwealth Bank report has found that 78% of mining salaries earned in the northern WA communities of Karratha, Kununurra and Port Hedland, are not spent in the region (because of the fly-in fly-out roster).

The State Government acknowledges the significant contribution made by the tourism industry to the regional economy of the Kimberley. Accordingly, Tourism WA and the Department of State Development commissioned

a Tourism Impact Assessment (**TIA**) as part of the Strategic Assessment process for the Browse LNG Precinct. The TIA concluded that tourism in the Kimberley and the Browse LNG Precinct could co-exist. It is also noted that tourism and mining had co-existed in the Kimberley since 1950s.

While the construction workforce at the Precinct will be largely comprised of FIFO workers, there are still a number of ways in which the local and regional economy will benefit. A key objective of State Government in establishing the Precinct is to provide opportunities for local employment and economic development. The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry. Subsequently, the local manufacturing and construction base will potentially grow through contracting to supply goods and services to the Precinct. This would result in flow-on benefits of increased business income and an increase in the capacity of local businesses to deal with large clients and projects.

The development of the Precinct also provides significant scope for the region to diversify and considerably increase its contribution to the State's economy, including in tourism-related sectors such as retail, hospitality and aviation. For example, as aviation officials in the TIA emphasised, development of the Precinct would increase air travel into the region, which would benefit tourism. In addition, it is likely that new employment opportunities with Broome-based contractors (for example laundry, catering, transport and trades-people) may generate an expanded customer base for the region's non-Precinct related businesses (such as retail and hospitality) and could also include opportunities for the establishment of new Indigenous business ventures. Along with increased spending associated with new employees and their families, an increase in average individual incomes from direct employees and contractors would also suggest a likely increase in local spending.

Education, training and employment opportunities associated with Precinct employment would also generate a pool of skilled people in the region. Skills acquired through training for jobs on the Browse LNG Precinct can also be applied to non-project industries such as construction, which can assist in addressing the lack of skilled workers noted by many Broome businesses.

The Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a number of strategies aimed at improving service provision within the region, and maximising the benefits associated with the Precinct for the local community.

To assist with the delivery of the necessary social and economic management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1308 Sub ID [195] Raised by [S195 Q974]

Part 5 Section 4.7.1: Why is Woodside trying to buy a hotel in Broome - are they entering the hospitality industry now? We have already lost to lots of short stay accommodation for workers. How can this be good for tourism? Have you noticed the huge tourism industry in Karratha and Port Hedland? No! That is because there isn't one. Why do all our coastal towns have to go down this same path? "Dollar for dollar, the benefit the region can expect from the LNG plant is less than it earns now from tourism," lead researcher Michael Hughes, of the university's Sustainable Tourism Centre, said. A report released last year by finance consultants JPMorgan found that areas other than the humpback whale breeding zone could also be suitable for the gas hub.

Responses to the following elements of this submission can be found at:

- Short stay accommodation: see GQID 1305 and GQID 408.
- Tourism in Karratha/Port Hedland vs. Broom: GQID 745.
- Michael Hughes claims: GQID 801

The claim made in the submission that Woodside are attempting to purchase a hotel in Broome, is false. The managed-access workers camp near the Precinct will meet most of the direct workforce accommodation needs for the construction phase.

In relation to the comment advised to be sourced from the JP Morgan report, **Part 3, Section 2.6** of the SAR reports that based on extensive whale surveying, the selection of James Price Point has avoided whale calving areas which are predominantly located further north.

Generic Question ID: 1346 Sub ID [132] Raised by [S132 Q3323]

Broome and the Dampier Peninsula is a booming tourist area and provides a unique blend of commercial, Indigenous and ecotourism opportunities for a growing national and international market. The proposed development threatens the existence and development of this industry and the costs to the tourism market in both the short and long term has not yet been identified.

The State Government acknowledges the significant contribution made by the tourism industry to the regional economy of the Kimberley. The Strategic Assessment Report (**SAR**) discusses the role of tourism as a key economic contributor and employer in the Kimberley region. In recent years Broome has become a high profile tourist destination and is perceived as an access point for the Kimberley with tourists travelling on for extended luxury Kimberley coastal cruising, adventure based land based tours, Indigenous and eco-experiences and as a service town to many free and independent tourists.

The importance of tourism for Broome and the Dampier Peninsula prompted the Department of State Development to commission a Tourism Impact Assessment (**TIA**), which was undertaken by Tourism WA and conducted by Kadar Pearson and Partners (**Appendix D-5**). The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation the means to maximise the potential benefits, and mitigate and manage potential negative impacts. The potential impacts on tourism are summarised in **Section 4.7** in **Part 5** of the SAR. In addition, the Aboriginal Social Impact Assessment (**ASIA**) undertaken by the Kimberley Land Council (**KLC**) (**Appendix E-3**) included a discussion of potential negative and positive impacts on Indigenous tourism ventures (see **Sections 3.4.12** and **3.5.3** in the ASIA).

As indicated in the SAR, the main finding of the TIA is that the Precinct could co-exist with tourism although it may also negatively impact some tourism values. For example, visitors to Indigenous tourism operations in the Dampier Peninsula expect a remote natural experience and may be impacted by direct lighting, light spill from infrastructure lighting, the high pressure emergency flare (during flaring events), and sky glow though surrounding vegetation.

The TIA conducted for the SAR was at the strategic level. Further analysis of potential impacts on tourism will be included in the project-level Social Impact Assessments undertaken by commercial proponents. In addition, the actual impact of the development on the tourism industry will be dependent upon implementation of management measures prior to construction of the Precinct and on an ongoing basis.

The Tourism Management Strategy is the key management measure to address the potential impact of the Precinct on the destination's image. The objective of the strategy, led by Tourism WA, will be to maintain or enhance Broome's image as a tourist town of national and international significance and its distinctive character.

In addition, several management measures outlined in the SAR will address tourism and tourism operators specifically in the Dampier Peninsula, as follows:

- Development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) will provide a mechanism for the people of the Dampier Peninsula to consider the future of tourism in the Dampier Peninsula. This Strategy will consider the way the Dampier Peninsula is accessed and promote the conservation of environmental and heritage values of the area. The Strategy, along with other mechanisms such as the Cultural Heritage Management Plan, will also provide appropriate mechanisms to address possible impacts of visitors accessing the area on cultural heritage, including registered and unregistered rock art and other sites on the Dampier Peninsula.
- Commercial proponents will be required to develop a plan to manage the interaction between a large scale construction workforce and the communities of Broome and the Dampier Peninsula. This will include policy and procedures to manage access to Broome and the region by the construction workforce at the accommodation camp, including access to recreational fishing and tourism in the region. Any recreation activities undertaken on rest days will be actively managed (e.g. guided tours with Aboriginal tour operators and/or fishing tour operators), which will benefit local Indigenous tourism operators whilst managing uncontrolled visitor access. The managed-access construction camp and workforce behaviour policies will also manage potential impacts to the region's tourism brand.

To assist delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1353 Sub ID [132] Raised by [S132 Q3340]

The coastal habitats that will be destroyed or severely degraded (including monsoon vine thicket, reef, seagrass beds, sand dunes, cliffs and woodlands)underpin aboriginal cultural connection to country, social and recreational values and tourism for the region.

As with all major resource development projects, there are ecological and environmental implications of the proposal that in turn have the potential to impact on social factors. The State Government acknowledges the significance that many species of fauna have to Indigenous and non-Indigenous Australian culture. The interdependency of human beings and the natural environment to which this submission refers is difficult to quantify in a social impact assessment. One reason for this is that Western scientific approaches tend to analyse various components of the environment separately (for example geology, tides, climate, flora, fauna). Traditional Owners have often questioned whether such assessments are capable of taking into account the interconnectedness of species, humans, landscape and spirit beings that is a central concept in Indigenous Australian worldviews. This in part is what drove the State Government to conduct both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**) as part of the Strategic Assessment process for the Browse LNG Precinct.

While the Strategic Assessment Report (**SAR**) follows the standard structure for a multidisciplinary report, with separate volumes dealing with environmental and social impacts, the social implications of environmental impacts play a significant role in framing and defining the impacts that were discussed. For example, noise and waste discharges and the environmental impacts on commercial and recreational fishing, aquaculture, pearling and tourism, are all key impacts that are discussed both from social and environmental perspectives (**Part 5** of the **SAR**). The connection is also captured in the way changes in an environment could affect people's perceptions of an area's local amenity and sense of place. Framing of social impacts around these environmental impact factors implicitly recognises the interdependency of humans and their environment.

The State Government is committed to the delivery of benefits to West Kimberley communities, and ensuring that the potential negative socio-economic and environmental impacts of the Browse LNG Precinct development are managed. This will require both successful implementation of the management measures and effective monitoring that allows these management measures to be changed as the need arises.

There are a number of mechanisms that will assist with delivery on the commitments made in the SAR. For example, the proposed Precinct Governance structure will provide a mechanism to ensure these management measures are implemented. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. Stakeholders representing a range of interests will be part of this management structure. This includes representation of Traditional Owners in all Browse oversight groups, including the Precinct Control Group. Through this mechanism Traditional Owners can have significant input into the environmental and social management associated with the Precinct.

The State Government will also establish lease conditions and monitor the development of the Precinct to ensure that commercial proponents comply with the environmental and socio-economic management measures described in the SAR. Monitoring information will be made publicly available in annual reports. The State Government and commercial proponents will also seek feedback from the community on a regular basis to determine if changes to mitigation and management are required.

There are procedures in place to ensure that the environment is protected from degradation. This protection applies to the design, construction, operation, decommissioning and rehabilitation of the Browse LNG Precinct site. This includes a range of applicable State and Commonwealth environmental regulations, as well as the management measures outlined in the SAR (**Parts 3** and **4**) aimed at minimising the environmental impact of the Precinct development. The Precinct will also be required to meet any Ministerial conditions that may be attached to State and Commonwealth environmental approval. Finally, the Department of State Development will prepare and implement a closure and decommissioning strategy for the Browse LNG Precinct to provide a timely and consistent approach to removal or retention of plant and infrastructure, rehabilitation of disturbed areas and identification of contaminated areas. When the land is no longer needed, it will be returned to the Traditional Owners, fully remediated.

If the project is approved, the ministers may choose to attach conditions to the approval. Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval. Compliance and performance reporting conditions are also expected to be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Regulators will assess and review audits to check for compliance against conditions. Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence.

Generic Question ID: 1426 Sub ID [120] Raised by [S120 Q3400]

ENGO Submission **Part 5 Section 4.7.3.1** Sensitivity and Resilience:

The issue of how community sentiment toward the proposed development will impact on social cohesion is not reflected in the SIA.

The Tourism Impact Assessment' (**TIA**) (KPP Business Development, 2009) also notes that: 'It will be the function of the Social Impact Assessment study to measure and report on how the issues of community sentiment toward the proposed development will impact on social cohesion (p. 84)'. This is not evident though from the SIA report.

Proposals for large-scale resources development in any community have the potential to impact on community cohesion. The potential for the project to reduce community cohesion in Aboriginal communities was a key focus area in the Aboriginal Social Impact Assessment (**ASIA**) (**Appendix E-3**).

Whilst changes to social cohesion were not a key impact of concern identified during the strategic assessment, changes in related variables will be captured as part of social monitoring related to community identity and sense of place. As outlined in the Strategic Social Impact Monitoring Plan (SAR **Part 5**, **Section 5**), a management objective is to retain the unique character and 'Sense of Place' associated with Broome during the development of the BLNG Precinct. To this end, a Broome 'Sense of Place' Management Strategy will be developed. This will include relevant targets and indicators, including a target of "no significant negative change in monitoring surveys". Guidelines to manage Broome's identity and 'Sense of Place' will also be developed.

Generic Question ID: 1427 Sub ID [120] Raised by [S120 Q3401]

ENGO Submission **Part 5 Section 4.7.3.1** Sensitivity and Resilience:

Findings on housing affordability should be included in the main body of the SAR.

It also needs to be stated in the TIA that 73% of respondents thought that housing affordability would be exacerbated by the LNG Precinct 153 (KPP Business Development, 2009: p. 96). The visitor survey also indicated there will be damage to the Kimberley's brand, with a third of respondents (particularly international visitors) saying they would be less likely to return to Broome if there is damage to the Kimberley coast (KPP Business development 2009: p. 1221). These findings from the TIA should have been reported in **Part 5** of the Strategic Assessment Report.

Due to the large volume of information generated in the development of the strategic assessment, choices had to be made about what to include in the main body of the report. Whilst these particular findings were not included in **Part 5** of the SAR, it was still included in the SAR and was made publicly available (**Appendix D-5**).

4.8 Relevant Factor: Sports, Recreation and Land Use (including Recreational Fishing)

Generic Question ID: 347 Sub ID [34, 217, 226, 131, 235] Raised by [S34 Q312]

The bounteous reef at James Price Point has always been among the favoured of fishing and camping places for many Indigenous Broome locals. As the town of Broome expands, such places of traditional food gathering and recreation within reach of town are becoming scarcer and scarcer.

The significance of customary fishing to Indigenous people is acknowledged in the Strategic Assessment Report (**SAR**). Many varieties of reef, near-shore and offshore fish species are caught by line, spear and/or trapped in man-made or natural fish traps in the area of the proposed Precinct. As discussed in the SAR, James Price Point has a number of features that make it particularly attractive to customary fishers. It has a relatively large reef system associated with it, which extends south of the point, potentially into the area that is likely to be required for use by the proposed BLNG Precinct.

This issue was explored with Indigenous people in the engagement conducted for the Indigenous Impact Report and Aboriginal Social Impact Assessment (**ASIA**). In addition, Dr Guy Wright was commissioned by the Department of Fisheries to provide a Customary Fishing Report entitled "Impact of the proposed Kimberley LNG Precinct on Customary Fishing in the Vicinity of James Price Point" (Big Island Research, 2010). In this report, the reef is described by customary fishers as being "… really alive: it has a lot of coral and shellfish, clams and trochus." It has the advantage of being accessible for fishers without the need for a dinghy or boat.

Facilities at the Precinct would restrict access and much of the fishing done is land based or close to shore. It can be reasonably predicted that development of the Precinct is likely to affect customary fishing in the immediate vicinity of the Precinct just south of James Price Point. However, it is likely that customary fishing would not stop as a result of the development, and that it would continue elsewhere along the coast.

The State Government recognises that there are a limited number of fishing locations along the coast, and has developed management measures to ensure that the cultural values associated with fishing activities can be

maintained. Management measures relating to the protection of customary fishing values are described in **Part 5, Section 3.8.1.5** of the SAR. There are a range of management measures that will be implemented, from those that protect the marine environment (e.g. Invasive Marine Species management) to those that restrict recreational fishing access for visitors and Precinct workers (e.g. managed access construction camp and the Recreation Management Strategy). Protection of "exclusion zones" where only Indigenous residents of the Dampier Peninsula are permitted to harvest wild resources will also be explored in the development of the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan).

Predicted impacts on customary fishing are summarised in **Part 5, Section 3.8** of the SAR. More detailed information on customary fishing can be found in the Customary Fishing report, which is online at: http://www.fish.wa.gov.au/docs/op/op093/fop93.pdf. In addition, a summary of information on the use and value of wild resources to Indigenous people is available in the Indigenous Impacts Report and ASIA (SAR **Appendix E**).

Generic Question ID: 680 Sub ID [75, 120, 124] Raised by [S120 Q1325]

ENGO Submission: **Part 5 Section 4.8.1** Current Knowledge. Current knowledge of potential impacts to recreational use is acknowledged as being inadequate. 'It is not possible to accurately describe the nature and extent of recreational use (i.e. volume and frequency of activity by locality and season) in the Broome and Dampier Peninsula areas due to the absence of current survey data on recreational and tourism use in this area'. This surely begs the question - why hasn't such a survey been carried out for the SIA, since recreation and tourism are such key components of the Broome economy and lifestyle? There have also been insufficient surveys of recreational fishing activity. The report says: 'It is not possible to accurately describe the nature and extent of recreational fishing activity (i.e. volume and frequency of activity by locality, fish species and season) in the Dampier Peninsula due to the absence of current survey data on recreational fishing in this area'. The Fishing Industry Impact Study 158 (Econsearch, 2009) is therefore largely based on interviews and anecdotes - and not 'science-based' (**p. 291**). This is not a strong basis upon which to assess the likely impacts to recreational fishing activity.

Part 5 of the Strategic Assessment Report (**SAR**) notes that it " is not possible to accurately describe the nature and extent of recreational use (i.e. volume and frequency of activity by locality and season) in the Broome and Dampier Peninsula areas due to the absence of current survey data on recreational and tourism use in this area" (**p. 4-145**). At a strategic level of assessment, it is not necessary to have such a detailed profile of recreational use.

More detailed information will be needed at the project-level of assessment. As described in the SAR (**Part 5, Section 5.5.3.** Management of Impacts of Recreational Use), the following management mechanisms are recommended to address the issue of potential impacts on recreational uses:

- Commercial proponents are to prepare a management plan, in consultation with relevant stakeholders, that provides a clear understanding of the recreational use of the area surrounding the Precinct and the potential displacement of these activities. The plan will also develop a set of recreational management measures, consistent with the Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan), to manage the commercial proponent's direct and indirect recreational impacts.
- In collaboration with Traditional Owners, State and Local Government are to investigate managing access to the Dampier Peninsula and alternative recreation areas that support the further development of the Dampier Peninsula Planning Strategy.

Use of stakeholder perceptions is a legitimate source of information in the assessment of impacts; however, it is typically not the only source of information. The Department of Fisheries commissioned a Fishing Industry Impact Study (**FIS**) as part of the SIA (Big Island Research, 2009) which forms the basis for the following section. The SAR acknowledges that the study was based on interviews with representatives of the commercial and recreational fishing community and is largely based on qualitative and anecdotal information. As such, the report is not highly science based and reflects the impacts expected by the people interviewed at an early stage in the Precinct development process. It presents mitigation strategies suggested by fishers, rather than based on an analysis of impact.

Due to the limitations of the FIS, management and monitoring of impacts will be critical. In addition, management activities must be adaptive to changing conditions. Examples of management measures that will address potential impacts on recreational fishing include:

- Proponents of derived proposals will be required to prepare and implement an Invasive Marine Species

Management Plan (**IMSMP**), to the satisfaction of the Western Australian Minister for Environment, to minimise the risk of introducing invasive marine species (**IMS**) to Australian waters during the life of the Precinct.

- The State government will prepare and implement a Management Plan for Roebuck Bay and on-going Management of 80 Mile Beach. In addition, the implementation of Dampier Peninsula Land use and Infrastructure Plan will address the recreational fishing access and facilitate the establishment of additional nature reserves and/or national parks.
- The State government will also prepare and implement an Engagement Plan to manage all interactions with public users of the marine and terrestrial environment in and around the Precinct, including recreational users and tourism operators.
- Ensure planning and layout of the BLNG Precinct is subject to appropriate strategic land use buffer zoning in alignment with State Planning Policy (Industrial Buffer Policy) and EPA Requirements (Guidance Statement No.3) to ensure appropriate separation distances between industrial and other land uses.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 681 Sub ID [120] Raised by [S120 Q1326]

ENGO Submission: **Section 4.8.4.5** Potential Impacts on Sport and Recreation due to Light Emissions [p296]. 'The marine environment adjacent to James Price Point is primarily accessed by cruises that tend to travel past the Dampier Peninsula at sunset when cruise patrons focus on the sunset and away from the Dampier Peninsula'. They might not if there is a huge LNG precinct on the coast!

Part 5, Sections 4.4.3.3 and **4.4.3.4** of the SAR are the primary sources of information on the impact assessment associated with the visual and light impacts of the Browse LNG Precinct. **Table 4.4.2** of the SAR describes the movement of cruise vessels in the following way '*Cruise vessels operate in the area generally between March and October, during daylight as well as the hours of darkness*.' **Section 4.4.2.2** also notes that the cruise vessel patrons are of high sensitivity due to their expectations for a high level of visual amenity during their journey.

In relation to cruise vessel patrons, the light and visual impact assessment concludes that persons aboard the cruise vessels are likely to view the physical infrastructure and lighting associated with the marine infrastructure (visible up to 25km away) and taller elements of the LNG facilities such as columns (visible up to 20km away). The high pressure emergency flare may be visible up to 55km away but at this distance, this is likely to be only evident during flaring events.

The Department of State Development (**DSD**) has undertaken measures at a strategic level to minimise visual impacts associated with the coastal users noted. These include siting the majority of LNG infrastructure approximately 1.5km from the coast, behind the dune formations. In addition, DSD intends to retain the majority of this dune formation with the exception of areas intended to accommodate the shore crossing and pipeline corridors. These measures should assist in reducing, but not avoiding, visibility of the Precinct to coastal users. At a project level, commercial proponents will be required to prepare a visual amenity management plan primarily focused on reducing the visibility of their developments to people utilising the James Price Point coastal area and broader Dampier Peninsula.

Generic Question ID: 1102 Sub ID [157] Raised by [S157 Q2459]

WAFIC Submission: While the draft SAR notes that the improved access to the Dampier Peninsula and the 'significant natural population growth' is 'likely to increase the number of people visiting the Dampier Peninsula and using the recreational facilities in the region', a rigorous discussion about risks to fish stocks associated with an increase of recreational fishing is absent. This needs to be addressed and strategies to mitigate any impacts (for example from the construction and operation workforce) need to be identified. We do not support recreational fishing from commercial oil and gas infrastructure and/or vessels.

As discussed in the Strategic Assessment Report (SAR), one of the potential impacts of the projected 'natural' population growth in Broome is that recreational fishing pressures can be expected to increase, negatively impacting fishing stocks. Key informants consulted for the Aboriginal Social Impact Assessment (**ASIA**) in particular were concerned about this impact (**Appendix E-3, Section 3.4.2**). Although not focused specifically on the potential impacts from recreational fishing pressures, the potential impacts of the Precinct development on fish species was discussed in more detail in **Part 3** of the SAR.

The focus of the Strategic Assessment is to address potential impacts on fish stocks arising from the Precinct,

rather than addressing the broader issue of a rapidly growing population in Broome. The impact of Precinct development on fish stocks is known in sufficient detail to develop management measures at the strategic level. It should also be noted that the Foundation Proponent, Woodside, prohibits fishing from its vessels and installations as part of its health, safety and environment policy. This is a standard practice in the oil and gas industry.

The State Government has identified a range of management and mitigation measures to holistically address the key impacts to marine users and the marine environment. In relation to concerns regarding a potential reduction in fish stocks as a result of over-fishing by construction workers, existing fishing activities will be protected by the operation of a Managed Access Construction Camp close to the James Price Point Precinct. Any recreation activities undertaken on rest days will be actively managed (guided tours with Indigenous tourism operators and/or fishing tour operators, for example). The Dampier Peninsula Planning Strategy (formerly the Dampier Peninsula Land Use and Infrastructure Plan) (**Part 3**, **Section 3.4.5)** would also play a role by helping to address the potential impacts of a cumulative increase in recreation and tourism in the Dampier Peninsula.

The main measure to address the socio-economic impacts to marine users is the fishing industry mitigation and management strategy. This strategy will minimise, mitigate and manage the impact of the Browse LNG Precinct on marine resources including commercial, recreational and customary fishing activity in the James Price Point area. This will be developed in consultation with the commercial and recreational fishers and tourism operators. The State Government will also prepare and implement an Engagement Plan to manage all interactions with public users of the marine and terrestrial environment in and around James Precinct Point, including recreational users and tourism operators.

There are also a range of management measures that will ensure the health of the marine ecosystem is maintained. While the above measures focus on the socio-economic impacts, there are also a range of environmental impacts that will be managed, particularly through those strategies relating to Marine Ecosystem Integrity (**Part 3**, **Section 2.8**).

To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1239 Sub ID [212] Raised by [S212 Q1120]

Part 5 Section 4.8.4: The Impact on Recreational Fishing due to noise and vibration is acknowledged to be extensive, but as with Aboriginal Heritage issues, fishing is seen as being of secondary importance to the BLNG project.

Impacts on recreational fishers as a result of the development of the Browse LNG Precinct were an important consideration in the Strategic Assessment process. Recognising this, a Fishing Industry Impact Study (**Appendix D-4**) was commissioned as part of the assessment, which outlined the concerns of fishing industry stakeholders. As described in the Strategic Assessment Report (**SAR**), the construction and operation of the Precinct will alter the existing noise environment, so there is the potential to impact on the amenity of recreational users (including recreational fishers) in the James Price Point coastal area. There may also be associated noise and vibration issues impacts associated with marine aspects, which could have impacts on the distribution of recreation fish species (e.g. sailfish).

As with any impact assessment, there are a range of values that must be considered and the potential impacts must be weighed across these values.

The State Government has proposed a range of management measures to ensure that recreational values are protected to the extent possible. As noted in the SAR (**Table 4.8-3**), the residual impact of noise and vibration on recreational fishing is expected to be of very low significance after management measures are implemented. However, given that recreational fishing covers a broad geographical area and is not limited to the James Price Point coastal area only, the Browse LNG Precinct development is not likely to result in significant impacts on recreational fishing activities across the region. Recreational fishers would be excluded from areas where the key noise generating activities within the Browse LNG Precinct occur, limiting amenity impacts on these users. It can also be expected that fishers will choose other locations with greater amenity, given that the marine environment in the immediate vicinity of James Price Point is not determined to be unique in terms of fish species or catch.

Generic Question ID: 1240 Sub ID [212] Raised by [S212 Q1121]

Part 5 Section 4.8.4.11 Vessel Movements**:** The report acknowledges significant impact on the movement of recreational boats, but as with point 4.8.4.9, gives this fact no importance. If this LNG was processed in the Pilbara facility, there would not need to be anything like the disturbance to recreational fishing that will occur if

the JPP construction goes ahead.

As acknowledged in the SAR, the development of the Browse LNG Precinct will impact on recreational fishing areas located in close proximity to James Price Point. However, given that recreational fishing covers a broad geographical area and is not limited to the James Price Point coastal area, the residual impacts of the Precinct development are predicted to be low at a regional level.

In the SAR a range of management and mitigation measures is proposed to address each of the key impacts to marine users, including recreational fishers. The main measure to address the socio-economic impacts to marine users is the fishing industry mitigation and management strategy. This strategy will minimise, mitigate and manage the impact of the Precinct on marine resources including commercial, recreational and customary fishing activity in the James Price Point area. This will be developed in consultation with the commercial and recreational fishers and tourism operators.

There are also a range of management measures that will ensure the protection of the marine resources on which recreational fishers depend. For example, commercial proponents at the Precinct will be required to demonstrate application of best practice measures to minimise the impacts on coastal processes from onshore and near shore marine infrastructure. The management of Invasive Marine Species (**IMS**) is an important measure to ensure the health of the marine ecosystem is maintained. IMS will be managed in accordance with international, State and Commonwealth legislation and through the implementation of best management practices.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

As with all industrial developments, even after best management practices are employed and impact management measures are implemented, there will be some residual impacts on social and environmental values due to the development. While the type and significance of impacts would have been different if a different site were selected, this does not necessarily mean recreational fishing would not be impacted. In the case of the Pilbara, recreational fishing is a popular activity in the region, thus even if an alternative site along the Pilbara coast was selected, this does not necessarily mean the impact on this activity could have been avoided.

Generic Question ID: 1414 Sub ID [114] Raised by [S114 Q2163]

While apparently only a small area of the coast will be excluded to local people, diving won't be a safe recreation option there any longer.

A commitment has been made by State Government that public access to James Price Point would be maintained from Broome via the Precinct access road and an unsealed track around the Precinct itself.

An exclusion zone for recreational activities, including diving, will be required in the vicinity of the Browse LNG Precinct and its port waters. To ensure that recreational values are protected to the extent possible, the exclusion zone will only be as large as is required to protect the health and safety of the public.

4.9 Relevant Factor: Human Health

Generic Question ID: 268 Sub ID [64, 197, 120, 198, 212] Raised by [S64 Q691]

DEC Recommendation 47 (16): BTEX emissions, particularly during condensate loading, need to be verified. Ambient monitoring of BTEX levels should be undertaken to ensure ambient levels are below acceptable criteria. If benzene and toluene levels are above acceptable criteria, then further emissions reductions controls need to be considered.

Discussion: The report indicates that benzene and toluene will exceed current ambient air or modelling criteria outside the buffer zone. This is a significant concern and needs further investigation with consideration of subsequent emissions reduction controls. It is assumed that best practice emissions controls applicable to air toxics will be applied to benzene and toluene emissions.

It is inherent in the nature of a strategic assessment that precise details of future proposals may not be known. Consequently, the SAR has used conservative estimates and has identified emissions of air toxics such as benzene and toluene as a significant environmental factor for the Precinct, with potential to lead to elevated ground-level concentrations beyond the Precinct buffer zones. As such, all Derived Proposals proceeding from the SAR must demonstrate that this environmental factor is managed so that local and regional air quality standards are maintained. Implementation of best practice principles at the design stage of a Derived Proposal will ensure that emissions are eliminated or minimised.

The air quality management plan for the Precinct will address ongoing management of any residual risk

identified by a Derived Proposal. The air quality management plan will include monitoring of emissions to confirm that the assumptions of any evaluation of a Derived Proposal are justified, and ambient monitoring as appropriate to confirm that air quality standards are maintained.

Generic Question ID: 92 Sub ID [2, 25, 197, 107] Raised by [S2 Q49]

The proposed industrial precinct near James Price Point will pose an unacceptable risk to public health of nearby settlement.

The EPA provided advice under Section 16e of the *Environmental Protection Act 1986* on short-listed sites for the proposed Kimberley LNG Precinct in Report 1306 of December 2008. The EPA found that of the sites considered on the Dampier Peninsula, James Price Point was the least likely to be environmentally constrained, in part because of the greater distance from permanent human settlements. Therefore, one factor in favour of James Price Point is in fact its relative isolation and distance from permanent human settlements, such that the risks to human health and well-being can be minimised and managed.

With regard to risks associated with exposure to air emissions, the Air Quality Assessment of the proposed Precinct, conducted as part of the SAR, used a computer model of air emissions to investigate potential impacts on air quality at nearby human settlements including Broome, Beagle Bay, Coconut Wells and the Country Downs and Kilto Stations. Predicted concentrations of the pollutant emissions identified in the study were not large compared to national and international air quality criteria, and air quality standards for the protection of human health and well-being were not exceeded at these nearest population centres as a result of the proposed development. The results of regional modelling confirmed that the Precinct is predicted to make a relatively small contribution, with cumulative regional concentrations dominated by the impacts of fires.

Generic Question ID: 94 Sub ID [39, 205, 215] Raised by [S39 Q357]

Given the importance of health, this appears to be an area with a significant lack of quality investigation. There is a huge weight of responsibility being placed on the BLNG commercial proponents to mitigate and manage the potential health impacts from the Precinct development. Further, it is difficult to excuse the lack of data being presented about the impacts of industrial development on the health of Pilbara communities. After forty or so years of development in that area, why is the State unable to have access to quality information that may indicate what health impacts may be in store for West Kimberley residents? There should be a thorough process followed to establish health baseline data for the LNG Precinct.

Human health impacts are discussed in the SAR **Part 5**, **Section 4.9**, which summarises the state of knowledge of population health in the Kimberley region. The LNG Precinct, as an industrial area, will have a limited standing population and will not be expected to include vulnerable members of the community. Further detail relating to health impact assessment has been included in **Section 4.7.7** of the Response to Submissions Summary Report.

Wider and ongoing monitoring of the status of human health in the region will require input and active support from local and regional health professionals and local and state government services, as well as local industry and would cover the full range of industrial and other emissions.

With respect to air emissions from the LNG Precinct, **Tables 2.8-7** to **2.8-9** of the SAR air quality assessment demonstrate that air quality standards are not exceeded at the sensitive receptors representing population centres and residences.

Generic Question ID: 710 Sub ID [120, 156, 222] Raised by [S120 Q1489]

ENGO Submission: With respect to air quality, the SAR does not adequately account for or assess impacts of the LNG chemicals on the health of humans and the environment. The Strategic Assessment Report does not include a dedicated Health Impact Assessment and there are no plans to monitor the impact of LNG pollution on human and environmental health.

An additional review of health impacts has been incorporated into **Section 4.7.**7 of the Response to Submissions Summary Report which will supplement broader health impacts which are addressed in the SAR Social Impact Assessment (**Part 5 Section 4.9**).

Air quality is covered in **Part 4**, **Section 2.8** of the SAR including the assessment of air quality impacts against relevant Australian and international standards. These standards are set based on human health as well as environmental health.

Forward approvals processes under the *Environmental Protection Act 1986*, such as the Air Quality Management Plan to be prepared and implemented by proponents of derived proposals (**SAR Part 4 Table 2.8-12**) and Part V licensing requirements will determine specific air emissions monitoring to be undertaken by

future proponents within the BLNG Precinct.

Generic Question ID: 748 Sub ID [197, 114, 102] Raised by [S197 Q1723]

Part 5 Section 4.9.4: The SAR states that "Healthy adults and children have not been reported to suffer serious effects from short term exposure". By short term exposure, does this mean people who are in Broome only for a short time? Emissions will be released into the air continually and they do have serious effects. The potential health effects of chemical emissions (many of which have not been tested) are going to be huge. Children are especially at risk. More testing of chemical (especially combinations of them) emissions needs to be done before approval for the Precinct is given.

The purpose of the SAR is to identify these emissions at a strategic level and show, where possible, that they will not result in or contribute to unacceptable impacts on local and regional air quality. The modelling undertaken for the SAR was based on a full 12 months of historic winds that include coastal winds. This work has shown that the Browse LNG Precinct will not contribute to any exceedances of air quality standards at Broome (including carcinogenic gases such as toluene). Furthermore the modelling shows that the Browse LNG Precinct won't contribute to the exceedance of air quality anywhere, except for benzene and toluene adjacent to the buffer zone and hydrogen sulphide from an odour (not health) perspective. It should be noted that, although the PM2.5 criteria was exceeded this was due to bushfires with the Precinct contributing no more than 2% of the criteria. Buffer zones around the Precinct are designed to separate the general population, including the workforce while off-duty, from direct contact with emissions.

The context of the phrase 'short term exposure' (**Part 5**, **Section 4.9.4.1**) was with respect to airborne particulates (PM10) and the preceding sentence defined long term exposure as being exposed for 'many years'. In this context 'short term' can be taken to be in the order of months. As shown in Table 2.8-5 and Table 2.8-7 the maximum increase in PM10 was 5% (Kilto Station) which is 4% of the relevant NEPM criteria (**Part 4**, **Section 2.8**). As shown in Figure 2.8-12 the predicted increase at Broome was negligible (**Part 4**, **Section 2.8**).

The relatively remote location of the James Price Point site, approximately 30km from the nearest residence and 50km from Broome, serves to provide additional protection to the most vulnerable members of the population, such as children and the elderly.

Generic Question ID: 737 Sub ID [70, 75] Raised by [S70 Q616]

Various historic assessments in WA call for adequate health assessments to be undertaken but these have not been followed up (see p. 13 & 14 of submission for details). At the very least, we need baseline health data, and also real measured baseline air pollutant data. There is concern that if the BLNG project goes ahead, citizens will have no redress in the long term if their health is affected.

The selection criteria employed during the site selection process for the Browse LNG Precinct, placed considerable weighting on limiting proximity to permanent settlements, in order to avoid potential impacts to human health. Accordingly, the option of North Head was rejected because of out-stations being located within 10km of the suggested site. Experience from LNG processing plants near Karratha and Darwin, which are both located within 20km of permanent settlements, indicate that there is likely to be no significant risk to the health of the Broome community, which is located over 45km away from the Browse LNG Precinct site.

Emissions associated with the Browse LNG Precinct will be managed, monitored and responded to through the Air Quality Management Plan. This Plan will assist in ensuring that efficient technologies are used to minimise and monitor air emissions from the LNG facilities during operations. This management plan will include air quality monitoring at appropriate off-site locations, including sensitive receptors and additional areas as determined in consultation with key leaders in the community. Reporting of key substances will be undertaken in accordance with the National Environmental Protection Council's NEPMs, and to comply with Ministerial Conditions and Operating Licences.

Potential impacts to human health more broadly are discussed further in **Section 4.7.2** of the Response to Submissions Summary Report.

The air quality assessment report in **Appendix C-25** is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Appendix_C-25.pdf

Generic Question ID: 946 Sub ID [212, 198] Raised by [S198 Q1821]

Part 4 Section 2.8.2.2: There is concern about the potential impact on human health during the construction and operation of the BLNG Precinct. What is considered to be a safe buffer zone for casual users of the area?

Casual users can safely utilise the area right up to the fence line of the facilities.

The buffer zones relate to land planning activities and meet the requirements of the State Planning Policy

(Industrial Buffer Policy) and EPA Guidance Statement No. 3 Separation Distances between Industrial and Sensitive Land Uses. These policies and the buffers included in the SAR therefore relate to activities requiring planning activities. The buffer zones would not apply to casual use.

Generic Question ID: 430 Sub ID [104] Raised by [S104 Q933]

DoH Submission: The revised Health (Pesticides) Regulations 2011 should be noted and implemented at the BLNG Precinct.

The revised regulations are noted and will be considered in order to inform implementation of management practices and procedures that require the use and storage of pesticides within the BLNG Precinct.

Generic Question ID: 432 Sub ID [104] Raised by [S104 Q934]

DoH Submission: If the commercial proponents conduct any on-site fumigation a wash-down facility (and Quarantine Approved Premise) must be provided. The Proponent should engage with WA. Health's Pesticide Safety and AQIS regarding the requirements for fumigation under the Health (Pesticides) Regulations 2011 and compliance with Australian Standards (AS 2476:2008) - General Fumigation Procedures. AQIS also have their own condition for fumigation. More detailed information is required if fumigation is to be conducted by the proponents. Note there are risks associated with the activities including chemicals spills, leaks, misapplication when handling pesticides and fumigants; BLNG proponents should consider developing appropriate control measures to ensure public health and environmental impacts are minimised during such an events or emergencies.

Prior to the construction and operation activities associated with the BLNG Precinct, future commercial proponents will be required to prepare and implement a Quarantine Management Plan (**Part 4**, **Section 2.7.5**, **Table 2.7-3**) to the satisfaction of the Western Australian Minister for Environment. The Quarantine Management Plan will address on-site management measures, including investigation of the requirements for establishing an on-site fumigation facility, wash-down facility and Quarantine Approved Premise. In order to inform appropriate management practices and procedures relevant to on-site fumigation for the BLNG Precinct, management plans will consider the Health (Pesticides) Regulations 2011, Australian Standards (AS 2476:2008) - General Fumigation Procedures and AQIS conditions, as relevant to activities subject of this proposal. It is expected that WA Health's Pesticide Safety and AQIS will be consulted in order to ensure the Quarantine Management Plan is consistent with the applicable regulations and procedures.

Generic Question ID: 437 Sub ID [104] Raised by [S104 Q935]

DoH Submission: WA Health has previously provided comments on this proposal with regard to mosquito and mosquito-borne disease risks. It is important that the Proponent develops an integrated mosquito and nuisance insect management program and implement suitable control measures before construction or ground works begin. The Proponent must also clearly define its mosquito and nuisance insect management responsibilities and the timeframe within which to complete them. The strategic assessment report document that has been provided does not address the above needs and therefore these still need to be provided to WA Health.

The physical presence of the Browse LNG Precinct could alter the existing environment of the area through the potential emergence of standing waterbodies. Ponded water during construction and operation may provide habitat for the breeding of nuisance insects, such as mosquitoes. It is also noted that during the wet season there are very frequently natural waterbodies formed temporarily. A high level of mosquito numbers in proximity to human habitation is a significant health risk in addition to an impact on amenity. Unmanaged, an increase in mosquito-borne diseases may result in increased pressure on regional health services.

As a result, commercial proponents wishing to locate at the Precinct must prepare a Construction Environmental Management Plan to the satisfaction of the Western Australian Minister for Environment, which addresses the following:

- schedule of construction activities;
- details of the construction methods to be used;
- objectives and targets;
- environmental management;
- environmental training and inductions; and
- environmental monitoring, contingencies and reporting, and stakeholder consultation.

In order to address the potential impacts to surface water identified within **Part 4, Section 2.2** of the Strategic Assessment Report (**SAR**), the Construction Environmental Management Plan may include environmental

management measures such as the following:

- Water quality control for management of potential water quality impacts resulting from construction or operational activities.
- Bunding or other means of containment (such as impervious berms) of hydrocarbon and chemical storages and areas likely to present a contamination hazard.
- Techniques to be used for management of sediment loads and erosion such as revegetation, sediment basins, erosion berms and maintenance programs.
- Collection and treatment of first flush water from paved process areas.
- Discharge of surface water collected from potential contamination areas to minimise surface water quality impacts.
- Minimise the amount of constructed impervious areas as far as practicable (with reference to DoW stormwater manual 2004).

Additionally, the Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, requires commercial proponents wishing to locate at the Precinct to develop and implement a primary health care management plan. This will be done to ensure that the provision of primary health care to the Precinct does not impact on regional social services.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 449 Sub ID [104] Raised by [S104 Q942]

DoH Submission: It is recommended that consideration is given to the implementation of a Smoking Management Plan for the Precinct. Employers can complement legislative bans in enclosed workplaces, by going beyond legislation to provide healthier workplaces for their employees (see submission for additional benefits for workplace and community). 'Supporting Smoke Free Workplaces - A Policy Implementation Guide' provides information on the health effects of exposure to Environmental Tobacco Smoke (**ETS**) and the steps to be taken in order to comply with legal requirements, as well as detailing ways in which organisations can help to encourage and support smoking cessation in the workplace. It offers step by step direction to policy planning and the decision-making process and provides a sample smoke free policy. Implementing a smoke free workplace policy sends a strong message to all staff and visitors that your workplace takes a strong stance on the issue of smoking and exposure to ETS and is committed to providing a healthy, supportive working environment. A copy of the guide is available at: http://www.tobaccocontrol.health.wa.gov.aulworkplace/index.cfm (see submission for recommendations on managing smoking on-site). As implementation of smoking restrictions can result in physical and emotional symptoms of nicotine withdrawal, it is vital that those affected by the policy are provided with information and practical support, which should include access to:

- Nicotine Replacement Therapy (**NRT**) free of charge;
- information resources;
- self help printed materials;
- smoking cessation groups;
- telephone counselling; and
- online resources.

A comprehensive workplace program with cessation support for smokers can be implemented as a component of a workplace healthy lifestyle program which would also include environmental and policy support for healthy eating and physical activity elements.

The Precinct will comply with legislative bans for smoking in enclosed workplaces, and the Department of State Development recognises that there are health benefits of going above and beyond legislative requirements. Due to the focus of the Strategic Assessment Report (**SAR**) on the strategic level impacts, the smoking policies of future commercial proponents have not yet been determined. Lead responsibility for management of health and safety and development of workforce policies at the Precinct has been given to the commercial proponents. The Department of Health's suggestion to implement a Smoking Management Plan for the Precinct will be brought to the attention of future commercial proponents; however, discretion to implement Smoking Management Plans will be given to these companies.

Generic Question ID: 750 Sub ID [197] Raised by [S197 Q1724]

Part 5 Section 4.9.4. Changes in legislation need to be made to the regulatory requirements of industry to manage, report and disclose information regarding the risks associated with chemical emissions to the general public.

Part 5 ,**Section 4.9.4.** Changes in legislation need to be made to the regulatory requirements of industry to manage, report and disclose information regarding the risks associated with chemical emissions to the general public.

Generic Question ID: 752 Sub ID [197] Raised by [S197 Q1751]

Part 5, **Section 4.9.4:** The SAR states that "These wastes may prove toxic to humans." Of particular concern is the use of the word 'may'. What happens if they do prove to be toxic? Will operations cease until human health can be guaranteed? The recent episode of Four Corners detailed the many hazardous effects of the seamline gas 'fracking' in Queensland. Industry is taking no responsibility for widespread loss of livelihood and health effects on the local residents - in fact it is in denial. Will the situation be any different here?

Waste management in Western Australia is controlled under the *Waste Avoidance and Resource Recovery Act 2007* and Environmental Protection (Controlled Waste) Regulations 2004. These prescribe how wastes must be handled based on their potential toxicity. By law, waste from the Browse LNG Precinct will need to be managed in line with these requirements.

The Browse LNG Precinct Strategic Assessment is not related to coal seam methane (which was the subject of the Four Corners episode). Nor does the Strategic Assessment seek approval for any oil and gas extraction activities or contemplate seamline gas fracking.

Generic Question ID: 1084 Sub ID [135] Raised by [S135 Q2515]

Aboriginal mental illness is of a great height within Broome and surrounding communities. Aboriginal people, amongst others, are able to overcome many of their health issues by going back to traditional means of living, living off the land and learning to look after the land. There is concern that this opportunity will be lost and there will be a rise in mental illness, including suicides.

As discussed in the Strategic Assessment Report (**SAR**), mental health rates, including suicide rates, are currently some the most pressing issues within the Kimberley. This is particularly severe for Aboriginal people living in the region (**Part 5, Section 4.9**). Existing negative social conditions, including the prevalence of mental illness, may be exacerbated if the local population is not provided with adequate opportunities to benefit from a project. A primary concern amongst key informants to the Aboriginal Social Impact Assessment (**ASIA**) was that increased access to higher disposable incomes amongst young people would lead to higher rates of substance abuse and potentially increase the already high rates of youth suicide. Participants and youth groups felt that the LNG Precinct could have serious, negative impacts on youth if they are not actively engaged and in particular, given meaningful employment and training opportunities. At the same time, the proposed development was recognised as an opportunity to address entrenched socio-economic conditions, particularly education, training and employment deficits.

In addition, the ASIA emphasised that loss of land or sea country (even if it is limited) can have profound social, cultural and spiritual ramifications, because of the central role the land plays in the lives of Indigenous people. Threats to country, whether through destruction caused by development or through environmental degradation associated with it, cause great anguish and fear. This in turn can lead to problems at the individual, family and community level associated with, for example, alcohol abuse, violence, family breakdown, mental illness and suicide.

A key objective of locating the Browse LNG Precinct in the Kimberley is to maximise and retain benefits for local people, both Indigenous and non-Indigenous. Few areas are as important as Indigenous education and training in shaping the potential effects of the Precinct. Effective management responses in this area will help ensure that Traditional Owners and other affected Indigenous people are able to secure employment and business opportunities associated with the LNG Precinct, which in turn will help them deal with rising living costs, avoid growing inequality with non-Indigenous people, and minimise many potential social costs such as drug and alcohol abuse, rising crime rates, and growing problems with mental illness and youth suicide. Better educational outcomes are also essential if Indigenous people are to establish and operate effective governance mechanisms, which in turn are central to achieving positive outcomes from the LNG Precinct, for example through effective management of benefit packages and effective and sustained Indigenous input into environmental management.

Strategies aimed at improving the education and employment status of Indigenous people include the following:

- implementation of education, training and employment strategies to increase local employment in both construction and operational phases of the Precinct in order to retain benefits and promote residence within the Kimberley;
- implementation by the commercial proponents of an Indigenous Workforce Development Strategy;
- a local purchasing strategy for labour, services, and materials during construction and operation; and
- developing, where relevant, emerging Indigenous businesses.

The present lack of resources to meet mental health needs in the Kimberley was also highlighted in the ASIA, with a recommendation for increased Indigenous mental health funding within the area of impact. Among the measures to address this deficiency is the Broome Social Services Strategy, which will be a whole of Government initiative to address social services deficits in Broome, including accessibility to those services for Indigenous communities on the Dampier Peninsula. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.
In addition, measures to mitigate and manage impacts on health and well-being for Indigenous people are provided for in the land access agreement negotiated with the Traditional Owners.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group and through this mechanism; the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

5 Strategic Social Impact Management Plan (SSIMP)

Generic Question ID: 65 Sub ID [7, 27, 40, 53, 71, 81, 88, 90, 96, 102, 119, 142, 143, 150, 160, 182, 197, 201, 212, 218, 222, 226, 235] Raised by [S7 Q79]

The project will likely result in the same negative impacts on Broome that have occurred in towns like Karratha or Port Hedland - high rentals, inflationary prices for food at grocery stores and an extreme differentiation between the "haves" and the "have nots" i.e. those that work for mining companies and those that do not. Broome will become a mining town and lose its character and soul. It will focus only on making money which is the attitude of those working in other mining towns. There is very little cultural development occurring in these towns because of the transient nature of the workforce. This will have a significantly deleterious impact on a town like Broome with its rich cultural diversity.

The Strategic Social Management Plan in **Part 5**, **Section 5** (http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf) outlines the strategies that commercial proponents are required to put in place to manage their social and economic impact on Broome and the surrounding area and enhance the opportunities.

These strategies are aimed at avoiding many of the impacts that occurred in the Pilbara towns and managing those that do occur. The requirement that the commercial proponents house their construction workforce in a managed-access construction camp and manage their access to Broome and Dampier Peninsula will avoid many of the potential social impacts. A number of other social management measures aim to manage potential impacts such as minimising the number of transient or opportunistic workers arriving in the region and managing those who do arrive.

Broome currently has a highly transient population and this is part of its current community identity. The 2006 census showed that only 65% of Broome's residential population lived at the same address one year before. Even without LNG processing, Broome's population is projected to continue growing strongly, increasing by 84% from 17,100 people in 2011 to 31,400 by 2041. In addition, Broome's population almost doubles at the peak of the tourist season. There are a number of other social management measures aimed at retaining Broome's community identity or 'sense of place' and ensuring Broome retains its status as one of WA's premier tourist destinations.

Generic Question ID: 278 Sub ID [39, 205, 215] Raised by [S215 Q2757]

Part 5 Section 3.4.4.6: To deal with the exacerbation of existing health issues in the Kimberley, it is proposed is to keep the BLNG Precinct workers and residents of Broome and Dampier Peninsula separate (apart from organized visits).

- How will keeping locals and workers apart mitigate the expected increase in health issues within the Aboriginal community itself?
- How will the commercial proponents "manage" worker access to Broome and the Dampier Peninsula?

In response to community concerns around the unregulated impacts of a large scale construction workforce on Broome and the Indigenous communities of the Dampier Peninsula, the Strategic Assessment Report (**SAR**) recommends that commercial proponents operate a managed-access construction camp. This policy of separation was agreed in consultation with stakeholders and the community, as it was seen as the best way to manage the potential social impacts of the workforce on Broome and the Dampier Peninsula.

How will keeping locals and workers apart mitigate the expected increase in health issues within the Aboriginal community itself?

There are a number of ways in which the policy of separation will assist in managing potential health impacts on the Indigenous community. For example:

- Commercial proponents are required to have clear workforce management policies and procedures established to control access to drugs and alcohol and manage worker behaviour when visiting Broome or Dampier Peninsula.
- Compulsory random alcohol and drug testing is a standard feature of resource industry worksites and will limit the prevalence of substance misuse by Precinct workers and any potential flow-on effects to the local community. Although it is likely that a 'wet mess' will be present in the camp, alcohol consumption will be subject to licensing restrictions.
- The health sector is a key stakeholder that will continue to be involved during construction and operation of the precinct, either through potential membership on the Social Management Committee or through another means agreed upon in consultation with this sector.
- Measures to mitigate and manage impacts on health and well-being for Indigenous people would be provided for in the Indigenous Land Use Agreement (**ILUA**) or other land agreement negotiated with the Traditional Owners.

Addressing social service deficits in the West Kimberley, including health services, will also be important. Given the current vulnerability of health and social service provision, the SAR recommends development of the West Kimberley Socio-Economic Strategy. This will be an across government initiative to increase capacity of services such as health, education, child care, counselling, therapeutic and emergency services to prevent further pressure. In addition to addressing short term deficits, this strategy will assist in the longer term to increase the capacity of health and social service provision to accommodate any potential increase demand resulting from development of the Precinct. Commercial proponents will also be required to ensure appropriate primary health care, emergency, security and police services are provided to the Precinct and construction camp without detracting from service provision to Broome.

How will the commercial proponents "manage" worker access to Broome and the Dampier Peninsula?

Internal and external access to the construction camp will be managed to limit the interaction between the construction workforce and the Broome and Dampier Peninsula communities when they are not at work. An access management plan to limit and manage will be the key mechanism for managing worker access to the Broome and Dampier Peninsula. This is a condition of locating at the Precinct, thus preparation and implementation of this plan will be ensured through the proposed governance structure (refer to **Section 2.3** of this document).

Access to recreational fishing and tourism activities in the region will also be managed. Any recreation activities undertaken on rest days will be actively managed (e.g. guided tours with Aboriginal tour operators and/or fishing tour operators). In addition, managing access to the Dampier Peninsula and alternative recreation areas will be investigated in collaboration with Traditional Owners, State and Local Government to support the development of the Dampier Peninsula Planning Strategy.

The effectiveness of this management measure will be monitored as part of the social monitoring program. As noted in SSIMP an adaptive management approach is essential. Social monitoring and ongoing involvement of key stakeholders, including Traditional Owners, will allow management to be responsive to changing needs and conditions. Community feedback via email, hotline or other mechanism will likely also be part of the social monitoring program. As with all management measures, the involvement of the communities of Broome and the

Dampier Peninsula in decisions about what is working and what is not will be important in determining if changes should be made to the mitigation and management measures in order to achieve better social outcomes.

To ensure delivery of the necessary social management measures, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 279 Sub ID [39, 161, 205, 215, 150] Raised by [S150 Q3172]

Why is there no mention as to how health hazards caused by gas processing may be managed? What might these health hazards be?

Human health impacts are discussed in the SAR **Part 5**, **Section 4.9**, which summarises the state of knowledge of population health in the Kimberley region.

Air emissions from industrial facilities such as those proposed for the BLNG Precinct are one set of factors that would be considered in a full health impact study, which would also include exposure to pollutants through other pathways, such as ingestion and contact, and for the full range of physical and social factors that can impact human health. Health impacts are discussed further in **Section 4.7.7**.

Air emissions from the BLNG Precinct and their potential impacts on local and regional air quality are discussed in most detail in SAR **Appendix C-25**. **Section 3.1** lists the emissions of concern for air quality, and the rest of Section 3 describes the significant sources in the BLNG Precinct and outlines how the quantity of emissions is estimated. The potential risk that these emissions present for human health and amenity and for the environment are discussed in **Section 4.1**, and **Section 4.2** outlines various standards and criteria that have been developed to ensure that satisfactory air quality is maintained and human and environmental health are not compromised.

With respect to air emissions from the BLNG Precinct, the SAR air quality assessment has shown that air quality standards are not exceeded at the sensitive receptors representing population centres and residences, with the exception of benzene (representative of air toxic compounds) and hydrogen sulphide. The study identified that there is some risk of elevated concentrations of benzene and hydrogen sulphide in the general vicinity of the proposed accommodation village, beyond the buffer zone to the south-east of the Precinct. As such, all derived proposals under the SAR will be required to show how these emissions will be eliminated or otherwise minimised so that unsatisfactory air quality impacts do not occur.

The process of setting air quality standards incorporates safety factors so that the air quality standards are designed to be well above the concentrations that cause observable effects.

Generic Question ID: 178 Sub ID [39, 212, 207] Raised by [S39 Q377]

"support for small businesses…to provide recreational fishing and other tours for construction workers" (**p.318**). What will happen to tourism ventures in the longer term once the construction workforce has left the precinct locations?

The Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) recommends that commercial proponents wishing to operate at the Browse LNG Precinct implement policy and procedures to manage access to the region by their construction workforces. This includes managing access to recreational fishing and tourism activities in the region. Any recreation activities undertaken on rest days will also be actively managed (e.g. guided tours with Indigenous tour operators and/or fishing tour operators). It is likely that many tourism ventures in Broome and the West Kimberley region may benefit and expand during the construction phase, through these organised activities, along with the increased air services operating to and from Broome.

The operations phase of the Browse LNG Precinct would require a much smaller number of workers than the construction phase. As a result, there would be a significant reduction in demand for recreation tours from the Precinct workforce following the construction phase. However, the State Government is of the view the Precinct can co-exist with tourism in the Kimberley. A Tourism Impact Assessment (**TIA**), which was conducted as part of the Strategic Assessment process, informed the tourism-related aspects of the SSIMP. The extent of the ongoing success of many established tourism ventures in the Kimberley, following the construction phase, will depend on a number of variables including :

- the extent to which the reduction in demand due to the end of construction is replaced by new demand generated by increases in the tourism sector and the population growth expected in Broome;
- the timing of additional commercial proponents establishing at the Precinct as these will produce their own construction phases; and

- whether these small businesses have put in place appropriate strategies to manage the decline in demand expected at the end of the construction period.

On balance, expansion associated with the development of the Precinct, in the size and range of services available in the Kimberley, is expected to facilitate growth in the region's tourism industry over the longer term. The SSIMP accordingly proposes mechanisms to maximise the potential of this expansion, to ensure the future sustainability of tourism as a key industry in the Kimberley.

Generic Question ID: 242 Sub ID [39, 212, 217] Raised by [S39 Q731]

The SAR indicates that if social impact mitigation, management and monitoring strategies are implemented, the Precinct related social impacts can be largely managed. The word "if' does not place enough importance on the implementation of strategies and "largely managed" implies a shortfall in addressing the social impacts of the Precinct.

The Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) provides a framework for the further development of strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the establishment of the Browse LNG Precinct. It adopts adaptive management principles and seeks a balanced approach which maximises benefits through negotiated outcomes. The adaptive management principles will allow the strategies to be adjusted in response to changed or new conditions, should they eventuate.

Rather than downplaying the importance of the implementation of the social impact management strategies, the word “if” highlights the fact that the implementation of the recommended impact management measures is ***essential*** in order to minimise potential negative social impacts and maximise potential positive social impacts. The recommended mitigation and management measures will ensure that potential negative social impacts are reduced to acceptable levels. Impact monitoring will allow adjustments to be made if management measures are not performing as well as predicted.

To ensure the efficient delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 280 Sub ID [39, 205, 215] Raised by [S39 Q756]

There is a huge weight of responsibility being placed on the commercial proponents to mitigate and manage the potential health impacts from BLNG development. Who will act to audit the responsibilities of the commercial proponents in relation to their obligations? What penalties could be expected if non-compliance was evident?

If the project is approved, compliance and performance reporting conditions (e.g. air quality) will be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. Regulators will assess and review audits to check for compliance against conditions. Auditing will be undertaken by the Department of State Development and commercial proponents, in accordance with conditions of approval.

The Office of the EPA monitors compliance with the Ministerial Approval Statements issued under the *Environmental Protection Act 1986*. This is done in a coordinated and planned approach through audits. Where non-compliances are identified, appropriate enforcement action is taken to regain compliance. All non-compliances are reported to the Minister for Environment on a quarterly basis.

Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence. Section 48 of the Act details the powers that the Western Australian Minister for the Environment has in relation to non-compliance. The Minister may:

(a) after making reasonable endeavours to consult the proponent of the relevant proposal, cause to be served on that proponent an order made by the Minister and requiring that proponent forthwith to stop the implementation of that proposal for a period not exceeding 24 hours; and

(b) cause to be served on the proponent of the relevant proposal an order made by the Minister and requiring that proponent to take such steps as are specified in that order within such period as is so specified for the purpose of complying with the relevant condition or procedure or of preventing, controlling or abating any pollution or environmental harm caused by any non-compliance with that condition or procedure; and

(c) cause such steps as are necessary for the purpose of complying with the relevant condition or procedure to be taken; and

(d) cause such steps as are necessary for the purpose of preventing, controlling or abating any pollution or environmental harm caused by any non-compliance with the relevant condition or procedure to be taken; and

(e) if he considers that the relevant condition or procedure should be changed, make a request under section 46(1) of the EP Act.

In the absence of formal social impact compliance mechanisms, DSD will have a significant role in liaising with other relevant government agencies to ensure that commitments, monitoring and reporting on social impacts (e.g. impact on local health services) and management is undertaken.

To ensure delivery of the necessary environmental and social management measures, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 292 Sub ID [39, 207] Raised by [S39 Q770]

With reference to SAR **Section 5.4.1**, the BLNG partners should take ALL of the responsibility for their construction workforce and not put pressure on existing Police or Traditional Owners.

Commercial proponents wishing to operate within the Browse LNG Precinct are responsible for managing any potential impacts arising from their construction workforce. However it is appropriate and desirable that the commercial proponents continue to have discussions with key stakeholders (e.g. Police or Traditional Owners) so as to ensure that the proponent's management measures to address potential construction workforce impacts are appropriate for the whole community. These ongoing discussions have already contributed to a number of impact management commitments outlined in the Strategic Social Impact Management Plan (**SSIMP**) that will apply to the commercial proponents. These include:

- The decision to have a controlled access FIFO construction camp.
- A management plan to ensure that the provision of primary health care, emergency and security services to the Precinct that does not impact on external services.
- The requirement for a workforce behavioural management plan.
- The requirement for having all construction workers undergo cross-cultural training.

The Strategic Social Impact Management Plan is outlined in **Part 5**, Section 5 of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

Generic Question ID: 648 Sub ID [120, 114] Raised by [S120 Q1291, S114 Q2178]

A number of submissions raise similar points regarding the SIA:

- ENGO Submission: The report states that the SIA just has to meet the requirements of the Terms of Reference not the State and Commonwealth environmental legislation. This is another serious flaw in the process and demands reconsideration of the role of SIA in the environmental assessment process.
- Social impact Assessment - the report states that this will not be assessed under the EPA Act or the Commonwealth EPBC Act, who will assess the Social Impact Assessment (the government that wrote it?) and what criteria will be used? The State Commonwealth Agreement in the appendix on the Strategic Assessment of the Kimberley LNG Precinct says that the Federal Minister may give consideration to economic and other matters, what criteria will be used and who will do that assessment? Either this Report is incorrect or this is a breach of the State Commonwealth Agreement.

Western Australia currently has no legislation requiring consideration of social issues in the development approvals process, apart from those closely linked to environmental matters under the Western Australian *Environmental Protection Act 1986* such as noise, dust, light spill, visual amenity, emissions and Indigenous heritage. However, by conducting the Strategic Assessment process for the Browse LNG Precinct, the State Government recognised the importance of considering a broader suite of social issues. **Part 5, Section 5** of the SAR therefore proposes a Strategic Social Impact Management Plan, which will require that social impacts be addressed by commercial proponents wishing to locate at the Precinct.

Although under the current system the Social Impact Assessment (**SIA**) is not assessed under environmental legislation, it is noted in the Terms of Reference that the State and Commonwealth Ministers for Environment must give consideration to social and economic matters. The Terms of Reference were developed by the State and Commonwealth Governments to ensure that the SAR could be assessed under section 146 of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) and under s38 of the *Environmental Protection Act 1986* (WA).

Due to the strategic nature of the SIA, the prediction of social impacts needed to be based on assumption about the likely characteristics of projects locating at the Precinct. This was provided by Woodside as the likely

Foundation Proponent. This information provided a reasonable basis for social impact prediction at a strategic level of assessment. If the Browse LNG Precinct is approved, additional social impact studies will be conducted by commercial proponents at the project level which will include refined project characteristics. However, this is unlikely to result in the introduction of large changes to the project characteristics assumed in the SAR and SIA.

Generic Question ID: 1283 Sub ID [118, 228] Raised by [S118 Q3085]

There should be an increase in support for Kimberley land and sea conservation and management programs, such as the successful Indigenous Rangers and Indigenous Protected Areas programs, and increased support for sustainable regional economic development projects.

There are a number of relevant funding commitments to support conservation programs. This includes $63m over five years announced as part of the Kimberley Science and Conservation Strategy and annual funding of $1.5m for the creation and management of Conservation and Heritage Areas as part of the Native Title Agreement with the objective that these be jointly managed by Traditional Owners and the Department of Environment and Conservation.

The Indigenous Protected Area program is likely to continue, however as it is a Commonwealth program the state of WA has no role is determining budget allocations.

Generic Question ID: 156 Sub ID [23] Raised by [S23 Q184]

UWA Response (Point 11): In what way will 'social monitoring' occur, and what tool will enable immeasurable qualities such as local well-being to be 'measured' by the 'commercial proponents' (**p. 317**)? What processes will be put in place to have these so-called measures reviewed, what sections of the broad based population of Broome will be involved, and what protocols will be established to have these (and other) concerns attended to? How will social, cultural, economic and ecological impacts likely to disadvantage a community's cohesion be offset before they emerge and transform into data to be measured?

In the absence of formal state social impact compliance mechanisms, DSD will have a significant role in liaising with other relevant government agencies to ensure that monitoring and reporting on social impacts and management is undertaken. The BLNG SSIMP provides a framework for the further development of social impact management plans and strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the establishment of the LNG Precinct. These plans will include:

- clear performance targets, performance measures, key performance indicators, reporting and governance arrangements;
- commitments to monitor the identified impacts and adjust the management plan as needed; and
- measures to evaluate the effectiveness of the management measures.

To ensure delivery of the necessary environmental and social management measures, the SAR proposed that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.
Commercial proponents will establish social and economic impact monitoring systems and report their monitoring results to the Precinct Management. This would form one component of the Precinct-level monitoring system. The Precinct-level monitoring system would include:

- core social and economic indicators applicable to both the construction and operational phases of all commercial proponents at the Precinct;
- arrangements for independent auditing;
- mechanisms to review and adapt mitigation and management if existing measures prove inadequate; and
- relevant reporting arrangements.

Each management plan will need to establish the ‘pre-change’ baseline social and economic conditions against which changes can be monitored. The monitoring of some social variables such as local well-being will likely require the use of multiple rather than single indicators and multiple sources and types of data (qualitative and quantitative).

Generic Question ID: 157 Sub ID [23] Raised by [S23 Q185]

UWA Submission (Point 12): The refrain that permeates the Report is that any problems that arise as a result of the proposed LNG plant will be 'managed' and/or 'mitigated'. Whilst it is stressed (**p. 333** et passim) that social services associated with health, housing and education are already struggling in Broome, it is less clear why government has not yet addressed these concerns, especially because they have been consistently reported. The claim that the introduction of FIFO will be 'comparatively minor' also requires attention, especially in light of evidence available elsewhere (as in Point 9 above).

The SIA illustrates that most social services in Broome are currently at or exceeding their delivery-capacity. The impact of even small increases in demand can be amplified if a services system is already under pressure from demands, as is the case with Broome. The combination of the significant natural population growth projected for Broome and the BLNG Precinct proposal provides an opportunity and impetus for Government to focus on the significant social service needs of Broome. This includes correcting existing deficits and putting management plans in place to allow adequate capacity to be made available to properly service Broome and surrounding areas into the future.

The West Kimberley Socio-Economic Strategy will be an across-government initiative to address the social services deficits in Broome. It is planned to address social service issues in the West Kimberley with two, five and ten year strategic plans and will be developed in close consultation with the Broome community. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need. Closing the gap in terms of the existing level of social services is an essential element in ensuring that the Broome community is to benefit from the proposed BLNG Precinct.

The SIA and ASIA identified stakeholder concerns around worker behaviour and its influence on the local community (both Indigenous and non-Indigenous) and tourists. This includes concerns about the potential impact of the Precinct construction workers on Broome and the Dampier Peninsula. Most of these potential impacts would be mitigated by employing a largely FIFO workforce within a managed access residential camp located in proximity to the James Price Point BLNG Precinct (outside of Broome).

The SIA process identified that the concerns of health professionals and community members revolve around sexual behaviour, social behaviour as well as access to drugs and alcohol. Given that the Dampier Peninsula is an alcohol restricted area, there is also concern about the availability of alcohol to local Indigenous residents of the Dampier Peninsula. These same concerns were raised in the ASIA which highlighted the potential that the presence of workers on the peninsula could increase the availability of alcohol, drugs and undesirable behaviours among the Indigenous community. A managed-access camp, with the enforcement of relevant workforce management strategies such as a code of conduct, would help to alleviate these issues and reassure concerned stakeholders.

The commercial proponent will be responsible for preparing and implementing a management plan to ensure the effective management of the construction workforce (especially FIFO workers). The plan is to be developed with all relevant stakeholders, and is to include relevant targets and performance indicators. The commercial proponent will also be required to prepare and implement a worker behaviour management plan including clear policies and procedures to control access to drugs and alcohol. The management plan is to be developed with all relevant stakeholders, within the stated timeframe, with relevant targets and performance indicators.

Generic Question ID: 175 Sub ID [39] Raised by [S39 Q374]

There are insufficient details about what will form the content of the management plans proposed in the document. How can we assess whether these plans are likely to succeed?

One of the strengths of the Strategic Assessment process as applied to the BLNG Precinct is that it provides an opportunity to ensure that the Precinct is developed in a coordinated and sustainable manner that takes into consideration social, economic and environmental values. It also identifies a range of responsibilities and management mechanisms to mitigate potential impacts. These responsibilities are reflected in a tiered approach to management which includes:

- State Government measures which provide a means by which regional scale mitigation or protection measures are realised and also ensure state government involvement in relevant precinct matters.
- Conditions issued under the *Environmental Protection Act 1986* which are legally binding on the proponents and require sign-off by the Minister for Environment or delegated authority.
- Requirements to be addressed by the Proponent via development and implementation of a Management Plan, some of which will require sign off by the Minister for Environment or delegated

authority.

Therefore, Management Plans are only one mechanism for mitigating potential impacts.

The proposed conditions describe the required environmental outcomes (or acceptable level of impact) as they relate to the environmental factor and include a brief description of how the achievement of the outcome is to be demonstrated in accordance with the EPA's Environmental Assessment Guideline No.4 - Towards Outcome Based Conditions. Where it is proposed to prepare and implement a management plan to achieve an objective, the management plan also focuses on the outcome. This approach enables the commercial proponent (and their contractors) to decide on how best to achieve and demonstrate the required outcome. The Strategic Assessment process requires Management Plans to be part of the information that would be required for a proposal to be declared derived, or may become one of the implementation conditions. Additional information would be provided in the management plans on a range of issues.

Future commercial proponents would have to demonstrate that their proposal can meet these conditions in order to be implemented. Outcome-based conditions may also include adaptive management triggers to address uncertainty in predictions of impact. The Strategic Assessment proposes outcome-based conditions that may be applied by the regulators.

Ministerial Conditions are legally binding on the Proponent.

Part 2, **Section 8** describes the impact assessment methodology and should be read in conjunction with the description of impacts and the preventative and management measures described in **Part 3** (for marine environmental factors), **Part 4** (for terrestrial environmental factors) and **Part 5** (for social and Indigenous factors).

Generic Question ID: 272 Sub ID [39] Raised by [S39 Q748]

There is concern that insufficient forward planning will result in the community being unable to cope with the changes generated by the project.

A community concern identified during the Broome sense of place workshop was the lack of forward planning during recent growth periods, leaving a system that was unable to cope with changes in demand. This concern was due to changes in the region occurring independently of the Precinct's existence, such as the high population growth rate in Broome in recent years, with related problems, such as deficient social service provision and lack of housing.

A strategic assessment was conducted at this level in order to avoid the problems that a lack of forward planning can create. There are considerable gas resources off the Kimberley coast and a high level of industry interest in developing these resources. This raises the potential for multiple and uncoordinated gas processing facilities to be developed along the Kimberley coast leading to unnecessary and significant social and environmental impacts.

In order to avoid such an outcome, the State Government has proposed a single multi-user LNG Precinct from which gas can be processed and transported. Through the Strategic Assessment process, the State Government has identified the potential high-level impacts of the Precinct and planning and management priorities that should be addressed in subsequent stages, should the development proceed. The central findings outlined in the Strategic Assessment Report is that the community will be able to cope with changes generated by the Browse LNG Precinct, and the environmental values of the Kimberley will be maintained, provided the mitigation, management and monitoring strategies are implemented.

To ensure delivery of the necessary environmental and social management measures, the Strategic Assessment Report proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 291 Sub ID [39] Raised by [S39 Q769]

The SAR (**Section 5.4**) contains a lot of social impact management strategies which tells us that the impacts on all these areas are predicted to be highly significant.

While some potential negative social impacts were identified in the Strategic Assessment Report (**SAR**), the State Government is of the view that the development of the Precinct would be an overall benefit to the local economy, bringing a range of social and economic development and employment opportunities. For example, it would bring opportunities to supply services to the Precinct, as well as a greater availability of training and employment opportunities for local residents. The development of the Precinct would increase and secure the economic resilience of the area well into the future, by introducing another economic sector.

The SAR acknowledges that without effective mitigation measures some of the potential negative social impacts

associated with the development of the Browse LNG Precinct could be highly significant. However, the central finding of the SAR, which was informed by both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**), is that the recommended mitigation and management measures should reduce the level of residual negative social impacts to acceptable levels, and substantially increase the social and economic wellbeing of the local community. This highlights the necessity of successful implementation of the recommended social impact management measures in order to minimise potential negative social impacts and maximise potential positive social impacts. Compliance with management measures will be required of all Precinct proponents (e.g. via lease conditions).

The success of this mitigation will also rest on an effective monitoring plan. Using adaptive management principles will allow adjustments to be made if management measures are not performing as well as predicted.

To ensure delivery of the necessary social management measures, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 390 Sub ID [104] Raised by [S104 Q905]

DoH Submission: DoH recommends the Social Management Committee identified in the proposed BLNG Precinct Management Structure has representation on the BLNG Precinct Control Group.

To ensure delivery of the necessary environmental and social management measures, the Strategic Assessment Report proposed that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 399 Sub ID [104] Raised by [S104 Q910]

DoH Submission: DoH recommends that the Plan of Work for the Social Management Committee includes a requirement for ongoing consultation between the KAHPF and the KLC on health and well-being objectives and strategies.

Engagement with stakeholders will continue throughout the development of management strategies and monitoring programs. At this point in time, the plan of work for the Social Management Committee has not yet been developed. However, the Department of State Development (**DSD**) agrees that the Social Management Committee could benefit from consultation with the Kimberley health sector on a regular basis, and will consider this recommendation in further developing the governance model. Effective governance mechanisms will be important for involving interested and/or affected stakeholders in the management and mitigation of impacts.

The health sector will also be consulted during the development of the Broome Social Services Strategy. This Strategy will map existing health services and identify gaps and engage with stakeholders and the community to identify priorities. Development of this strategy offers an opportunity to further engage with stakeholders representing Indigenous health, including the Kimberley Aboriginal Health Planning Forum (**KAHPF**) and the Kimberley Land Council (**KLC**).

To ensure delivery of the necessary social management measures, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 400 Sub ID [104] Raised by [S104 Q911]

DoH Submission: The SIA proposes management strategies to address the identified impacts to communities from implementation of the BLNG Precinct. It should be recognised that many of the strategies to address specific Precinct conditions have direct and indirect health and well-being implications and that consultation and planning for these should include the health sector.

The Strategic Assessment Report (**SAR**) notes that the development of social impact management plans and strategies should occur in consultation with all relevant stakeholders. It is agreed that the development and implementation of social impact management strategies outlined in the Strategic Social Impact Management Plan, addressing issues with direct or indirect health and well-being implications, should include consultation with the health sector (e.g. workforce behaviour management, Precinct health and emergency services, transient workforce management).

To ensure delivery of the necessary social impact management measures, the SAR proposed a Browse LNG Precinct Management Structure to be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 417 Sub ID [104] Raised by [S104 Q923]

DoH Submission: DoH recommends waste management services are enhanced for the following reasons:

- Currently, no sustained funding is provided for rubbish collection vehicles and household bins.
- Management of landfills including appropriate fencing does not meet Government requirements.
- There is limited access to heavy machinery for burial of waste and creation of new trenches in landfill sites.
- Waste sorting and recycling should be promoted and supported to a much greater degree in accordance with Government Zero Waste policy.

Waste management impacts associated with the development of the Browse LNG Precinct are discussed in **Part 5, Section 2.5** of the Strategic Assessment Report (**SAR**). As noted in the SAR, no impacts on current waste management facilities and infrastructure are predicted as a result of the development of the Precinct. Wastes generated during construction and operations at the Precinct would be collated, divided into hazardous and non-hazardous and temporarily stored onsite. These wastes would be handled by licensed waste contractors and would be recycled, treated or disposed of as appropriate. No landfill facility would be constructed within the Precinct itself.

There are a number of recognised current and future waste management needs in Broome and the West Kimberley that were discussed during the Infrastructure Workshop held as part of the Social Impact Assessment (**SAR Appendix D-2**). Waste management beyond the scope of the Precinct's impacts have not been addressed in the SAR, as it is beyond the scope of the proposal. The Shire of Broome is currently exploring future options for waste management, including a potential new site. This issue may be reviewed in further detail as part of the works conducted for the development of the Dampier Peninsula Planning Strategy.

Generic Question ID: 646 Sub ID [120] Raised by [S120 Q1289]

ENGO Submission: There are certainly numerous social impact management plans and strategies proposed in the SIA. The overall strategy is clearly to create more strategies. Most of the outcomes and outputs are so general as to be almost meaningless. For example on p327 of the Social Assessment section [SAR, **Part 5**] it lists the following Outcome: 'a commercial, recreational and customary fishing, pearling and aquaculture mitigation and management strategy that enables co-existence with the BLNG precinct'. Yet it is not clear whether approval for these plans and strategies will be required independently from the proposed Precinct Control Group and the subsidiary Social Management Committee. What role will the EPA play? Can approval for the Precinct to operate be revoked if these strategies are not developed and implemented in a timely or effective manner?

As this submission highlights, Western Australia has no legislation requiring attention to social issues apart from those closely linked to environmental matters under the Western Australian *Environmental Protections Act, 1986* such as noise, dust, light spill, visual amenity, emissions and Indigenous heritage. These will be the responsibility of the Minister for Environment.

However, the Department of State Development will require that social impacts be addressed by commercial proponents. As outlined in the Strategic Social Impact Assessment Management Plan (**SSIMP**), as a condition of locating at the Precinct, commercial proponents will be required to implement comprehensive plans to manage their social impacts. The SAR also includes commitments by State Government agencies to undertake certain management plans (e.g. LandCorp and the Department of Housing will have responsibility for housing and land).

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Under the proposed governance structure, the social impact management plans would need to be approved and monitored by the Precinct's Social Management Committee. This committee will include relevant State Government agencies as well as local representatives to ensure that the management plans meet local conditions. The Social Management Committee will report outcomes to the Browse LNG Precinct Control Group. This Precinct Control Group will report to the Minister for State Development who has ultimate responsibility for ensuring the implementation of social impact management commitments that lie outside the responsibility of the Minister for Environment.

Generic Question ID: 647 Sub ID [120] Raised by [S120 Q1290]

ENGO Submission: It is of great concern that the Foundation Proponent (Woodside) will receive approval based on this Strategic Assessment without any of these SIA strategies being finalised and approved. This highlights a consistent problem with this Social Impact Assessment. It has been conducted at such a general level that it should not be the basis for subsequent approval for Woodside's specific proposal. Whilst Woodside is conducting its own SIA it remains unclear where this sits in the overall approvals process.

The Strategic Assessment process conducted for the Browse LNG Precinct provides for high level "strategic" or "Precinct-level" assessment to occur. This strategic assessment establishes conditions for subsequent projects. Accordingly, impacts are discussed in the Strategic Assessment Report at a general level, as those at the project level were beyond the scope of the assessment. It is however important to note that these subsequent projects are not approved under the Strategic Assessment, and will have to undergo additional "derived' approval.

Through the Browse LNG Precinct Strategic Assessment process the State Government has created a unique opportunity for social impacts to be considered in the planning stages of a major development. Western Australia currently has no legislation requiring attention to social issues apart from those closely linked to environmental matters under the State *Environmental Protection Act 1986* such as noise, dust, light spill, visual amenity, emissions and Indigenous heritage. These will be the responsibility of the Minister for Environment.

In the absence of legislation requiring the approval of management of social impacts, the Department of State Development will require that, as a condition of locating at the Precinct, all commercial proponents address their social impacts. Other management strategies require that relevant government agencies and others develop detailed management plans to manage the social impacts relevant to their agencies' function. These requirements are outlined in the Strategic Social Impact Assessment Management Plan (**SSIMP**), contained within **Part 5, Section 5** of the SAR.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 649 Sub ID [120] Raised by [S120 Q1292]

ENGO Submission: Will the community have an adequate opportunity to participate in the development and implementation of any monitoring systems? It is noted that the Social Management Committee, which is under the Browse LNG Precinct Control Group, has local government and native title group representatives, but no other community representatives. It is also noted that there is, according to the Strategic Assessment Report [Executive Summary, p15]:'no legislative requirement for consultative processes subsequent to a strategic approval'. There is an absence of formal social impact compliance mechanisms, apart from some assurances that the Department of State Development (**DSD**) will ensure commitments are met. It is therefore not clear how the wider community will participate in social impact monitoring or by what mechanisms the community will have oversight over future social impacts.

Community engagement will be an ongoing process throughout the life of the precinct. To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. The proposed governance structure will provide a mechanism to ensure the community plays a role in the monitoring of social impact management measures.

A monitoring program will be developed at the Precinct and at project level to monitor impacts during construction and operation of the precinct. Community involvement in the development and implementation of any monitoring systems is fundamental to ensure that monitoring is reflective of the community's needs and concerns (**SAR Part 5, Section 5.5.8**). The public will also have the ability to review the effectiveness of management measures. Both Precinct and project-level monitoring will include relevant reporting requirements, and reports will be made available to the public on a regular basis.

The Social Management Committee will report outcomes to the Browse LNG Precinct Control Group and will be required to publicly publish reporting.

Generic Question ID: 650 Sub ID [120] Raised by [S120 Q1293]

ENGO Submission: O'Faircheallaigh (2009) argues that for SIA to be effective it must help to end the marginalisation of Indigenous peoples regarding development on their traditional lands. This means that Aboriginal people must control the SIA process. Whilst the KLC has played a significant role in the SIA, producing a number of reports that have fed into the broader environmental assessment, Indigenous people are clearly not in control of the timelines for project approval under which this SIA has been conducted. These time

constraints, including the current WA Government-led process for compulsorily acquiring land at James Price Point, have been thrust upon Traditional Owners and their representative body by government and are largely dictated by the commercial needs of the Foundation Proponent (Woodside). In this sense then, the SIA has been clearly ineffective.

As acknowledged in the submission the Kimberley Land Council (**KLC**), as the official representative of the Native Title claimants, was heavily involved in the Social Impact Assessment (**SIA**) process, including commissioning the Aboriginal Social Impact Assessment (**ASIA**) and in the development of Terms of Reference for impact studies.

With respect to the land required for the Precinct, it has always been the State Government's preference to secure access to the land through agreement with Traditional Owners. The State Government has been negotiating with the KLC, as authorised representatives of the Native Title claimants, to this end since January 2008.

A deadline for completing formal negotiations was established by all parties (KLC, Woodside and the State Government). Despite three extensions of the deadline, in July 2010 the Kimberley Land Council advised the State that agreement could not be reached due to divisions within the Native Title claimant groups. In September 2010, the State commenced a formal land acquisition process in accordance with the *Land Administration Act 1997* and the *Commonwealth Native Title Act 1993.*

This process does not remove the rights of affected people, and the relevant laws include objection periods and right to compensation. Under the *Land Administration Act 1997*, compulsory acquisition can only occur if it is consistent with the requirements of the *Native Title Act 1993.* In addition, the State must issue a Notice of Intention to Take (**NOITT**), to which affected persons have a 60 day objection period. Another objection period of 60 days would follow if a final taking order (which can only be issued in accordance with *Native Title Act 1993*) is issued by the Minister for Lands. Affected people have a right to compensation under this process.

This was not the State Government's preferred course of action and they continued to seek a negotiated solution to establish an Indigenous Land Use Agreement (**ILUA**) under the *Native Title Act 1993*. Agreement was achieved by the parties on 30 June 2011.

The most current reporting of the status of this process is provided in **Section 2.5** of the Response to Submissions Summary Report.

Generic Question ID: 917 Sub ID [127] Raised by [S127 Q1906]

Kimberley Development Commission: The Board considers that there should be high level agreements between the State Government and Woodside Browse Ltd to ensure that the tangible and measurable regional benefits are delivered to the West Kimberley community and further, those impacts and benefits are externally monitored with an appropriate reporting structure to Government and the Community. The Board suggests that this monitoring and reporting be tied to an assessment instrument of social and economic returns to the region.

The State Government will negotiate a final development agreement with the foundation commercial proponent and monitor the development of the Precinct to ensure commercial proponents comply with the environmental and socio-economic management measures described in the SAR. Monitoring and evaluation, as described in the Strategic Social Impact Management Plan (**SSIMP**) (**Section 5, Part 5 of the SAR**), will help ensure that tangible and measurable regional benefits are delivered to the West Kimberley. The SSIMP requires that management strategies consist of:

- a series of measures to enhance the project's benefits and minimise the adverse effects;
- a plan to manage the identified impacts and adverse effects;
- clear performance targets, performance measures, key performance indicators, reporting and governance arrangements as well as the response to the target shortfall;
- a plan to monitor the identified impacts and adjust the management plan as needed; and
- measures to evaluate the effectiveness of the management measures.

Performance indicators have been included where appropriate in the management plans to monitor the effectiveness of the management strategies over time. These indicators will be developed by the responsible parties as the detailed management plans are prepared, and will include relevant targets and timeframes.
The proposed Precinct Governance structure and associated reporting requirements will ensure public accountability and that management measures are implemented and adapted as required. Monitoring information will be made publicly available in annual reports. The State Government and commercial proponents will also seek feedback from the community on a regular basis to determine if changes to mitigation and management are required.

To ensure delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval. Compliance and performance reporting conditions are expected to be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. Regulators will assess and review audits to check for compliance against conditions. Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence.

Generic Question ID: 920 Sub ID [127] Raised by [S127 Q1909]

Kimberley Development Commission: The SAR highlights the need, irrespective of the project, to manage the population growth of Broome. However we believe that the impacts of the project upon the service providers and contractors that will be required to provide services to the Proponent on an ongoing basis through the life of the project may require additional work.

The purpose of the Strategic Assessment Report (**SAR**) was to focus on the high-level, strategic impacts of the Browse LNG Precinct development, and propose a range of management measures to address these impacts. In most cases, additional work will need to be done prior to construction and on an ongoing basis. This includes additional work to examine impacts on services and businesses, and will occur through development of the management mechanisms outlined in the Strategic Social Impact Management Plan (SAR **Part 5, Section 5**), and from the project-level Social Impact Assessment currently underway by Woodside. In particular, the following management measures identified in the SAR will include additional work on the topic of service provision in the West Kimberley:

- The Broome Social Services Strategy, which will be a whole of Government initiative to address social services deficits in Broome, including accessibility to those services for Indigenous communities on the Dampier Peninsula. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.
- The West Kimberley Socio-Economic Strategy will seek to optimise the benefits of the Precinct development for local businesses in the West Kimberley. In consultation with appropriate stakeholders, this strategy will map existing local business capacity, identify potential opportunities for these businesses to provide services to the Precinct and identify gaps in existing business capacity.

Both of these strategies will be developed prior to Precinct construction, with the State Government taking lead responsibility.

Additionally, through local development initiatives such as the Kimberley Business Capability and Services Register (Kimberley BIZ), Woodside as Foundation Proponent, has already commenced work with local industries to enhance their capacity to participate in works associated with the exploration and development of Browse Basin gas. Woodside is also in the process of conducting its own project-level Social Impact Assessment, which will seek to further enhance community participation.

As noted in the SAR (**Part 5**, **Section 5**), the management plans proposed in the Strategic Social Impact Management Plan must include relevant targets and performance indicators such as the value of locally bought goods and services and the number of local Indigenous business enterprises developed. Commercial proponents are also required to develop a program to monitor the effectiveness of this management measure. This will include local indicators of economic development such as cost of living, employment and business development.

To ensure delivery of the necessary social impact management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 921 Sub ID [127] Raised by [S127 Q1910]

Kimberley Development Commission: It is acknowledged that further, more project specific, analysis and management plans will be developed through the Woodside Social Impact Assessment.

This is correct. The project-level Browse Social Impact Assessment (**SIA**) will contain a more detailed assessment of the socio-economic impacts of Woodside's proposed development within the Precinct. The

Browse SIA is currently underway. More information on the Browse SIA can be found online at the project website, http://www.ebc.net.au/bsia/

Generic Question ID: 1152 Sub ID [211] Raised by [S211 Q2808]

Part 1 Section 2: Most of the services to design, build and maintain the project are likely to be carried out overseas or by experts brought in. This is in line with experience by small engineering companies in Kwinana, where Mr Barnett agreed that the work would be done overseas (ABC investigation reports into Australian content). Some of the support services will come from Broome direct if local businesses can meet the stringent criteria for occupational health and safety, etc. We have already seen Woodside's "Environmental Management Services" (security, SAS etc), none of which are local people. But the benefits are likely to pale compared to the losses to current tourism industries and income here in Broome.

An objective of the State Government in establishing the Browse LNG Precinct is to provide opportunities for local employment and local economic development in the West Kimberley, and to ensure that the Precinct can co-exist with tourism in the region. This will however, require the development and implementation of effective management measures prior to construction and on an ongoing basis. To this end, the Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the SAR proposes a number of management strategies.

A Precinct Condition strategy outlined by the SSIMP states that commercial proponents wishing to operate at the Precinct will be required to develop and implement a management plan to retain local benefits prior to a construction. This will include implementation of local purchasing strategies that will encourage Precinct expenditure within local businesses and industry. The purchasing strategy will be based on the demands of the Precinct and related activities as well as an assessment of Broome and the region's current and future capacity to supply goods and services.

Local purchasing policies will help local businesses become more viable and expand their capacities. As discussed in the SAR, the opportunity for the region's small manufacturing and construction base to contract for supply of Precinct goods and services is likely to generate flow-on benefits including an increase in both business income and in the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area beyond LNG contracting and will assist local businesses generate an expanded customer base in non-Precinct related business (e.g. retail and hospitality sectors).

A Tourism Impact Assessment (**TIA**), commissioned by Tourism WA and the Department of State Development (**DSD**) and conducted as part of the strategic assessment process, concluded that tourism and the development of the Precinct could coexist (SAR **Appendix D-5**). The TIA also pointed out that that tourism and mining have co-existed in the Kimberley since the 1950s. The focus of the TIA was to quantify the potential impacts should the project proceed, and identify through consultation, the means to maximise benefits, and limit any potential negative impacts. The TIA recommended that a detailed management plan be implemented to ensure that Broome's tourism industry and the development of the Precinct can satisfactorily co-exist. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report, proposes a Tourism Management Plan, with Tourism WA as the lead agency, to meet this recommendation.

As noted in the SAR (**Part 5**, **Section 5**), the management plans proposed in the SSIMP must include relevant targets and performance indicators such as the value of locally bought goods and services and the number of local Indigenous business enterprises developed. Commercial proponents are also required to develop a program to monitor the effectiveness of this management measure. This will include local indicators of economic development such as cost of living, employment and business development.

To ensure delivery of the necessary social impact management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Through local development initiatives such as the Kimberley Business Capability and Services Register (**Kimberley BIZ**), work has already commenced with local industries to enhance their capacity to participate in works associated with the exploration and development of Browse Basin gas.

Generic Question ID: 1257 Sub ID [103] Raised by [S103 Q2926]

Woodside Submission: Woodside recognises that the Browse LNG Precinct, and Woodside's development within it, will have significant benefits as well as impacts for Broome and its surrounding communities. Woodside also recognises the need for sensitive management of social, cultural and heritage issues to ensure the quality of life and sustainability of the region is not just maintained, but enhanced.

The State Government is of the view that the development of the Browse LNG Precinct would be an overall benefit to the local region, bringing a range of social and economic development and employment opportunities.

The SAR acknowledges that without effective mitigation measures some of the potential negative social impacts associated with the development of the Browse LNG Precinct may be significant. However, a key finding of the SAR, informed by both a Social Impact Assessment (**SIA**) and an Aboriginal Social Impact Assessment (**ASIA**), is that the recommended mitigation and management measures should reduce the level of residual negative social impacts to acceptable levels, and substantially increase the social and economic well-being of the local community.

To help ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1258 Sub ID [103] Raised by [S103 Q2927]

Woodside Submission: Broad based community engagement will be maintained throughout the life of the project. The community will have an ongoing role in helping the implementation of the Browse Social Impact Management Plan, and will take an active role in ensuring it is meeting its objectives in the community.

As an investigative tool, social impact assessment provides a useful baseline from which management strategies can be developed. The social baseline of communities' attitudes varies over time and so community engagement must continue to play a role in informing plans. Accordingly, the Strategic Social Impact Management Plan (**SSIMP**), outlined in **Part 5, Section 5** of the SAR, adopts an adaptive management approach, to ensure that community interests are maintained throughout the life of the Precinct.

Generic Question ID: 1260 Sub ID [103] Raised by [S103 Q2929]

Woodside Submission: Woodside's economic performance is about more than producing financial returns. It is about delivering benefits across the communities where we operate, and in this case the Kimberley region. The SAR serves to highlight the means by which Woodside can deliver benefits for local Kimberley communities and work with the WA and Australian Governments to see the successful development of the first Browse LNG Project in the Kimberley. Woodside is committed to a sustainable Browse LNG Development that will bring lasting benefits to the Kimberley region and Western Australia.

This statement supports the State Government's social and economic objectives for this development. The Browse LNG Precinct project will provide a mechanism to develop a range of opportunities for the community across the West Kimberley region. It will also provide a means to monitor social impacts and ensure that public and private health and training services, housing and infrastructure are adequate for the region's requirements.

It is further noted that the State Government and Woodside Energy Limited have together committed to deliver about $1.5 billion of social and economic benefits to local Aboriginal communities in terms of education, jobs, business development and financial incentives.

A summary of the social and economic benefits for the Kimberley region is provided in **Part 2**, **Section 3.3**. Further information on benefits for the Aboriginal community is presented in **Section 2.5** of the Response to Submissions Summary Report (Land Access and Informed Consent).

5.1 Overarching Strategic Framework

5.2 Precinct-level Management Strategies

Generic Question ID: 176 Sub ID [39, 207, 212] Raised by [S39 Q375]

Performance indicators are required to monitor the effectiveness of management strategies over time (**p.315**). Who will govern these and reinforce them if the companies are in breach?

The State Government will monitor the development of the BLNG Precinct by commercial proponents, progress on the implementation of State measures, and cumulative impacts of activities based on monitoring programs of individual commercial proponents. This information will be collated in an Annual BLNG Precinct Environment Report prepared by the State Government, submitted to SEWPaC and made publicly available.

Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval. Compliance and performance reporting conditions are expected to be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. Regulators will asses and review audits to check for compliance against conditions.

Non-compliance with conditions of an Implementation Statement issued under the EP Act is an offence. Section 48 of the EP Act details the powers that the Western Australian Minister for the Environment has in relation to non-compliance.

A summary of the proposed monitoring and management framework is provided in the SAR Executive Summary, **Part 1**, **Section 3**. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1243 Sub ID [207, 212] Raised by [S212 Q2918]

Part 5 Section 5.2: "a plan to manage the identified impacts and adverse effects" (**p.315**). A plan cannot bring back waterways, sealife, beach and marine habitats. The WA State Government and the companies involved are trying to sidestep all negative effects by managing these things with plans – these are simply words. Once the ecology is gone – it is gone!

The reliance on management plans reflects the strategic nature of the impact assessment presented in the SAR. The State Government is committed to the delivery of benefits to West Kimberley communities, and ensuring that the potential negative socio-economic and environmental impacts of the Precinct development are managed. This will require both successful implementation of the management measures and effective monitoring that allows these management measures to be changed as the need arises.

There are a number of mechanisms that will ensure delivery on the commitments made in the SAR. For example, the proposed Governance structure will provide a mechanism to ensure these management measures are implemented. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. Stakeholders representing a range of interests will be part of this management structure. This includes representation of Traditional Owners in all Browse oversight groups, including the Precinct Control Group. Through this mechanism Traditional Owners can have significant input into the environment and social management associated with the Precinct.

The State Government will also establish lease conditions and monitor the development of the Precinct to ensure that commercial proponents comply with the environmental and socio-economic management measures described in the Strategic Assessment Report (**SAR**). Monitoring information will be made publicly available in annual reports. The State Government and commercial proponents will also seek feedback from the community on a regular basis to determine if changes to mitigation and management are required.

There are procedures in place to ensure the environment is protected from degradation. This protection applies to the design, construction, operation, decommissioning and rehabilitation of the Browse LNG Precinct site. This includes a range of applicable State and Commonwealth environmental regulations, as well as the management measures outlined in the SAR (**Parts 3** and **4**) aimed at minimising the environmental impact of the Precinct development. The Precinct will also be required to meet any Ministerial conditions that may be attached to State and Commonwealth environmental approval. Finally, the Department of State Development will prepare and implement a closure and decommissioning strategy for the Browse LNG Precinct to provide a timely and consistent approach to removal or retention of plant and infrastructure, rehabilitation of disturbed areas and identification of contaminated areas. When the land is no longer needed, it will be returned to the Traditional Owners, fully remediated.

If the project is approved, the ministers may choose to attach conditions to the approval. Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval. Compliance and performance reporting conditions are also expected to be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Regulators will assess and review audits to check for compliance against conditions. Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence.

Generic Question ID: 1245 Sub ID [212, 207] Raised by [S212 Q1123]

Part 5 Section 5.2: "an overall Precinct management structure…to ensure the involvement of Traditional Owners and the Broome community in the process." (**p. 315**). If the management plan includes the continued corporate "funding" of community groups, organisations, schools and businesses to get the community on side; then the businesses and the State government cannot claim that they have been open, objective and transparent in their "involvement of Traditional Owners and the Broome community". This is clearly a case of corporate power being used to sway the community into favouring the Precinct.

Communities have an expectation that the corporate sector will contribute to community development through sponsorships and partnerships with community groups. This is done independently of the State Government and often over and above any regulatory commitments companies may have.

Companies tend to do this with an expectation that they will enhance their relationships with and reputation in the community. Communities can decide whether this is the case or not.

Generic Question ID: 401 Sub ID [104] Raised by [S104 Q912]

DoH Submission: With respect to SAR 5.4: Precinct Condition Strategies, the objectives for each of the Strategies are supported. As Management Plans are the main outputs for the following strategies, each must be made publicly available, regularly updated, maintained for the life of the Precinct and binding on all proponents establishing within the Precinct.

The Strategic Social Impact Management Plan, outlined in **Part 5**, **Section 5** of the Strategic Assessment Report (**SAR**), proposes a number of management measures which have been informed by both the Social Impact Assessment (**SIA**) and the Aboriginal Social Impact Assessment (**ASIA**), to mitigate any potential social impacts associated with the development of the Precinct.

To ensure delivery of the necessary social impact management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

In addition to governance and management arrangements at the Precinct, the State Government will monitor:

- the development of the Browse LNG Precinct by commercial proponents;
- progress on the implementation of State measures; and
- cumulative impacts of activities based on monitoring programs of individual commercial proponents.

This information will be collated in an Annual Browse LNG Precinct Implementation Report prepared by the Precinct Management Structure and will be made publicly available.

5.3 Precinct Governance and Social Monitoring

Generic Question ID: 177 Sub ID [39, 212] Raised by [S212 Q1125]

Part 5 Section 5.3.2: "the range and magnitude of actual social and economic impacts occurring at the time of Precinct construction and operation may differ from the impacts predicted." (**p. 316**). There are clear risks articulated and the BLNG partners are still prepared to take the risks – why have the partners NOT considered offshore processing? Why has the report left this information OUT? The SIA has completely disregarded its own authenticity by making this statement. The WA Government would have to see itself as liable for damages under this negligence.

The State Government has given careful consideration into selecting the area near James Price Point as the proposed location for the Browse LNG Precinct. The site was selected following an extensive two year process, whereby studies confirmed that compared to other locations, James Price Point minimised the potential environmental impacts of a project of the scale of the Browse LNG Precinct.

The site selection process analysed a range of considerations including technical, economic, marine and terrestrial environment, natural and Indigenous heritage, and other Indigenous and socio-economic constraints. A range of development options were considered to determine the suitability of the State's proposal as well as to define the preferred location for the State's proposed development. Development options considered including offshore processing. For more information on the site selection development options particularly offshore options refer to SAR **Part 2, p. 4-13**.

It is noted that the proposed Precinct is envisaged as a means to facilitate the development of larger natural gas reserves that are most logically developed on shore. Floating LNG technology is currently unproven and itself carries a significant risk, and while floating LNG facilities may have potential for the development of smaller, remote fields, currently envisaged technologies constrain floating LNG production to around 4Mtpa. In contrast the Precinct would have capacity for the production of up to 50Mtpa of LNG.

Generic Question ID: 1246 Sub ID [212, 207] Raised by [S212 Q1124]

Part 5 Section 5.3.1 Governance: "Timely and transparent communication of information regarding environmental management" (**p.315**) How ironic! Here is a massive project where the corporate interests have prevented the reporting of transparent information regarding the environmental impact, let alone environmental management.

The State Government has been committed to providing the best available information to assist the community in developing an informed opinion with regards to the Browse LNG Precinct. Community, Traditional Owner and key stakeholder consultation for the Strategic Assessment began during the site selection process and is ongoing. Since October 2007, the State Government has been involved in more than 15 community workshops and public forums in Broome and has held many more meetings with local businesses, community and Aboriginal organisations and individuals. In addition, each of the specialist studies for the SIA (Indigenous

impacts, tourism, fishing, pearling and aquaculture) included their own consultation activities. More information on the community engagement conducted to this point can be found in **Section 3.1** of the Response to Submissions Summary Report.

Engaging the community does not end with the publication of the SAR. Should the project be approved, a Precinct Engagement Plan will be developed that will address ongoing non-Indigenous and Indigenous engagement. This plan will outline the ways in which information will be shared with the public through all stages of development of the Precinct (i.e. construction, operation and decommissioning).

To ensure delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

This Governance structure and associated reporting requirements will ensure public transparency. A monitoring system will also be in place to monitor the impacts of the construction and operation of the Precinct over time. This monitoring information will be made publicly available in annual reports, and will be used to adapt the management measures if required. The State Government and commercial proponents will also seek feedback from the community on a regular basis to determine if changes to mitigation and management are required.

Generic Question ID: 479 Sub ID [166] Raised by [S166 Q1394]

Shire of Broome Submission (1f): The inclusion of the Shire of Broome as a key stakeholder in the planning and management for the implementation of industrial development in or adjacent to the Shire of Broome, a matter raised in Council's resolution of 7 November 2008, has not been adequately addressed in the SAR **Part 5**.

The Shire of Broome has been nominated for management responsibilities in the industrial and infrastructure related sections of the Strategic Social Impact Management Plan in **Part 5** of the SAR.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 483 Sub ID [166] Raised by [S166 Q1398]

Shire of Broome Submission (4): It is essential that the Shire of Broome plays a leading role in the Browse LNG Precinct Control Group with respect to the development, implementation and monitoring of impact management strategies, and the Shire must be provided with sufficient resources to be able to undertake the role.

As the local government authority for the area around the Browse LNG Precinct, the Shire of Broome has a significant role to play, particularly with respect to the management of potential social impacts. As such, it is proposed that the Shire of Broome will be represented in the Social Management Committee in its role of implementing and coordinating the Precinct related social management plans.

While the State acknowledges that there may be some current service constraints impacting the Shire (**Part 5, Section 5.4.4**), it also notes that the Shire stands to benefit significantly in the medium term from the additional activity and resulting economic development in the region from the Precinct.

The purpose of a Browse LNG Precinct governance structure is to clearly assign responsibilities for the performance of management plans in meeting objectives with respect to the Strategic Assessment. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 499 Sub ID [232] Raised by [S232 Q1363]

The Indigenous people on the Dampier Peninsula wonder who they can complain to, if things go wrong with the project as the LNG Precinct moves forward?

The State Government will be responsible for overseeing and coordinating the impact management arrangements described in the Strategic Assessment Report (**SAR**). A key next step in the assessment process is to establish the BLNG Precinct Management Structure to ensure delivery of the environmental and social management measures.

The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group and through this mechanism; the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

Any community concerns during the construction and operation of the Precinct will be addressed through this governance arrangement, and should this prove not to address concerns, directly to environmental regulators.

The State Government will also monitor the development of the Precinct by commercial proponents, and progress on the implementation of State measures. This information will be made publicly available in annual reports.

Commercial proponents will be required to incorporate monitoring and adaptive management into their operations. Monitoring programs will be outlined in Management Plans developed by commercial proponents and provided to the relevant agencies for their consideration during the derived proposal and/or Action application processes. All such Management Plans will include contingency measures and remedial actions to be triggered should monitoring indicate that performance measures or targets have not been achieved or are not likely to be achieved.

Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval. Compliance and performance reporting conditions are expected to be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. Regulators will assess and review audits to check for compliance against conditions. Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence.

Generic Question ID: 500 Sub ID [232] Raised by [S232 Q1364]

The Aboriginal community members on the Dampier Peninsula have great concerns about the proposed Browse LNG Precinct because they mistrust the State and the company. They believe that the big money to be made from the Precinct will over-ride any public concerns. What can the State do to ensure that the mistrust of the State and Company can be put to rest? How can the State convince the public that the environmental concerns of the Browse LNG Precinct will not be over-looked, as was the case with the approvals for the Gorgon Project?

The State Government and commercial proponents must deliver on their commitments to earn the trust of the community. Building trust with the community will require the successful implementation of the management measures, and effective monitoring that allows these management measures to be changed as the need arises.

The proposed Governance structure will provide a mechanism to ensure these management measures are implemented. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group and through this mechanism; the Traditional Owners can have significant input into the environment and social management associated with the Precinct.

The State Government will establish lease conditions and monitor the development of the Precinct to ensure that commercial proponents comply with the environmental and socio-economic management measures described in the Strategic Assessment Report (**SAR**). Monitoring information will be made publicly available in annual reports. The State Government and commercial proponents will also seek feedback from the community on a regular basis to determine if changes to mitigation and management are required.

Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval. Compliance and performance reporting conditions are expected to be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. Regulators will assess and review audits to check for compliance against conditions. Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence.

5.4 Precinct Condition Strategies

Generic Question ID: 411 Sub ID [104, 195, 211, 106] Raised by [S104 Q919, S211 Q1039]

DoH Submission 5.4.10; Precinct health, emergency services, policing and security:

The provision of health services in the region is already challenged and additional requirements from the Precinct may have broader implications. Issues to be considered should include:

- existing local skills shortages;
- the potential for competition for health practitioners from the Precinct;
- the potential for lower health status of workers particularly 457 visa workers who may require additional health support; and
- the Hospital Sector which currently has limited capacity, and is frequently under extreme pressure in the

peak season.

This point was also raised in other submissions:

- Access to GP services in the town is already difficult, and made worse during the tourist season. The temptation to earn more income from workplace assessments and miners health will surely divert some practitioners away from their core business of servicing the health needs of the community.
- I feel deep sympathy for our health workers who are already overworked, underpaid and under-resourced in a population of 15,000 expanding to 35,000 at the peak of tourist season. How will they cope with the extra population when we are already stretched to the limit? Why does it take the prospect of an LNG processing plant for the government to spend money on health infrastructure? Last weekend's Weekend Australian (12-13 March) p. 6 of the Inquirer contained an interesting article titled "Depression, the Dark Side of the Mining Boom". This article described the increase in family disintegration, suicide, depression and other dysfunction. Further concerns include the well known increase in drug use and there have already been inquiries about the opening of brothels. Nowhere is this mentioned in the SAR. In addition, we have already heard that local health workers are gearing up for a massive increase in HIV.

The proposal to build the Browse LNG Precinct near James Price Point has drawn attention to existing social service deficiencies in Broome, including a scarcity of general practitioners. These deficiencies are summarised in **Part 5** of the SAR (**Section 2.6**), and described in more detail in the SIA (**Appendix D-1, Section 8.3**).

The State Government has lead responsibility to develop strategies to address social service gaps, and commercial proponents located at the Precinct would be given responsibility to address health, emergency services, policing and security at the Precinct. It is also notable that Precinct workforce management strategies would limit the number of construction workers living in Broome and making use of the Broome's health services.

To assist with delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Recognising that any impact from the Browse LNG Precinct would be in the context of a health system that is already under pressure, several management measures have been included in the Strategic Social Impact Management Plan (**SSIMP**). These measures would help address deficiencies in the short term, help the system to absorb any impacts arising from the project, and provide for services at the Precinct itself where required. The SAR therefore recommends measures that will help address these deficiencies, increasing the current capacity of the social services to prevent further pressure.

If appropriate numbers of health workers cannot be found in Broome without impacting on existing services, it is possible that fly-in, fly-out workforce will need to be used at the Precinct to limit workforce

competition.

The provision of social, emergency, police and security services will be addressed at both the Precinct level and at the broader regional level (i.e. Broome and West Kimberley) through development of three strategies:

- The Broome Social Services Strategy will map existing services in Broome (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify priorities. It will address areas such as health, education, child care, counselling, therapeutic and emergency services in Broome.
- Commercial proponents will be required to develop and implement a Health, Emergency Services, Policing and Security Strategy. This strategy should ensure that health and emergency services will be provided to the Precinct without impacting upon these services in Broome, and that appropriate level and quality of security is provided at the precinct.

The Department of State Development acknowledges that the issues outlined in the Department of Health submission should be considered in the development and implementation of these strategies. The Broome Social Services Strategy will assist in addressing current social service deficiencies. In addition to addressing short term deficits, they will assist in the longer term by providing measures to increase the capacity of health and social service provision to accommodate any potential increase demand resulting from development of the Precinct, and from natural population growth in Broome. Management of issues related to existing skills shortages and obtaining health workers for the Precinct should be addressed at both the Precinct level and in these broader strategies.

If 457 visa workers are to be employed at the Precinct, they must meet the health requirements outlined in Australian migration law. According to the Department of Immigration and Citizenship, migrants must meet the health requirements, which are designed to:

- minimise public health and safety risks to the Australian community;
- contain public expenditure on health and community services; and
- maintain access of Australian residents to health and community services.

All 457 visa holders must undergo physical exams in order to obtain their visas, and are required to acquire adequate health insurance for the duration of their stay in Australia.

Generic Question ID: 800 Sub ID [75, 87, 106] Raised by [S75 Q865]

The SAR (**Part 5, Section 2.6, p. 2-30**) states that proponents will be required to supply primary health care services at the precinct. What is not revealed is how medical emergencies will be treated and how primary care will be provided during the construction phase. Even if the precinct has on-site medical/OP facilities, they are unlikely to be completely self sustaining. For example:

- Who will be responsible for emergency aero-evacuation of workers to Perth or Darwin? If it is to be the RFDS, this means further competition for already over-stretched evacuation services.
- If an injured or sick worker requires surgery to stabilise them prior to evacuation, where will this occur? No doubt at Broome Hospital, placing ever greater pressure on an already stretched service where people deemed to be non-emergencies already have to wait several hours for treatment.
- If new Broome-based workers need medical assessments prior to engagement, who will conduct these? Access to OP services in the town is already difficult, and made worse during the tourist season. Any new doctors to town should, as a priority, provide services to local people, but the temptation to earn more income from workplace assessments will surely divert some practitioners away from their core business.
- It is recognised that FIFO workers in general are prone to family dysfunction, guilt, loneliness, substance abuse and depression. Accessing appropriate services to assist people to address issues such as these is already a problem in Broome. Additional load should not be placed on these services by the need to help FIFO workers.

As discussed in the Strategic Assessment Report (SAR), the health sector in Broome, including all hospital, medical and allied health services, is currently under significant pressure with a number of services operating beyond capacity. Even without the development of the Browse LNG Precinct, the projected strong growth in population anticipated for the Shire of Broome, unless addressed, will bring significant additional demand for health services. For this reason, the implementation of the mitigation and management measures, including measures to improve existing health services in Broome and provide health and emergency services at the Precinct, is crucial to ensure the existing health system can absorb any additional demand related to the Precinct. The strategic social impact assessment found that, given these management measures, the impact of the additional demand for health services caused by the Precinct should be manageable.

It is correct that it is not possible to eliminate all impacts of the Precinct on health services in Broome. However, the SAR outlines several key measures that will ensure the impact is minimised (**Part 5, Section 5**):

- Primary and emergency health services would be provided for the workers at the construction camp and this would lessen the impact on Broome and the region's health services. Commercial proponents will be required to develop a Precinct Health, Emergency Services, Policing and Security Strategy to ensure these services are provided at the Precinct.
- Precinct workforce management strategies would limit the number of construction workers living in Broome and making use of the Broome's health services.
- The Broome Social Services Strategy will be a whole of Government initiative to address social services deficits in Broome. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

Regarding the specific concerns identified in this submission, these issues are all valid concerns that will need to be considered. The commercial proponents will take responsibility to ensure workers get the appropriate medical attention, and the Precinct management will ensure these measures are implemented through the

proposed governance structure (**Part 6**). However, the first three issues (i.e. aero-evacuation, surgery for injured or sick workers and medical assessments) have not been specifically addressed as they are project-level issues for which more detailed policies will be developed if approval is granted at the strategic level.

The SAR discusses the final concern highlighted in this submission - the potential for family dysfunction, guilt, loneliness, substance abuse and depression associated with FIFO work. These concerns are not specific to the Precinct; rather they are general issues of concern and important consideration of all industries that use FIFO workforces. It is a matter that will be addressed not only through Precinct management, but will also be addressed more broadly at an industry-government level. At the Browse LNG Precinct, this issue will be addressed in a number of ways. First, the existing deficiencies in mental health services will need to be addressed, which will be part of the Broome Social Services Strategy. At the project level, a policy of limiting FIFO workforce layover time in Broome may substantially mitigate potential increases in substance abuse from the workforce population. The required workforce behaviour policies, including the existing practice in the industry of compulsory random alcohol and drug testing should also limit the prevalence of substance misuse by Precinct workers in the town.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. This proposed Precinct Governance arrangement has been the subject of numerous comments from both the community and State and Commonwealth environmental regulators. A number of modifications have subsequently been made to this and these are presented in detail in **Section 2.3** of the Response to Public Submissions Summary Report.

Generic Question ID: 99 Sub ID [12, 212] Raised by [S12 Q116]

The following statement was made with respect to **Part 5**, **Strategy 5.4.7** - Indigenous Workforce Development Objectives:

• Ensure a co-ordinated approach to a range of indigenous education, training and employment;

• Develop and implement a strategy to increase the . number of indigenous workers on the project;

• Develop or link existing programs to assist indigenous people to overcome barriers to education, training and employment;

• Provide opportunities for indigenous people to work on cultural and environmental values relevant to precinct operation;

• Develop appropriate workforce arrangements that include support for indigenous workers.

Achieving the above objectives relating to Indigenous workforce development relies heavily on the adoption of a coordinated and consultative approach to designing and implementing initiatives that will strengthen the skill base within Indigenous communities and increase their participation in the labour market. The key findings of the Trade Training Centre feasibility study relating to Indigenous people and labour supply in the West Kimberley region were as follows:

• There are significant barriers to participation in the workforce for many Indigenous people including but not limited to, poor health and housing, a lack of literacy and numeracy skills and little or no experience in the workplace.

• Work-readiness training, including mentoring, counselling and life-skills tied to entry-level qualifications, is crucial to the successful transition of Indigenous people to employment.

• The services required to help Indigenous people overcome the barriers to participation in the workplace currently face a number of factors that make the delivery of services difficult and inconsistent, including a shortage of suitably skilled trainers and a lack of funding for entry-level training, mentoring, and literacy and numeracy training. • There is a pool of over 4,200 registered Indigenous job seekers spread across the Kimberley, including over 2,500 in the West Kimberley, whose work readiness is at widely differing levels but who, with more intensive training and support, would be candidates for employment in the construction, civil and oil and gas industries, or other industries as appropriate.

• The positive response to training from sample groups of 18-39 year old Indigenous people in two work-skills audits suggests that there would be a significant and similar response amongst the broader Indigenous community if training were linked to employment outcomes through a training pathway that included appropriate support and was tailored to their needs.

• Data extrapolated from a specific work-skills audit suggests that a range of between 149 to 264 Jabirr Jabirr people would be interested in a career in the construction, civil and oil and gas industries.

• There are an unknown number of people, possibly numbering in the high hundreds, who are not in the labour

force and whose health status and aspirations are unknown.

• Of the 263 Indigenous students currently enrolled in public schools in Years 10, 11 and 12 in the West Kimberley, there are possibly between 82 to 157 students who may meet the national minimum standard for reading at a Year 9 level and who, with appropriate training and support, could be candidates for employment in the construction, civil and oil and gas industries, or other industries as appropriate.

• Of all public and private school students currently enrolled in Years 10, 11 and 12 in the West Kimberley, there is a cohort of approximately 201 students, including 38 Indigenous students in the public school system, who have been in regular attendance at school and who, with appropriate training and support, could be candidates for employment in the construction, civil and oil and gas industries, or other industries as appropriate.

• The Indigenous population of the West Kimberley is much younger than the general population with a median age of 22 years old compared to the Western Australian median of 36 years old.

• The indigenous population in the West Kimberley is forecast to increase by approximately 3,410 people (34.3%) between 2006 and 2021 with the most significant increase, of 46.9% or 1,057 people, being in the 5-14 year old age group. The study recommends that the implementation of the Training Service and Infrastructure Model, including the establishment of a Trade Training Centre, will assist in removing the barriers to long term employment for Indigenous people and supply an appropriately skilled labour force. The study also recommends the establishment of an Aboriginal Skills Centre that focuses on work readiness and civil construction skills, and the provision of additional workshops, and the establishment of new facilities at Kimberley TAFE to enable it to provide more trade level skills. The Premier is currently seeking a commitment from the Australian Government to invest in this initiative. The implementation of appropriate infrastructure and targeted support services to Indigenous communities will ensure that training and employment opportunities for the people of the Kimberley region are significantly boosted. The collaboration of Australian and State Governments to appropriately fund these initiatives will be critical to the long-term success of these initiatives. In addition to the above, the Department will be undertaking a comprehensive Kimberley Workforce Development Plan in 2011. The workforce development plan will capture the training and workforce development needs of both Indigenous and, non—Indigenous communities in the region and at a sub-regional level. The development phase of this Plan will include consultation with key stakeholders including Aboriginal groups, industry, local government and community groups and is expected to be completed in late 2011. This initiative will link to the planning processes of the Kimberley Regional Development Commission and the Department of Planning and the Western Australian Planning Commission in the region. The first phase commencing in March 2011 will include the development of a regional profile and an environmental scan. Part two, expected to commence later in the year, will include the preparation of a workforce development plan along with the development of a range of employment and training strategies. The Department is of the view that the range of initiatives outlined above will significantly contribute to achieving the following key outcomes, as outlined in the SAR **Strategy 5.4.7**:

- maximising the number of Indigenous workers working directly on the Precinct and on related activities;
- maximising the number of Indigenous apprenticeships; and
- up skilling the Indigenous workforce in the longer-term.

The State Government recognises the key role of education and skills development in enabling local Indigenous people to be able to take advantage of the opportunities presented by the LNG Precinct. The Strategic Assessment Report identifies a range of strategies as part of the Strategic Social Impact Management Plan (**SSIMP**) in **Part 5**, **Section 5**, tailored towards the delivery of social and economic benefits to the local indigenous community. In addition to management measures targeting the related barriers of health and housing, the SSIMP includes management measures related to education, training and workforce development. This includes the referenced management measures (**Part 5**, **Section 5.4.7**) to increase the Indigenous workforce and ensure their development.

DSD has included in the SSIMP a requirement that a management plan for indigenous education, training and employment be developed. To ensure that this is done as soon as possible, the SSIMP requires that this management plan be developed prior to construction and include relevant targets and performance indicators.

As this submission acknowledges, the need for a Trade Training Centre in the West Kimberley was a finding in the SAR. The recommendations of the Trade Training Centre feasibility study will be valuable in developing the indigenous education, training and employment management plan and achieving the outcomes described in the SSIMP. This includes the recommendation that the Training Service and Infrastructure Model, which includes the establishment of a Trade Training Centre, be implemented. During development of the management plan, such recommendations will assist in identifying the ways in which the barriers to long term employment for indigenous people can be addressed and an appropriately skilled labour force supplied.

Generic Question ID: 269 Sub ID [39, 114] Raised by [S39 Q745]

Some submissions queried the opportunities for local business to service managed access camps:

- If the restriction upon the coming and goings of construction camp workers is successful, then how will the promised boost to small business be delivered?
- There are many small businesses providing services plumbing, electrical, transport, IT, construction, cleaning, health and other domestic services and so on. Will they get a 'look-in'? Given the proposal to fly-In fly-out and keep workers in closed camps what opportunities exist for retailers?

A key objective of State Government in establishing the Browse LNG Precinct in the Kimberley is to provide opportunities for local businesses. While the construction workforce will be largely comprised of FIFO workers, there are still a number of ways in which the local and regional economy will benefit. The development of the Precinct provides significant scope for the region to diversify and considerably increase its contribution to the State's economy, including in tourism and related sectors such as retail, hospitality and aviation.

The SAR highlighted the potential long term flow-on benefits of employing local businesses in the development of the Precinct, including both an increase in business income and the capacity of local businesses to deal with large clients and projects. The implementation of local purchasing strategies by commercial proponents will encourage Precinct expenditure within local businesses and industry (**Part 5**, **Section 5**). Subsequently, the local manufacturing and construction base would grow through contracting to supply goods and services to the Precinct. This would result in flow-on benefits of increased business income and an increase in the capacity of local businesses to deal with large clients and projects. This increased capacity can be utilised to generate an expanded customer base beyond the LNG sector (e.g. retail and hospitality sectors). There is potential for retailers in particular to benefit from rising household incomes, leading to an increase in spending.

In addition, the up-skilling of local people to work directly or indirectly on the Precinct, will increase the pool of skilled workers in the region. The skills acquired through training for jobs on the Precinct will also be applicable to non-Precinct jobs. For example, the up-skilling of local workers during the construction phase of the Precinct will drive local involvement in the likely demand for housing construction associated with Broome's natural population growth. Small businesses that up-skill and obtain contracts on the Precinct project may also use their increased capacities to generate an expanded customer base in non-Precinct related business.

Preparing local businesses will start well in advance of the Precinct establishment and be well co-ordinated to ensure a match between the skills required, the capacity of the training providers and local businesses and the programs to provide local people with the required skills. Work is already being done in this area. For instance, the Kimberley Development Commission facilitates the Kimberley Business Capability and Services Register that is sponsored by a range of commercial operations, including the Foundation Proponent of the Browse LNG Precinct (i.e. Woodside). The Register will be a valuable tool in connecting local businesses with regional development opportunities, including the Browse LNG Precinct (http://www.kimberleybiz.com.au/home.asp). The State government will also support the use of this register in the implementation of local purchasing strategies developed by commercial proponents to encourage Precinct expenditure within local businesses and industry.

For example, many small businesses in Broome and the Kimberley are involved in the tourism industry, and it is State Government's view that tourism can coexist with the development of the Browse LNG Precinct. Accordingly, the SSIMP also proposes the development of a detailed tourism management plan, which maintains the current tourism image of Broome and the Kimberley, while also providing a framework for the ongoing development of the Precinct. One potential benefit to small businesses arising from this management plan could be planned tours from the managed-access construction worker camp to Broome. Due to the seasonal nature of tourism in the region, this could provide a much needed boost to small business, particularly in the off-season.

The Strategic Social Impact Management Plan is outlined in **Part 5**, **Section 5** of the Strategic Assessment Report, and is available online from: http://www.dsd.wa.gov.au/documents/Browse_SAR_Part5_Social_Assessment.pdf

Generic Question ID: 406 Sub ID [104, 149] Raised by [S104 Q916]

DoH Submission: 5.4.7 Indigenous workforce development:

One of the potential barriers for employment of some Aboriginal people may be their health status. Aboriginal employment development programmes could also include strategies to improve and maintain health status in consultation with the health sector.

The State Government is of the view that development of the Browse LNG Precinct will provide an opportunity for new initiatives to substantially improve the education, health, social and economic well-being of Indigenous

people, and considerably reduce disadvantage across the broader West Kimberley population.

Part 5, Section 5.4.7 of the Strategic Assessment Report (**SAR**) proposes the development and implementation of an Indigenous education, training and employment management plan that ensures a coordinated approach across government and non-government agencies, to maximise opportunities for the local community. Through a collaborative approach between commercial proponents wishing to operate at the Precinct, State and Commonwealth Government agencies, and the community, this plan will include a range of management mechanisms to reduce the existing barriers to Indigenous employment.

The SAR acknowledges that health status is often a barrier to employment for Indigenous people. Accordingly, the health sector is viewed as a key stakeholder to be engaged in this process. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the SAR, proposes mechanisms through which the provision of health and social services to Indigenous and non-Indigenous people throughout the West Kimberley region will be strengthened.

The Broome Social Services Strategy, will be an across government initiative to address the social services deficits in Broome and surrounds. This Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will address areas such as health, education, child care, counselling, therapeutic and emergency services in Broome, including for Indigenous people.

The management measures proposed under the Strategic Social Impact Management Plan will be developed and implemented concurrently, to ensure that potential synergies in the objectives of these measures are capitalised upon.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1248 Sub ID [212, 207] Raised by [S212 Q1126]

Part 5 Section 5.4: Precinct Condition Strategies - Ten management strategies are listed to “mitigate flow on impacts” (**p.316**). There are a lot of management strategies which tells us in the community that the impacts on all these areas are predicted to be highly significant. If this is the case, the WA Government MUST back down from this project.

The number of management strategies listed in the document is not indicative of the level of significance of the predicted socio-economic impacts. The purpose of a Social Impact Assessment (**SIA**) is to develop a social profile of impacted communities, predict potential social impacts of the development and develop management and mitigation measures to address those impacts. **Part 5** of the SAR summarises the predicted socio-economic impacts of the development of the Browse LNG Precinct and assigns a level of significance to these impacts. The SAR then sets forth a range of commitments to put in place management plans to ensure that any negative impacts are minimised to the extent feasible and potential benefits are realised by local communities.

To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Where possible, impacts have been avoided or minimised; however, even when best management practices are employed, there will still be some residual impacts. The predicted residual socio-economic impacts of the development (i.e. the significance of impacts after management measures have been implemented) are outlined in **Section 4**, **Part 5** of the SAR. These residual impacts range from low to high.

Generic Question ID: 96 Sub ID [12] Raised by [S12 Q115]

The WA Department of Training and Workforce Development has provided comment on the SAR **Strategy 5.4.6** - Education, Training and Employment which has the following objective: "to maximise education, training and employment opportunities for the local community and ensure a coordinated approach to a range of education, training and employment strategies implemented to support the development of the BLNG Precinct".

The feasibility study for a Trade Training Centre undertaken by the Department highlighted the importance of ensuring that people are appropriately trained and that this training is linked to employment opportunities in the region. The study also identified that there are gaps in capacity and capability to deliver training and provide pathways to employment in the West Kimberley. In addition, the study found that a more co-ordinated approach to education, employment and training opportunities in the Kimberley and a more co-ordinated and streamlined approach to the delivery of training, employment and support services for Indigenous people is required.

It is important that work-readiness training, capacity building initiatives and the coordination and streamlining of services are implemented as soon as possible to allow Indigenous and non-Indigenous people pathways to higher level, training that will be delivered through proposed training infrastructure developments in the medium

term. The study proposes that the development and implementation of a new Training Service and Infrastructure Model will bring together training and employment providers with other key stakeholders to operate under a regional service agreement to successfully train Indigenous people and non-Indigenous people for employment in the oil and gas and civil and construction industries in the West Kimberley. Stakeholders who have participated in the study have committed to working together to determine the best way forward and to proceed with an agreement for a coordinated approach. This includes Aboriginal groups, the KLC, employment and training providers, industry and State and Australian Governments.

The Department's newly established Aboriginal Workforce Development Centre in Broome will play a key role in maximising the training and employment opportunities for the local community and insuring a co-ordinated approach to service delivery. The Department is of the view that the successful implementation of the feasibility study recommendations relating to infrastructure and service delivery will go a long way to achieving the outcomes of:

• a trained local workforce that can be deployed during Precinct construction;

• increased local employment at the Precinct, including Indigenous people; and

• up-skilling of the regional workforce in the longer-term.

The State Government is committed to delivering fundamental economic and social change to the West Kimberley through development of the BLNG Precinct. Maximising education, training and employment opportunities for the local community is one way in which these benefits can be delivered.

Overcoming the barriers that currently limit the ability of local community members to secure employment is essential if the local community, especially its Indigenous members, are to be able to take advantage of the direct and indirect employment opportunities resulting from the establishment of the BLNG Precinct. The SSIMP includes a requirement that a management plan for education, training and employment be developed and implemented prior to project construction. This will necessitate a coordinated approach involving the key government and non-government stakeholders.

The establishment of a Trade Training Centre in the West Kimberley would assist in removing barriers to long-term employment for Indigenous people and provide employers with an appropriately skilled local labour force. DSD as the Proponent agrees with the WA Department of Training and Workforce Development that additional supporting elements will be needed to ensure that Indigenous people receive and successfully complete the training they need. These will need to be part of the education, training and employment management plan.

Generic Question ID: 100 Sub ID [12] Raised by [S12 Q117]

The Department of Training and Workforce Development states that the objectives outlined in the Strategic Assessment Report relating to education training and employment and Indigenous workforce development are supported by the Department and its initiatives to prepare and strengthen Western Australia's, and in particular the Kimberley region's, workforce for the future. The investment in funding and support by both Australian and State Governments will be critical to achieving these objectives.

The State supports a Trade Training Centre in the West Kimberley and other employment and training initiatives so that the region’s population, especially Aboriginal people, is well positioned to take advantage of the direct and indirect employment opportunities associated with the construction and operation of the BLNG Precinct. The State Government is working with Commonwealth and Industry to determine the best way to progress and is seeking a commitment from the Australian Government to invest in this initiative.

It should also be noted that, as part of the land access negotiations, funds would be allocated from both the State and commercial proponents for education and training of the Indigenous community.

Generic Question ID: 402 Sub ID [104] Raised by [S104 Q913]

DoH Submission: 5.4.2 Access to Broome and the Dampier Peninsula:

Health and well-being benefits to local communities and the workers may arise from appropriate interaction especially workers with extended periods of employment at the Precinct. Additional outputs (activities) for workers may arise on consultation with the communities of Broome and the Peninsula and the workers themselves.

The effectiveness of controlling access to Broome and the Dampier Peninsula will be monitored as part of the social monitoring program. The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) acknowledges the importance of adopting an adaptive management approach. Social monitoring and ongoing involvement of key stakeholders, including the community and Precinct workforce, will allow management measures to be responsive to changing needs and conditions. As with all management measures, the involvement of the communities of Broome and the Dampier Peninsula in

decisions about what is working and what is not will be important in determining if changes should be made to the mitigation and management measures in order to achieve better social outcomes.

The decision to manage interaction between the community and Precinct workers was made based on community concerns identified in both the Social Impact Assessment (**SIA**) and Aboriginal Social Impact Assessment (**ASIA**). However, it is possible that community perceptions will change over time and this management measure will need to be adjusted to suit changing conditions. This may include the development of additional organised recreational or community based activities for Precinct workers. Any alterations to controlled access management measures will also need to reflect the requirements of the "Sense of Place" strategies proposed for both Broome and the Dampier Peninsula.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 403 Sub ID [104] Raised by [S104 Q914]

DoH Submission: 5.4.3 Workforce Behaviour Management:

Workforce management practises must include control on the use as well as access to drugs and alcohol.

The Strategic Social Impact Management Plan, outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) proposes management measures to mitigate any potential negative social impacts associated with the development of the Precinct. Among these management measures are Precinct Condition strategies, which include a managed-access FIFO construction worker camp near the Precinct and the requirement for commercial proponents to implement policies and procedures to manage worker behaviour when visiting Broome or the Dampier Peninsula. This is to include workforce management practises to control access to drugs and alcohol.

As is the case with any modern natural resource processing facility in regional Western Australia, compulsory random alcohol and drug testing will also limit the prevalence of substance misuse by Precinct workers. Although it is possible that a 'wet mess' will be present in the camp, limits to consumption may be imposed and compulsory testing may act as a disincentive for excess consumption. The service of alcohol would be subject to licensing conditions.

To ensure delivery of the necessary social management measures, including the Precinct Condition strategies outlined in the Strategic Social Impact Management Plan, the SAR propose that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 404 Sub ID [104] Raised by [S104 Q915]

DoH Submission: 5.4.5 Cross-cultural Training:

It may be appropriate to consider regular cross-cultural training for workers rather than only on commencement of work and should include consideration of cultural and family obligations (ASIA Recommendations 46 and 47).

The Strategic Social Impact Management Plan outlined in **Part 5, Section 5** of the Strategic Assessment Report (**SAR**) proposes a number of Precinct Condition strategies to which commercial proponents wishing to operate at the Precinct must adhere. **Part 5, Section 5.4.5** of the SAR proposes the development and implementation of management plans to ensure the cultural awareness of the Precinct workforce.

Ensuring that workers at the Browse LNG Precinct are aware of the culture and the cultural traditions of their Indigenous colleagues, as well as their heritage and the heritage values within and near the Precinct and surrounding area, is an important objective of the management measures outlined in the Strategic Social Impact Management Plan. Commercial proponents wishing to locate at the Precinct are required to develop a management plan to ensure that all construction workers have undergone cross-cultural training as soon as practicable. Although a requirement for cross-cultural training is currently limited to the construction workforce, the Department of State Development agrees that it would be beneficial to extend this requirement to the operational workforce. This will be explored further in the next stage of the project, as the management plan and leasing conditions are developed, and in consultation with future commercial proponents. In addition, a commitment has been given that Traditional Owners would have representation in all Browse oversight groups. The Traditional Owners would then be able to monitor and provide advice about any need for ongoing cultural awareness training.

Combined with the significant Indigenous training and employment opportunities presented by the development of the Precinct, the management measures proposes in the SAR will, in the longer term, allow for a more culturally balanced workforce across the region.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 407 Sub ID [104] Raised by [S104 Q917]

DoH Submission: 5.4.8 Transient workforce management:

Opportunistic workers include sex workers and objectives on recruitment strategies may not address these needs. Further consultation with the health sector, the Local Government and others to manage these workers is required.

Prior to the commencement of construction, commercial proponents wishing to locate at the Browse LNG Precinct are to put in place policies and procedures to limit and manage the potential numbers of opportunistic workers arriving in the region. The Transient Workforce Management Plan outlined in **Part 5, Section 5** of the Strategic Assessment Report (SAR) will be required to implement measures to:

- minimise the number of opportunistic workers arriving in Broome;
- ensure sufficient temporary accommodation for the opportunistic workforce to avoid impacts on Broome's short-stay accommodation in the tourist season; and
- endeavour to gainfully use the transient/opportunistic workforce that does arrive to fill employment vacancies in Broome and minimise the effect of workforce competition.

Although these measures seek to manage the impact of transient/opportunistic workers as a group, it is agreed that they do not explicitly address the issue of sex workers. However, development of this management plan will include collection of additional baseline data on the profile of transient/opportunistic workers that can be expected. It is also recognised that the development of social impact management strategies addressing issues with direct or indirect health and well-being implications should include consultation with the health sector, including the transient workforce management plan.
The potential impact of transient workers will also be explored as part of the project-level SIA being undertaken by Woodside (i.e. the Foundation Proponent).

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 408 Sub ID [104] Raised by [S104 Q918]

DoH Submission: 5.4.9 Strategies to retain local benefits:

Issues to be considered should include:

- environmental sustainability with respect to transport of goods and services should be key objectives of strategies;
- covenants with local businesses and/or workers should be agreed to provide some degree of certainty;
- seed funding for local business development; and
- impacts on provision of goods and services that will come through or be provided by the Broome community.

An objective of the State Government in establishing the Browse LNG Precinct is to provide opportunities for local employment and local economic development in the West Kimberley. This will require the development and implementation of effective management measures prior to construction and on an ongoing basis. To this end, the Strategic Social Impact Management Plan (**SSIMP**) outlined in **Part 5, Section 5** of the SAR proposes a number of management strategies.

A Precinct Condition strategy outlined by the SSIMP states those commercial proponents wishing to operate at the Precinct will be required to develop and implement a management plan to retain local benefits prior to a construction. This will include implementation of local purchasing strategies that will encourage Precinct expenditure within local businesses and industry. The purchasing strategy will be based on the demands of the Precinct and related activities as well as an assessment of Broome and the region's current and future capacity to supply goods and services. The strategies to retain local benefits will also contribute to retaining regional benefits by contributing to the development of the West Kimberley Socio-Economic Development Strategy, which seeks to maximise all socio-economic benefits of the Precinct for the West Kimberley.

Local purchasing policies will help local businesses become more viable and expand their capacities. As discussed in the SAR, the opportunity for the region's small manufacturing and construction base to contract for

supply of Precinct goods and services is likely to generate flow-on benefits including an increase in both business income and in the capacity of local businesses to deal with large clients and projects. This could lead to further productivity gains in the area, even beyond LNG contracting. This will also help local businesses generate an expanded customer base in non-Precinct related business (e.g. retail and hospitality sectors).

Through local development initiatives such as the Kimberley Business Capability and Services Register (**Kimberley BIZ**), Woodside as Foundation Proponent has already commenced work with local industries to enhance their capacity to participate in works associated with the exploration and development of Browse Basin gas. Woodside is also in the process of conducting its own project-level Social Impact Assessment, which will seek to further enhance community participation.

As noted in the SAR (**Part V**, **Section 5**), the management plans proposed in the SSIMP must include relevant targets and performance indicators such as the value of locally bought goods and services and the number of local Indigenous business enterprises developed. Commercial proponents are also required to develop a program to monitor the effectiveness of this management measure. This will include local indicators of economic development such as cost of living, employment and business development.

To ensure delivery of the necessary social impact management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 501 Sub ID [232] Raised by [S232 Q1365]

The Aboriginal people on the Dampier Peninsula wonder how the FIFO Workers will be managed?

The construction phase would involve a large number of FIFO workers. The Strategic Assessment Report (**SAR**) identifies a number of strategies to manage the potential for any behavioural problems associated with the FIFO workforce. These include:

- The decision to accommodate the FIFO construction workforce in a managed-access construction camp near the Precinct rather than having them live in Broome.
- The implementation by commercial proponents of policies and procedures to:
    - manage Precinct worker access to Broome and the Dampier Peninsula; and
    - manage worker behaviour including access to drugs and alcohol and unacceptable employee behaviour when visiting Broome and other areas in the Kimberley.
- The provision of cross-cultural training to all construction workers on the project.

The proposed governance structure for the Browse LNG Precinct will provide a mechanism to ensure that these management measures are implemented. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 514 Sub ID [232] Raised by [S232 Q1379]

The Aboriginal community members on the Dampier Peninsula believe that there is a need for everyone to have cultural protocol training. Can this be arranged?

The Strategic Assessment Report (**SAR**) acknowledges the importance of all workers at the Browse LNG Precinct being aware of the cultural obligations of their Indigenous colleagues, their heritage and the heritage values within and near the Precinct and surrounding area, including their importance and legal obligations of managing or avoiding impacts to heritage sites. As outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5**), commercial proponents are to collaborate with Traditional Owners to ensure that all construction workers have undergone cross-cultural training as soon as practicable. This will be done under a cross-cultural training management plan.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 682 Sub ID [120] Raised by [S120 Q1329]

ENGO Submission: 5.4.7 Indigenous Workforce Development [p321]. As yet there are no Indigenous workforce targets or commitments.

As this was a strategic-level assessment, specific project-level indicators and targets were not established. These will be established in the next stage of planning, when more details of the required worker profile for specific projects are known. Commercial proponents will be required to develop an Indigenous education,

training and employment management plan. This must occur prior to construction and include relevant targets and performance indicators. The effectiveness of the plan will be monitored and the results reported on, as part of the Precinct governance arrangements**.** As with all management measures outlined in the SAR, should monitoring indicate that performance targets are not being met, adjustments would be made to the management measures to achieve the desired performance outcomes.

The proposed Governance arrangement has been the subject of numerous comments from both the community and State and Commonwealth environmental regulators. A number of modifications have subsequently been made to this and these are presented in detail in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group, and through this mechanism, the Traditional Owners can have significant input into the environmental and social management measures associated with the Precinct.

Generic Question ID: 683 Sub ID [120] Raised by [S120 Q1330]

ENGO Submission: **Part 5 Section 5.4.8.** Transient Workforce Management. It seems unlikely that the commercial proponents will take the lead for ensuring that transient and opportunistic workers in Broome will be housed and have access to adequate services.

Commercial proponents have an important role to play in limiting the number of transient workers that migrate to Broome and managing those that do arrive. Although not the sole responsibility of commercial proponents, companies can discourage these workers from moving to the region and, once they have arrived, have procedures in place so these workers find employment in Broome. This will be part of the required Transient Workforce Management Plan to be prepared by the Commercial proponents (**Part 5**, **Section 5.4.8**).

Other parties will also have a role to play in managing the impacts of transient workers. Housing impacts, for example, will be addressed through the development of a Housing Strategy, which will be led by LandCorp (**Part 5**, **Section 5.5.5**). In addition, the provision of services in Broome will be addressed in the Broome Social Services Strategy, led by the State Government (**Part 5**, **Section 5.5.6**). These general social management strategies will complement the Precinct-level policies and procedures implemented by the commercial proponents, which together will alleviate the potential impacts of transient workers.

To ensure delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 684 Sub ID [120] Raised by [S120 Q1331]

ENGO Submission: **Part 5 Section 5.4.9** Strategies to Retain Local Benefits. There is no consideration of the impacts on Broome and the Dampier Peninsula if the LNG project becomes commercially unviable, as occurred to the town of Ravensthorpe in 2009 when BHP Billiton closed its nickel mine.

The nickel mining sector is vulnerable to changes in the commodity value of nickel on world markets. It is not unusual for nickel mines to close or be temporarily mothballed in reaction to a drop in world nickel prices. By comparison, the LNG sector is very stable and thus far less vulnerable to the types of volatility not uncommon in the nickel sector.

It is also noted that Broome is significantly larger and has a more diverse economy than Ravensthorpe, and would be in a much better position to withstand the withdrawal of the LNG industry in the unlikely event that this occurred.

The State Government and Woodside (as a potential Foundation Proponent) have together committed to delivering about $1.5 billion of social and economic benefits to local Aboriginal communities, under a Heads of Agreement (**HoA**) signed by the KLC on behalf of the Goolarabooloo Jabirr Jabirr claimants in April 2009. This commitment would still be fulfilled in the highly unlikely event that the LNG project becomes commercially unviable.

To ensure the necessary delivery of benefits committed to under the HoA, the SAR proposes the establishment of a Precinct Governance structure. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners and local authorities would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, the Traditional Owners and local authorities can have significant input into the environmental and social management associated with the Precinct.

Generic Question ID: 746 Sub ID [70] Raised by [S70 Q626]

Why did SAR not mention the "temporary" (i.e. 15 year!) workers camp situated on the edge of Broome to house 600 construction workers, currently before Council? The "mitigation strategy" of separating the workforce from the population of Broome is obviously not in evidence here.

The Pioneer camp was identified in the SAR as a category C activity (i.e. a related activity), but not part of the approvals process. See **Part 2, Section 6.2.2.2** of the SAR:

"Woodside is considering a 600 person pioneer accommodation facility ahead of the development of the permanent construction and operational workforce facilities which are part of the BLNG Precinct. Woodside will seek separate approvals for this facility as required."

At the time of publication of the SAR, the location of the Pioneer camp was not known. With regards to the strategies for separation of Precinct workers and Broome residents, although it is closer to Broome than the Precinct construction workforce accommodation, Woodside intends to impose the same workforce management strategies, including controlling access to and from the camp.

In addition, while the Woodside temporary workers camp is outside the scope of the Strategic Assessment, it is subject to the relevant planning legislation. The Western Australian *Planning and Development Act 2005* establishes the legislative basis for State and local planning. Under this legislation, Broome Shire's *Town Planning Scheme No. 4* provides the planning framework to guide the future development of Broome. The *Town Planning Scheme No. 4* provides for a range of local planning policies, including "Transient Workers Accommodation" (Local Planning Policy 8.8) (http://www.broome.wa.gov.au/council/pdf/policy/88.pdf). This planning policy relates to a "temporary or intermittent workforce employed on one or more finite projects in or based in the Shire of Broome". The policy provides a number of assessment criteria to enable the council to assess Transient Workers Accommodation proposals.

Generic Question ID: 910 Sub ID [171] Raised by [S171 Q1899]

DIA Submission: It is recommended that the Education, Training and Employment Strategy be designed to incorporate lessons which have been learned by small RTOs like Djaringo and Kimberley Group Training (**KGT**) in the training of Indigenous personnel.

Identifying other programs that have and have not had success will be an important step in developing management strategies that are effective and realistic. In developing strategies to maximise opportunities for Indigenous people to engage in education, training and employment, it will be important to review what has been done elsewhere in greater detail. Lessons from programs administered by small registered training organisations will likely be among those that are reviewed. This will help the responsible parties identify approaches that are and are not effective. It will also assist in developing targets and performance indicators that are realistic, given what has been achieved elsewhere.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1122 Sub ID [71] Raised by [S71 Q2600]

While the SAR states that there will be restricted access for workers to access to Broome, the submitter believes this is not a viable option.

Although it would be difficult to manage worker access to Broome and the Dampier Peninsula if the majority of the workforce lived locally, this task is made easier through the use of a largely fly-in, fly-out (**FIFO**) workforce and a controlled-access construction camp near the site. These measures will enable worker access to Broome and the Dampier Peninsula to be managed. Internal and external access to the construction camp will be controlled to limit the interaction between the construction workforce and the Broome and Dampier Peninsula communities when they are not at work. An access management plan will be the key mechanism for managing worker access to the Broome and Dampier Peninsula. This is a condition of locating at the Precinct, thus preparation and implementation of this plan will be ensured through the proposed governance structure (**Part 6**).

Access to recreational fishing and tourism activities in the region will also be managed. Any recreation activities undertaken on rest days will be actively managed (e.g. guided tours with Aboriginal tour operators and/or fishing tour operators). In addition, managing access to the Dampier Peninsula and alternative recreation areas will be investigated in collaboration with Traditional Owners, State and Local Government to support the development of the Dampier Peninsula Planning Strategy (formerly Dampier Peninsula Land Use and Infrastructure Plan).

The effectiveness of this management measure will be monitored as part of the social monitoring program. As noted in SSIMP an adaptive management approach is essential. Social monitoring and ongoing involvement of key stakeholders, including Traditional Owners, will allow management to be responsive to changing needs and

conditions. Community feedback via email, hotline or other mechanism will likely also be part of the social monitoring program. As with all management measures, the involvement of the communities of Broome and the Dampier Peninsula in decisions about what is working and what is not will be important in determining if changes should be made to the mitigation and management measures in order to achieve better social outcomes.

To ensure delivery of the necessary social and construction workforce management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1249 Sub ID [212] Raised by [S212 Q1127]

Part 5 Section 5.4.1: Managed Access Construction Camp - "a managed access construction camp will manage the exit and entry of the workforce and external entry by people not legitimately at the Precinct" (**p. 317**). The community concerns about the construction workers is very real. The BLNG partners should take ALL of the responsibility for their workforce and not put pressure on existing Police or Traditional Owners. At the same time, the impacts on housing should be the responsibility of WA State Government as well. If this is left to the corporate partners they will buy up housing for their personnel living in Broome town which will definitely have a negative effect on housing affordability. This will be even worse than the situation in Karratha.

The development and operation of a managed-access construction worker camp in close proximity to the Precinct will minimise the potential negative socio-economic impacts of allowing workers to live in Broome (e.g. increased cost of living and housing prices, impacts on tourism). This decision was made in response to community concerns and the findings identified in the Social Impact Assessment (**Appendix D**) and Aboriginal Social Impact Assessment (**Appendix E-3**). Commercial proponents will be given the responsibility of ensuring their workers have accommodation. Each commercial proponent will be required to develop an accommodation plan to ensure workforce accommodation needs over the life of its project will be met without increasing the existing affordability and availability stresses on permanent and temporary accommodation in Broome and surrounding areas.

In addition, housing issues will be addressed more broadly. The State Government, with lead responsibility assigned to LandCorp, will develop a land and housing management plan to ensure the timely supply of land and housing to meet the needs of Broome and the project. The strategy is also intended to address short-term accommodation deficits, affordable housing, social housing and homelessness issues.

To assist with delivery of the necessary housing management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1317 Sub ID [207] Raised by [S207 Q3154]

Everything about the proposed development seems to require extraordinary management. Knowing the potential detrimental impacts to the environment and surrounding communities, the proponents are opening themselves up for litigation in future years. The proponents are negligent before the project even starts.

As discussed in **Part 2, Section 1** and **Section 2** of the SAR, the selection of the James Price Point coastal area to accommodate a multi-user LNG Precinct was subject to an exhaustive site selection process, initially involving the assessment of 43 sites in the Kimberley region of Western Australia, as well as examination of potential sites in the Pilbara and outside Western Australia. The Environmental Protection Authority (**EPA**) concluded the following on the James Price Point coastal area in their Section 16(e) of the EP Act advice when the site was shortlisted alongside others:

- "*The environmental impacts and risks of locating a precinct in the James Price Point area are likely to be manageable. The risk of future expansion being significantly constrained is likely to be low*."

Whilst it is recognised that none of the sites were entirely unconstrained and that there remains various environmental issues that require addressing for the James Price Point coastal area, DSD believes that the management measures presented in the SAR are not particularly extraordinary in their scope. The environmental management that has been proposed is relatively typical of an LNG Development of this nature and in this biogeographic setting.

Litigation would only arise in environmental terms in a situation where commercial proponents breached their licence or Ministerial conditions. DSD and other Government Agencies will monitor compliance for commercial proponents on these conditions. Refer to **Section 2.3** of the Response to Submissions Summary Report for further information regarding the Governance structure of the BLNG Precinct.

Generic Question ID: 1375 Sub ID [111] Raised by [S111 Q2146]

There is a very real possibility that there may be times, such as during a cyclone evacuation from the gas platform, that Broome will be inundated with hundreds of workers, of which the majority will be male, which will make made it very uncomfortable and certainly not relaxing.

During construction the offshore workforce will be stationed on mobile vessels that would sail away from cyclone threats. In these circumstances personnel would not be evacuated. Woodside's plans for operating offshore facilities are for them to be unmanned, except during maintenance periods. Existing practice for evacuations is for people to transit direct to Perth once they have been evacuated from an offshore installation.

Emergency response plans have not yet been prepared, but will be prepared by the State government and commercial proponents. The State government will prepare an overarching Emergency Response Plan that includes:

- risk assessment of potential emergencies (including bushfires, introduction of foreign pests, flooding and spills);
- emergency response equipment and training;
- emergency response procedures;
- responsibilities during emergency response; and
- reporting, review and improvement as required.

Commercial proponents will also be required to ensure appropriate primary health care, emergency, security and police services are provided to the Precinct and construction camp without detracting from service provision to Broome. The development of a Precinct Health, Emergency Services, Policing and Security Strategy will be required prior to construction.

To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1377 Sub ID [111] Raised by [S111 Q2151]

Bearing in mind that the majority of fire brigade members are volunteers and it is becoming increasingly difficult to recruit volunteers, the submitter is concerned that small communities such as 12-Mile, Coconut Wells, Skuthorpe and those at Crab Creek may suffer because of the added pressure of having to protect a hub and workers camp from fire.

In recognition that any impacts from the Browse LNG Precinct would be on the already stressed services in Broome, the State Government has made a commitment in the SAR to address existing deficits in the Broome Social Services Strategy. This will be an across government initiative to increase capacity of emergency services along with services such as health, education, child care, counselling, and therapeutic services to prevent further pressure. In addition to addressing short term deficits, this strategy will assist in the longer term to increase the capacity of health and social service provision to accommodate any potential increase demand resulting from development of the Precinct.

Commercial proponents will also be required to ensure appropriate primary health care, emergency, security and police services are provided to the Precinct and construction camp without detracting from service provision to Broome. The development of a Precinct Health, Emergency Services, Policing and Security Strategy will be required prior to construction. The strategy will include targets and performance indicators, such as the level of Precinct use (time spent, number of incidents) of Broome health care, police and emergency services. To ensure management measures are effective, mechanisms to review and adapt mitigation and management as required will be included in the Precinct-level monitoring system.

Finally, emergency services will be addressed in an overarching Emergency Response Plan that addresses:

- risk assessment of potential emergencies (including bushfires, introduction of foreign pests, flooding and spills);
- emergency response equipment and training;
- emergency response procedures;
- responsibilities during emergency response; and
- reporting, review and improvement as required.

To assist with delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. This proposed Precinct Governance arrangement has been the subject of numerous comments from both the community and State and Commonwealth environmental regulators. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

5.5 General Social Management Strategies

Generic Question ID: 412 Sub ID [104] Raised by [S104 Q920]

DoH Submission: 5.5.1-5.5.9: All issues raised in this section have the potential for indirect health outcomes which, when considered, should be in consultation with the health sector.

Part 5, Section 5.5 of the Strategic Assessment Report (**SAR**) addresses the General Social Management Strategies proposed as part of the Strategic Social Impact Management Plan. These strategies are to be developed and implemented to address a number of issues including:

- management of marine resource use impacts;
- management of tourism impacts;
- management of impacts of recreational use;
- Broome character and Sense of Place management strategy;
- housing strategy;
- Broome Social Services Strategy; and
- governance and monitoring.

It is agreed that some of the above impact strategies would have indirect health and well-being implications (e.g. Broome Social Services Strategy, governance and social monitoring). For those strategies with the potential for indirect health and well-being implications, the health sector would be considered a key stakeholder and accordingly would be engaged as part of the process of strategy development.

To ensure delivery of the necessary social management measures outlined in the Strategic Social Impact Management Plan, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 685 Sub ID [120] Raised by [S120 Q1333]

ENGO Submission: **Part 5 Section 5.5.6**. Broome Social Services Strategy. The kind of planning proposed as the West Kimberley Socio-Economic Strategy should be undertaken regardless of whether an LNG Precinct is approved given the frequently acknowledged social services deficit in the region. This is a core function of state and federal governments. It does not need to be linked to the proposed LNG project.

Delivering social and community services to regional communities (both Indigenous and non-Indigenous) is a challenging issue that is the joint responsibility of the Commonwealth, State and local governments. Improving social services in Broome and the West Kimberley are key priorities for the State and Commonwealth Governments, independent of this project.

The Broome Community Services Strategy will ensure that the additional demands generated by the Precinct do not exceed the delivery capacities of community services in the regional service centre of Broome. As part of this strategy, measures will also be taken to increase the capacity of community services that are currently under pressure and thereby vulnerable to any increased demand from the combined effects of projected population growth and population increases due to the Precinct. The Strategy will map existing services (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

This strategy is linked to development of the Precinct in that its purpose is to ensure Precinct development has the greatest positive local benefit in creating a more resilient community. Whilst development of this specific strategy is linked to delivering the benefits of the project, there are numerous other government programs to improve service delivery in Broome and the Kimberley that will continue regardless of development of the Precinct. For more information on this initiative, please refer to **Section 4.7.4** of this document.

The former West Kimberley Socio-economic Strategy has been replaced by the West Kimberley Industry Participation Initiative. The State Government will encourage and support the local procurement of supplies and services for the Browse LNG Precinct through the West Kimberley Industry Participation Initiative. The primary

focus of this initiative will be the Shires of Broome and Derby/West Kimberley and secondly, the Kimberley as a whole. This initiative will be led by the Local Content Unit of the Department of Commerce.

Generic Question ID: 687 Sub ID [120] Raised by [S120 Q1335]

ENGO Submission: **Part 5 Section 5.5.8.1** Commercial Proponents Monitoring System. The second dot point is highly opaque. In the interests of coherent public dissemination of information, further clarification is sought of the following: "The commercial proponents monitoring system would include: decision-making processes, based on the outputs of monitoring, to adapt management measures to meet evolving requirements, based on agreement with Broome leadership and community input".

The Strategic Social Impact Management Plan (**SSIMP**) (SAR **Part 5, Section 5**) outlines the high-level management strategies that will mitigate many potential negative impacts that could occur through the construction and operation of the Precinct. Under the SSIMP, commercial proponents would be required to develop a monitoring program to monitor the social and economic impacts of their construction and operation over time, using both quantitative and qualitative measures. The SSIMP utilises an adaptive management framework to ensure that management measures are responsive to changing local conditions and community needs. Monitoring data will help identify the management measures that are successful and those that are not.

In the section referenced in this submission (SAR **Part 5, Section 5.5.8.1**), the monitoring system must include three key components: monitoring of mitigation and management measures; decision-making; and reporting to Precinct management. The purpose of the decision-making component of the monitoring program is to provide a built-in mechanism for adapting the management measures as needed based on analysis of monitoring data. A decision-making process will enable companies to assess the socio-economic impacts of their projects and identify where, if at all, changes should be made to management measures to achieve better outcomes. The State Government would require these decision-making processes to be transparent, involve local leaders and community members, and that they be clearly outlined in the monitoring program.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 688 Sub ID [120] Raised by [S120 Q1336]

ENGO Submission: 5.5.8.2. Precinct-level Monitoring [p335]. The report states that the Precinct-level monitoring system includes 'arrangements for independent auditing' and 'relevant reporting arrangements', but no detail is provided. Who will undertake the audit - government (i.e. DSD or the EPA), a private sector consulting firm, an academic or specially designated body?

Auditing will be undertaken by the Department of State Development (**DSD**) and commercial proponents in accordance with conditions of approval. For those matters covered by the *Environmental Protection Act 1986*, compliance and performance reporting conditions may be imposed by the Minister for Environment via Statements outlining conditions for derived proposals. Compliance reporting will be required annually, whilst performance reporting is required five-yearly. The responsible regulatory agencies will assess and review audits to check for compliance against Ministerial conditions. Non-compliance with conditions of an Implementation Statement issued under the *Environmental Protection Act 1986* is an offence.

With respect to the monitoring social impacts (other than those covered by the *Environmental Protection Act 1986*), the Precinct's social monitoring system will monitor social and economic change during both the construction and operational phases of the Precinct. The Precinct-level monitoring system would include:

- core social and economic indicators applicable to both the construction and operational phases of all commercial proponents at the Precinct;
- arrangements for independent auditing;
- mechanisms to review and adapt mitigation and management if existing measures prove inadequate; and
- relevant reporting arrangements.

Commercial proponents will be required to establish a monitoring system to monitor the social and economic impacts of their construction and operation over time, using both quantitative and qualitative measures. The commercial proponents monitoring system will feed into the Precinct-level monitoring system.

To ensure effective ongoing monitoring and compliance with conditions of operating at the Precinct, the SAR proposes that a Precinct Governance arrangement be established. The proposed Precinct Governance structure has been the subject of numerous comments from both the community and State and Commonwealth

environmental regulators. A number of modifications have subsequently been made to this and these are presented in detail in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners and the local authorities would have representation in the majority of the Browse oversight groups. Through this mechanism, the Traditional Owners and local authorities can have significant input into the environmental and social management associated with the Precinct.

Generic Question ID: 908 Sub ID [171] Raised by [S171 Q1897]

DIA Submission: The recommendation in the report that the commercial proponents should establish a monitoring system to monitor the social and economic impacts of their construction and operation over time using both quantitative and qualitative measures is supported (**Part 5**, **p. 5-26**). The monitoring is to feed into a Precinct level monitoring system. It is considered that the State should receive the information that is gathered by the Precinct level monitoring system, in order to be able to tailor service requirements appropriately. If the State will be provided with the information, then this needs to be clarified in the report (**Part 5**, **p. 5-26**).

The monitoring system described in the Strategic Assessment Report (**SAR**) includes monitoring at the project and Precinct levels by the Precinct Governance arrangement and the commercial proponent(s).

Western Australia currently has no legislation requiring attention to social issues apart from those closely linked to environmental matters under the Western Australian *Environmental Protection Act 1986* such as noise, dust, light spill, visual amenity, emissions and Indigenous heritage. These will be the responsibility of the Minister for Environment.

However, the Department of State Development will require that social impacts be addressed by commercial proponents. As outlined in the Strategic Social Impact Assessment Management Plan (**SSIMP**), as a condition of locating at the Precinct, commercial proponents will be required to implement comprehensive plans to manage their social impacts. The SAR also includes commitments by State Government agencies to undertake certain management plans (e.g. LandCorp and the Department of Housing will have responsibility for housing and land).

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. This proposed Governance arrangement has been the subject of numerous comments from both the community and State and Commonwealth environmental regulators. A number of modifications have subsequently been made to this and these are presented in detail in **Section 2.3** of the Response to Public Submissions Summary Report.

Under the proposed governance structure, the social impact management plans would need to be approved and monitored by the Precinct's Social Management Committee. This committee will include relevant State Government agencies as well as local representatives to ensure that the management plans meet local conditions. The Social Management Committee will report outcomes to the Browse LNG Precinct Control Group. This Precinct Control Group will report to the Minister for State Development who has ultimate responsibility for ensuring the implementation of social impact management commitments that lie outside the responsibility of the Minister for Environment. A commitment has also been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group (**PCG**). Through this Traditional Owners can have significant input into the environmental and social management associated with the Precinct.

The Social Management Committee will report outcomes to the Browse LNG Precinct Control Group and will be required to publicly publish reporting.

Generic Question ID: 911 Sub ID [171] Raised by [S171 Q1900]

DIA Submission: It is recommended that agreements between the Proponent and the Traditional Owners include provision for recruiting and retaining Aboriginal counsellors and bolstering services provided to counter substance abuse, and other education, social and youth services which will directly assist the Aboriginal community.

The Strategic Assessment Report (**SAR**) acknowledges that some impacts associated with the development of the Browse LNG Precinct could result in additional demands on already stressed services. The SAR also acknowledges that development of the Precinct could present significant opportunities to develop and expand the capacity of health services in the region. Therefore, provision of social, emergency, police and security services will be addressed at both the Precinct level and at the broader regional level (i.e. Broome and West Kimberley) through development of tailored management strategies:

- The Broome Social Services Strategy will map existing services in Broome (State, Local, Commonwealth and NGO), identify gaps or serious deficits and will engage with the community to identify priorities. It will address areas such as health, education, child care, counselling, therapeutic

and emergency services in Broome.

- Commercial proponents will be required to develop and implement a Health, Emergency Services, Policing and Security Strategy. This strategy should ensure that health and emergency services will be provided to the Precinct without impacting upon these services in Broome, and that appropriate level and quality of security is provided at the Precinct.

Additionally, under the Heads of Agreement, the State Government and Foundation Proponent (i.e. Woodside) have committed to providing funding to the Traditional Owners to improve Government facilities and services for the wider community. It is possible that some of this money will be allocated to recruiting and retaining Aboriginal counsellors and bolstering services provided to counter substance abuse, and other education, social and youth services; however, this will be at the discretion of the Traditional Owners.

The Department of State Development acknowledges that the issues outlined in the Department of Indigenous Affairs submission should be considered in the development and implementation of these strategies. The Broome Social Services Strategy will assist in addressing current social service deficiencies. In addition to addressing short term deficits, they will assist in the longer term by providing measures to increase the capacity of health and social service provision to accommodate any potential increase demand resulting from development of the Precinct, and from natural population growth in Broome. Management of issues related to existing skills shortages and obtaining health workers for the Precinct should be addressed at both the Precinct level and in these broader strategies.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups. Through this mechanisms, Traditional Owners can have significant input into the social and environmental management mechanisms associated with the Precinct.

Generic Question ID: 912 Sub ID [171] Raised by [S171 Q1901]

DIA Submission: It is recommended that the Education, Training and Employment Strategy explore some way to continue to support fledgling Indigenous ventures such as the eco-tourism enterprises set up under the Community Development Employment Projects (**CDEP**) until they are self sufficient.

As noted in the ASIA and summarised in **Part 5, Section 3** of the SAR, there are a number of barriers to Indigenous enterprise development. For example, Indigenous people have trouble accessing financial assistance to set up or expand enterprises, as many rely on CDEP payments for income, and do not have security of tenure, with the result that they are sometimes ineligible to get loans. Moreover, most of the existing but fledgling enterprises such as the eco-tourism enterprises were set up as CDEP programs, and people running them are dependent on CDEP payments to supplement their income. This is especially so in the wet season, when business is slow.

The focus of the management measures outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5**) is to manage the negative impacts and maximise the benefits resulting from Precinct development. The emphasis in the education, training and employment opportunities will be primarily on those opportunities relating directly or indirectly to the Precinct. For example, the Indigenous Workforce Development and Education, Training and Employment Strategies will help Indigenous people take advantage of the direct and indirect employment opportunities offered by the Precinct. Although separate from the Education, Training and Employment Strategy, the Local Benefits Strategy will include measures specifically targeted to develop, where relevant, emerging Indigenous businesses. In addition, support for small businesses, particularly Indigenous, will be provided in the Access to Broome and Dampier Peninsula Management Plan to provide recreational, fishing and other tours for construction workers. Finally, the Heads of Agreement (HoA) also provides funding for the development of Indigenous enterprise which, should the Traditional Owners decide, could be used to support the development or expansion of an Indigenous eco-tourism venture.

To ensure delivery of the necessary management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report. A commitment has been given that Traditional Owners would have representation in all Browse oversight groups, including the Precinct Control Group. Through this mechanism, Traditional Owners can have a significant input into the environmental and social management associated with the Precinct.

Generic Question ID: 916 Sub ID [127] Raised by [S127 Q1905]

Kimberley Development Commission Submission: The Board of the Commission believes that a Regional Benefits Package is required to be established to provide contributions to the necessary community infrastructure that will enable the whole community to gain lasting benefit from the project. The Board expresses concern that there is no visible mechanism in place to ensure that these regional benefits are captured and monitored.

The State considers that the Browse LNG Precinct would provide an overall benefit to the local economy, bringing a range of economic development and employment opportunities. For example, it would bring opportunities to supply services to the Precinct, as well as a greater availability of training and employment opportunities for local residents. The development of the Precinct would increase and secure the economic resilience of the area well into the future, by introducing another economic sector.

Additionally, there are a number of strategies outlined in the Strategic Social Impact Management Plan (**Part 5, Section 5** of the SAR), which seek to ensure the retention of local benefits and the sustained economic growth of Broome and the broader West Kimberley region. Importantly, as described in **Part 5**, **Section 5.6** of the SAR, the Broome Social Services Strategy will map existing services, identify gaps or deficits and will engage with the community to identify priorities to provide better coordination of services. It is envisaged that commercial proponents would contribute funding to this strategy, although the details are still a matter for discussion with commercial proponents at this time.

The coordination of this strategy would be undertaken by the Precinct Social Management Committee. The purpose of a Browse LNG Precinct governance structure is to clearly assign responsibilities for the performance of management plans in meeting objectives with respect to the Strategic Assessment. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 967 Sub ID [224] Raised by [S224 Q1929]

KLC Submission: The SAR does not adopt or endorse most of the recommendations of the Indigenous Impacts Report Volume 3 - Aboriginal Social Impact Assessment Report, stating that 'The specific nature of some of the ASIA recommendations were not appropriate to capture at this stage ...' (**Part 5**, **p. 5-1**). It says that the detail of the recommendations 'should be considered in the further development of [management] strategies' at a later date (**Part 5**, **p. 3-6**). The ASIA recommendations in many cases constitute 'specific measures' and 'specific management arrangements' of the type required by the ToR, and it would be entirely appropriate to endorse them at this stage. Indeed because of the lead time involved in implementing some of the ASIA recommendations (for instance education initiatives designed to enhance employment prospects for affected Indigenous people), failure to adopt them now means that it will not be possible to avoid or mitigate the relevant impacts within the planned time frame for development of the BLNG Precinct.

It is incorrect to assert that the SAR does not adopt or endorse most of the recommendations of the Indigenous Impacts Report Volume 3. The statements in the SAR regarding the ASIA recommendations must be considered in the context of the overall framework of the BLNG Strategic Social Impact Management Plan.

The SAR **Part 5**, **p. 5-1** states that "The BLNG Strategic Social Impact Management Plan (**SSIMP**) provides a framework for the further development of strategies to enhance opportunities and avoid, mitigate or manage the social impacts arising from the establishment of the LNG Precinct. It adopts adaptive management principles and seeks a balanced approach which maximises benefits through negotiated outcomes. The adaptive management principles allow the strategies to be adjusted in response to changed or new conditions, should they eventuate." This section also states that "It is important to recognise that the strategic nature of the SIA restricts the SSIMP to providing a strategic framework from which more detailed management strategies can be developed when there is greater certainty about the Precinct, its development and potential social and economic impacts."

In relation to the specific example related to education recommendations, the State Government recognises the key role of education and skills development in enabling local Indigenous people to be able to take advantage of the opportunities presented by the BLNG Precinct. The Strategic Assessment Report identifies a range of strategies as part of the Strategic Social Impact Management Plan (**SSIMP**) in **Part 5**, **Section 5**, tailored towards the delivery of social and economic benefits to the local Indigenous community. In addition to management measures targeting the related barriers of health and housing, the SSIMP includes management measures related to education, training and workforce development. This includes the referenced management measures (**Part 5**, **Section 5.4.7**) to increase the Indigenous workforce and ensure their development.

DSD has included in the SSIMP a requirement that a management plan for Indigenous education, training and employment be developed. To ensure that this is done as soon as possible, the SSIMP requires that this management plan be developed prior to construction and include relevant targets and performance indicators.

The need for a Trade Training Centre in the West Kimberley was a finding in the SAR. The recommendations of

the Trade Training Centre feasibility study will be valuable in developing the Indigenous education, training and employment management plan and achieving the outcomes described in the SSIMP. This includes the recommendation that the Training Service and Infrastructure Model, which includes the establishment of a Trade Training Centre, be implemented. During development of the management plan, such recommendations will assist in identifying the ways in which the barriers to long term employment for Indigenous people can be addressed and an appropriately skilled labour force supplied.

5.6 Social Aspects and Matters of National Environmental Significance

5.7 Environmental Management Measures Relating to Social Factors

Generic Question ID: 686 Sub ID [120] Raised by [S120 Q1334]

ENGO Submission: **Part 5 Section 5.5.7**. West Kimberley Socio-Economic Strategy. This looks more like an economic strategy. As an 'over-arching strategy' it is too focussed on benefits to business. We note there is no local government or community involvement apart from that of Traditional Owners.

The West Kimberley Socio-Economic Strategy will be a broad economic strategy to ensure on-going coordination between government, industry and the community to maximise the socio-economic opportunities offered through the development of the Precinct.

The Broome Social Services Strategy will be a whole of Government initiative to address social services deficits in Broome, including accessibility to those services for Indigenous communities on the Dampier Peninsula. The Strategy will map existing services provided by State, local and Commonwealth governments as well as non-Government organisations, identify gaps or serious deficits and will engage with the community, along with Shire of Broome, to identify implementation priorities. This will provide better coordination of existing service provision, better use of existing funds and identify the areas of greatest need.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

5.8 Conclusion

Generic Question ID: 1216 Sub ID [205, 215, 212] Raised by [S205 Q2722]

Part 5 Section 5.8: The following statement is misleading “The assessments have been used to develop strategies to overcome or minimise impacts and to maximise opportunities from development”. What exists in this section is a series of skeleton strategies/plans that at best indicate what impact they aim to manage. There is basically no detail to provide direction on how impacts will be managed - just a statement in each section indicating that some sort of management plan should be established. How can we assess whether these plans are likely to succeed?

Due to the nature of the strategic assessment process, the SAR provides a high-level impact assessment at the Precinct level. This approach is consistent with the requirements of the Terms of Reference agreed to between the State and Commonwealth Governments in February 2008. The SAR does not provide detailed information on a number of topics, where specific details are not yet definite (such as detailed port design). However, it does provide a number of scenarios that account for the maximum potential impacts associated with the development of the Browse LNG Precinct.

Consistent with the Terms of Reference, the general structure of governance, management and monitoring measures are outlined in detail in **Section 2.3** and **Section 2.4** of the Response to Submissions Summary Report. The level of detail is considered sufficient to allow the State and Commonwealth Government authorities to assess the Precinct proposal under Section 38 of the *Environmental Protection Act 1986* and Section 146 of the *Environment Protection and Biodiversity Conservation Act 1999*. If approved, both the State and Commonwealth Ministers may specify what conditions, if any, are attached to the approval. This may also include recommendations on how the governance and management arrangements should be modified.

The State Government will impose strict Precinct Conditions on commercial proponents, and monitor the development of the Browse LNG Precinct to ensure commercial proponents comply with the environmental and socio-economic management measures outlined in the SAR. Monitoring information will be made publicly available in annual reports, ensuring accountability to the public. Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval.

Generic Question ID: 644 Sub ID [120] Raised by [S120 Q1288]

ENGO Submission: The central finding of the Strategic Social Assessment is that, if the mitigation, management and monitoring strategies are implemented, the Precinct-related social impacts can be largely managed. The basic flaw here is that most of the mitigation, management and monitoring strategies are not yet outlined in any detail. Indeed most of the proposals in the SIA involve developing social impact strategies and management plans in the future, either at pre-construction stage or thereafter. It is therefore impossible to reach the conclusion based on present documentation that the social impacts can be 'largely managed'.

The Strategic Assessment Report (**SAR**) acknowledges the potential for a range of social impacts if the Browse LNG Precinct is developed. As this submission acknowledges, the Strategic Social Impact Management Plan (**SSIMP**) (SAR **Part 5**, **Section 5**) relies on a number of mitigation, management and monitoring measures to address these impacts. The Department of State Development recognises that well-designed and implemented plans will be crucial for the successful management of impacts, and this will be the focus of the next phase of work, should the project be approved.

The management measures have been developed using adaptive management principles in which the strategies can adapt to accommodate changed conditions and new issues. As in all major projects, the actual impacts may differ from those predicted. Although the current social impact assessment has identified a range of potential social and economic impacts which may occur in the future, the range and magnitude of actual social and economic impacts occurring at the time of Precinct construction and operation may differ from the impacts predicted. The social monitoring system outlined in the SSIMP will allow social and economic impacts to be monitored over time (SAR **Part 5, Section 5.5.8**). Quantitative and qualitative measures will be monitored at the Precinct and project levels during construction and operation. The community will be involved in the development and implementation of these monitoring systems to help ensure that monitoring is reflective of the community's needs and concerns. Commercial proponents will be required to report on monitoring data to Precinct management, and Precinct-level monitoring will also include relevant reporting requirements.

To ensure delivery of the necessary social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. Under the proposed management structure, management plans would need to be approved by and monitored by the Precinct's Social Management Committee. The Social Management Committee will report outcomes to the Browse LNG Precinct Control Group and will be required to publish reporting. This Precinct Control Group reports to the Minister for State Development.

The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 689 Sub ID [120] Raised by [S120 Q1337]

ENGO Submission: **Part 5 Section 5.8.** Conclusion. The final sentence is typical of the bland assurances that are littered throughout this report: 'Implicit to the development of the management strategies will be specific monitoring and evaluation measures, including the creation and implementation of management and monitoring structures to ensure accountability for implementation and currency'. Yet there is insufficient detail contained in this report, despite it being over 300 pages long, to allow a reasonable judgement as to whether the current Proponent (WA Government) and the Foundation Proponent (Woodside) will be held to account for the social impacts of the project.

To ensure delivery of the necessary environmental and social management measures, the Strategic Assessment Report (**SAR**) proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Due to the strategic nature of the assessment, the SAR provides a high-level impact assessment at the Precinct level, and thus does not provide detailed information on a number of topics. There was no detailed project plan to assess for the site during this phase of work, but more detailed planning will be conducted as that information becomes available. Consistent with the Terms of Reference, the general structure of governance, management and monitoring measures are outlined in the Response to Submissions Summary Report in Sections 2.3 and 2.4 respectively. The level of detail is sufficient to allow the State and Commonwealth Government authorities to assess the Precinct proposal under Section 38 of the *Environmental Protection Act 1986* (**EP Act**) and Section 146 of the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). If approved, the Ministers may specify what conditions, if any, are attached to the approval. This may also include recommendations on how the governance and management arrangements should be modified.

The State Government will establish lease conditions and monitor the development of the Browse LNG Precinct to ensure commercial proponents comply with the environmental and socio-economic management measures outlined in the SAR. Monitoring information will be made publicly available in annual reports, ensuring accountability to the public. The State Government and commercial proponents will also seek feedback from the

community on a regular basis to determine if changes to mitigation and management are required. Auditing will be undertaken by the Department of State Development and commercial proponents in accordance with conditions of approval.

Part 6: Commonwealth

1 Introduction

Generic Question ID: 951 Sub ID [224] Raised by [S224 Q1917]

KLC Submission: **Part 6** - The Strategic Assessment Agreement includes a request by the State Ministers that the assessment include impacts on the environment generally, as detailed in the ToR. The effect of this request, as provided for in s146(1A) of the EPBC Act, is that the Commonwealth Minister for the Environment must be satisfied in relation to all of the matters in the ToR. The structure of the SAR, and the information it contains regarding the effect of the request by the State Ministers under s146(1A), has the potential to mislead both the general public during the period of public comment and the Minister at the time he considers the finalised Report as required by clause 7 of the Strategic Assessment Agreement. This error should be corrected prior to the finalisation of the Report.

The structure of the SAR has been designed following extensive consultations with stakeholders and in particular the Commonwealth and State regulators.

The EPBC Act approvals process pursuant to Section 146 (1) of the EPBC Act is summarised in the SAR **Part 1**, **Section 3**, **p. ES-5** and the key steps for the Strategic Assessment Process pursuant to Section 146 (1) are explained in the SAR **Part 2**, **Section 2**, **p. 2-1.**

Generic Question ID: 1314 Sub ID [228] Raised by [S228 Q3115]

The Federal Government has a conflict of interest in the proposed development. The Browse Basin Gas Field is in Commonwealth waters, hence via the 'Petroleum Resource Rent Tax' the Federal Government stand to earn billions of dollars in royalties. This removes their objectivity relating to the proposed development.

The Commonwealth Government regularly makes environmental determinations with respect to operations that have Petroleum Resource Rent Tax (**PRRT**) implications. In this case the BLNG Precinct's upstream components, which are subject to PRRT, are not being assessed through the current SAR.

It is noted that both the State's Environmental Protection Authority (**EPA**) and Commonwealth's Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**) operate ethically, independently and transparently. Both organisations provide advice to their respective Ministers in order for the Ministers to make a final decision. Decisions are made in either case according to legislative requirements, and in both cases independently of either each other, their advisory bodies, or of the economic arms of Government.

Accordingly, the Proponent does not believe there is any potential for conflict of interest in the SAR decision-making process.

1.1 Activities Addressed Under the Precinct Plan

2 Matters of National Environmental Significance

Generic Question ID: 568 Sub ID [120, 169] Raised by [S120 Q1204]

ENGO Submission: Contrary to the bilateral agreement, the Plan does not and will not 'promote ecologically sustainable development' and it does not and will not 'provide for the protection and conservation of the environment and matters of national environmental significance'. The proposed development has also ignored the precautionary principle and principle of intergenerational equity.

A key purpose of the BLNG Precinct is to minimise the environmental footprint associated with processing gas from the Browse Basin in accordance with the mitigation hierarchy - avoid, minimise, rectify, reduce and if necessary, offset. This approach promotes ecologically sustainable development of LNG facilities in the Kimberley region. The State recognises the potential additional environmental and social impacts of an unplanned and uncoordinated approach to LNG development in the sensitive Kimberley region. The implementation of the Precinct Plan would prevent the proliferation of LNG processing plants at different locations in the West Kimberley region, thereby addressing the environmental, social and cultural impacts at a single location and allowing for coordinated, consistent and comprehensive environmental management of the region's LNG processing industry.

The Plan provides for the protection and conservation of the environment and matters of NES firstly through site selection and then in the design and management of processing facilities at the Precinct site. Overall, the assessment of the impacts on matters of NES demonstrates that the site selection process undertaken by the Northern Development Taskforce (**NDT**) succeeded in ensuring that most areas of environmental significance or

sensitivity were avoided. It also supports the S16(e) advice of the Environmental Protection Authority (**EPA**) that environmental risks and impacts were likely to be manageable (EPA, 2008). For example, in relation to the potential impacts on marine mammals (such as whales and dugongs) and marine turtles, it was found that the site selection had avoided the whale aggregation and calving areas towards the northern end of the Dampier Peninsula, as well as turtle nesting areas on the Lacepede Islands. Impacts on significant seagrass areas in Roebuck Bay and Beagle Bay used by dugongs had also been avoided. Similarly, for terrestrial impacts, the site selection resulted in most of these affecting Pindan vegetation which is very common on the Dampier Peninsula and which, through improved management measures, can have its environmental condition enhanced to maintain or improve overall environmental outcomes on the Peninsula.

The SAR has considered the precautionary principle and principle of intergenerational equity on a sliding scale, with a high level of precaution applied where information is limited; and conversely where there is a great deal of information then there is limited need to apply a precautionary principle (refer to SAR **Part 1, Figure 3-2 Sliding Scale for Environmental Management Approach**).

In an effort to overcome difficulties associated with the uncertain nature of derived proposals, consistent definitions regarding the significance of potential impacts were adopted, and a greater level of precautionary assessment or management was applied.

A key outcome of the Strategic Assessment process will be to establish the State Management Framework that will apply to future proponents within the BLNG Precinct. In this regard, a number of controls exist, or will be in place, to ensure appropriate environmental outcomes are achieved. Key arrangements will include:

- environmental conditions imposed by the State Minister for Environment to derived proposals;
- conditions imposed by the Commonwealth Minister for Sustainability, Environment, Water, Population and Community to approved actions or classes of actions;
- conditions of works approvals and environmental licences under Part V of the EP Act;
- requirements under Part V of the EP Act related to general environmental harm and pollution;
- future planning controls under Regional or Town Planning Schemes;
- conditions to be applied to leases in the BLNG Precinct; and
- other State and Commonwealth statutes.

Based on the conclusions of the impact assessment, appropriate environmental management and impact mitigation measures have been developed to ensure that the identified environmental, social and heritage objectives can be achieved. In response to the strategic nature of the assessment, where detailed baseline and project scope may not be available, a range of mechanisms have been proposed to provide certainty that the identified environmental, heritage and social objectives could be achieved.
These include:

- controls by other regulatory processes;
- application of outcome-based conditions;
- conduct of sensitivity analyses;
- assessment of reasonable worst case scenarios;
- conduct of impact assessments;
- application of ‘best practice’ management measures; and
- preparation of management plans for derived proposals.

For some factors, a range of approaches have been proposed to achieve the required level of certainty. For example, a range of air emissions scenarios have been assessed to determine whether a sensitive receptor would be unacceptably affected and an outcome-based condition has also been proposed that sets air quality limits at the boundaries of the BLNG Precinct.
Certain management measures presented in **Parts 3, 4**, **5** and **6** of the Strategic Assessment Report make reference to the demonstration of the application of 'best practice'. For the purposes of the Strategic Assessment Report, the term 'best practice' is defined as the following:

“…the application of the best available mitigation measures that are practicable in the particular circumstances of a proposal to avoid or minimise environmental impact’. The process of achieving best practice would include developing design and management measures against international benchmarks whilst having regard to local conditions and circumstances (including costs) and to the current state of technical knowledge”.

The philosophy of application of best practice, as outlined above, is the underlying approach for developing environmental management plans and design of proposals consistent with the management framework identified in the Strategic Assessment.

Generic Question ID: 1074 Sub ID [157] Raised by [S157 Q2426]

WAFIC Submission: **Part 1 Section 9** Matters of National Significance: The draft SAR states that many impacts arising from activities associated with the BLNG Precinct will be 'offset' by 'supporting the development of Roebuck Bay Management Plan and DEC's management of Eighty Mile Beach', and refers to the State's announcement of the creation of marine parks to protect these areas (**p. ES-79**). Such an approach is of concern to commercial fishers given that 'environmental offsets' including Marine Parks often impact the commercial fishing, pearling and aquaculture industries whilst exonerating the mining and petroleum sector for environmental impact elsewhere. There are significant commercial fishing and pearling interests in both the Roebuck Bay and Eighty Mile Beach (and indeed in Camden Sound and the 'North Kimberley' where other State marine parks have been announced) that should not be compromised for the purpose of 'offsetting' any impact on marine life associated with the BLNG Precinct.

Roebuck Bay and Eighty Mile Beach are both internationally significant migratory shorebird resting and feeding areas and accordingly are categorised as Wetlands of International Importance under the EPBC Act. Both have been identified as future marine parks for many years prior to any consideration of the planning for the Browse LNG Precinct. The establishment of Marine Parks for these areas and subsequent development of any management plans needs to recognise existing uses and go through processes of consultation with all stakeholders including the fishing and pearling industries. In many cases the objectives for protection of environmental values and fishing and pearling values will be the same.

For example the Interim Management Guidelines for developed by the Roebuck Bay Working Group are based on the following principles:

- Maintain the cultural, spiritual, sustenance and economic values of Roebuck Bay for Yawuru Traditional Owners;
- Minimise activities likely to cause disturbance to shorebirds and other species important to the ecological and cultural values of Roebuck Bay;
- Minimise loss of habitat significant to shorebirds and other species in Roebuck Bay; maintain and restore the biodiversity in the area;
- Maintain and restore water quality across Roebuck Bay;
- Ensure that natural surface and groundwater flows are maintained as far as possible;
- Prevent the introduction of invasive plants and animals into Roebuck Bay; contain and/or eradicate invasive species where infestations have occurred;
- Promote environmentally sustainable economic uses of Roebuck Bay; and
- Increased human use and visitation should not be permitted to damage the natural and cultural values of Roebuck Bay.

(refer to **Part 6**, **Section 2.4.1)**
It is considered that all of the above principles would also benefit viable and sustainable fisheries and aquaculture enterprises.

Generic Question ID: 1104 Sub ID [234] Raised by [S234 Q2543]

The area is of National Environmental Significance - dugong, snubnose dolphin, at least four species of turtle, humpback and other species of whale, critically endangered freshwater sawfish, ancient coral reefs, sea grass beds, some of Australia's best palaeontology, echidna, wallaby, potentially bilbies, monsoon vine thickets, abundant birdlife, bush fruit and medicine forests, and a visual landscape of intense colour.

Matters of National Environmental Significance have been discussed in **Part 6, Section 2** of the SAR and Management Arrangements described in **Part 6**, **Section 3.**

The State Government has recently announced the Kimberley Science and Conservation Strategy which aims to protect the region's natural and cultural heritage while allowing the region to fulfil its economic potential. This strategy identifies high value cultural and natural areas as priorities for protection and incorporates marine, coastal and terrestrial conservation strategies. In addition, proposals to establish additional marine and terrestrial conservation reserves have also recently been announced by the State government.

Generic Question ID: 1251 Sub ID [195] Raised by [S195 Q947]

Part 6 Section 2 Commonwealth Matters: The mention of the vine thickets and abundance of gubinge trees as well as other bush tuckers are not mentioned here. If all the whales are north why are there so many just off shore during their migration. The submitter is also aware of feeding dugong in these waters as well as snubfin dolphins. This area is just as important as any other. The whole coast is of national significance and grandiose

plans have no place in this environment. There are other options (Karratha, Port Hedland, Floating LNG). The submitter has no confidence in a process directed by the DSD.

Vine thickets (which include gubinge) and species of ethno-biological significance are discussed in **Part 4,Section 2.5** of the SAR. No flora species listed under the EPBC Act listed as Threatened are likely to occur in the area (i.e. no matters of National Environmental Significance).

Whale migrations in the area are described in **Part 3**, **Section 1.4.4.4** and impacts are described in **Part 3**, **Section 2.6**; this information has been summarised in **Part 6**, **Section 2.2.2.1**.

Dugongs are described in **Part 3**, **Section 1.4.4.5** and **Section 2.6**, and snubfin dolphins are described in **Part 3**, **Section 1.4.4.4** and **Section 2.6**; this information has been summarised in **Part 6**, **Section 2.2.3.**

Other options for sites are discussed in **Part 2**, **Section 4** of the SAR. A site selection process was designed which analysed a range of considerations including technical, economic, marine and terrestrial environment, natural and Indigenous heritage, and other Indigenous and socio-economic constraints. This process used analyses and input by the Western Australian Government, the Commonwealth Government, Traditional Owners, and industry (primarily Woodside and Inpex) to identify the most suitable location for the BLNG Precinct. The ultimate choice of a site from this process was in the vicinity of James Price Point.

Generic Question ID: 1341 Sub ID [195] Raised by [S195 Q3104]

Part 6 Section 2.4.2: Most of the impacts will come from habitat destruction (2,861ha is a lot of habitat), as well as short term displacement. How do they really know what will happen? The Australian Painted Snipe will just have to move on. The SAR states that they haven't seen any Masked Owls, therefore the BLNG won't have an impact. With statements like these there is no wonder these species are threatened.

The maximum extent of vegetation clearing required for the BLNG Precinct, pipeline corridors, workers accommodation, light industrial area and ancillary infrastructure is described in the Strategic Assessment Report (**SAR**) as 3,037ha (**Part 4, Section 2.6.3.1, Table 2.1-1**). Of the maximum 3,037ha proposed to be cleared 2,861ha is Pindan vegetation, which is considered of low conservation significance as it is well-represented in the James Price Point coastal area.

The SAR undertook a robust impact assessment process to determine the predicted impacts of the BLNG Precinct development, with the impacts to threatened terrestrial fauna (listed under the *Environment Protection and Biodiversity Conservation Act 1999*) detailed in **Part 6, Section 2.4.2.1**. The potential impacts of vegetation and habitat clearing on terrestrial fauna, with a specific focus on habitat loss and conservation significant fauna and migratory birds, are discussed in **Part 4, Section 2.6.3.1**.

With regard to the Australian Painted Snipe, the species preferred habitat is shallow freshwater swamps, which is not present in the James Price Point coastal area. However, the SAR acknowledges that it may frequent the drainage basin habitat of the area following wet season rainfall. This area of potential habitat will not be removed as a result of the BLNG Precinct construction and additional areas of similar habitat are known to occur at Flat Rock to the north which will not be affected. Therefore, the BLNG Precinct is unlikely to significantly affect the availability of habitats for this species within the local or regional area (**Part 6, Section 2.4.2.1**).

The SAR **Part 4, Section 2.6.3.1** states that the Masked Owl has broad habitat requirements and may utilise all habitat types within the BLNG Precinct area, and wider Dampier Peninsula as part of larger foraging territory as no roosting sites are present. Although a total of 3,037ha (or 11.5%) of suitable foraging habitat from the James Price Point coastal area may be lost, similar areas of potential habitat are likely to occur across the Dampier Peninsula. Based on similar habitats mapped on the Dampier Peninsula by ENV (2008a; **Appendix C-14**) approximately 59,717ha or 93% of habitats would continue to persist (or 60,948ha, representing 95% of habitats using DEC mapping data for vine thicket). Given the lack of records from the locality, and large areas of similar foraging habitat elsewhere on the Dampier Peninsula, habitat loss associated with the BLNG Precinct area and pipeline corridors is unlikely to significantly impact the Masked Owl.

Whilst it was noted that impacts to terrestrial fauna may occur as a result of the Precinct development, it was concluded that impacts are manageable and are unlikely to threaten the continued survival of populations of fauna, in particular fauna of National Environmental Significance (**NES**), or the broader ecosystem integrity of the James Price Point coastal area, with appropriate management measures and controls in place. Furthermore, the majority of conservation significant species, including those of NES, listed in the James Price Point coastal area have broad habitat requirements and are likely to occur elsewhere on the Dampier Peninsula where suitable habitats occur.

2.1 Introduction

2.2 Matters of NES Relevant to the Precinct Plan

Generic Question ID: 142 Sub ID [22, 122, 123] Raised by [S22 Q152]

The potential impact of hydrocarbon spills, especially during severe weather conditions has been inadequately addressed in the SAR.

Several of the hydrocarbon spill models presented in the SAR (**Appendix G3**: Hydrocarbon Spill Modelling Study) project that, although spills are not expected to enter Roebuck Bay itself, they will clip the southern edge of the bay. This is the location of Bush Point, the most important single roost of shorebirds in the bay, with historical counts of about 100,000 and more recent counts of up to 70,000 shorebirds. Typically 50-70% of the shorebirds in Roebuck Bay roost there and contamination of this site would potentially have disastrous consequences for the shorebird population. The Dampier Peninsula is subject to storm surges from cyclonic weather events, with very rough seas, large swells and extremely strong winds which are frequently onshore. The SAR (**Part 7**: Supplementary Information **Section 5.3.3.2**, **p. 53**) states that: "Modelling of the potential sediment transport rates showed .....during the cyclone season (December-March) there are often large southerly sediment transport events".

The SAR does not include hydrocarbon spill modelling during cyclonic/severe storm conditions when there could be increased risk of such a spill. This appears to be a significant omission given the regular occurrence of cyclones in the area. Our specific focus is on the important sites for shorebirds to the south of James Price Point, given the combination of southerly aquatic movements and onshore winds. However, we also note the considerable effect hydrocarbon spills could have on the local tourism industry.

The submission suggests to:

(a) increase the scope of the hydrocarbon spill modelling to include conditions prevalent during tropical cyclones and comment on any effects on important shorebird sites to the south of James Price Point; and

(b) develop detailed response methods to hydrocarbon spills that include critical shorebird feeding roosting sites and treatment of oiled birds.

The period modelled for estimation of the oil spill risks was from 1st August 2007 running until the 1st September 2008 (**Section 5.5**, **Appendix G-3**) which included three cyclones (*Melanie* 26 December 2007 - 2 January 2008 - Category 2; *Nicholas* 11 - 20 February 2008 - Category 3; and *Ophelia* 1 - 6 March 2008 - Category 2) that passed the NW coast of WA. This resulted in an estimated annual probability of oil reaching Roebuck Bay to be less than one in every 10 000 years. With the minimum time for oil to get to Roebuck Bay being 10 days. Consequently this will provide sufficient time to mobilise the necessary response resources.

In addition, port facilities such as those proposed for the Browse LNG Precinct will close when cyclones threaten the port with ships leaving coastal areas, moving out to sea to avoid an approaching cyclone. Consequently, the probability of a spill of sufficient volume to reach Roebuck Bay occurring during a cyclone is remote (note that the oil spill modelling took no credit for this remoteness).

As outlined in **Part 7, Table 4-3**, the State Government has committed that the Broome Port Authority shall be responsible for preparing an Emergency Response Plan including oil spill contingency procedures and coordination of proponents in the event of emergency response procedures. This plan would cover events such as the potential oiling of birds. In addition the State Government has committed to the resourcing and maintenance of hydrocarbon spill response equipment with the capacity to effectively respond to a tier two (10 - 1000t) event.

Generic Question ID: 141 Sub ID [22, 70, 122, 123, 148] Raised by [S22 Q151]

There is concern raised regarding the welfare of migratory shorebirds of the East Asian-Australasian Flyway. In particular in relation to:

- Roebuck Bay, a Ramsar site 56 kilometres south-south-east of the proposed BLNG Processing Plant at James Price Point; and
- Eighty Mile Beach, another Ramsar wetland potentially impacted upon by the proposal.

Roebuck Bay is a major feeding location for very large numbers of these birds during their non-breeding period in the Southern Hemisphere. It is also the arrival and departure point for large proportions of the Australian populations of many shorebird species, including the vulnerable Eastern Curlew (Nuinenius madagascariensis) - which is included on the DEC Priority Fauna List - and Great Knot (Calidris tenuirostris). The site provides essential energy replenishment for these birds, some of which fly non-stop between continental East Asia and Australia. It is estimated that more than 300,000 shorebirds may use the site each year, and it regularly

supports 125,000 during the non-breeding period. Eighty Mile Beach is a second Ramsar wetland located further from the proposed LNG Processing Plant than Roebuck Bay, but also potentially under threat from developments associated with the Plant. This too is one of the major arrival and departure areas for shorebirds migrating to Australia. It is characterised by extensive mudflats supporting a thriving benthic community, and more than 472,000 migratory shorebirds have been counted on the mudflats during the September- November arrival period.

Roebuck Bay is the most important site in Australia in terms of the number of species it supports in internationally significant numbers. Twenty migratory wader species are found there in numbers >1% of the flyway population. The 2010 update of the IUCN Red List of Threatened Species has for the first time classified two of these species, the Eastern Curlew Numenius madagascariensis and the Great Knot (Calidris tenuirostris), as vulnerable.

A migratory bird study has been specifically undertaken to understand the distribution and abundance of migratory birds within the James Price Point coastal area and the regional importance of the area to inform the Strategic Assessment (**Appendix C-1**). The SAR acknowledges the importance of Roebuck Bay and Eighty Mile Beach as important feeding and resting sites for migratory shorebirds and an integral part of the East-Australasian Flyway (**Part 4, Section 1.4.5.6**). The use of the East-Australasian Flyway by migratory shorebirds is also documented in **Appendix C-1**.

The potential impacts of the BLNG Precinct to the Ramsar sites Roebuck Bay and Eighty Mile Beach are discussed in **Part 4, Section 2.6.3.4.** and **Part 4, Section 2.4.3.1** of the SAR. The proposed LNG Precinct is unlikely to directly affect the usage of the Roebuck Bay and Eighty Mile Beach Ramsar sites by migratory birds due to it being located sufficiently far away from these sites (56km from Roebuck Bay, the closest Ramsar site).

The SAR acknowledges that disturbance of Roebuck Bay and Eighty Mile Beach may occur indirectly due to the development from increased recreation use arising from any increase in population in Broome (**Part 6, Section 3.73, Table 3-8**). Proposed measures to minimise such impacts include ongoing support to the development of Roebuck Bay Management Plan and the Department of Environment and Conservation's management of Eighty Mile Beach.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on fauna, including migratory birds. Refer to **SAR Part 4, Section 2.6.4** (Management Measures) for a complete summary. The SAR **Part 6** (in particular **Table 3-3** and **3-4**) also outline management arrangements for terrestrial species including migratory birds.

Generic Question ID: 146 Sub ID [22, 201, 227] Raised by [S22 Q167]

The SAR (**Part 6** - Commonwealth Matters 2.2.1, p 6) does recognise the importance of Roebuck Bay to the shorebirds of the flyway: *'The intertidal mud and sand flats of Roebuck Bay supports high abundance of benthic dwelling invertebrates, which are a key food source for waterbirds. The site is one of the most important migration stopover areas for shorebirds in Australia and globally. For many shorebirds, Roebuck Bay is the first Australian landfall they reach on the East Asian Australasian Flyway. The numbers of shorebirds using the site each year is estimated at over 300,000. The northern beaches and Bush Point provide important high tide roost sites (Australian Government, 2010).'*

The migratory shorebirds of the East Asian-Australasian Flyway that depend on the integrity of Roebuck Bay and Eighty Mile Beach are protected under a range of legal instruments. These include international agreements of the Commonwealth of Australia with Japan (**JAMBA**), China (**CAMBA**) and the Republic of Korea (**ROKAMBA**) and the Convention on Migratory Species (Bonn Convention); the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) and the WA Wildlife Conservation (Specially Protected Fauna) Notice 2010 - Schedule 3 - Migratory birds. However, the SAR focuses on the immediate vicinity of James Price Point and the core elements (Category A) of the proposed Precinct, rather than the wider implications of the proposed development and concludes: *'Implementation of the BLNG Precinct (Category A activities) will not result in direct impacts to Eighty Mile Beach or Roebuck Bay'* (**Part 6 - Commonwealth Matters 2.4.1, p. 26**).

This section (Commonwealth Matters) does not therefore mention any of the above responsibilities. We submit that they should be taken particularly seriously because global populations of 44% of shorebird species have declined over the last 20 years and recent developments along the Australasian East-Asian Flyway, of which Roebuck Bay and Eighty Mile Beach are part, are placing considerable pressure on the capacity of shorebirds to complete their annual migration. Maintenance of the capacity of Australian staging points and non-breeding sites, such as Roebuck Bay, in first class condition is critical for global conservation of shorebirds.

It should be noted that the scope of the detailed assessment reported in the Strategic Assessment Report is focussed on Category A related activities (i.e. the core elements of the BLNG Precinct, including associated

infrastructure, necessary to process and export hydrocarbons in State waters), with commentary provided on Category B and Category C activities in the context of cumulative impacts.

The SAR provides a summary of the legislative basis relevant to the protection of migratory shorebirds, and recognises the international agreements under JAMBA, CAMBA and ROKAMBA (refer SAR **Part 4, Section 2.6.1.1** for specific details). Potential impacts of the Browse LNG Precinct to the fauna (including migratory birds) of the local James Price Point coastal area and the greater region (including the Ramsar sites Eighty Mile Beach and Roebuck Bay) are discussed in **Part 4, Section 2.6.3** and **Part 6, Section 2.4.3**.

In recognition of the international importance of Roebuck Bay and Eighty Mile Beach the SAR proposes support for the development of management plans to be developed by DEC. Given international recognition of the protection of migratory shorebirds, it is likely that a key objective of these management plans would be to maintain them in first class condition to support the global conservation of shorebirds as suggested in the submission.

Generic Question ID: 537 Sub ID [170] Raised by [S170 Q1420]

WWF & ACF Submission Section 13: Under the 2010 UNFCCC Conference of the Parties, Australia committed to a 5% reduction in total greenhouse gas pollution by 2020. The Browse LNG facility will be a very pollution-intensive LNG production facility and increase Australia's national greenhouse gas emissions by up to 5%. Adding an additional 5% increase to Australia's carbon pollution will make this commitment extremely expensive and difficult, if indeed it is possible. An increase in Australia's carbon pollution of this magnitude would have significant impacts on a range of Matters of National Environmental Significance (**MNES**), including (but not limited to) oceanic acidification, coral bleaching and sea level rise. These impacts have been noted on areas such as the Great Barrier Reef and the Ningaloo reef within the Ningaloo proposed World Heritage area. These impacts will also affect marine life in Commonwealth Waters, including whales and other MNES utilising this habitat. The downstream impacts of carbon pollution resulting from the burning of LNG produced from this facility as a fuel source must be taken into account in this assessment. A project of this kind should be required to commit to using geosequestration to store its reservoir and processing greenhouse emissions and should also show how this would be deployed safely against alternative development options.

The strategic assessment process requires that a conservative approach to the identification and assessment of environmental impacts be taken. This conservative approach has meant that conservative greenhouse gas emission estimates have been applied to accommodate other future (unknown) proponents that may have higher reservoir CO2 and other LNG processing technologies. Although the SAR includes a 50Mtpa scenario as a maximum case, the maximum constrained capacity could reasonably be expected to be significantly less than this which was the basis for inclusion of other scenarios with maximum ultimate capacities of 15, 25 and 35 Mtpa. Maximum respective increases to Australia's emissions (relative to 2007) are 2.0%, 3.3% and 4.5%. These specific details will not be available until a proponent submits their derived proposals to the EPA for evaluation.

As outlined in **Part 4**, **Section 2.9.3** of the SAR, the Commonwealth Government has committed to an unconditional 5% reduction of CO2-e emissions target by 2020, below 2000 levels. In absolute terms, this represents an emissions target of 525 MT CO2-e. The most conservative, maximum case scenario of 50Mtpa production comprises 7.4% of the Commonwealth target. The minimum case scenario of 12Mtpa production comprises only 2.2% of this target. Importantly, these emissions calculations do not take into account potential abatement measures by future proponents within the Precinct.

Given the global nature of climate change, the Proponent notes that discussion of greenhouse gas emissions related to the BLNG should be presented in the context of net global greenhouse gas levels. As recognised in WA's Greenhouse Gas Reduction Strategy (2004 and updated in 2008), LNG has an important role to play in transitioning global energy markets away from carbon intensive energy fuels such as coal, and thereby contributing to a global reduction in emissions.

Lifecycle emissions for power generation are presented in **Part 4**, **Figure 2.9.4** of the SAR. It illustrates that downstream and end use accounts for a significant proportion of the overall lifecycle emissions for LNG. Notably, total lifecycle emissions from LNG are considerably less than for coal.

A CSIRO (1996) study shows that for every tonne of CO2-e emitted in LNG production within Australia, 4 tonnes of emissions from the coal alternative can be avoided globally. More recent work by Worley Parsons (2008) validates the CSIRO figures, showing that for every tonne of CO2-e emitted in LNG production within Australia, between 5½ and 9½ tonnes of emissions from the coal alternative can be avoided globally.

In presenting the greenhouse-related project benefit, the Proponent has also considered actual examples where LNG has directly contributed to lower greenhouse gas emissions levels at a broader scale. For example the increased availability of natural gas from the North Sea in the 1990s resulted in the United Kingdom switching its primary electricity generating fuel from coal to natural gas. This resulted in a reduction to its GHG emissions

from power plants by 29% between 1990 and 1999 despite a 16% increase in electricity consumption (Department for Environment, Food and Rural Affairs, 2001).

With respect to geo-sequestration, the Proponent notes that its implementation requires identified injection sites to be technically and economically viable. For example, there are no depleted oil or gas reservoirs in the region that could support a geo-sequestration scheme for the BLNG precinct. Consequently the geo-sequestration options would need to consider unproven traps or geological features that would give sufficient certainty for the containment of CO2 until it is permanently sequestered which will take thousands of years. With this in mind, mandating geo-sequestration will not necessarily encourage the best practicable emissions reduction outcome by proponents. In addition, mandating geo-sequestration where it is not technically and economically viable would also diminish the potential for LNG to positively contribute to climate change at the global level.

The decision on geo-sequestration as an abatement measure will be made by each proponent and incorporated into a Greenhouse Gas Abatement Plan (**GGAP**) that will be prepared to the satisfaction of the Minister for the Environment to support a derived proposal. The scope of the GGAP is outlined in **Table 2.9-9**, **Part 4** of the SAR, and importantly will address, amongst other items, specific reduction targets and timeframes for achievement, application of best practice measures to reduce emissions, demonstration of compliance with National scheme for reduction of GHG emissions, and independent verification, monitoring and external reporting. The GGAP process is aligned with EPA's environmental assessment objective to ensure that GHG emissions from proposed projects are adequately addressed through best practice planning, design and operation. In summary, this process means the best practicable GHG abatement opportunities will be identified and implemented.

Generic Question ID: 1176 Sub ID [122] Raised by [S122 Q2324]

The submitter maintains that the legal responsibilities held by both the Commonwealth and Western Australian Governments to protect the Roebuck Bay Ramsar site and migratory shorebirds are not adequately fulfilled by the SAR.

Roebuck Bay does not fall within potential areas of impact associated with the BLNG Precinct and as such no direct impacts have been identified. However the potential for indirect impacts due to increased population in Broome and consequent increase in recreational use is identified and a commitment is made to support the development of a Roebuck Bay Management Plan. It should also be noted that the State government has recently announced its intention to establish a Marine Park in Roebuck Bay.

Generic Question ID: 1338 Sub ID [195] Raised by [S195 Q956]

Part 6 Section 2.2.2 Commonwealth Matters: It should be noted that Quondong Point is just south of (10 km by road) James Price Point. "Possibly occurs" is used a lot in this part of the report indicating that they have no exact idea of what occurs in this area. If it was studied properly this proposal would be found inconsistent with the values of the area. Proper surveys have not been undertaken due to the rush to get this project going. Just because no one saw anything does not mean it does not exist, maybe there are so few that locating them in that bushland is difficult. The late Malcolm Douglas reported evidence of Bilbies only a couple of years ago. New species are still being discovered in the Kimberley. On this issue alone the project should be stopped as no one really knows what occurs in this area.

The Proponent has made a commitment to conduct further surveys at Quondong Point to establish presence/absence of Greater Bilby population to determine the size and range of the population. Should surveys identify a viable established population of the Greater Bilby, the performance measure will be to:

- ensure the maintenance and protection of a viable bilby population at or better than predevelopment baseline population at Quondong Point, unless attributable to factors outside of the control of the State; and
- implement a management plan for the species which addresses management of access, feral animal control and monitoring of populations.

The plan will be prepared in accordance with relevant Threat Abatement Plans and the National Recovery Plan for the Greater Bilby.

In addition, the State Government is currently preparing a Kimberley Science and Conservation Strategy which will aim to protect the region's natural and cultural heritage while allowing the region to fulfil its economic potential. This strategy would identify high value cultural and natural areas as priorities for protection and develop and implement marine, coastal and terrestrial conservation strategies.

Extension of the reserve system on the Dampier Peninsula will be substantially progressed, including

negotiations with all relevant parties at the commencement of LNG facilities, by DSD through their involvement in the BLNG Precinct Control Group.

Generic Question ID: 1356 Sub ID [216] Raised by [S216 Q1453]

Part 6 Section 2.2.2: Possibly? Please do your research and write the truth. These animals do occur in the James Price Point region because I have seen them with my own eyes year after year.

A total of 32 threatened fauna species listed under the Commonwealth EPBC Act as Endangered or Vulnerable have been identified by SEWPaC, and through surveys, as potentially occurring in the James Price Point coastal area and its surrounds. **Part 6**, **Sections 2.2.2.1** to **2.2.2.5** outline those that are considered to be recorded/likely to occur, potentially occur and unlikely to occur, and gives reference to the source material for these conclusions.

2.4 Assessment of Potential Impacts, Safeguards and Mitigation Measures

Generic Question ID: 145 Sub ID [22, 62] Raised by [S22 Q155]

The legal responsibilities held by both the Commonwealth and Western Australian Governments to protect migratory shorebirds are not adequately fulfilled by the SAR.

The SAR provides a summary of the legislative basis relevant to the protection of migratory shorebirds (refer SAR **Part 4, Section 2.6.1.1** for specific details). A study of migratory birds of the James Price Point coastal area was specifically undertaken to inform the SAR and reflects the bird species known or expected to occur in the area with a focus on conservation significant species protected under environmental legislation (see **Appendix C-1**). Other relevant studies which documented the occurrence and potential occurrence of migratory birds and their conservation status are presented in **Appendices C-16, C-17** and **C-19** of the SAR.

The SAR **Part 4, Section 2.6** provides a detailed assessment of the potential impacts on birds and associated habitat, and the proposed management response. The assessment drew on a range of studies and investigations undertaken at a local and regional level to characterise the known and likely occurrence of bird species (refer SAR **Part 4, Section 1.4.5** for detail). In a regional context, it is well established that the local area has relatively low significance as a summer feeding site for migratory shorebirds compared to other areas including Eighty Mile Beach and Roebuck Bay. The James Price Point area comprises a suite of species that are widespread and well-represented on the Dampier Peninsula (**Appendix C-1**),and the area is not regarded as primary habitat in comparison to other coastal areas and offshore islands. The SAR considers the potential impacts relevant to the BLNG Precinct development, with particular reference to managing direct and indirect disturbance on habitat for conservation of significant fauna that have potential to occur in the area.

A range of management measures have been proposed in the SAR, to manage and monitor potential impacts on fauna, including birds. Refer **SAR Part 4, Section 2.6.4** (Management Measures) for a complete summary. The SAR **Part 6** (in particular **Table 3-3** and **3-4**) also outlines management arrangements for terrestrial species including birds.

Taking into account the above, the Proponent is confident that the management framework to protect migratory birds is appropriate, commensurate with the risk of impacts anticipated to arise from the BLNG Precinct and the legal obligations under State, Commonwealth and international agreements.

Generic Question ID: 1281 Sub ID [195] Raised by [S195 Q951]

Part 6 Section 2.4.1: Will this be managed by the same people who look after the rock art on the Burrup? How can you mitigate these impacts. Never enough money is invested and only token efforts are undertaken. Right now only recreational fishers and traditional owners are the main users of the bay. The disturbance by them is minimal. This project should be moved on down south and no mitigation would then be required, then more money can be spent on what is already being impacted on elsewhere.

In October 2010 the Western Australian Government announced the formation of the Kimberley Wilderness Parks as a key component of the Kimberley Science and Conservation Strategy. Four new Kimberley marine parks were proposed at Camden Sound, North Kimberley, Roebuck Bay, and Eighty Mile Beach. On 30 June 2011 the Government announced the release of the final Kimberley Science and Conservation Strategy together with $63 million over five years to deliver conservation outcomes.

Roebuck Bay is managed through the Roebuck Bay Working Group (**RBWG**), a collaboration of Traditional Owners and representatives, government agencies, industry, community and local government, with Secretariat support provided by World Wildlife Fund – Australia. It is noted that the web page http://www.roebuckbay.org.au/index.php provides further information on the Roebuck Bay Working Group and the management plans developed to protect, restore and maintain Roebuck Bay into the future.

The site selection process is discussed further in the Response to Submissions Summary Report **Section 4.2**.

Generic Question ID: 1287 Sub ID [195] Raised by [S195 Q3106]

Part 6 Section 2.4.2: "increased public access" - The submitter has not noticed the public clearing bushland at James Price Point, just the proponent's contractors. It's funny how the groups with the least impact are mentioned as a concern.

The references to the potential impact of increased public access in **Part 6**, **Section 2.4.2** refer to cumulative impacts which may result through the upgrading of access roads and increased population. Increased public access and recreation may affect habitat value through destruction of habitat and spread of weeds. The State, as part of its statewide conservation reserve management approach, will progressively prepare management strategies or plans to protect the values of these areas where required.

3 The Plan to Establish an LNG Precinct

3.1 Definition of the Plan and the Proponent

3.2 Purpose of this Plan

3.3 Precinct Purpose

3.4 Precinct Location Selection Process

3.5 Intentions for Changing Status of the Land

3.6 Description of the Plan

3.7 Matters of National Environmental Significance and Heritage

3.8 Plan Implementation

Generic Question ID: 716 Sub ID [70] Raised by [S70 Q585]

It is laughable that DSD has oversight when they have a vested interest in supporting industrialisation. The US oil spill experience clearly shows the danger of having the same authority regulate and benefit from royalties.

DSD is not a regulatory authority but the Proponent. It must adhere to State and Commonwealth Environmental legislation. If the SAR is approved then DSD and other Precinct users will be responsible for complying with the imposed Ministerial Conditions as applied at both the SAR and derived proposal levels, and would be subject to the same penalties for non-compliance. DSD's role would be to coordinate other users of the Precinct to ensure that the implementation of SAR conditions meet the appropriate compliance standards.

Generic Question ID: 1062 Sub ID [77] Raised by [S77 Q2191]

In relation to the James Price Point Development proposal, processes have been fast tracked to suit particular interests, both at a federal and state level and to suit Woodside's own interests.

Processes were not fast-tracked but rather have been well considered in a series of stages over a number of years supported by comprehensive investigations.

In recognition of the environmental and heritage values of the West Kimberley region, as well as the significant economic potential of the Browse Basin gas reserves, a Strategic Assessment Agreement was entered into in 2008 by the State and Commonwealth Ministers for the Environment. This was preceded by State assessment processes to evaluate alternative sites for a natural gas processing precinct in Western Australia. The processes that follow the completion of the strategic assessment process will be approval processes for derived proposals and actions under the endorsed Precinct Plan under both *Environmental Protection Act 1986* (**EP Act**) and *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) respectively.

This agreement provides for the assessment of impacts of proposed actions through a concurrent and collaborative process. The Terms of Reference for the assessment were publicly reviewed and agreed in 2008.

The Commonwealth EPBC Act approvals process involves the assessment of a "Precinct Plan" pursuant to Section 146(I) of the EPBC Act, the key steps of which are:

1. Strategic Assessment Agreement is entered into (completed February 2008).
2. Terms of Reference for the Strategic Assessment are developed, publicly reviewed and endorsed

(completed July 2008).
3. Preparation of a Strategic Assessment Report outlining the impacts of implementing actions and the accompanying Precinct Plan for consideration by the Commonwealth Minister (the released SAR).
4. Ministerial recommendations made.
5. Endorsement of the Precinct Plan by the Commonwealth Minister.
6. Consideration for approval of actions foreshadowed under the Precinct Plan.

The EP Act approvals process involves the assessment of a "strategic proposal" pursuant to the EP Act. The process is being undertaken in accordance with the following three stages:

1. Stage 1: Early strategic advice provided by the EPA under section 16(e) of the EP Act regarding environmental sensitivities associated with short-listing of sites for the BLNG Precinct. This stage has been completed with EPA advising in December 2008 that impacts at the site are likely to be manageable.
2. Stage 2: Assessment of a strategic proposal as described in this released SAR under Part IV of the EP Act and the setting of implementation conditions that will apply to "derived proposals".
3. Stage 3: Consideration of future proposals alluded to under the Strategic Proposal for declaration as derived proposals and the application of relevant conditions.

DSD has proceeded as directed under the requirements of the State and the Commonwealth for the above processes.
In addition, approval of the Browse LNG Precinct Strategic Proposal under State or Commonwealth legislation does not provide approval to implement any specific future proposals. Commercial proponents wishing to construct an LNG plant in the Precinct would need to refer specific future proposals to the EPA who would then decide the approval process (that is, whether the referred future proposal is a derived proposal or not) that would apply.

The above comprehensive processes have enabled a meaningful site selection process as well as an increasing detailed evaluation of environmental impacts from site selection to derived proposal stages of the process. The final recommendation and timing with respect to derived proposals is at the discretion of the independent EPA. It is expected that derived proposals will be required to demonstrate appropriate public consultation, and the EPA may always require further information should proposals lack sufficient detail. Accordingly, the process will be as rigorous as any other comparable environmental assessment process.

The derived proposal process is described further in the Response to Submissions Summary Report, **Section 2.2**.

3.9 Monitoring and Adaptive Management

Generic Question ID: 47 Sub ID [4, 24, 27, 45, 62, 71, 94, 95, 97, 98, 118, 120, 124, 132, 134, 135, 182, 205, 211, 212, 215, 292, 293] Raised by [S4 Q65]

The proposed 'management plans' to be developed by the Proponent (in the future) will fail to address all of the impacts and issues. Additionally, it is unlikely that they will be adequately monitored and enforced, nor made available for public comment.

Management measures that have been identified to avoid, minimise, manage and mitigate the potential impacts reflect a tiered approach. This approach which is described in detail in **Section 8.4** of **Part 2** of the SAR, includes:

- Tier 1 - State Government Measures which have been developed to address environmental aspects associated with the Precinct with the highest environmental impact significance.
- Tier 2 - Proposed Conditions for the Strategic proposal which address impacts from activities to be of moderate or high potential significance. The proposed conditions can be issued under Section 45 of the *Environmental Protection Act 1986*, and would be legally binding on the Proponent. These conditions would require sign-off by the State Minister for Environment or delegated authority.
- Tier 3 - Requirements for derived proposals which address environmental impacts of medium or low significance. Some proposed requirements will require sign-off by the Minister for Environment or delegated authority.

The implementation of factor-specific management plans are proposed as Tier 2 and 3 management measures. As such, these plans are legally binding on the Proponent. Many of the plans will form pre-start conditions and work will not be allowed to commence until the plans are signed-off by the Minister or delegated authority. The

management plans will be developed to achieve a particular outcome (or performance measure) and will include monitoring programs to demonstrate that the desired outcome has been achieved. Enforcement of the management plans clearly rests with the Department of Environment and Conservation.

Part 7: Supplementary Information

1 Introduction

1.1 Background to the BLNG Strategic Assessment

1.2 SAR Part 7: Supplementary Information

2 Marine Wastewater Discharge Modelling

2.1 Introduction

2.2 Relevant Factors

2.3 Study Overview

Generic Question ID: 769 Sub ID [75] Raised by [S75 Q819]

In the absence of design detail, how can valid modelling be undertaken? For example, Woodside have repeatedly told the public that they have not decided on the length of the breakwater or the extent that the breakwater will project into the sea at the proposed site. How then can accurate modelling about the impact of dredging or the movement of sediment plumes be undertaken?

The SAR provides a clear indication of the potential port footprint in which a breakwater and other associated port infrastructure would occur (**Figure 5-4** to **5-7**, **Part 2**).

At the time of submission detailed geotechnical, engineering and metocean data were not available to inform the detailed engineering design. Accordingly, the final Marine Port Facilities layout including the requirement for a breakwater had not been determined. To inform the SAR, various configurations and port concepts were considered, based on the provision of a single shipping channel for vessel entry and exit into the port, product loading berths and inclusion of breakwater, as agreed with the OEPA.

As the key areas of uncertainty related largely to the geotechnical characteristics of the site and their potential impact on the port design and dredge program, conservative scenarios supported by sensitivity tests were adopted for the impact assessment. This approach allowed the overarching Strategic Assessment to take into consideration a range of potential port infrastructure concepts, dredging and dumping scenarios, while assessing/demonstrating the implications of altering key variables to represent both less and more conservative circumstances.

A conservative approach to modelling the environmental impacts of these scenarios was also taken.

Generic Question ID: 1037 Sub ID [224] Raised by [S224 Q1967]

KLC Submission: **Part 7 Section 2.3.2**: Methodology Overview - The discharge modelling assumes multiport diffuser for marine outfalls. The SAR needs to clearly state if this is a design commitment that will be placed on future users of the Precinct.

For the Strategic Assessment an outcomes based approach was adopted for water quality. This has resulted in the Proponent committing to 'ensuring that the treated discharge meets appropriate environmental guidelines (i.e. 95% level of species protection; Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC/ARMCANZ 2000) outside the Browse LNG Port Area' (**Part 3**, **Table 2.3-4**).

An outcome based approach was considered most appropriate as the Browse LNG Precinct has been designed to allow for multiple future proponents. As water treatment processes will need to be designed to meet each proponents specific wastewater characteristics, any specification of those technologies at this point of time is likely to result in suboptimal or ineffective treatment (i.e. selected technology doesn't match wastewater characteristics). To address this uncertainty, future proponents will be required to 'prepare and implement a Marine Wastewater Discharge Management Plan (**MWDMP**), to the satisfaction of the Western Australian Minister for Environment'. This plan shall include 'details of the discharge including outfall location, outlet design and discharge volumes, rates and quality' (**Part 3**, **Table 2.3-4**). Modelling at this stage will then take account of other port structures. In addition any wastewater treatment plant would be subject to the Works Approval provisions of the WA *Environmental Protection Act, 1986*.

The SAR (**Part 7**, **Section 2.0**) demonstrated that dilutions level in excess of 100 times can readily be achieved within the active mixing zone (to be confirmed based on actual design parameters, port layouts, etc and presented in the MWDMP). Consequently it can be anticipated that the water treatment system will need to

meet a discharge quality of approximately 100 times the ANZECC 95% level of species protection which is a very stringent discharge requirement.

Based on the above it can be seen that each proponent would need to achieve the same water quality objective with or without a multiport diffuser. However good engineering practice would be expected to lead to the use of multiport diffusers to meet these objectives.

Generic Question ID: 1038 Sub ID [224] Raised by [S224 Q1968]

KLC Submission: **Part 7 Section 2.3.3** Key Findings - The SAR makes reference to meeting water quality guidelines provided in ANZECC/ARMCANZ 2000. Future proponents should be required to demonstrate that they will meet ANZECC/ARMCANZ 2000 (where applicable) as a minimum and that other best practice initiatives will be adopted. Evidence of these best practices should be presented in subsequent versions of the SAR.

As stated in **Part 3**, **Table 2.3-4**, the SAR commits future proponents of the Precinct to meet the relevant ANZECC/ARMCANZ 2000 guidelines with regards to wastewater discharge. In addition, the Proponent committed to the application of best practice techniques and technology for wastewater treatment to minimise potential impacts. Details of the techniques and technologies for wastewater treatment will be provided during the commercial proponent's derived proposal process.

2.4 Assessment against SAR Impact Conclusions and Outcomes

Generic Question ID: 1039 Sub ID [224] Raised by [S224 Q1969]

KLC Submission: **Part 7 Section 2.4.1.2** Social Factors - Reference is made to a future Marine Wastewater Discharge Management Plan. This plan(s) will be critical in providing specific details on treatment standards, outfall location and mitigation measures and therefore this Plan(s) will need to be reviewed and endorsed by the Traditional Owners.

The SAR **Part 3, Section 2.3.5** discusses the proposed mitigation measures and safeguards applicable to management of impacts to marine water quality arising from the construction and operation of the Browse LNG Precinct.

Proponents of derived proposals in the Browse LNG Precinct will be required to prepare and implement a Marine Wastewater Discharge Management Plan to the satisfaction of the Western Australian Minister for Environment. The Plan must ensure that the disposal of treated wastewater from operation of the Browse LNG Precinct facilities is undertaken and managed in a way that minimises the environmental impacts and is consistent with the local water quality environmental values. These objectives are to be achieved through the implementation of best practice techniques and technology for wastewater treatment to minimise potential impacts.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1040 Sub ID [224] Raised by [S224 Q1970]

KLC Submission: **Part 7**, **Section 2.4.1.2 'Social Factors'** - The SAR needs to clearly state if all proponents will utilise the same outfalls or if individual proponents will have their own outfalls.

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To maximise the efficiency of an outfall, the size of the outfall needs to be matched to the range of anticipated flows. Consequently a well designed outfall to accommodate a 50Mtpa LNG development (larger flow) would not work well for a smaller 12Mtpa initial development (i.e. decreased mixing so concentrations of potential pollutants would be higher). Therefore it is likely that multiple outfalls would ultimately be installed, however they would all be located in the defined port area.

2.5 Conclusion

3 Benthic Primary Producer Habitat Calculations

Generic Question ID: 587 Sub ID [120] Raised by [S120 Q1241]

ENGO Submission: The Nearshore Benthic Habitat Modelling and Mapping, James Price Point (SKM 2010a; **Appendix C-5**) suggests that "Additional research is considered necessary for developing conservation strategies, and to inform decision-making around biodiversity conservation and Environmental Impact

Assessment (EIA) for proposed developments (DEWHA 2008). A detailed understanding of the existing marine environment will facilitate an accurate evaluation of potential environmental impacts likely to emanate from a proposed development in the coastal environment. "

The Nearshore Benthic Habitat Modelling and Mapping Study (**Appendix C-5)** indicates that, despite the extensive survey efforts undertaken to inform the Strategic Assessment Report, there remains some gaps in full understanding of the benthic habitats (particularly the spatial and temporal distribution of ephemeral seagrass communities) within the James Price Point and broader Dampier Peninsula. However, the scope and breadth of the benthic baseline studies undertaken as part of the site selection and SAR process have provided a sound basis for the impact assessment conclusions made in the SAR. The Proponent expects that proponents of derived proposals will continue benthic habitat modelling and mapping as part of the derived approval process to inform management plans.

Generic Question ID: 595 Sub ID [120] Raised by [S120 Q1248]

ENGO Submission: In the "Nearshore Benthic Habitat Modelling and Mapping" study, two years at completely different seasons are compared. "Comparisons of observed seagrass distribution between June 2008 and November 2009 highlight the variability in sea grass distribution; areas that had sea grass present in 2008 not having any sea grass in 2009 and vice versa. There was no clear pattern of increase or decrease in distribution or coverage between the 2008 and 2009 survey". (SKM, 2010). Seagrass meadows are renowned for their seasonality.

It is true that seagrass meadows often demonstrate marked seasonality. The patchy and ephemeral nature of the seagrass communities surveyed within the James Price Point area emphasise this characteristic and resulted in difficulty in effectively modelling and mapping this habitat.

During both the 2008 and 2009 surveys, seagrass was observed with lower prevalence than 5% (3.4% in 2008 and 4.8% in 2009). An attempt to model seagrass distribution was made using a combination of high resolution bathymetric data and habitat distribution data (as observed from towed video transects). However, due to the low prevalence and temporally variability of this habitat across the study area, a robust relationship between the environmental characteristics and the observed distribution could not be defined. Seagrass was the only habitat class that demonstrated this pattern, with models for other habitat types being relatively consistent across the two sampling periods.

While not conducive to modelling distribution, this result did highlight the highly variable nature of seagrass distribution in the James Price Point coastal area. It also indicated that the spatial and temporal variability of seagrass distribution is less influenced by the environmental characteristics used in this study (e.g. bathymetry and topographic complexity), but more driven by other factors, perhaps seed dispersal or benthic light availability.

Generic Question ID: 845 Sub ID [201] Raised by [S201 Q1812]

The submitter has been involved in Benthic surveys of Roebuck Bay for over four years and is aware of regular surveys which have been carried out in that location over 15 years by volunteers associated with the Broome Bird Observatory. Whilst Roebuck Bay is a considerable distance from James Price point there is no guarantee that some detrimental effect will not be felt in this area. Especially given the north/south tidal flows referred to in the SAR and the amount of dredging required by this project over a long period.

It is acknowledged in the Strategic Assessment Report (primarily within **Part 3**, **Sections 2.4.3.1** and **2.3.4.1**, and **Part 7**, **Section 3.5**) that the dredging and nearshore construction activities will result in some temporary (i.e. recovery <5 years) and permanent impacts on local benthic habitats (including seagrass). The resulting TSS dispersion pattern derived from the model reflects the dominating influence of local tidal flows and seasonal wind conditions. The results indicate that there are no predicted losses of Benthic Primary Producer Habitat in Roebuck Bay anticipated to arise from the dredging activities relevant to the BLNG Precinct. A range of management and monitoring measures are proposed in relation to dredging activities, as presented in the **SAR Part 3 Section 2.3**, including an adaptive management response in the event that impacts are realised outside areas of predicted impact.

3.1 Introduction

3.2 Relevant Factors

3.3 Study Overview

3.4 Calculation of Cumulative Losses of Benthic Primary Producer Habitat

3.5 Assessment against SAR Impact Conclusions and Outcomes

Generic Question ID: 1049 Sub ID [224, 114] Raised by [S224 Q1975]

KLC Submission: **Part 7, Section 3.5.2** Mitigation and Management - The SAR needs to present binding commitments to ensure that responsible organisations such as Broome Port Authority have the skills and resources to provide effective oil spill preparedness and response for such a large hydrocarbon processing development.

The SAR addresses the Broome Port Authority's (**BPA**) existing responsibility for hydrocarbon spill preparedness and response for areas in its jurisdiction. With particular regard to oil spill response capabilities of the Broome Port Authority, the following points reinforce this capability and responsibility through the appropriate provision of resources, equipment and training:

- The Port authority is currently responsible for the immediate response and management of tier 2 incidents in the region.
- BPA has a stockpile of response equipment and dispersant, sufficient for a first strike capability. This would be supplemented by the Dampier stockpile in the event of a large spill.
- BPA currently has two senior staff trained as oil spill operations managers, and a dozen trained as Oil Spill Response (**OSR**) team members. Two are trained as team leaders.
- OSR personnel attended the last two major state exercises and have fulfilled operations, administration, media, equipment, beach clearance, and general logistics duties.
- Regular training programs are undertaken in conjunction with Department of Transport oil spill specialists.
- In line with the BLNG Precinct Environmental Management Plan (**BPEMP**) already committed in the SAR, equipment would be located at the Precinct to hasten response to any oil spill during the early construction phases.

A summary of mitigation and management of a spill is provided in **Part 7, Section 4.4.2.**

Generic Question ID: 1043 Sub ID [224] Raised by [S224 Q1971]

KLC Submission: **Part 7 Section 3.5.1.1** Environmental Factors - The SAR makes reference to the need for the most invasive construction technique for the nearshore pipeline construction. Evidence should be provided as to why a less invasive construction technique is not viable.

The SAR has consistently relied on describing the impacts from maximum impacting options even when it is known that it is likely that lower impacting options will be used. This has been done in order to deal with a level of uncertainty about the detail of the proposals that may be developed and thus to be transparent that maximum possible impacts on the environment are described.

In relation to the shore crossing for pipelines, the SAR does indicate that horizontal directional drilling or tunnelling are options that may be feasible, and which if used would satisfy the SAR commitment to "minimise disturbance and avoid clearing in sensitive areas as far as is practicable" (SAR **Part 4, Table 2.4-9**)**.** It would therefore be a requirement that proponents of Derived Proposals demonstrate whether or not such lower impact options are practicable.

Generic Question ID: 1044 Sub ID [224] Raised by [S224 Q1972]

KLC Submission: **Part 7 Section 3.5.1.1** Environmental Factors - The SAR indicated that further and more detailed dredging and dredge spoil modelling is proposed for derived proposals. This fragmented approach to the assessment contributes to the uncertainties around cumulative and additive impacts. The SAR should attempt to undertake a more robust cumulative assessment at this stage so that affected communities can understand the potential impacts and respond accordingly.

The approach taken with regards to the assessment of dredging and spoil disposal activities is consistent with the philosophy of the Strategic Assessment and in agreement with the Environmental Protection Authority and the Department of Sustainability, Environment, Water, Population and Communities (**SEWPaC**). The dredging

impacts associated with the full phase Precinct development were assessed and presented in the SAR. The additional modelling to be undertaken within the commercial proponent's derived approval process will focus on the impacts associated specifically with their activities. This modelling will benefit from an increase in engineering and geotechnical detail, allowing a refinement of the scenarios modelled and therefore is likely to result in a reduction in the impact footprints presented in the SAR.

For a future proponent to be declared 'derived', they must demonstrate (WA EPA Act, s38):

- The referred proposal was identified in the strategic proposal.
- Environmental issues raised by the derived proposal were adequately addressed in the Strategic Assessment.
- No significant new or additional information has arisen that justifies the reassessment of the issues raised by the proposal.
- There have been no significant changes in the relevant environmental factors since the strategic proposal was assessed.

In simple terms, future proponents must demonstrate that their project fits within the predicted impacts scenarios presented in the SAR which must incorporate cumulative and additive impacts.

Generic Question ID: 1045 Sub ID [224] Raised by [S224 Q1973]

KLC Submission: **Part 7, Section 3.5.2** Mitigation and Management - Reference is made to a future Dredging Spoil Disposal Management Plan (**DSDMP**). This Plan(s) will be critical in providing specific details on how impacts from dredging will be reduced and managed, and therefore this Plan(s) will need to be reviewed and endorsed by the Traditional Owners.

Part 3, **Section 2.3.5** of the Strategic Assessment Report discusses the proposed mitigation measures and safeguards applicable to management of impacts to marine water quality arising from the construction and operation of the Browse LNG Precinct.

Proponents of derived proposals in the Browse LNG Precinct will be required to prepare and implement a Dredge Spoil Disposal Management Plan to the satisfaction of the Western Australian Minister for Environment. The Plan must ensure that potential impacts to marine sediments from marine site disturbance and excavation from operation of the Browse LNG Precinct facilities is undertaken and managed in a way that minimises the dredging impacts. This plan will be subject to stakeholder consultation including Traditional Owners.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

Generic Question ID: 1048 Sub ID [224] Raised by [S224 Q1974]

KLC Submission: **Part 7 Section 3.5.2** Mitigation and Management - Clarification is required if only one DSDMP will be prepared or if separate plans will be prepared for each of the dredging activities.

The DSDMP will be designed to cover the initial campaign for the Port development and this will likely include the channel, berth pockets, and turning basins. If the placement of pipelines for the delivery of LNG to the Precinct requires nearshore modifications, then a plan will be required to manage and mitigate for impacts related to that activity.

The management plan requirement will depend on the activities outlined in the derived proposal submission. For example, if both the port and the pipeline crossing are proposed in the one submission, then the DSDMP may cover impacts associated with both activities.

3.6 Conclusion

4 Hydrocarbon Spill Modelling

Generic Question ID: 185 Sub ID [39, 232] Raised by [S232 Q1368]

The Aboriginal people on the Dampier Peninsula wonder what will happen if the gas pipeline bursts between the Browse Basin and the LNG Precinct?

Other submissions queried: Will there be compensation to businesses that rely on an oil free Cable Beach should a spill occur?

The likelihood of a hydrocarbon spill occurring is considered very low. The risk of such an event occurring as a

result of the Precinct, and of this affecting Cable Beach, could be considered extremely low with a frequency of less than once in 5,000 years.

Pipeline spill scenarios are modelled in the SAR **Part 7, Table 4-1 p.34**, including the likelihood of a pipeline failure. Based on the estimated event frequency and other hydrocarbon spill modelling undertaken to support the SAR, pipeline failure in the ocean is considered to be highly unlikely and the likelihood of a significant hydrocarbon spill is considered to be very low. If the highly unlikely event were to occur, the extent of any leak would be minimised by the automatic activation of safety control valves located at strategic locations along the pipeline.

State emergency procedures and proponent oil spill contingency plans would be triggered to manage and minimise any impacts that could otherwise occur, and preventative measures are introduced at the earliest stages of facility design to ensure that facilities are built to accommodate the range of events that may be encountered. Operational measures will also be implemented to ensure facilities are regularly maintained and operated to prevent hydrocarbon spill events, and Government agencies will conduct regular inspections to ensure statutory requirements are met and to identify improvements that can be made to continuously improve environmental and safety outcomes.

Discussion about hydrocarbon spill modelling and the corresponding management measures proposed in the Strategic Assessment Report can be found in **Part 3, Section 2.2** and also **Part 7, Section 4**.

Generic Question ID: 593 Sub ID [57] Raised by [S57 Q498]

The SAR concludes that the likelihood of an oil spill is classed as "very low" and that the Hydrocarbon and Chemical Spill Contingency Plan with a "fast response" will be sufficient to mitigate environmental harm. The Safety Case for the Montara and Deepwater Horizon did nothing to prevent that disaster. A "Fast response" is always inadequate and under resourced for events this size.

The Montara (Australia's northern waters) and Gulf of Mexico (Deepwater Horizon) oil spills have heightened the concern and focus on large scale oil spills from oil and gas activities. Both of these events were a result of a loss of control of oil and gas from a well during drilling. As such, until the wells were capped, the events were 'continuous' as the contents of the oil and gas reservoir were able to leak into the ocean.

The SAR for the Browse LNG Precinct does not seek approval for the drilling of oil and gas wells as this is not an activity contemplated at the Browse LNG Precinct. Unlike a well blow out, volumes from the Browse LNG Precinct will be limited to stored condensate volumes within facilities such as pipelines (which would be shut down in the event of a spill) or condensate tankers (ships). These spills have been incorporated into the spill assessments presented in the SAR.

Further information on Emergency Response is contained in **Section 4.4.1** of the Response to Submissions Summary Report.

Generic Question ID: 741 Sub ID [70] Raised by [S70 Q1667]

How will LandCorp or the Broome Port Authority manage a serious oil spill? Do they have anywhere near the tugs, cranes etc. available in the Gulf of Mexico?

The Broome Port Authority (**BPA**) has existing responsibility for hydrocarbon spill preparedness and response for areas in its jurisdiction. With particular regard to oil spill response capabilities of the Broome Port Authority, the following points reinforce this capability and responsibility through the appropriate provision of resources, equipment and training:

- The Port authority is currently responsible for the immediate response and management of tier 2 incidents in the region.
- BPA has a stockpile of response equipment and dispersant, sufficient for a first strike capability. This would be supplemented by the Dampier stockpile in the event of a large spill.
- BPA currently has two senior staff trained as oil spill operations managers, and a dozen trained as OSR team members. Two are trained as team leaders.
- Core Oil Spill Response (**OSR**) personnel have attended the last two major state exercises and have fulfilled operations, administration, media, equipment, beach clearance, and general logistics duties.
- Regular training programs are undertaken in conjunction with Department of Transport oil spill specialists.
- In line with the BLNG Precinct Environmental Management Plan (BPEMP) already committed in the SAR, equipment would be located at the Precinct to hasten response to any oil spill during the early construction phases.

For more information see **Part 7, Section 4.4.2** and **Section 4.4.1** of the Response to Submissions Summary Report.

Generic Question ID: 1309 Sub ID [195] Raised by [S195 Q3244]

Part 7 Section 1: The Montara oil spill off the Kimberley coast of Western Australia could have been so much worse. Australia was lucky: the slick headed north. Indonesian fisheries bore the brunt of it, and the locals want compensation. A sloppy cementing operation on the West Atlas drilling rig owned by the Thai operator PTTEPA led to the accident on August 21, 2009. Up to 140,000 barrels spilt over the next 74 days. That pales next to the 5 million-barrel spill in the Gulf of Mexico, but the lessons are similar, as we will find when the Resources Minister, Martin Ferguson, finally releases the Montara Commission of Inquiry report he has been sitting on since June. A clear problem is regulatory capture. The Australian Financial Review recently reported there was just one official in the Northern Territory government who had the technical expertise to oversee drilling for oil and gas. He had approved PTTEPA's changed drilling plans in half an hour on a Friday afternoon. On the day of the accident he was on leave, and did not return until a few days later. Pressed, the same official said: "Maybe we do get a little lax around here but only because we have such an open and ongoing relationship with all of the key players at PTTEPA." The Montara spill should force a re-evaluation of the risks associated with massive oil and gas development in such an environmentally sensitive region. West Atlas was an oil rig. The developments planned off Western Australia are mostly liquefied natural gas projects and there is less risk of a spill, but watch the Mariner gas rig that exploded in the Gulf of Mexico this week. Some natural gas fields contain a high level of oil and condensate. One such is Woodside's proposed Browse Basin LNG plant at James Price Point on the Kimberley coast, 60 kilometres north of Broome. The $30 billion-plus plant would pipe hundreds of barrels of oil condensate a day. A spill would be devastating, says an Environs Kimberley campaigner, Martin Pritchard, because tides and currents mean a slick would linger. The area is remote and highly inaccessible. Besides the threat of an oil spill, there is anti-freeze to be piped round the plant.

The likelihood of a significant hydrocarbon spill is very low and hydrocarbon spill modelling undertaken to support the SAR demonstrates that the extent of a spill is predominantly driven by prevailing onshore and offshore winds and tidal forces, thereby minimising the likely extent of coastline impacts in the Kimberley region.

State emergency procedures and proponent oil spill contingency plans would be triggered to manage and minimise any impacts that could otherwise occur, and preventative measures are introduced at the earliest stages of facility design to ensure facilities are built to accommodate the range of events that may be encountered.

Minor chemical discharges such as ethylene glycol (anti-freeze) may result from unplanned events, for example, process leaks and small operational spills, which typically result in negligible environmental impacts. However, with modern design and preventative measures the likelihood of a ethylene glycol spill or leak occurring is very low.

Operational measures are implemented to ensure facilities are regularly maintained and operated to prevent chemical and hydrocarbon spill events. In addition, Western Australian Government agencies such as the Department of Environment and Conservation and the Department of Mines and Petroleum conduct regular inspections and audits of LNG facilities to ensure statutory requirements are met by the operator and to identify improvements that can be made to achieve a better environmental and safety outcome (mitigation and management measures are discussed further in **Part 7**, **Section 4.4.2**).

For more information on the proposed Emergency Response see **Section 4.4.1** of the Response to Submissions Summary Report.

4.1 Introduction

4.2 Relevant Factors

4.3 Study Overview

Generic Question ID: 201 Sub ID [24, 27, 32, 34, 40, 45, 75, 76, 77, 84, 86, 87, 88, 89, 96, 97, 102, 105, 132, 134, 210, 235] Raised by [S88 Q2626]

Several submissions raised the issue of managing oil spills. Some examples are as follows:

- As history has shown, the companies involved lack the knowledge and integrity to control the possibility of an oil spill in this area.
- The SAR Executive Summary (**Part 1**, **Table 7-8**) includes the comment "Industry experience indicates

that proposed management measures can be expected to be successful". This contradicts the evidence seen in the recent Gulf of Mexico and Montara oil spills.

- Introducing the threat of oil spill risk to Cable Beach, Willie Creek, Roebuck Bay, Dampier Peninsula and the Lacepede Islands is in no way acceptable, since purported 'best practice' is never fool-proof. No oil spill management strategies have been developed for public comment - this should be a minimum requirement for the assessment.

- In response to the modelling and conclusions presented in **Section 4.3.3** it is noted that:
  - The wind direction assumptions used in this modelling are different from those used in the modelling undertaken in the section on air quality which focuses on westerly winds (See **Table 8.3**, **Part 1**, **p. ES-57** and **Appendix C-25**, **p. 45**).
  - There does not appear to be any modelling for a cyclone situation when the winds will almost certainly not accord with the pattern modelled.
  - The report notes that strong tidal movements mean there is need for a rapid response to a spill. In Point 4.4.2 it then goes on to offer the reassurances that Broome Port Authority (60km away) will be in charge of the response using an unspecified amount of equipment which will be stored on site, and that two men have been appropriately trained!! No mention is made of how initiating a response in a cyclone will be possible.

Oil spill risks should be modelled in all possible cyclone scenarios and full details of the emergency response capability required should be revealed.

There is a clearly defined oil spill response structure within Australia. The Commonwealth Government has developed the National Marine Oil Spill Contingency Plan (http://www.amsa.gov.au/Marine_Environment_Protection/National_plan/) that outlines how marine oil spills are managed in Australia. The Australian Maritime Safety Authority (**AMSA**) is responsible for maintaining the plan. The basis of this plan is a tiered response based on the size of a spill. The tiers are:

- Tier 1 - up to 10 tonnes - a small spill requiring a local response where the combat agency will generally have the available equipment to respond to the spill.
- Tier 2 - between 10 and 1000 tonnes - a medium spill requiring regional and/or national assistance. Interstate resources will be facilitated by the Statutory Agency through Marine Environment Pollution (**MEP**), AMSA.
- Tier 3 - Tier 3 - above 1000 tonnes – a large spill requiring national assistance generally requiring local, regional, national and possibly international assistance. Interstate and international resources will be facilitated by the Statutory Agency through MEP.

The Browse LNG Precinct Port will be under the control of the Broome Port Authority. As outlined in **Part 7**, **Table 4-3** the State Government has committed that the Broome Port Authority shall be responsible for preparing an Emergency Response Plan including oil spill contingency procedures and coordination of proponents in the event of emergency response procedures. In addition the State Government has committed to the resourcing and maintenance of hydrocarbon spill response equipment with the capacity to effectively respond to a tier two (10 -1000t) event.

Individual proponents with the Browse LNG Precinct are required to develop a Hydrocarbon and Chemical Spill Contingency Plan which will sit under the Broome Port Authority Emergency Response Plan. The Proponent's Hydrocarbon and Chemical Spill Contingency Plan must be developed to the satisfaction of the Western Australian Minister for Environment (**Part 3**, **Table 2.3-4**).

In addition, most of the Australian oil industry, including the potential Foundation Proponent Woodside, subscribes to Australian Marine Oil Spill Centre (**AMOSC**). AMOSC maintains a stockpile of Tier 3 oil spill response equipment. Under an agreement between AMSA and AMOSC oil spill resources (both equipment and personnel) is available, if required, to the Commonwealth and Western Australia for incidents.

Both the air quality assessment model (**Appendix C-25**) and the oil spill model (**Part 7**, **Section 4**) were run for a full 12 months of weather conditions and therefore incorporate the variability anticipated over a full year. In both models, winds are driven by the Australian Bureau of Meteorology data (from MesoLAPS and LAPS data).

The period modelled for estimation of the oil spill risks was from 1st August 2007 running until the 1st September 2008 (**Section 5.5**, **Appendix G-3**) which included three cyclones (*Melanie* 26 December 2007 - 2 January 2008 - Category 2; *Nicholas* 11 - 20 February 2008 - Category 3; and *Ophelia* 1 - 6 March 2008 - Category 2) that passed the NW coast of WA. This resulted in an estimated annual probability of oil reaching

Roebuck Bay to be less than one in every 10 000 years. With the minimum time for oil to get to Roebuck Bay being 10 days. Consequently this will provide sufficient time to mobilise the necessary response resources.

In addition, Ports such as those proposed for the Browse LNG Precinct will close when cyclones threaten the Port with no ships remaining within the Port. Consequently the probability of a spill is reduced as no loading or shipping operations will be occurring in the Precinct.

4.4 Assessment against SAR Impact Conclusions and Outcomes

Generic Question ID: 702 Sub ID [210] Raised by [S210 Q1014]

Part 7 Section 4.4.2: Would the Broome Port Authority have staff based at James Price Point to manage a spill at James Price Point or would they bring a team from Broome?

The Broome Port Authority, as the statutory Authority for the marine facilities associated with the Precinct, will regulate construction and operation on behalf of the State to effectively manage the multi-user port facilities and to ensure potential impacts on the marine environment are mitigated. It is expected that the Broome Port Authority will have a presence at the Browse LNG Precinct in order to facilitate this role through ongoing monitoring and oversight of the Port. As outlined in **Part 7,** S**ection 4.4.2**, Broome Port Authority has responsibility to manage and respond to any hydrocarbon spill incident that occurs within its jurisdiction.

Generic Question ID: 783 Sub ID [111] Raised by [S111 Q2150]

Where the report is particularly unconvincing is its reliance on yet-to-be-written plans to mitigate the risk. What might inspire more confidence and enable best practice decision-making to occur regarding the practicalities of plans developed and the capacity for risks to be addressed is specific information on practical matters including:

- Where will LNG tankers go when cyclones are imminent? How many hours will it take for them to get there?
- How many kilometres of retaining materials to stop a spill spreading are required? Where will this equipment be stored? Who will be responsible for deploying it? Who will pay for the deployment?
- What fire-fighting equipment will Woodside or any other proponent be required to have on site in the event of an explosion and/or fire?

In the absence of such information, it is impossible to assess the validity or otherwise of the SAR's assessment that the risks are manageable.

It is inherent in the nature of a strategic assessment that precise details of future proposals may not be known. Key areas of uncertainty are addressed with conservative assumptions (listed in **Table 3-1**, **Appendix C-13**), and aspects related to project specific details will be addressed through derived proposals (see **Section 2.2** of the Response to Submissions Summary Report). Project proponents will be required as part of the process to consult broadly prior to submission of derived proposals.

Nevertheless, one of the key priorities of the State in creating the Browse LNG Precinct is to mitigate and manage potential adverse impacts to an acceptable level. As such, stringent regulatory requirements and industry standards will be applied to commercial proponents to ensure their activities are undertaken to minimise the likelihood of a disaster to as low as reasonably practicable. Some practical measures in response to the broader issues raised in this submission include:

- It is expected that tankers will sail out of the path of an approaching cyclone. This is a standard safety practice that is routinely carried out for all shipping in cyclone prone regions in northern Australia.
- The Broome Port Authority (**BPA**) has existing responsibility for hydrocarbon spill preparedness and response for areas in its jurisdiction. With particular regard to oil spill response capabilities of the Broome Port Authority, the following points reinforce this capability and responsibility through the appropriate provision of resources, equipment and training:
    - The Port authority is currently responsible for the immediate response and management of tier 2 incidents in the region.
    - BPA has a stockpile of response equipment and dispersant, sufficient for a first strike capability. This would be supplemented by the Dampier stockpile in the event of a large spill.
    - BPA currently has two senior staff trained as oil spill operations managers, and a dozen trained as OSR team members. Two are trained as team leaders.
    - Core Oil Spill Response (**OSR**) personnel have attended the last two major state exercises and have fulfilled operations, administration, media, equipment, beach clearance, and general logistics duties.

- Regular training programs are undertaken in conjunction with Department of Transport oil spill specialists.
- In line with the BLNG Precinct Environmental Management Plan (**BPEMP**) already committed in the SAR, equipment would be located at the Precinct to hasten response to any oil spill during the early construction phases.

- A Process Fire Management strategy would be in place for operations of the BLNG Precinct that would consist of a combination of measures and management protocols to prevent escalation of consequences from fire events. Primarily, management is achieved through passive and active means of fire protection including:
  - safety distances (i.e. unit separation, equipment separation);
  - isolation and blow down (i.e. limiting inventory release);
  - passive fire protection (i.e. fire proofing structures); and
  - active fire protection (i.e. fire and gas detection systems, fire water systems, fire fighting equipment).

4.5 Conclusion

5 Supplementary Coastal Processes Modelling

Generic Question ID: 1343 Sub ID [77, 105, 160] Raised by [S160 Q3220]

There has been a lack of studies into the affect the Precinct will have on the beaches around Broome and the areas directly north and south.

The impact of the Browse LNG Precinct on coastal processes has been investigated through site assessments and detailed modelling summarised in **Part 7,Section 5** of the SAR.

The results of the coastal modelling study indicate that there would be localised changes to some of the coastal character in the area immediately to the north and south of the Precinct. Outside this area, no significant changes in key values (intrinsic, recreational, topographical, etc) are anticipated assuming appropriate measures are implemented.

Part 7, **Section 5.4.2** of the Strategic Assessment Report proposes that proponents of derived proposals shall prepare and implement a Coastal Processes Management Plan, in consultation with the Office of the Environmental Protection Agency and other key regulatory agencies, to mitigate impacts on coastal processes arising from the construction and operation of the Browse LNG Precinct.

The likelihood of a significant hydrocarbon spill is very low and hydrocarbon spill modelling undertaken to support the SAR demonstrates that the extent of a spill is predominantly driven by prevailing onshore and offshore winds and tidal forces, thereby minimising the likely extent of coastline impacts.

State emergency procedures and proponent oil spill contingency plans would be triggered to manage and minimise any impacts that could otherwise occur. Preventative measures would be introduced at the earliest stages of facility design to ensure facilities are built to accommodate the range of events that may be encountered. Operational measures would be implemented to ensure facilities are regularly maintained and operated to prevent such hydrocarbon spill events, and Government agencies would conduct regular inspections to ensure statutory requirements are met and to identify improvements that can be made to continuously improve environmental and safety outcomes. Mitigation and management measures are discussed further in **Part 7**, **Section 4.4.2**.

For more information see **Section 4.4.1** of the Response to Submissions Summary Report.

Generic Question ID: 103 Sub ID [14] Raised by [S14 Q106]

The Project will affect the pristine stretch of coastline.

The development of the Browse LNG Precinct may affect coastal processes and sediment transport due to changes induced by the proposed port, channel and marine infrastructure. The Strategic Assessment Report proposes a range of mitigation and management measures outlined within **Part 3**, **Section 2.1** (Tidal Regimes, Wave Climate and Currents) to mitigate potential impacts on coastal processes or to manage the potential impacts to an acceptable level.

The Environmental Protection Authority also requested supplementary information on coastal processes in the Browse LNG Precinct area. This additional modelling is contained in the Strategic Assessment Report **Part 7**: Supplementary Information document.

It is expected that the predicted impacts to the local coastal geomorphology can be successfully mitigated by

the application of best practice management and design measures. Local impacts can be managed by refining the infrastructure design. A regular coastal processes survey program will also be developed to monitor local influences from the port development and implement appropriate management actions if impacts are detected, in order to achieve acceptable outcomes.

Generic Question ID: 296 Sub ID [165] Raised by [S165 Q719]

One clear omission in the SAR is the identification of risks associated with climate change on the Kimberley coast. There is no evidence provided on the likely impacts of more intense tropical cyclones on the James Price Point, although it is acknowledged that the absence of long term datasets makes it impossible to assess the impacts of cyclones in the area. In addition there has been no coastal vulnerability assessment carried out to ascertain the vulnerability of James Price Point to erosion and extreme weather events (including storm surges) in the event of anticipated sea level rise.

Potential impacts on the Browse LNG Downstream Precinct from climate change will need to be considered by individual proponents and addressed in the related derived proposals. In particular, requirements for set-back and elevation from the coast to accommodate potential sea level rise will need to be considered. The coastal topography of the James Price Point area is dominated by coastal cliffs and dune systems, so the land-based components of the Precinct plan will be elevated and the BLNG Precinct area itself is set back from the coast such that sea level rise is unlikely to be a concern. In addition, the historical assessment of the coastline stability (**Part 7**, **Section 5.3.3**) indicates that the coastline is not subject to significant erosion. It is expected that appropriate bench heights and setback distances will be defined as engineering details and layouts are confirmed by individual proponents within the Precinct. Engineering studies will be expected to give consideration to the WAPC's recently released State Planning Policy No 2.6 State Coastal Planning Policy Schedule 1 Sea Level Rise.

Generic Question ID: 979 Sub ID [156] Raised by [S156 Q2093]

Littoral drift will definitely be affected by this development. Have studies been conducted on this?

The readers attention is directed to **Part 7**, **Section 5** and **Appendix G-4** which address the potential impacts to coastal processes including littoral drift. The summary conclusion is included below to assist the reader:

The supplementary coastal process report found that the existing coastal sediment transport regime will be relatively unaffected along the coastline outside the immediate area sheltered by the Precinct. Nonetheless, the port will act as a "sediment sink" and this will result in sediment starvation of local beaches within approximately 2-3km north and south of the port in the short to medium term. It is expected that the predicted impacts to the local coastal geomorphology can be successfully mitigated by the application of best practice management and design measures, consistent with the commitments outlined in the SAR and further commitments in this Supplement (for example the development of an adaptive Coastal Processes Management Plan).

Generic Question ID: 980 Sub ID [156] Raised by [S156 Q2094]

Will sea grass beds and natural creeks, mangroves and other habitats along this pristine coast be adversely affected by these new sand movements?

In terms of the risk of changes to natural sand movement resulting in coastal erosion, it was acknowledged (**Part 3, Section 2.1.3.2**) that the presence of nearshore infrastructure has the potential to influence local coastal processes in the vicinity of the Precinct. Supplementary coastal processes modelling was undertaken (**Part 7, Section 5**) to verify the impact assessment conclusions made within **Part 3, Section 2.1.3** of the Strategic Assessment Report. The results of this study demonstrate that the proposed port development may lead to a sediment deficit immediately adjacent to the facility. This zone of impact is likely to be limited to approximately 2-3km north and south of the development. As the predicted zone of impact is limited to the coastal zone, no benthic habitats (i.e. seagrass beds) will be impacted. Similarly, the nearest creek and mangrove habitats are approximately 20km south at Barred Creek, well outside the predicted zone of impact. In addition, it was determined that the impacts to the local coastal geomorphology can be successfully mitigated by the application of best practice management and design measures, consistent with the commitments outlined in the Strategic Assessment Report and the Supplement (**Part 7**).

5.1 Introduction

Generic Question ID: 1 Sub ID [1, 66, 156] Raised by [S1 Q4]

The BLNG Precinct will result in environmental damage (including the erosion of world famous Cable Beach) caused by the construction of a breakwater and constant dredging required for port facilities.

The dredging and nearshore construction activities are unlikely to result in catastrophic environmental impacts, and are well removed from Cable Beach. It is acknowledged in the Strategic Assessment Report (primarily within **Part 3, Sections 2.4.3.1** and **2.3.4.1** and **Part 7, Section 3.5**) that the dredging and nearshore construction activities will result in some temporary (i.e. recovery <5 years) and permanent impacts on nearby benthic habitats affected by the turbidity and sedimentation. However, it should be noted that the site chosen for the BLNG Precinct was strategically placed to avoid areas of significant benthic habitat. This resulted in the selection of the site at James Price Point site where BPPH coverage is generally low and thus the 'indicative port development' scenario is predicted to result in a loss of approximately 321ha of combined BPPH (primarily macroalgae and seagrass). Whilst removal of macroalgal habitat is expected to reduce benthic primary production in the area, this is not expected to impact on general ecosystem function and integrity of the James Price Point area, given the prevalence of this habitat type within the wider bioregion.

In terms of the risk of coastal erosion as a result of nearshore infrastructure, it was acknowledged (**Part 3, Section 2.1.3.2**) that the presence of nearshore infrastructure has the potential to influence local coastal processes in the vicinity of the Precinct. Supplementary coastal processes modelling were undertaken (**Part 7, Section 5**) to verify the impact assessment conclusions made within **Part 3, Section 2.1.3** of the Strategic Assessment Report. The results of this study demonstrate that the proposed port development may lead to a sediment deficit immediately adjacent to the facility. This zone of impact is likely to be limited to approximately 2-3km north and south of the development. This modelling predicted that the impacts to the local coastal geomorphology can be successfully mitigated by the application of best practice management and design measures, consistent with the commitments outlined in the Strategic Assessment Report and the Supplement (**Part 7**). Therefore, the proposed BLNG Precinct activities are not predicted to have any significant effect on Cable Beach (approximately 45-50km south of the Precinct site).

5.2 Relevant Factors

5.3 Study Overview

Generic Question ID: 1050 Sub ID [224] Raised by [S224 Q1976]

KLC Submission: **Part 7,Section 5.3.3.2** Sediment Transport - Further specific details are required on the predicted impacts to coastal habitats as a result of changes to sediment transport and details on the extent of these impacts. The results of these studies and the ability to manage the impact need to be presented to Traditional Owners for review and comment.

In terms of the risk of coastal erosion and potential flow-on impacts to coastal habitats resulting from nearshore infrastructure, it was acknowledged (**Part 3, Section 2.1.3.2**) that the presence of nearshore infrastructure has the potential to influence local coastal processes in the vicinity of the Precinct. Supplementary coastal processes modelling was undertaken (**Part 7, Section 5**) to verify the impact assessment conclusions made within **Part 3, Section 2.1.3** of the Strategic Assessment Report. The results of this study demonstrate that the proposed port development may lead to a sediment deficit immediately adjacent to the facility. This zone of impact is likely to be limited to approximately 2-3km north and south of the development. The intertidal fringing reef platform is exposed for long periods during low tide and also subject to frequent resuspension of sediments. Therefore this zone is unlikely to support substantive BPP communities due to the frequent periods of desiccation, sediment deposition and scouring. The intertidal study undertaken to support the SAR (**Appendix C-3**), confirmed that the majority of this zone consists of abiotic substrates (bare rock and sand), with very low BPPH cover. Therefore it is not predicted that the effect of the nearshore infrastructure on coastal processes will have a significant impact on benthic habitats within the James Price Point area.

In addition, the modelling predicted that the impacts to the local coastal geomorphology and coastal habitats can be successfully mitigated by the application of best practice management and design measures, consistent with the commitments outlined in the Strategic Assessment Report and the Supplement (**Part 7)**. The implementation of such measures will be undertaken in consultation with the appropriate stakeholders. The Traditional Owners will continue to be engaged in the environmental management of the Browse LNG Precinct with these requirements formally enshrined via the BLNG Project Agreement.

5.4 Assessment against SAR Impact Conclusions and Outcomes

Generic Question ID: 1051 Sub ID [224] Raised by [S224 Q1978]

KLC Submission: **Part 7, Section 5.4.2** Mitigation and Management - The SAR makes reference to a future Coastal Process Management Plan. This plan will be critical in providing specific details on how impacts from dredging will be reduced and managed, and therefore this Plan(s) will need to be reviewed and endorsed by the Traditional Owners.

Part 7, **Section 5.4.2** of the Strategic Assessment Report proposes that proponents of derived proposals shall prepare and implement a Coastal Processes Management Plan, in consultation with the Office of the Environmental Protection Agency and other key regulatory agencies, to mitigate impacts on coastal processes arising from the construction and operation of the Browse LNG Precinct.

To ensure delivery of the necessary environmental and social management measures, the SAR proposes that a Browse LNG Precinct Management Structure be established. The proposed Precinct Governance arrangement is detailed in **Section 2.3** of the Response to Submissions Summary Report.

5.5 Conclusion

6 Summary and Conclusions

6.1 Purpose

6.2 Marine Wastewater Discharge Modelling

6.3 Marine Benthic Primary Producer Habitat Calculations

6.4 Hydrocarbon Spill Modelling

Generic Question ID: 1405 Sub ID [87] Raised by [S87 Q2206]

Of concern is the high likelihood of hydrocarbon spills from shipping/drilling accidents. This is the case especially with the recent announcement that PTTEP Australasia, the company responsible for the Montara oil spill, has been named a joint venture partner for Woodside's Omar-1 well.

As part of the Strategic Assessment of the Browse LNG Precinct, hydrocarbon spill modelling has been undertaken to determine the predicted impacts and corresponding management measures. Maintenance and integrity of LNG facilities and associated infrastructure is paramount to the longevity and sustainability of the Australian LNG industry. As such, stringent regulatory requirements and industry standards are applied to LNG proponents to ensure their activities are undertaken to minimise the likelihood of hydrocarbon spills to as low as reasonably practicable.

Preventative measures for loss of hydrocarbon containment are introduced at the earliest stages of facility design and engineering to ensure facilities are built to accommodate a range of both environmental and anthropogenic events that may be encountered such as: cyclonic activity; lightning strikes; tsunamis and ocean level rise; vessel anchoring in shallow waters; and trawling vessels. Design measures to prevent the release of hydrocarbons to the environment as a result of the failure of pipelines or vessels include: secondary containment (e.g. bunding) of hydrocarbon storage areas; rock armouring of pipelines; and strict material specifications to ensure the technical integrity of a facility is maintained.

Western Australian Government agencies such as the Department of Environment and Conservation and the Department of Mines and Petroleum conduct regular inspections and audits of LNG facilities to ensure statutory requirements are met by the operator and to identify improvements that can be made to achieve a better environmental and safety outcome. Whilst the scope of these inspections differs according to the legislative framework under which these agencies work, the outcome is to ensure that LNG facilities are designed, operated and maintained appropriately to minimise risks to the environment and to improve the safety of personnel.

For more information see **Part 7**, **Section 4.4.2.2**.

For discussion about proposed Emergency Response see **Section 4.4.1** of the Response to Submissions Summary Report.

6.5 Coastal Processes Modelling

6.6 Impacts

Generic Question ID: 1164 Sub ID [211] Raised by [S211 Q1036]

Part 1 Section 8.1.3: The study carried out failed to accurately portray the data from Bureau of Meteorology regarding prevailing winds, and also Wet Season or cyclone conditions. Many locals have pointed this out. How can the modelling be based on inaccurate data? The 1 in 10,000 year risk assessment reminds me of the 1/100 year flood risk assessments for the Willare bridge, when it collapsed the very next year after being built.

The Executive Summary (**Part 1**) was intended to only give a very high level summary of the issues, not present the basis for the air emission modelling. Further detail is provided on the local and regional wind climate in **Part 4, Section 2.8.1.2**, which summarises observations from the Bureau of Meteorology station at Broome Airport. This section describes prevailing wind condition but this by no means implies that other wind conditions do not occur.

The computer models used for the air quality assessment (TAPM and TAPM-CTM) incorporate a meteorological sub-model that generates the wind patterns that are used to calculate dispersion of emissions, rather than relying on monitoring data from any one source. The meteorological sub-model was verified against available monitoring data as discussed in Section 7.2 of **Appendix C-25**. The model successfully reproduced the observed general features of the wind climate, including northerly and southerly winds, as shown in **Figure 7.2** of **Appendix C-25**. **Section 7.2, p. 67** of **Appendix C-25**, notes that that the TAPM model tends to under-predict surface wind speeds but also notes that performance is better further aloft at plume height. Under-prediction of wind-speeds will tend to over-predict concentrations, so the error is conservative and will not work to hide adverse conditions. The model was run for a full 12 months to ensure seasonal and daily variations were taken into account for the impact assessment.

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