Gorgon Project:

Gorgon Gas Development, Additional Construction Laydown and Operations Support Area

Environmental Review

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Gorgon Gas Development, Additional Construction Laydown and Operations Support Area

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Revision Approvals

	Name	Signature	Date
Prepared:	Peter Caron	PCRH	5/12/2013
Checked:	Sean Finn		5/12/2013
Approved:	David Lee	P.P. (JGVL)	5/12/2013
Document Control QC:	Gertrude Chan	GChan	5/12/13

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20.	Chevron Australia Pty Ltd	David Lee
21.	Chevron Australia Pty Ltd	Nicole Johnson
22.	Chevron Australia Pty Ltd	Clayton Pritchard
23.	Chevron Australia Pty Ltd	Hannah Brown
24.	Chevron Australia Pty Ltd	Todd Baldock

Additional Approval Page

Endorsed by (*if required*)

	Name	Signature	Date
☐ Legal	Kathryn Barras		5/12/2013
☐ PGPA	Norm Taylor		5/12/2013

Additional Approvals (*if required*)

	Name	Signature	Date
☐ General Manager – Greater Gorgon	Colin Beckett	KMLN FOR C. BECKETT	5/12/13

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Terms, Definitions and Abbreviations

API	Assessment on Proponent Information
APPEA	Australian Petroleum Production and Exploration Association
ABU	Australasia Strategic Business Unit
Astron	Astron Environmental Sciences
Bank Cubic Metres	Represents the contents of a cubic meter of material in place
Biota	Biota Environmental Sciences
Chevron Australia	Chevron Australia Pty Ltd
Barrow Island Act	Barrow Island Act 2003 (WA)
Declared Rare Flora	Declared Rare Flora has the meaning given by the Wildlife Conservation Act 1950 (WA)
Development envelope	An area of approximately 36 ha within which the proposal area will be located
DPaW	Western Australian Department of Parks and Wildlife
DMAs	Decision Making Authorities
EIS/ERMP	Environmental Impact Statement/Environmental Review and Management Programme (for the Proposed Gorgon Development dated September 2005) as amended or supplemented from time to time
eNGO	Environmental Non-Government Organisation
Environmental Harm	Has the meaning given by Part 3A of the Environmental Protection Act 1986 (WA)
EP Act	Western Australian *Environmental Protection Act 1986* (WA)
EPA	Environmental Protection Authority (WA)
EPBC Reference: 2003/1294	Commonwealth Ministerial Approval (for the Gorgon Gas Development) amended or replaced from time to time
EPBC Reference: 2005/2184	Commonwealth Ministerial Approval (for the Jansz Feed Gas Pipeline) as amended or replaced from time to time
EPBC Reference: 2008/4178	Commonwealth Ministerial Approval (for the Revised Gorgon Gas Development) as amended or replaced from time to time
ISO	International Organization for Standardizations
IVMS	In Vehicle Monitoring System

GIS	Geographic Information System
GJVs	Gorgon Joint Venturers
GPS	Global Positioning System
Gorgon Gas Development	The Gorgon Gas Development as approved under Statement No. 800 and EPBC Reference 2003/1294 and 2008/4178 as amended or replaced from time to time
Fourth Train Proposal	Gorgon Gas Development Fourth Train Proposal
ha	Hectare
km	Kilometre
m^2	Square metre
Material Environmental Harm	Environmental Harm that is neither trivial nor negligible
Non-indigenous Species	Any species of plant, animal or micro-organism not native to Barrow Island
OE	Operational Excellence
OEMS	Operational Excellence Management System
OEPA	Office of the Environmental Protection Authority
PEC	Priority Ecological Community
Proposal area	The 32 ha of uncleared land that will be subject to activities relating to the proposal
Priority Ecological Community	DPaW classification for a possible threatened ecological communities that do not meet survey criteria or that are not adequately defined
Priority Flora	Priority flora is a non-legislative category aimed to manage those plant taxa listed by DPaW on the basis that they are known from only a few collections, or a few sites, but which have not been adequately surveyed. Such flora may be rare or threatened, but cannot be considered for declaration as rare flora until such survey work has been undertaken
Serious Environmental Harm	Environmental harm that is: a. irreversible, of a high impact or on a wide scale; or b. significant or in an area of high conservation value or special significance and is neither trivial nor negligible
SREs	short-range endemics

Statement No. 748	Ministerial Implementation Statement No. 748
Statement No. 769	Ministerial Implementation Statement No. 769
Statement No. 800	Ministerial Implementation Statement No. 800
TDF	Terrestrial Disturbance Footprint
Threatened Ecological Communities	DPaW classification for a threatened ecological community categorised as “presumed totally destroyed”, “critically endangered”, “endangered” or “vulnerable”
WAPET	West Australian Petroleum Pty Ltd.
WAPET Landing	Proper name referring to the site of the barge landing existing on the east coast of Barrow Island prior to the date of Statement No. 800
Wildlife Conservation Act	*Wildlife Conservation Act 1950* (WA)

Executive Summary

Chevron Australia Pty Ltd (Chevron Australia) proposes to undertake clearing and earthworks over up to 32 hectares (ha) of land (proposal area) on Barrow Island and use the proposal area for activities/facilities of the approved Gorgon Gas Development. The proposal has been submitted to the Western Australian (WA) Environmental Protection Authority (EPA) for assessment under Section 38 of the *Environmental Protection Act 1986* (WA) (EP Act).

The use of land on Barrow Island for gas processing purposes is provided under the *Barrow Island Act* 2003 (WA) (Barrow Island Act). The uncleared land encompassed by this proposal falls within the limitation on uncleared land available for gas processing project purposes under the Barrow Island Act (as proposed to be amended). Most of the proposal area will be used for Gorgon Gas Development construction support, with a component used to house operations support facilities, via an expansion of the existing administration/operations complex. The proposal does not include construction of any new production, transportation, or accommodation facilities, and all workforce, utilities, and transport requirements will be met via existing infrastructure and from within existing (approved) capacities. Any disturbed areas not required for the future construction and operation of the Gorgon Gas Development will be rehabilitated in accordance with the Post-construction Rehabilitation Plan.

The exact location of the proposal area has not yet been determined, but it will be located within a 36 ha development envelope south of, and adjacent to, the approved Gorgon Gas Development Gas Treatment Plant site. The proposal area comprises approximately 0.1% of Barrow Island's land mass. As a result of the proposal, the total area of uncleared land on Barrow Island occupied by the approved Gorgon Gas Development will increase from approximately 1.3% of Barrow Island to approximately 1.4%. The total area of direct disturbance from development on Barrow Island, including uncleared land occupied by the proposal, the approved Gorgon Gas Development, and historical disturbance associated with the oilfield, would increase from approximately 6.6% to approximately 6.7%.

To inform the planning and assessment of the proposal, Chevron Australia has expanded the extensive and ongoing stakeholder engagement program associated with the approved Gorgon Gas Development. Specific consultation regarding the proposal has included all relevant stakeholders, including all applicable Decision Making Authorities (DMAs). The issues raised during consultation have been considered in proposal planning and addressed in this document, as appropriate. Consultation will continue during the construction and operation phases for the proposal.

The land that is proposed to be used falls entirely within the area inland of Town Point that has been subject to a range of environmental baseline and/or monitoring surveys associated with environmental approvals for the Gorgon Gas Development. Site-specific ecological surveys have been undertaken, with reference to contemporary EPA guidelines, to augment the substantial environmental information available from earlier studies.

The proposal area has been selected to avoid features of particular environmental significance. Comprehensive management, within the established management framework approved for the approved Gorgon Gas Development, is proposed to be implemented to ensure impacts on environmental factors are appropriately managed.

The land encompasses landforms, vegetation, and habitat types that have widespread distributions outside the area. There are no critical habitats for threatened fauna on the land, nor flora or fauna known to be restricted to the area proposed to be used.

The proposal was referred to the EPA on 25 October 2013 and published for public comment on 28 October 2013. No submissions were received. Following consideration of the environmental aspects of the proposal, the EPA has set the level of assessment at Assessment on Proponent Information (API) Category A. Scoping Guidelines (hereafter referred to as the API Guidelines) have been issued by the EPA, which identify the preliminary key environmental factors requiring further assessment to comprise:

- Flora and Vegetation
- Terrestrial Fauna
- Subterranean Fauna
- Offsets.

This Environmental Review document has been prepared in accordance with the requirements of the API Guidelines. Assessment of impacts to the factors has been guided by the EPA's relevant Position Statements and Guidance documents. The outcomes of this assessment are summarised below.

Flora and Vegetation

No declared rare flora or threatened ecological communities afforded protection under the *Wildlife Conservation Act 1950* (WA) (Wildlife Conservation Act) will be affected by the proposal. The potential for offsite impacts to vegetation in adjacent areas will be avoided or minimised through the management proposed, and the extent of unavoidable disturbance from clearing and earthworks will represent a very small (<1%) proportion of the Island-wide distribution of any vegetation type affected. The proposal would result in only an incremental increase in the existing level of disturbance to vegetation on Barrow Island, including that from the operating oilfield. The cumulative extent of clearing on Barrow Island, including by the approved Gorgon Gas Development and historical disturbance associated with the operating oilfield, would not compromise the representation, diversity, viability, and ecological function at the species, population, and community level of flora and vegetation on Barrow Island.

Fauna

The proposal area does not contain any Boodie warrens or other restricted habitats of particular importance to threatened species. All the fauna habitats affected are widespread elsewhere on Barrow Island and the extent of habitat that will be affected, including cumulative with existing disturbance on Barrow Island, comprises a small proportion of the total habitat area. Any disturbed areas not required for the future construction and operation of the Gorgon Gas Development will be rehabilitated in accordance with the Post-construction Rehabilitation Plan (Chevron Australia 2009b), making these areas available as fauna habitat.

Management of proposal activities, including collection and relocation of threatened mammals prior to clearing where practicable, is expected to ensure the number of individuals of any species affected by the proposal is minimised. All species involved, including threatened species, have secure populations on Barrow Island and are well represented outside impact areas, within the Barrow Island nature reserve. The proposal is expected to result in a reduction in overall construction duration and road traffic requirements for the approved Gorgon Gas Development that is likely to correspondingly reduce the effects on fauna from physical interactions.

Given the limited scale of disturbance and the presence of surrounding unaffected areas of similar habitat, the proposal will not compromise the representation, diversity, viability, and ecological function at the species, population, and assemblage level of any fauna on Barrow Island.

Subterranean Fauna

No conservation-significant species of subterranean fauna as listed under the Wildlife Conservation Act are expected to be significantly impacted by the proposal. The proposal may result in impacts to individuals of some subterranean fauna species that have broader distributions on Barrow Island. It may also result in a very small reduction in the extent and/or quality of subterranean fauna habitat available on Barrow Island.

The proposal area represents a very small proportion of prospective subterranean fauna habitat on Barrow Island and effects to subterranean fauna and/or habitat are expected to be restricted to only a portion of the habitat underlying the site. Comprehensive monitoring and management

programs have been developed to ensure that offsite impacts would be rapidly detected and reported, and appropriately addressed through adaptive management responses in consultation with relevant environmental agencies.

The predicted impacts of the proposal, including cumulative impacts with other disturbance on Barrow Island, are considered unlikely to alter the current representation, diversity, viability, or ecological function of any species, population, or assemblage of subterranean fauna.

Offsets

The management measures within the environmental management framework proposed to be applied to the proposal are consistent with the Western Australian (State) Government's Environmental Offsets Policies and the EPA hierarchy of avoidance, minimisation, rectification, and reduction. With application of the management measures proposed, all potentially significant impacts will be avoided or minimised and there will be no significant residual impacts to critical or high value environmental assets.

Application of the existing Net Conservation Benefits program and additional undertakings described in Schedule 1 of the Barrow Island Act will ensure that the use of uncleared land on Barrow Island for gas processing project purposes, including the proposal, will achieve the EPA's objective for this factor. Consequently no offsets are required or proposed.

Conclusion

The proposal has the potential for impact to a small area on Barrow Island and a correspondingly small proportion of its environmental values. The proposal will be undertaken within the framework of existing environmental management systems, plans, and procedures that are being applied to the approved Gorgon Gas Development, including specific monitoring and management programs relevant to the activities that are proposed. The proposal will be implemented by a workforce familiar with the environmental sensitivities of the area and will meet Chevron Australia's commitment to excellence in environmental stewardship. With the management that will be applied, the proposal:

- will not result in significant residual environmental impact. The proposal comprises relatively small-scale disturbance within a generally well understood environment and will be implemented within a proven, comprehensive management framework
- raises a limited number of key environmental factors and involves activities that have previously been subjected to detailed assessment for the potential to impact those factors. The impacts can be readily managed through application of the management measures that have previously been developed for the activities involved, to the satisfaction of the Western Australian Department of Parks and Wildlife (DPaW) and Office of the Environmental Protection Authority (OEPA), as well as the Commonwealth Department of the Environment
- does not introduce any significant stakeholder concerns that have not previously been considered through the assessment process(es) for the approved Gorgon Gas Development
- has incorporated appropriate and effective stakeholder consultation that has encompassed all relevant DMAs and other key stakeholders and which, combined with public review of the referral, ensures that issues identified by stakeholders will be adequately addressed in the implementation of the proposal
- is consistent with all relevant environmental policies, guidelines, and standards
- will be managed such that potential environmental impacts are avoided or minimised to the extent that ensures EPA objectives for all relevant factors will be met
- does not require environmental offsets under the EP Act additional to the existing Net Conservation Benefits package and additional undertakings relating to the protection of Barrow Island's conservation and biodiversity values specified in the Barrow Island Act (as proposed to be amended) for the use of 332 ha of uncleared land on Barrow Island.

1.0 Introduction

1.1 Purpose and Scope of this Document

The Gorgon Gas Development Additional Construction Laydown and Operations Support Area Proposal (the proposal) was referred to the Western Australian (WA) Environmental Protection Authority (EPA) for assessment under Section 38 of the *Environmental Protection Act 1986* (WA) (EP Act) on 25 October 2013. The proposal was published on the EPA website for public comment on 28 October 2013. No submissions were received.

The EPA subsequently set the level of assessment for the proposal as Assessment on Proponent Information (API) Category A and issued Scoping Guidelines (API Guidelines) that identified the preliminary key environmental factors for the proposal and described the scope of additional information required in the Environmental Review (this document) to support the EPA's assessment of the proposal.

This Environmental Review document has been prepared in response to the API Guidelines and to support the Chevron Australia Pty Ltd (Chevron Australia) proposal to undertake clearing and earthworks over 32 hectares (ha) of land on Barrow Island and use the area for activities/facilities of the approved Gorgon Gas Development. This document provides a detailed description of the proposal, a review of the associated potential environmental impacts, and describes the management that is proposed to be implemented to ensure the proposal does not result in significant residual environmental impacts and will meet the EPA objectives for all relevant environmental factors.

The scope of this document is limited to the activities associated with making the proposal area suitable for activities/facilities of the approved Gorgon Gas Development, and the use of the proposal area by these activities/facilities. The proposal does not include the construction, operation, and/or decommissioning of facilities associated with the approved Gorgon Gas Development, which have already been approved under Part IV of the EP Act (Section 1.3.1).

1.2 Proponent Details

Chevron Australia is the operator and proponent for the proposal on behalf of the following companies, collectively known as the Gorgon Joint Venturers (GJVs):

- Chevron Australia Pty Ltd
- Chevron (TAPL) Pty Ltd
- Shell Development (Australia) Pty Ltd
- Mobil Australia Resources Company Pty Limited
- Osaka Gas Gorgon Pty Ltd
- Tokyo Gas Gorgon Pty Ltd
- Chubu Electric Power Gorgon Pty Ltd.

1.3 Proposal Overview

1.3.1 Proposal Summary

The area to be developed by the proposal is inland of Town Point on Barrow Island. Barrow Island is located approximately 55 km off the north-west coast of Western Australia (WA), in State Waters. It is approximately 25 km long and 10 km wide, covering an area of approximately 23 500 ha. Figure 1-1 shows the proposal in a regional and Barrow Island context.

The proposal comprises an area (proposal area) of up to 32 ha of uncleared land that will be located within a 36 ha development envelope south of, and adjacent to, the approved Gorgon Gas Development Gas Treatment Plant site (Figure 1-1).

The proposal includes:

- clearing and earthworks limited to the proposal area
- use of the proposal area by the activities/facilities that are part of the approved Gorgon Gas Development.

The key characteristics of this proposal are consistent with, and do not require changes to, the key characteristics table of the approved Gorgon Gas Development in Schedule 1 of Ministerial Implementation Statement No. 800 (Statement No. 800). Further project description detail is included in Section 2.0.

The proposal is related to the approved Gorgon Gas Development, which comprises the initial (two-train) Gorgon Gas Development proposal, the Revised and Expanded (three-train) Gorgon Gas Development proposal, and the Jansz Feed Gas Pipeline proposal. The approvals history of these three proposals (collectively referred in this document as the approved Gorgon Gas Development) is outlined in Section 1.3.1.1. The need for the proposal is explained in Section 1.4. The proposal is also related to the Gorgon Gas Development Fourth Train Proposal (Fourth Train Proposal), referred for assessment under Section 38 of the EP Act in April 2011 (Chevron Australia 2011), and which will form part of the Gorgon Gas Development, if it proceeds.

1.3.1.1 History of the Gorgon Gas Development Environmental Approvals

The initial Gorgon Gas Development was assessed through an Environmental Impact Statement/Environmental Review and Management Programme (EIS/ERMP) assessment process (Chevron Australia 2005, 2006). The initial Gorgon Gas Development was approved by the Western Australian State Minister for the Environment on 6 September 2007 by way of Ministerial Implementation Statement No. 748 (Statement No. 748) and the Commonwealth Minister for the Environment and Water Resources on 3 October 2007 (EPBC Reference: 2003/1294).

In September 2008, Chevron Australia sought both State and Commonwealth approval through a Public Environment Review (PER) assessment process (Chevron Australia 2008) for the Revised and Expanded Gorgon Gas Development. The Revised and Expanded Gorgon Gas Development (Chevron Australia 2008) was approved by the Western Australian State Minister for the Environment on 10 August 2009 (EPBC Reference: 2008/4178), by way of Ministerial Implementation Statement No. 800 (Statement No. 800). Statement No. 800 also superseded Statement No. 748 as the approval for the initial Gorgon Gas Development. Statement No. 800 and therefore provides approval for both the initial Gorgon Gas Development and the Revised and Expanded Gorgon Gas Development.

The Jansz Feed Gas Pipeline proposal was approved by the Western Australian State Minister for the Environment on 28 May 2008 by way of Ministerial Implementation Statement No. 769 (Statement No. 769) and the Commonwealth Minister for the Environment and Water Resources on 22 March 2006 (EPBC Reference: 2005/2184). Proponentship of the Jansz Feed Gas Pipeline was transferred from Mobil Australia to Chevron Australia in 2009.

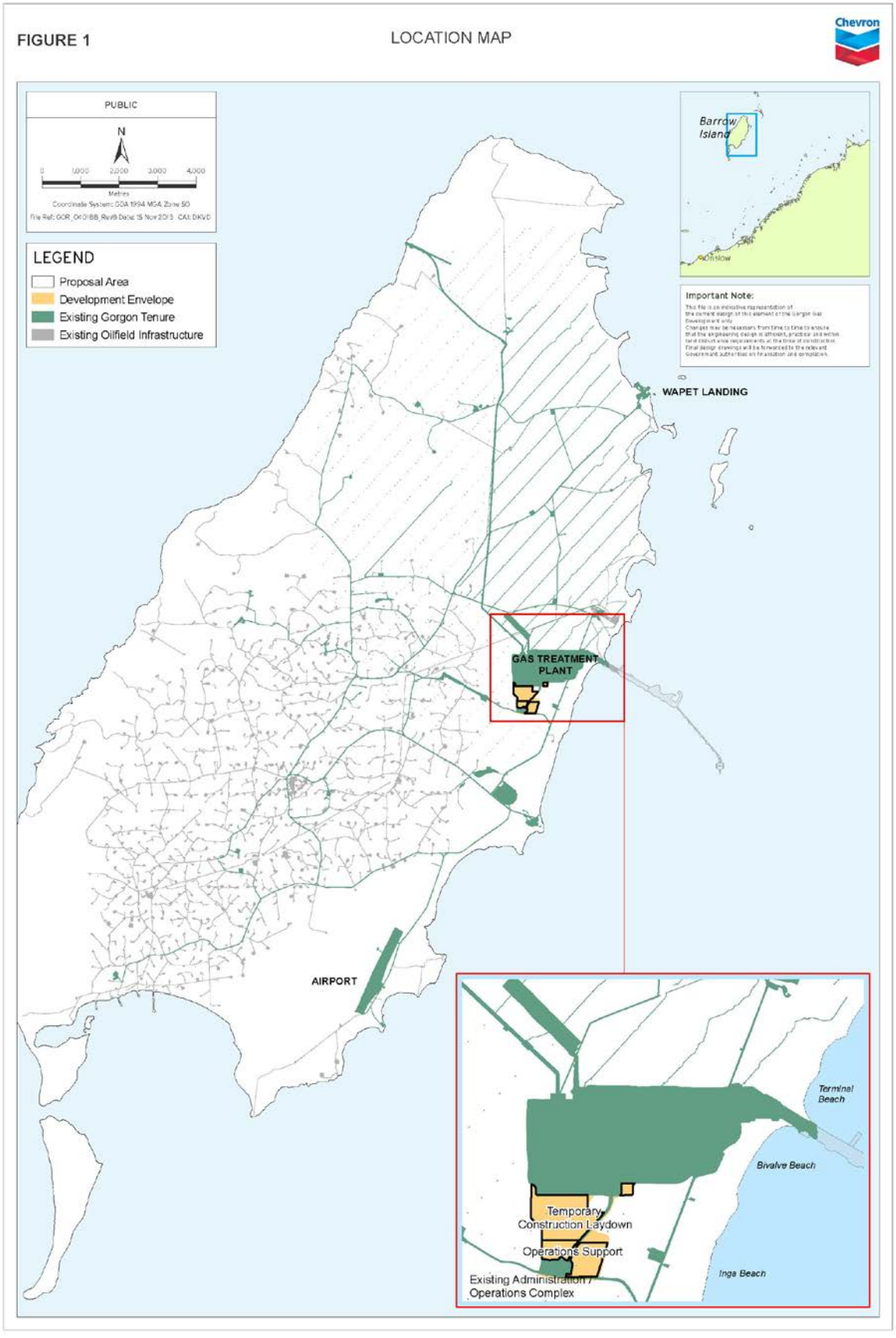
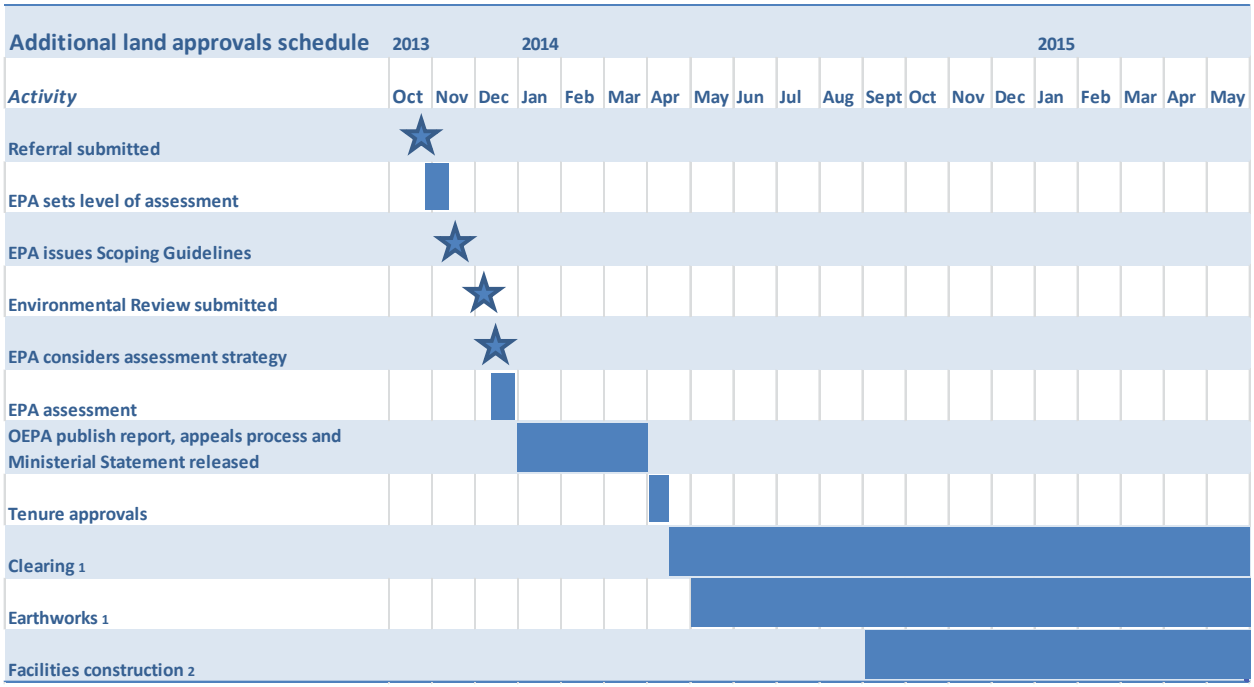


Figure 1-1 Proposal Location

1.3.2 Approval and Development Timeline

The proposal will be undertaken as part of, and within the schedule for, the construction program for the approved Gorgon Gas Development. Subject to receiving necessary approvals, vegetation clearing and earthworks for the proposal are anticipated to commence in mid-2014. Figure 1-2 shows an indicative schedule for assessment and implementation of the proposal.



[1] May be discontinuous

[2] Facilities construction is part of the approved Gorgon Gas Development and not part of this proposal

Figure 1-2 Indicative Development Schedule for the Proposal

1.4 Proposal Background and Need

Following a review of the environmental, social, and economic implications of siting gas processing facilities on Barrow Island, the Western Australian Government enacted the *Barrow Island Act 2003* (Barrow Island Act), which makes provision for the limited allocation of uncleared land on Barrow Island for gas processing project purposes. Chevron Australia, on behalf of the GJVs, subsequently received approvals to undertake the Gorgon Gas Development.

The approved Gorgon Gas Development comprises a range of offshore and onshore components to recover gas from the Gorgon and Jansz gas fields west and north-west of Barrow Island respectively. The approved Gorgon Gas Development will transport the recovered gas by a Feed Gas Pipeline System to Barrow Island, and process the recovered gas at, and ship it from, a Gas Treatment Plant that is being constructed on Barrow Island. Construction of the approved Gorgon Gas Development commenced in 2009.

Although specific locations were not identified for all elements of construction disturbance in the environmental reviews of the Gorgon Gas Development, the management of potential impacts included managing terrestrial disturbance of uncleared land on Barrow Island. Most of this disturbance, notably for the Gas Treatment Plant and associated facilities, was proposed to be located within a broad 'investigation' area adjacent to Town Point, on the eastern side of Barrow Island. The environmental reviews for the Gorgon Gas Development (Chevron Australia 2005, 2008) assessed the impacts of development within this broader area, based on a suite of studies undertaken to characterise its environmental values. Indicative locations and

dimensions for major infrastructure, including the Gas Treatment Plant and the administration/operations complex, were described in the environmental review documents.

Since approval was granted for the Gorgon Gas Development (Section 1.3.1.1), and following commencement of construction in 2009, it has become apparent the current tenure for the approved Gorgon Gas Development on Barrow Island, which was limited to 300 ha of uncleared land through the Barrow Island Act, presents a constraint to safe and efficient execution and to optimisation of cost, schedule, and environmental performance. In particular, the current tenure is considered inadequate for two key elements of the approved Gorgon Gas Development—construction support and operations support—as outlined in Sections 1.4.1 and 1.4.2.

The uncleared land encompassed by this proposal will fall within the limitation on the grant of tenure over uncleared land available for gas developments stipulated by proposed amendments to the Barrow Island Act introduced to Parliament by the Western Australian Government on 23 October 2013. The proposal assumes those amendments will be passed by Parliament and can only be implemented if the amendments are enacted. The proposal will address the constraints to approved Gorgon Gas Development execution presented by the current limitation on tenure on Barrow Island by incorporating up to 32 ha of uncleared land into Gorgon Gas Development tenure, consistent with the proposed amendments to the Barrow Island Act.

1.4.1 Construction Support

To date, most construction laydown requirements for the approved Gorgon Gas Development have been accommodated within the Gas Treatment Plant site. However, as construction of the Gas Treatment Plant advances, the facility infrastructure has progressively occupied a greater proportion of the site and the area available for laydown activity has correspondingly diminished. At the same time, unforseen delays to construction of the marine components of the approved Gorgon Gas Development have resulted in a greater quantity of materials requiring storage on Barrow Island. To progress construction of the approved Gorgon Gas Development, despite the increasing constraints on the area available for laydown, Chevron Australia has implemented a range of strategies, including:

- temporarily relocating materials and facilities within the Gas Treatment Plant site to provide construction access to different areas as/when required
- using previously cleared areas on Barrow Island some distance from the Gas Treatment Plant site for laydown and construction support
- temporarily demobilising equipment/materials from Barrow Island where/when immediate demand has ceased.

These strategies are increasing the handling and transport requirements during construction, with a corresponding decrease in efficiency and potential increase in cost, schedule, safety, and environmental risks. Furthermore, as construction of the approved Gorgon Gas Development progresses, there will be insufficient cleared land available for laydown near the Gas Treatment Plant site or on suitable sites elsewhere on Barrow Island that have been previously cleared for oilfield operations.

Consequently, there is now a critical need to increase the area available for laydown in the vicinity of the Gas Treatment Plant site.

1.4.2 Operations Support

During detailed planning for the operations phase of the approved Gorgon Gas Development, it has become apparent that maintaining adequate support capacity (e.g. warehouses, workshops, offices) in the vicinity of the Gas Treatment Plant will be important to optimise the efficiency and reliability of ongoing operations, particularly during plant maintenance activities. Experience in operating the logistics system for the approved Gorgon Gas Development, within the stringent quarantine management requirements that have been developed to protect the

conservation values of Barrow Island, has shown that the scale of facilities included in the design of the existing administration/operations complex does not provide a sufficient level of operations support.

Without adequate capacity near the Gas Treatment Plant site for operations support facilities, including storage of spares and equipment associated with maintenance, the approved Gorgon Gas Development will generate increased transportation and handling requirements on and off Barrow Island, reducing operational efficiency and introducing associated safety and environmental risks. The approved Gorgon Gas Development would be exposed to operational interruptions due to weather or other logistical delays if/where materials/equipment were required to be brought in at short notice because sufficient inventory could not be housed on Barrow Island. The scale of this risk has only become apparent through the experience with operating the logistics system for a development of this complexity on Barrow Island since construction commenced and subsequent to environmental approvals.

The proposed expansion of the existing administration/operations complex site would allow the consolidation of operations support facilities near the Gas Treatment Plant site and permit adequate on-island storage capacity for all foreseeable maintenance activities. In addition, the proposal will reduce vehicle movements between the Gas Treatment Plant site, administration/operations buildings, and warehouse, workshops, and offices that would otherwise have to be located elsewhere on Barrow Island, resulting in a decrease in emissions and in the frequency of fauna interactions, for the 60-year life of the approved Gorgon Gas Development

1.4.3 Alternative Options Considered

The proposal was developed by Chevron Australia after evaluating all potentially feasible alternative options to address the execution issues being experienced by the approved Gorgon Gas Development.

The only potentially feasible alternative to the use of additional uncleared land on Barrow Island involves the use of previously cleared sites. This alternative involves no changes to the approved Gorgon Gas Development and therefore effectively represents the ‘no development’ option.

The Old Airport site, approximately 1 km from the Gas Treatment Plant site, was identified as a location capable of housing operations support facilities and potentially some construction activities. Although other locations on Barrow Island have also been used to support construction (e.g. WAPET Landing, Terminal Tanks area, Triangle Gravel Pit) these are located some distance (approximately 12 km, 11 km, and 3.5 km by road respectively) from the Gas Treatment Plant site and have minimal available additional capacity for Gorgon Gas Development use. Chevron Australia concluded that using multiple other previously cleared sites on Barrow Island would not meet operational requirements. Therefore, this alternative was not carried forward.

Subsequent to discounting this option, Chevron Australia evaluated alternative locations of uncleared land on Barrow Island. To optimise operational considerations, the evaluation focused on locations close to the Gas Treatment Plant site. Key elements that Chevron Australia considered during the assessment of alternative locations included:

- proximity to approved Gorgon Gas Development infrastructure that may result in a safety risk during the operations phase (e.g. ground flare, LNG trains)
- propensity for land flooding
- presence of habitats of particular importance such as raptor nests and Boodie warrens
- proximity to turtle nesting beaches, which are a sensitive environmental receptor

- proximity to the existing approved Gorgon Gas Development administration/operations complex site; closer is desirable to increase efficiencies.

Chevron Australia's analysis of site alternatives included consideration of the environmental baseline information, including from surveys and studies available from the approved Gorgon Gas Development and conducted for this proposal. Several locations near the Gas Treatment Plant site were considered, with the area south of the Gas Treatment Plant site determined to be the preferred location for the proposal. The results of the analysis of site alternatives are summarised in Table 1-1.

Table 1-1 Alternative Locations Considered for the Proposal

Site Location (relative to the Gas Treatment Plant site)	Element (Positive or Negative)		Key Considerations
North	Close to ground flare	x	Potential safety concerns
	Away from the existing administration/ operations complex site	x	
North-east	Contains Boodie Warrens	x	More environmental sensitivities than alternative locations
	Close to turtle nesting beach	x	
	Away from the existing administration/ operations complex site	x	
South-east	Land prone to flooding	x	More environmental sensitivities than alternative locations
	Contains Boodie Warrens	x	
	Close to turtle nesting beach	x	
	Away from the existing administration/ operations complex site	x	
West	Away from the existing administration/ operations complex site	x	Further from existing administration/operations complex site More environmental sensitivities than alternative locations
South	Close to the existing administration/ operations complex site	✓	Preferred location
	Distant from the approved Gorgon Gas Development infrastructure that may result in a safety risk during the operations phase	✓	

The environmental features considered as key criteria in the selection of the preferred location included that it:

- avoids areas of particular fauna significance (e.g. Boodie warrens, raptor nests)
- avoids major drainage features
- avoids restricted creekline vegetation (potential Priority Ecological Community(PEC))
- is in a non-coastal location (no marine impacts)
- is contiguous with existing disturbance (reduced edge effects)
- provides a consolidated location (to optimise operations, facilitates management, and reduce transportation emissions, potential for fauna collisions, and quarantine risks).

1.5 Proponent's Environmental Commitment

Protecting people and the environment is a core company value for Chevron. This value is embodied within *The Chevron Way* (Chevron Corporation 2009), which is a publicly available document explaining who Chevron is, what Chevron does, and what Chevron plans to accomplish as a global energy company.

At the heart of *The Chevron Way* is the vision to be *the* global energy company most admired for its people, partnership, and performance. This includes earning the admiration of all stakeholders, including host governments and local communities, for not only the goals achieved but importantly, *how* they are achieved. How goals are achieved is embedded within the company culture where the emphasis is on keeping people and the environment injury- and incident-free. Chevron believes:

- All incidents can be prevented.
- There is always time to do the job right.
- All operating exposures can be safeguarded.
- Management is committed, visible, and accountable.
- Protecting our people, environment, and assets is good business.

Chevron Australia is committed to implement the proposal in accordance with *The Chevron Way.*

1.5.1 Delivering Operational Excellence

Chevron's commitment to implement *The Chevron Way* throughout its global activities, including the activities of Chevron Australia, is embodied in the term 'Operational Excellence' (OE). OE is the systematic management of safety, health, environment, reliability, and efficiency to drive progress towards world-class performance. OE aims to:

- achieve an injury-free workplace
- eliminate spills and environmental incidents, and identify and mitigate key environmental risks
- promote a healthy workplace and mitigate significant health risks
- operate incident-free with industry-leading asset reliability
- manage the efficient use of resources and assets.

Consistent with their undertaking for the approved Gorgon Gas Development, the GJVs are committed to developing the proposal in a way that contributes to the community's aspiration for sustainable development. This includes continuing to protect the conservation values of Barrow Island; managing all environmental, health, and safety requirements responsibly; and implementing responsible practices throughout all phases of the proposal.

1.5.2 Chevron Australia's Operational Excellence Management System

The Chevron Australasia Strategic Business Unit (ABU) Policy 530 – Operational Excellence (Figure 1-3) sets the overall goal of protecting the safety and health of people and the environment through the implementation of OE. The policy applies to all Chevron Australia projects, including the approved Gorgon Gas Development and the proposal. The Policy establishes OE expectations, organised under 13 elements (as outlined in Figure 1-3). Achievement of OE is accomplished through disciplined application of an Operational Excellence Management System (OEMS). The OEMS is a standardised approach to

consistently deliver and continuously improve OE; it applies to all Chevron capital projects and operational activities, including the approved Gorgon Gas Development and the proposal.

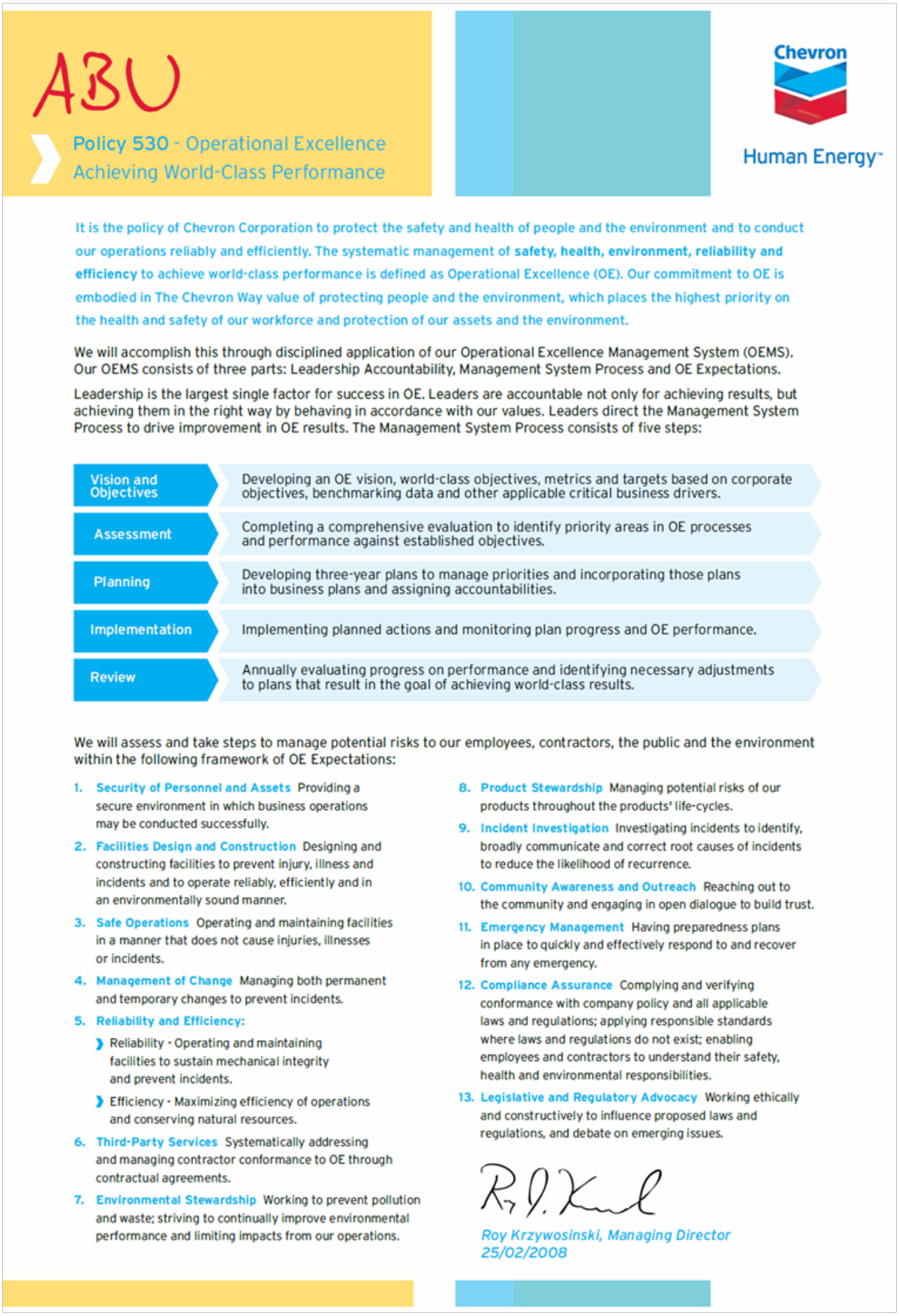
Chevron has received attestation from Lloyd's Register Quality Assurance that the OEMS is implemented throughout the organisation and is consistent with, and in some respects goes beyond the requirements of the International Organization for Standardization's (ISO) 14001 Environmental Management System Standard (ISO 14001) and the Occupational Health and Safety Assessment Series management specification 18001. These standards are internationally recognised benchmarks for environmental and occupational health and safety performance management and demonstrate Chevron's commitment to world-class performance.

1.5.3 Environmental Record

Chevron Australia has been involved with oil and gas operations on Barrow Island for more than 40 years. Chevron Australia's management of oilfield operations on Barrow Island is widely recognised as an industry benchmark for co-existence of petroleum development and the protection of conservation values. Implementation of conservation best practices underpins the success of the oilfield operations in managing protecting Barrow Island's environment and maintaining its conservation and biodiversity values.

Chevron Australia's success in managing the conservation values of Barrow Island has been formally recognised by the receipt of a number of national and international environmental awards and commendations. These include:

- Australian Petroleum Production and Exploration Association's (APPEA) 2009 Environment Award
- APPEA's 2011 Environment Award
- Society of Petroleum Engineers/APPEA's 2012 Environment Award
- Environment Award at the WA Engineering Awards 2011
- United Nations award for Environmental Best Practice 2012



ABU

Policy 530 - Operational Excellence
Achieving World-Class Performance

Chevron
Human Energy™

It is the policy of Chevron Corporation to protect the safety and health of people and the environment and to conduct our operations reliably and efficiently. The systematic management of **safety, health, environment, reliability and efficiency** to achieve world-class performance is defined as Operational Excellence (OE). Our commitment to OE is embodied in The Chevron Way value of protecting people and the environment, which places the highest priority on the health and safety of our workforce and protection of our assets and the environment.

We will accomplish this through disciplined application of our Operational Excellence Management System (OEMS). Our OEMS consists of three parts: Leadership Accountability, Management System Process and OE Expectations.

Leadership is the largest single factor for success in OE. Leaders are accountable not only for achieving results, but achieving them in the right way by behaving in accordance with our values. Leaders direct the Management System Process to drive improvement in OE results. The Management System Process consists of five steps:

Vision and Objectives	Developing an OE vision, world-class objectives, metrics and targets based on corporate objectives, benchmarking data and other applicable critical business drivers.
Assessment	Completing a comprehensive evaluation to identify priority areas in OE processes and performance against established objectives.
Planning	Developing three-year plans to manage priorities and incorporating those plans into business plans and assigning accountabilities.
Implementation	Implementing planned actions and monitoring plan progress and OE performance.
Review	Annually evaluating progress on performance and identifying necessary adjustments to plans that result in the goal of achieving world-class results.

We will assess and take steps to manage potential risks to our employees, contractors, the public and the environment within the following framework of OE Expectations:

1. **Security of Personnel and Assets** Providing a secure environment in which business operations may be conducted successfully.
2. **Facilities Design and Construction** Designing and constructing facilities to prevent injury, illness and incidents and to operate reliably, efficiently and in an environmentally sound manner.
3. **Safe Operations** Operating and maintaining facilities in a manner that does not cause injuries, illnesses or incidents.
4. **Management of Change** Managing both permanent and temporary changes to prevent incidents.
5. **Reliability and Efficiency:**
   - Reliability - Operating and maintaining facilities to sustain mechanical integrity and prevent incidents.
   - Efficiency - Maximizing efficiency of operations and conserving natural resources.
6. **Third-Party Services** Systematically addressing and managing contractor conformance to OE through contractual agreements.
7. **Environmental Stewardship** Working to prevent pollution and waste; striving to continually improve environmental performance and limiting impacts from our operations.
8. **Product Stewardship** Managing potential risks of our products throughout the products' life-cycles.
9. **Incident Investigation** Investigating incidents to identify, broadly communicate and correct root causes of incidents to reduce the likelihood of recurrence.
10. **Community Awareness and Outreach** Reaching out to the community and engaging in open dialogue to build trust.
11. **Emergency Management** Having preparedness plans in place to quickly and effectively respond to and recover from any emergency.
12. **Compliance Assurance** Complying and verifying conformance with company policy and all applicable laws and regulations; applying responsible standards where laws and regulations do not exist; enabling employees and contractors to understand their safety, health and environmental responsibilities.
13. **Legislative and Regulatory Advocacy** Working ethically and constructively to influence proposed laws and regulations, and debate on emerging issues.

Roy Krzywosinski, Managing Director
25/02/2008

Figure 1-3 ABU Policy 530 – Operational Excellence

1.5.3.1 Gorgon Gas Development Environmental Performance

The GJVs are required to report annually on the environmental performance associated with the implementation of the approved Gorgon Gas Development under Condition 5 and in accordance with Schedule 3 of Statement No. 800. Since construction of the approved Gorgon Gas Development began in September 2009, four annual Environmental Performance Reports have been issued by Chevron Australia (Chevron Australia 2009, 2010, 2011a, 2012, 2013). The annual Environmental Performance Report document, amongst other things, provides the results of monitoring of any measurable impacts of the approved Gorgon Gas Development, including changes from the baseline for selected parameters. To date, no incidents of Serious or Material Environmental Harm outside of the designated area of potential disturbance (Terrestrial Disturbance Footprint (TDF)) for the approved Gorgon Gas Development have been recorded. Key findings reported and of relevance to the proposal include:

- Monitoring of vegetation and flora indicates there have been no detrimental effects attributable to approved Gorgon Gas Development construction activities, including dust emissions, on species or communities outside approved Gorgon Gas Development tenure.
- No significant detrimental effects from approved Gorgon Gas Development activities to fauna populations in areas surrounding approved Gorgon Gas Development tenure (TDF) have been apparent.
- Surveys of subterranean fauna and short-range endemics (SREs) suggest most species are likely to have wider Barrow Island distributions, with all troglofauna from the Gas Treatment Plant site now known from elsewhere on Barrow Island and only two subterranean taxa and one SRE yet to be recorded outside the Gas Treatment Plant site.
- There has been no indication that approved Gorgon Gas Development clearing and earthworks have adversely impacted the value of groundwater as subterranean fauna habitat, based on monitoring of groundwater analytes to date.
- There were no proliferations of existing weeds or new weed establishments on Barrow Island as a result of the construction of the approved Gorgon Gas Development.
- There have been no measured instances of adverse effects in drainage lines related to the approved Gorgon Gas Development.
- There is no evidence of non-indigenous species or marine pests establishing on Barrow Island or in the surrounding waters (Controlled Access Zone) as a result of the approved Gorgon Gas Development.
- Based on the review of information available, there has been no environmental impact from approved Gorgon Gas Development construction lighting on the Flatback Turtle nesting population of Barrow Island.

2.0 Proposal Description

2.1 Overview

Chevron Australia is seeking approval to clear and use up to 32 ha of uncleared land for the approved Gorgon Gas Development on Barrow Island within a 36 ha development envelope located in the hinterland of Town Point, entirely within the broader 'investigation area' described in the environmental reviews for the approved Gorgon Gas Development (Chevron Australia 2005, 2008). The area to be developed as part of the proposal is south of, and immediately adjacent to, the Gas Treatment Plant site (Figure 1-1).

The proposal will result in a contiguous development footprint between the Gas Treatment Plant site and the approved Gorgon Gas Development administration/operations complex site. The proposal will involve clearing and earthworks, and subsequent use of the land by activities/facilities associated with the approved Gorgon Gas Development.

The proposal will primarily consolidate approved Gorgon Gas Development construction and operational activities/facilities that are or would occur elsewhere on Barrow Island onto a site closer to the Gas Treatment Plant site, and will also allow consolidation of some activities/facilities (e.g. critical spares warehousing) that may otherwise have been partially located on the mainland. The proposal does not involve any new or different activities or facilities from those previously assessed and approved for the Gorgon Gas Development. The proposal will support the approved Gorgon Gas Development and this proposal will be undertaken as an integrated development by Chevron Australia.

The approved Gorgon Gas Development, inclusive of the activities and facilities that may be sited on the proposal area, and associated conditions of environmental approval are not the subject of this proposal.

2.2 Site Preparation Works

Site preparation works will require vegetation clearing within the boundaries of the proposal area, which is contained within the allocation of uncleared land available for tenure under the Barrow Island Act (as proposed to be amended). Cleared vegetation will be disposed at an appropriately licensed facility, or burned on site. Burning of vegetation, including clearing via burning if required, shall be conducted in accordance with the measures described in the approved Gorgon Fire Management Plan (Chevron Australia 2009a) and in accordance with a Prescribed Fire Plan.

Following vegetation clearing, earthworks will be required to level and terrace the ground (cut and fill) over the construction support area and the operations support area. Prior to commencement of these activities, topsoil will be stripped and stored. The topsoil is planned to be stored within the proposal area and managed in accordance with the measures described in the approved Topsoil Management Plan (Chevron Australia 2012a), and used for rehabilitation activities on Barrow Island in accordance with the measures described in the approved Post-construction Rehabilitation Plan (Chevron Australia 2009b). Opportunities to use topsoil for 'direct lay' in rehabilitation associated with the oilfield will be investigated through consultation with the oilfield operator prior to, during and immediately after topsoil removal.

Excavation will be required within the proposal area, using cut and fill techniques to level and/or terrace the site. Approximately 45% of the proposal area is likely to require removal of material (cut), involving excavation to a maximum depth of approximately 6 m below surface level. Areas of rock may require the use of a surface miner or other means of fracturing rock prior to excavation. If blasting is required, chemical blasting, which is a non-explosive rock cracking method, or contained drill-and-blast, will be the preferred options as these techniques have been successfully used during the construction of the approved Gorgon Gas Development and reduce dust, noise, and vibration emissions compared with traditional explosive blasting techniques. Requirements for rock fracturing are anticipated to be limited to approximately 30%

of the site. It is expected that the proposal will result in excavation of approximately 280 000 bank cubic metres of substrate during levelling and terracing activities, with most (if not all) of the material used for onsite fill.

Following levelling and terracing of the proposal area, further earthworks will be required to install foundations, underground cables, drainage, and utilities within the proposal area, but these works would be required regardless of where the facilities are housed on Barrow Island and have been considered in the assessment of the approved Gorgon Gas Development. The total volume of earthworks as a result of the proposal when added to the approved Gorgon Gas Development will not exceed the total volume described for the approved Gorgon Gas Development in Schedule 1 of Statement No. 800.

Ground preparation may include drilling to a depth of approximately 8 m to install piled foundations, earthing rods, and rock anchors for buildings such as warehouses, workshops, and offices. Ground improvement options that improve soil density, such as grouting and dynamic compaction, may be required. These requirements are also common to other sites on Barrow Island.

Site preparation works relating to the proposal are planned to be conducted during daylight hours only, where possible. Construction activities for the proposal will be completed primarily using machinery and equipment that is already mobilised and located on Barrow Island and associated with construction of the approved Gorgon Gas Development. Depending on downtime and other demands on the construction workforce and equipment, clearing and earthworks are anticipated to take six to twelve months to complete.

2.3 Surface Drainage

Surface drainage management consistent with that for the approved Gorgon Gas Development will be applied to the proposal area. This will involve contouring the land to reflect existing drainage patterns to the extent practicable and application of the drainage management system developed for the approved Gorgon Gas Development. The drainage management system consists of a classed drainage network, which separates, segregates, and/or treats surface fluids based on their risk of contamination.

Specific drainage features (eg bubble-up pits, gabions) that have been successfully used to maximise local infiltration and reduce sediment levels in runoff from the existing infrastructure sites of the approved Gorgon Gas Development are proposed to be incorporated into the drainage for the site, in accordance with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a). The majority of the construction support area is proposed to remain unpaved, and drainage from paved areas in the operations support area are expected to tie in to the existing drainage system for the administration/operations complex.

Installation of the surface drainage system essentially constitutes installation of approved Gorgon Gas Development infrastructure within the proposal area, rather than elsewhere on Barrow Island.

2.4 Utilities

All utilities requirements for the proposal will be met via tie-in to existing approved Gorgon Gas Development infrastructure. Approved Gorgon Gas Development facilities expected to be used by the proposal include:

- reverse osmosis facilities
- sanitary wastewater treatment systems
- communications

- power generation.

The use of these facilities by the proposal is not expected to require any increase in the approved capacity of the respective facilities or any alteration of associated discharge methods or volumes permitted for the approved Gorgon Gas Development.

2.5 Subsidiary Infrastructure

A range of approved Gorgon Gas Development subsidiary infrastructure on Barrow Island may also be used to support the proposal, including:

- temporary construction facilities, e.g. offices, crib rooms, and toilets
- temporary diesel storage and distribution
- chemical/hazardous material storage areas
- concrete supply
- waste transfer station
- material/equipment storage areas.

2.6 Transportation

All transportation requirements for the proposal will be met via the existing logistics infrastructure and supply chain established for the construction of the approved Gorgon Gas Development. This includes facilities on Barrow Island and on the mainland such as:

- Materials Offloading Facility
- WAPET Landing (also known as the barge landing in the Gorgon Gas Development environmental approval documentation)
- Barrow Island road network
- Barrow Island Airport
- marine vessels, including tugs and barges
- mainland road network
- mainland supply bases (e.g. Dampier and Henderson).

No net increases are expected in the overall number of kilometres driven by vehicles on Barrow Island, fixed-wing and helicopter flights, tug and barge movements to and from the mainland, and direct shipments from international ports and supply yards during the construction of the approved Gorgon Gas Development as a result of the proposal. It is expected that decreases in vehicular traffic levels on Barrow Island may occur as a result of the proposal, as detailed in Section 5.1.

2.7 Construction Workforce and Accommodation

The works associated with the proposal will be undertaken by the existing construction workforce for the approved Gorgon Gas Development on Barrow Island. This workforce is accommodated in the existing camps on Barrow Island, including Butler Park (previously known as the Construction Village). No additional accommodation will be constructed on Barrow Island for the proposal, and the proposal will not increase the number of construction personnel on Barrow Island from that permitted for the approved Gorgon Gas Development.

2.8 Use of the Proposal Area by Approved Gorgon Gas Development Activities/Facilities

Use of the up to 32 ha proposal area by approved Gorgon Gas Development activities/facilities will comprise:

- **Construction Support Area:** Approximately 20 ha within two areas immediately south of the existing Gas Treatment Plant site is planned to be used for construction support activities. The construction support area will support construction activities and facilities that include temporary offices, workshop, storage, laydown, equipment staging facilities, and rock crushing and screening plant. Approximately 1 ha of the construction support area will be subsequently retained for longer term operations maintenance activities.
- **Operations Support Area:** The operations support area is an expansion of the approved Gorgon Gas Development administration/operations complex site and will involve approximately 12 ha to house operations support facilities, including warehouses, vehicle maintenance and workshops, and associated offices, and parking and laydown areas.

2.9 Closure Activities

The proposal's physical elements include the construction support area and operations support area.

Approximately 1 ha of the area that will be used for construction support activities for the approved Gorgon Gas Development will be retained for longer term operations maintenance activities. Other areas disturbed as part of the proposal but no longer required for the future construction and operation of the approved Gorgon Gas Development will be available for rehabilitation, in accordance with the measures described in the Post-construction Rehabilitation Plan (Chevron Australia 2009b).

The facilities constructed in the operations support area will be decommissioned along with other approved Gorgon Gas Development infrastructure at the end of field life, in accordance with decommissioning strategies described for the approved Gorgon Gas Development and required by conditions of approval to be documented in the Project Site Rehabilitation Plan and the Decommissioning and Closure Plan.

3.0 Stakeholder Consultation

Chevron Australia is committed to open and accountable processes that encourage ongoing stakeholder consultation. Stakeholder consultation for the approved Gorgon Gas Development commenced early in 2002, continued throughout the environmental approval processes, and remains ongoing. A broad range of government, industry, scientific, and community representatives have been involved in this process.

Extensive public and stakeholder input on the environmental impacts and management of gas development on Barrow Island has also been provided via the environmental review (including appeal) processes for the approved Gorgon Gas Development, which have included:

- Environmental Social and Economic Review (2002–2003)
- Environmental Impact Statement/Environmental Review and Management Program (2003–2007)
- Public Environmental Review (2008–2009).

During the planning for this proposal, Chevron Australia has consulted with relevant stakeholders to meet the following objectives:

- provide key stakeholders with information relating to Chevron Australia's requirements for additional land on Barrow Island
- outline the potential environmental effects of the proposal, including the environmental, safety, and quarantine benefits
- consider and address issues raised by stakeholders regarding the proposal
- incorporate issues identified in the assessment of this proposal.

A specific stakeholder engagement plan has been developed for this proposal. Stakeholders engaged through this consultative process include appellants on the previous Gorgon Gas Development approval, all relevant DMAs, environmental Non-Government Organisations (eNGOs), Indigenous stakeholders, industry associations, and representatives of local, State, and Commonwealth governments.

Consultation was undertaken via either face-to-face meetings and/or through correspondence. Stakeholders were provided with a description of the proposal and its environmental aspects, an outline of proposed management strategies and given an opportunity to seek further detail and/or provide feedback on the proposal. Table 3-1 details the stakeholders who were consulted, how they were consulted, the feedback received as part of this consultative process, and Chevron Australia's response.

No significant concerns or issues that have not previously been considered through the assessment process(es) for the approved Gorgon Gas Development were raised by stakeholders during the consultation. All comments from stakeholders related to the proposal have been taken into account in preparing this document.

Comment was also sought by the EPA from the public during the public review period that followed the submission of the referral. The referral was submitted on 25 October 2013 and was published for public comment on 28 October 2013. However, no comments from the public were received.

Table 3-1 Stakeholder Consultation

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
Commonwealth Government (includes relevant Director Generals and Ministers as required)				
Department of the Environment	Briefing 29 Sept 2013, 16 Oct 2013 & 13 Nov 2013	No significant concerns with the proposal. A query was raised as to whether the proposal would involve any marine components. A query was raised as to whether the proposal would cause sedimentation in the nearby coastal environment. Discussion occurred on potential assessment approaches if the proposal was referred under the EPBC Act.	The proposal does not involve any marine components. The same surface water drainage systems for the approved Gorgon Gas Development will be installed in the proposal area. Installation of the surface drainage system essentially constitutes installation of approved Gorgon Gas Development infrastructure within the proposal area. Surface water drainage will be designed and implemented to mirror as closely as reasonably practicable the natural hydrological regime of the existing environment. Measures will be implemented to minimise contamination of surface and ground water and maximise infiltration of clean stormwater, where practicable.	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.
State Government (includes relevant Director Generals and Ministers as required)				
Conservation Commission	Briefing 29th Oct 2013	Queried how the significance of impacts on fauna as a result of construction on Barrow Island had been assessed.	A comprehensive fauna monitoring program has been in place prior to construction of the Gorgon Gas Development. The program has confirmed that, to date, there have been no significant impacts to fauna, such as no population-level impacts to any species, resulting from clearing activities. This proposal will result in construction activities over an additional 32 ha and is not expected to result in any significant impacts to fauna.	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.
Department of Aboriginal Affairs	Letter 31st Oct 2013	Advised they were pleased to note that a heritage management plan was in place to appropriately protect heritage issues, and provided reference to Govt guidelines.	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
Department of Environmental Regulation	Briefing 13th Nov 2013	No significant concerns with the proposal. A query was raised as to how stormwater from the site will be managed.	The surface water drainage systems for the approved Gorgon Gas Development will be installed in the proposal area. No amendments are required to the surface drainage system and therefore installation of the surface drainage system essentially constitutes installation of approved Gorgon Gas Development infrastructure within the proposal area. Surface water drainage will be designed and implemented to mirror as closely as reasonably practicable the natural hydrological regime of the existing environment. Measures will be implemented to minimise contamination of surface and ground water and maximise infiltration of clean stormwater, where practicable.	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.
Department of Lands	Briefing 29th Oct 2013	No significant concerns raised and expressed general support for the proposed approach to environmental assessment and management. There was discussion around the tenure process that would be required post environmental approvals and what measures will be taken to reinstate hydrology during rehabilitation.	Rehabilitation will be undertaken consistent with measures described in the approved Post-construction Rehabilitation Plan which includes specific requirements for rehabilitating surface water hydrology.	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.
Department of Mines and Petroleum	Briefing offered	Offer of briefing declined based on the knowledge that Chevron Australia would be meeting with the Department of State Development. No comments received.	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Department of Parks and Wildlife	Briefing 15 Oct 2013	Highlighted possibility that any increase in light from the proposal may result in additive impacts to the success of nesting and hatching of turtles at Bivalve Beach and Terminal Beach. Chevron Australia should provide a commitment to limit the development and operation of the site to daylight hours only with minimal operation and lighting at night. Chevron Australia should monitor the additive	The proposal is expected to have negligible effects on prevailing light regimes. Construction and operation activities over the proposal area will be generally limited to daylight hours. Additional monitoring of light levels and turtle activity on the beaches closest to the proposal area is proposed to be undertaken to confirm this prediction. Monitoring will be undertaken in accordance with the approved Long Term Marine Turtle Management Plan (Chevron Australia 2013a).	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
		impact of additional lighting from the proposal.	The monitoring for potential impacts on turtles from the Gorgon Gas Development currently includes: • Monitoring of light levels on nesting beaches close to the proposal area • Monitoring of turtle nesting on nesting beaches close to the proposal area • Monitoring of hatchling activity on nesting beaches close to the proposal area This monitoring would capture any additional effects from lighting associated with the proposed use of the additional land and is linked to management feedback mechanisms that will apply to activities on the additional land.	
		A number of Boodie warrens exist around the proposal area, which may be further affected by reduction of foraging area and habitat fragmentation. Additional information is required regarding the Boodie warrens existing around the proposal area. Chevron Australia should provide information on the impact of construction activities on the reduction of foraging area and habitat fragmentation on nearby Boodies. Chevron Australia should provide a commitment to monitor the warrens surrounding the proposal area to determine if there are any detrimental impacts on these warrens and apply suitable mitigation measures, as required.	More detailed information on the use of the area by Boodies and potential impacts to Boodies, including reduction of foraging area and habitat fragmentation, is included in this assessment. Chevron Australia is committed to future monitoring of the warrens surrounding the proposal area as part of the ongoing monitoring program, which is linked to management feedback mechanisms via the approved Terrestrial and Subterranean Environment Protection Plan. No response required	
		Chevron Australia should provide some analysis of the sources of faunal deaths which would support the assertion that there would be a reduction in the faunal deaths with the consolidation of the laydown area. Chevron Australia should maintain ongoing	Review and analysis of sources of fauna casualties and the potential for the proposal to result in a reduction of them is included in this assessment. Chevron Australia is required to undertake ongoing monitoring and reporting of fauna	

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
		monitoring of the faunal deaths to measure and/or confirm whether the anticipated reduction occurs.	casualties, under existing Ministerial Conditions. Ongoing monitoring and analysis will capture the effects of the proposal on fauna casualties. The expected reduction in transportation relates to alternatives to using the additional land that have not yet been put in place. That is, if the additional land was not used, the laydown activity that is currently mostly occurring on the Gas Treatment Plant site would need to be undertaken elsewhere on Barrow Island and, similarly, the operations support facilities would be built elsewhere, such as at the Old Airport site, both of which would require more traffic movements than having them on the proposal area.	
Department of State Development	Briefing 28th Oct 2013	No significant concerns raised and expressed general support for the proposed approach to environmental assessment and management. The process and timing for the rehabilitation of the 20ha of land was queried. The potential extent for a reduction in construction duration for the Gorgon Gas Development that might result from access to the additional land was also discussed.	Rehabilitation of any areas no longer required for the future construction and operation of the approved Gorgon Gas Development will take place as soon as practicable and in accordance with the Post-construction Rehabilitation Plan.	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.
Office of the Environmental Protection Authority	Briefing and multiple pre and post referral meetings	Proposal raises few key environmental factors and could be appropriately assessed via an API process. Key preliminary factors considered to be flora and vegetation, fauna and subterranean fauna. Key stakeholders comprise DMAs and appellants on previous approval for Gorgon Gas Development. Scope of requirements for additional survey discussed. Required scope and timeline of additional information to be provided to OEPA and timelines for assessment outlined.	Key environmental factors addressed in this assessment. Stakeholder engagement program undertaken that encompassed all key stakeholders identified by OEPA. Additional surveys completed and appended to this assessment. Scope and timeline for assessment including additional information (this document) agreed.	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
Robin Chapple (Greens Senator)	Briefing 22 Nov 2013	Provided general comments regarding environmental performance on Barrow Island, specifically around quarantine..	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Pilbara Development Commission	Letter 31st Oct 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Western Australian Museum	Letter with offer of briefing 5th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and provided with an opportunity for input.
Local Government				
City of Cockburn	Letter 31st Oct 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
City of Fremantle	Letter 31st Oct 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Shire of Ashburton	Briefing 20th Nov 2013	Concerned about the potential impacts that additional land clearing may have on the population of White-winged Fairy Wrens.	It is unlikely that the displacement of an estimated 25 individuals as a result of the proposal will have significant adverse consequences for either local or Barrow Island populations of this species (Section 7.2.4).	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.
		Concerns about the potential social impacts of the proposal	The remote location and absence of a permanent residential population on Barrow Island means that limited social impacts can be expected from the proposal. The development envelope is not expected to contain any cultural heritage sites, however, preconstruction heritage surveys will be conducted to confirm the absence of these sites, and measures within Chevron Australia's Aboriginal Cultural Heritage Management Plan will also apply to the proposal. Land and sea use is not expected to be impacted by the proposal, as no additional transport	

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
			movements to or from Barrow Island will be required. Potential impacts to the Barrow Island workforce are also not expected, as the proposal will not result in any increase to workforce numbers. Potential social impacts will be addressed in further detail during the planning application process. In addition, Chevron Australia will continue to meet its obligations under the existing Gorgon Social Impact Management Plan. The Social Impact Management Plan is reviewed every two years. The current focus areas of the Gorgon Social Impact Management Plan are education, training and employment; regional economic development; and Aboriginal-specific training and employment.	
Shire of Roebourne	Briefing 13th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Non-Government organisations				
Cape Conservation Group	Letter with offer of briefing 5th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Conservation Council of Western Australia	Letter with offer of briefing 31st Oct 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
DomGas Alliance	Letter 5th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
Gorgon Community Reference Group	Briefing 13th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Kurama Marthudunera Native Title Claimants	Letter 7th Nov Briefing 26th Nov 2013	No significant concerns raised and expressed support for Indigenous groups to be involved in pre-construction cultural heritage surveys	Chevron Australia will implement the management measures of the Aboriginal Cultural Heritage Management Plan to this proposal	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Buurabalayji Thalanyji Aboriginal Corporation	Letter 7th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
The Wilderness Society of Western Australia	Letter 5th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
World Wide Fund for Nature Australia	Letter with offer of briefing 5th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Yaburara and Coastal Mardudhunera Aboriginal Corporation	Letter 6th Nov 2013	No comments received	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input.
Industry Groups and Representatives				
Australian Petroleum Production and Exploration Association	3rd Dec 2013	No significant concerns raised and expressed their appreciation for being briefed on the proposal	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input
Chamber of Commerce and Industry of WA	3rd Dec 2013	No significant concerns raised and expressed their appreciation for being briefed on the proposal	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input

Stakeholder	Method of consultation	Summary of Feedback Received	Chevron Australia's Response	Outcome
Chamber of Minerals and Energy	3rd Dec 2013	No significant concerns raised and expressed their appreciation for being briefed on the proposal	No response required	The stakeholder was made aware of the proposal and was provided with an opportunity for input
Independent Scientific Representatives				
Marine Turtle Expert Panel	Meeting 19th Nov 2013	Highlighted potential for cumulative impacts of lighting to other stressors and absence of monitoring on nearby beaches	The proposal is expected to have negligible effects on prevailing light regimes. Additional monitoring of light levels and turtle activity on the beaches closest to the proposal area is proposed to be undertaken to confirm this prediction. Construction and operation activities over the proposal area will generally be limited to daylight hours. Monitoring will be undertaken in accordance with the approved Long Term Marine Turtle Management Plan (Chevron Australia 2013a). The monitoring for potential impacts on turtles from the Gorgon Gas Development currently includes: • Monitoring of light levels on nesting beaches close to the proposal area • Monitoring of turtle nesting on nesting beaches close to the proposal area • Monitoring of hatchling activity on nesting beaches close to the proposal area This monitoring would capture any additional effects from lighting associated with the proposed use of the additional land and is linked to management feedback mechanisms that will apply to activities on the additional land.	The stakeholder was made aware of the proposal and was provided with an opportunity for input. The issues raised by the stakeholder during consultation have been addressed in the assessment and/or management described in this document.

4.0 Environmental Management Framework

Chevron Australia's operations on Barrow Island are conducted within a comprehensive environmental management framework, incorporating regulatory, corporate and project management requirements. Figure 4-1 provides an overview of the overall hierarchy of environmental management documentation that comprises the approved Gorgon Gas Development environmental management framework.

Given the relationship between the proposal and the approved Gorgon Gas Development, Chevron Australia proposes to manage potential environmental impacts of the proposal consistently with the existing management framework approved for the Gorgon Gas Development, which has ensured the Gorgon Gas Development has not led to any unacceptable environmental outcomes. Where necessary, Chevron Australia proposes to seek minor amendments (see below) to the relevant approved Gorgon Gas Development environmental management plans so that they will manage the impacts of the proposal.

4.1 Minor Amendments to Environmental Management Plans

The proposal does not involve any activities or facilities that are new or different from those approved for the Gorgon Gas Development and does not introduce any new or different environmental factors, stressors or risks. The development envelope is comprised of landforms, vegetation and habitat types (and associated fauna) that were present in the area of the approved Gorgon Gas Development and the potential environmental effects of the proposal are similar in nature, but smaller in scale, to those managed for the approved Gorgon Gas Development.

Consequently, the objectives and requirements of the environmental management plans as set out in the conditions of Statement 800 are appropriate to manage the potential impacts of the proposal, and the content of the management plans which meets those objectives and requirements will not need to be amended to ensure the potential impacts of the proposal are managed to meet the condition objectives.

Neither will any of the following content of the environmental management plans need to change to manage the potential impacts of the proposal to meet the condition objectives: management measures, contingency measures, performance standards, triggers, procedures (for example, procedures to care for fauna and to avoid secondary impacts to fauna), monitoring strategies, protocols and programs, reporting protocols, ongoing surveys. No changes are proposed to these elements of the existing plans.

The changes which are proposed to the environmental management plans relevant to management of potential impacts to the preliminary key environmental factors of fauna, vegetation and subterranean fauna are as follows:

- References to assessments and approvals will be amended to include the proposal assessments and approvals
- The proposal area will be included in descriptions and maps
- A description of the proposal impacts which have been assessed as part of the proposal assessment (this document) will be included (if/where this requires some change to the existing impact description)
- The consultation which has been undertaken on the proposal will be included
- The TDF will be revised to extend from the proposal area external boundary where this differs from the existing Gorgon Gas Development external boundary, but there will be no change to the existing definition of the dimensions (ie, the distance of the disturbance area when measured from the development external boundary) of the TDF.
- Baseline information (as described in this document) will be included about the ecological elements which will be directly impacted or put at risk by the proposal

- Details of surveys which have contributed to the baseline information about the proposal will be included
- Monitoring sites described in text/figures will be updated to ensure that sites that now fall within the proposal area are replaced where necessary so that monitoring will detect impacts of the proposal and approved Gorgon Gas Development in accordance with existing monitoring strategies, protocols and programs. (Note: in most cases this will not require an actual amendment to the plans, for example where sites are already appropriately located, or where the monitoring program includes some flexibility about specific site location in order to ensure sites always meet monitoring objectives).

A summary of the proposed (minor) amendments to the environmental management plans relevant to management of potential impacts to the preliminary key environmental factors of fauna, vegetation and subterranean fauna is provided in Appendix 1. The key management measures proposed in relation to the preliminary key environmental factors are described in Section 7.1.5, 7.2.5 and 7.3.5.

Administrative changes will also be required for other environmental management plans which manage the activities and facilities of the approved Gorgon Gas Development on the proposal area but which are not relevant to the management of potential impacts to the proposal's preliminary key environmental factors. These procedural changes will include reference to the proposal assessments and approvals, and the proposal area will be included in descriptions and maps.

All proposed changes to environmental management will be subject to prior assessment and approval by relevant regulatory agencies.

4.2 Proposed Consolidated Form of Approval

As noted above, the existing management plans for the approved Gorgon Gas Development are proposed to be applied (with minor amendments) to the proposal. Furthermore, the time and place of the proposal is proximate to the approved Gorgon Gas Development, and the proposal is to be carried out in conjunction with the approved Gorgon Gas Development.

Therefore, Chevron Australia proposes that, pursuant to section 45B of the EP Act, the implementation conditions agreed and set out in Ministerial Statement No. 800 dated 10 August 2009, as amended by Ministerial Statement 865 dated 8 June 2011, apply in relation to the approved Gorgon Gas Development and this proposal as a revised proposal.

In this way, the same management and monitoring plan conditions, outcome based conditions, incident reporting conditions, environmental performance reporting conditions, compliance conditions etc will apply to the approved Gorgon Gas Development and this proposal as a whole, ensuring the continuing effective and efficient management of potential impacts.

Chevron Australia notes this is consistent with the approach to the previous approval of the Revised and Expanded Gorgon Gas Development, when pursuant to section 45B the Minister approved the Gorgon Gas Development as a revised and expanded proposal.

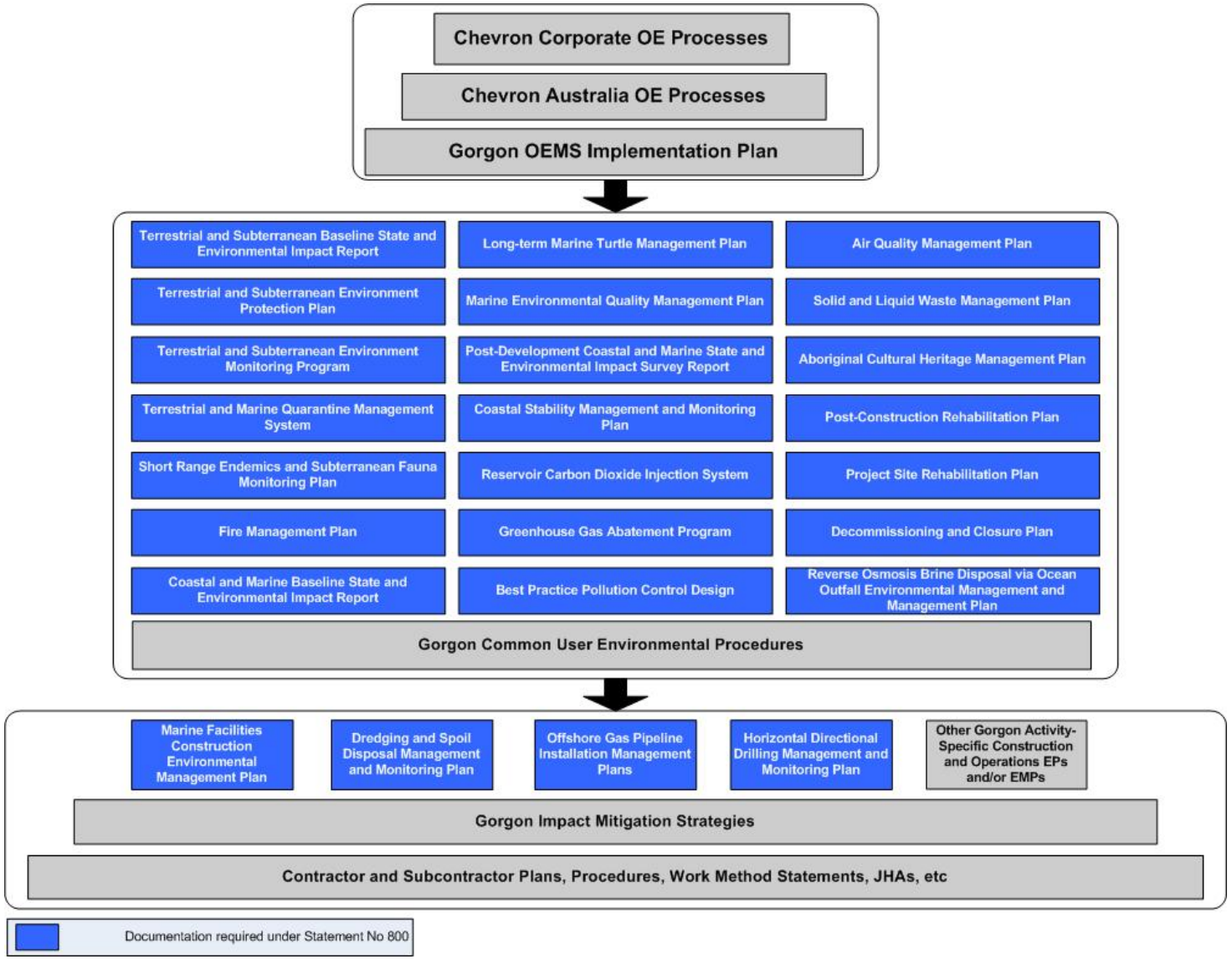


Figure 4-1 Gorgon Environmental Management Documentation

5.0 Environmental Benefits of the Proposal

The approved Gorgon Gas Development has experienced delays due to the limited availability of laydown on Barrow Island, resulting in extended periods of construction, reduced productivity, and increased workforce-hours. To address current constraints on the area available for laydown on Barrow Island, Chevron Australia has implemented various strategies to maintain effective execution of the construction phase of the approved Gorgon Gas Development, including:

- frequently relocating materials and temporary facilities within the Gas Treatment Plant site to provide construction access to different areas as required
- using previously cleared areas some distance from the Gas Treatment Plant site for laydown and construction support
- temporarily demobilising equipment/materials from Barrow Island where/when immediate demand has ceased.

These strategies involve increased handling and transport requirements, with associated potential safety and environmental risks, including in relation to emissions, fauna casualties, and quarantine.

The proposal may result in beneficial environmental effects that include:

- reducing the requirement for handling and movement of materials within the Gas Treatment Plant site, thereby reducing emissions, noise, likelihood of accidental spills etc.
- providing sufficient laydown capacity close to the Gas Treatment Plant site, thereby reducing transport requirements associated with more distant laydown sites and correspondingly reducing associated emissions, noise, and the likelihood of fauna interactions
- allowing plant/equipment/materials to be retained on Barrow Island between usage, avoiding the quarantine risk associated with more frequent mobilisation/demobilisation operations to and from Barrow Island
- reducing construction duration of the approved Gorgon Gas Development due to improved efficiencies and productivity.

The proposed use of additional land close to the Gas Treatment Plant site for operations support (e.g. warehouses, workshops, maintenance materials storage) will provide similar benefits during the operations phase of the proposal. In particular, the consolidation of operations support facilities into an expansion of the existing administration and operations complex will reduce vehicle traffic to other parts of Barrow Island, thereby reducing potential fauna casualties, for the 60-year life of the approved Gorgon Gas Development.

5.1 Quantification of Environmental Benefit

It is difficult to quantify with certainty the extent of environmental benefit that may be obtained by implementing the proposal as there are uncertainties associated with a range of contributing factors that would be involved. For example, weather conditions, and particularly the number of cyclones that affect the site, can have a dramatic effect on construction timeframes. In addition, siting of construction support (e.g. laydown) and operations support facilities on alternative sites on Barrow Island, which was examined as an alternative to the proposal (Section 1.4.3), has not yet occurred, and therefore there is no operational or environmental data available relating to the use of these sites.

Nevertheless, estimates can be generated for some predicted benefits by using experience and/or data available from construction to date, forecasts developed for planning purposes, and

by incorporating assumptions regarding various uncertainties. Information sources that can be used for these estimates include:

Vehicular Traffic Levels

Vehicle traffic on Barrow Island is subject to strict restrictions on routes and speeds to minimise the potential for fauna casualties. Vehicle management includes recording vehicle movements and speeds where practicable via a GPS-based In Vehicle Monitoring System (IVMS) fitted to light vehicles. The data from this system can be interrogated to determine traffic movements.

The experience gained with traffic requirements during construction to date also provides a basis for forecasting traffic levels for future activities, particularly where the activities and/or facilities involved are similar to those already in place.

Fauna Collision Numbers

All fauna collisions are considered an environmental incident on Barrow Island and subject to reporting and investigation. Chevron Australia records and reports fauna casualties on Barrow Island for compliance and adaptive management purposes. This includes details of the fauna species involved, the cause of the casualty, and the site of the incident. These records can be interrogated to identify casualty types and numbers, and inform management measure reviews for continuous improvement.

Fauna Casualty Rates

By correlating fauna casualty records with vehicular traffic data, fauna casualty rates on Barrow Island can be calculated. Chevron Australia currently calculates and presents casualty rates on a number of mammal casualties per 1000 km mileage basis, using the vehicle traffic data collected via the IVMS and fauna casualty data from the incident database.

5.1.1 Environmental Benefits from the Relocation of Facilities

The most relevant and readily quantifiable likely environmental benefit from the proposal relates to the potential reduction in fauna interactions due to fewer vehicular traffic movements associated with relocating support activities/facilities closer to the main construction and operations sites. The API Guideline requested quantification of predicted reductions in fauna impacts to be considered in the assessment of impacts on conservation significant species.

Without the proposal, there would be a requirement to house construction and/or operations support at various other locations on Barrow Island, and thereby generate traffic over a number of different roads. However, for simplicity, this evaluation has been restricted (conservatively) to traffic levels along the road that extends between the additional land and the Old Airport facility, which had been identified as a likely alternative location for a number of the activities/facilities that are proposed to be sited on the proposal area. Reductions in traffic along this road would include:

Construction Period:

- movements of personnel associated with construction activities (e.g. laydown) to/from accommodation camps at the start and end of each day, for the duration of the construction program (ie the journey would end at the proposal area rather than continuing to the Old Airport facility)
- heavy vehicle movements associated with transport of materials between the MOF and laydown areas, and between laydown areas and the Gas Treatment Plant site
- heavy vehicle movements associated with transport of materials between the MOF and warehouses
- movement of vehicles to/from Gas Treatment Plant site and maintenance workshops.

Operations Period:

- movement of operations vehicles to/from operation sites (Gas Treatment Plant and administration/operations complex) and maintenance workshops
- transport of materials from warehouses and workshops to operational areas, over the estimated 60-year life of operations
- movements of personnel associated with the operations support facilities to/from accommodation camps at the start and end of each day, over the estimated 60-year life of operations.

The casualty rate calculated for Barrow Island makes no distinction for the time of day that travel occurs. Vehicle interactions with threatened fauna, in particular, tend to be more associated with traffic between dusk and dawn. Most traffic associated with the facilities that would be located on the proposal area would be expected to occur during daylight hours, although transport of personnel to/from worksites at the beginning and end of the day during winter may involve movement around dawn and dusk.

5.1.1.1 Construction Period

The reduction in traffic from the proposal over the construction period was estimated based on reduced traffic movements due to the relocation of these facilities from the Old Airport site to the proposal area:

- rock crushing and screening plant
- laydown area
- turnaround temporary construction facilities
- vehicle maintenance workshop
- warehousing.

To access these facilities, vehicles would no longer be required to travel the additional distance between the main construction worksites and the Old Airport site. The facilities that are expected to remain at the Old Airport site and that were included for the purposes of the estimation are the permanent batch facility, asphalt plant, and waste transfer station. Anticipated vehicle types and estimated daily movement numbers for each vehicle type associated with each facility are presented in Table 5-1.

Based on the estimated usage, the proposed relocation of activities/facilities to the additional land will result in an approximately 69% (or 572 daily movements) reduction in traffic along the section of road between the additional land and the Old Airport site over the construction period.

Using the most recent annual data (2012) for casualty rates and casualty types (species) along the road leading to the Old Airport facility, and assuming fauna casualty rates and species remain constant over the construction period, the potential reduction in fauna casualty numbers, including for threatened species, that would result from the relocation of construction support activities/facilities to the proposal area can then be estimated.

Table 5-1 Reduction in Traffic due to Relocation

Mobile Equipment Use on Location	Permanent Vehicle Maintenance Workshop	Permanent Batch Plant	Crushing Plant	Asphalt Plant	Waste Transfer Station	Turnaround Temporary Construction Facilities	Warehousing	Laydown	Total Movements	Percentage
Heavy vehicles	32	64	51.2	25.6	44.8	51.2	96	96	**460.8**	**55.38%**
Mobile plant (e.g. cranes)	6.4	0	19.2	0	6.4	0	25.6	25.6	**83.2**	**10.00%**
Light vehicles	44.8	12.8	6.4	6.4	25.6	51.2	38.4	76.8	**262.4**	**31.54%**
Tracked plant	6.4	0	6.4	0	0	0	0	12.8	**25.6**	**3.08%**
TOTAL	89.6	76.8	83.2	32	76.8	102.4	160	211	**832**	
Proposal area	**90**		**83**			**102**	**128**	**169**	**572**	**68.77%**
Old Airport site		**77**		**32**	**77**		**32**	**42**	**260**	**31.23%**

Based on data from 2012, a fauna casualty rate of 1/1000 km has been derived, and applying this to the forecast reduction in vehicle movements for this section of road presented in Table 5-1, there would be an estimated potential reduction in total fauna casualties of 187 animals per year. The 2012 fauna casualty data indicates that more than 65% of casualties on the road to the Old Airport facility involved threatened species. Assuming this rate remained constant, that access to the proposal area is in place by mid-2014, and the construction program for the approved Gorgon Gas Development continues until mid-2015, this indicates the relocation of activities/facilities to the proposal area could potentially result in a reduction of up to 122 casualties of threatened fauna on this road during construction.

5.1.1.2 Operations Period

Daily vehicle movements over the operations period are expected to be considerably less numerous than during construction. However, as they would continue for a much longer period (approx. 60 years), any reduction in operations traffic generated by the proposal may also result in a non-trivial reduction in potential fauna casualties. In addition, movements of personnel to and from worksites during winter may involve travel around dawn and dusk when the risk of interactions with threatened species are highest.

Considering the reductions in movements during operations described in Section 5.1.1, and assuming that:

- one vehicle per week visited the vehicle maintenance workshops
- there were approximately 20 daily transfers of materials to/from workshops and warehouses

- approximately 2 to 3 vehicles were involved in transporting the 30 to 40 personnel stationed in the offices, workshops, and warehouses to and from accommodation facilities to site each day

it is estimated that there would be approximately 24 fewer traffic movements per day along the road to the Old Airport due to the relocation of facilities to the proposal area. Applying the same assumptions described above, this corresponds to a potential reduction of up to 470 fauna casualties, including 300 threatened fauna, over the 60-year duration of operations.

6.0 Impact Assessment Approach

6.1 Preliminary Key Environmental Factors and API Guidance

Following review of the referral, the EPA has identified the following preliminary key environmental factors as being relevant to the proposal:

- Flora and Vegetation
- Terrestrial Fauna
- Subterranean Fauna
- Offsets.

The API Guidelines have identified the additional information required to be included in this Environmental Review for these preliminary environmental factors to support the EPA's assessment of the proposal. The additional information, including detailed assessment of the potential impacts to these environmental factors, is provided in Section 7.0. Other factors deemed not to be preliminary key environmental factors have also been assessed; a summary of this assessment is provided in Appendix 2. Table 6-1 details the components of this Environmental Review that address the specific requirements of the API Guidelines.

Table 6-1 Compliance of Environmental Review with API Guidelines

Key Factor	API Guidelines Requirement	Reference
Flora and Vegetation	Describe the impacts associated with the proposal, including the direct impacts of clearing and indirect impacts of dust deposition, spread of weeds, and altered surface hydrology.	Section 7.1.4
	Provide a short summary of results of previous flora surveys focusing on significant flora that is statutory listed or defined in EPA Guidance Statement 51 (EPA 2004) as being significant.	Section 7.1.3.1
	Present the results of any additional surveys that have recently been undertaken.	Section 7.1.3 Appendix 5
	Undertake analysis to include the area and percentage of clearing to determine the direct and indirect impacts to flora populations and vegetation communities, including conservation significant flora and vegetation and cumulative impacts at the local and regional scale from the revised proposal.	Section 7.1.3 Section 7.1.4
	Classify floristic vegetation using appropriate analysis techniques, and provide rationale for data treatments and interpretations.	Section 6.3.1 Section 7.1.3.2 Appendix 5
	Describe management and monitoring protocols proposed to be implemented during construction, operation, and closure that will ensure the EPA's objectives are met.	Section 7.1.5 Section 4.0
Terrestrial Fauna	Describe the expected impacts to terrestrial fauna and habitat from the proposal.	Section 7.2.4
	Provide a short summary of results of previous fauna surveys focusing on significant fauna species and habitats that are statutory listed or defined in EPA Guidance Statement 56 (EPA 2004a) as being significant.	Section 7.2.3.1 Appendix 5
	Assess the impacts on conservation significant fauna species from the proposal, including: • Changes to predictions of impacts at a population level as a result of cumulative loss of vegetation formations; • quantification of predicted reduction of impacts on fauna from centralisation of operations that are spread across the island; • based on current knowledge, the lighting impacts on turtle nesting beaches associated with any night construction and operation activities associated with the proposal, particularly at Bivalve and Terminal beaches; • changes to population dynamics of Boodies as a result of restriction and fragmentation of habitat utilised by Boodies particularly associated with identified warrens that surround the proposal area.	Section 7.2.4 Section 5.0

Key Factor	API Guidelines Requirement	Reference
	Describe management and monitoring protocols proposed to be implemented during construction, operation, and closure to ensure the EPA's objectives are met.	Section 7.2.5 Section 4.0
Subterranean Fauna	Describe the expected impacts from the proposal including direct impacts (i.e. excavation and removal of rock or other material likely to contain subterranean fauna habitat).	Section 7.3.4
	Assess all areas likely to be directly or indirectly impacted by the proposal in accordance with Guidance Statement 54a (EPA 2007) and Environmental Assessment Guideline 12 – Consideration of subterranean fauna in environmental impact assessment in Western Australia (EPA 2013).	Section 7.3.4 Appendix 5
Offsets	The proponent shall include a completed Environmental Offsets Reporting Form and discuss any offsets proposed in the environmental review document. This should also include discussion as to how the proposal has met the mitigation hierarchy.	Appendix 7 Section 7.4
Other Matters	Description of the proposal and provision of spatial datasets, information products, and databases required.	Section 2.0 electronic spatial data provided on CD
	Details of the consultation process and outcomes.	Section 3.0
	Relevant information on the receiving environment and its conservation values in a regional and local setting.	Section 7.1.3 Section 7.2.3 Section 7.3.3 Section 1.3.1
	Identification of the limited number of preliminary key environmental factors and demonstration that the potential direct, indirect, and cumulative impacts on the environment for each factor can be readily managed to meet the EPA's environmental objectives. The findings of any surveys and investigations undertaken to support this assessment should be included, with the technical reports provided as appendices.	Section 6.1 Section 7.1 Section 7.2 Section 7.3 Section 7.4 Section 8.0 Appendix 5
	Assessment of the degree of certainty with which the environmental impacts can be predicted.	Section 7.0
	Identification of other potential impacts or activities of the proposal that can be regulated by other government agencies, under other statutes, and an acknowledgement of the need to comply with these.	Appendix 2

Key Factor	API Guidelines Requirement	Reference
	Justified statement of how the object of the Act and Principles of Environmental Impact Assessment (EIA) for the Proponent have been addressed and how the proposal meets all of the criteria for API category A.	Appendix 3
	The proponent should also describe any unforeseen environmental impacts or uses that studies and investigations may discover during the environmental review. This includes any significant new or additional information about an identified key environmental factor or a new environmental factor for the proposal.	Section 7.3 (record of *Milyeringa justitia* from recent sampling)

6.2 Environmental Protection Authority Considerations

Table 6-2 outlines the key EPA considerations (principles, objectives, criteria, procedures, and policies) relevant to the environmental impact assessment of this proposal and where they are addressed in this document.

Table 6-2 Environmental Impact Assessment Criteria

Criteria	Outcome	Location
EPA Principles, Objectives, and Procedures		
EP Act Principles	The proposal is consistent with the EP Act Principles.	The proposal has considered the EP Act Principles. Appendix 3 sets out the relevant principles and explains how they are being taken into account for the proposal
EPA Objectives	The proposal has been assessed in detail against EPA objectives for both key and other environmental factors. The proposal will meet the EPA objectives for all factors.	The EPA objectives relevant to the preliminary key environmental factors to the proposal are presented and addressed in Section 7.0.
EPA Administrative Procedures	The proposal conforms to the criteria for API Category A (as outlined in Section 10.1.1 of the Administrative Procedures). The proposal has addressed the information requirements (as identified in Section 10.1.3 of the Administrative Procedures), the principles of EIA for the proponent (identified in Section 5 of the Administrative Procedures) and the assessment procedure for API Category A (identified in Section 10.1.2 of the Administrative Procedures).	Appendix 3
Relevant EPA Guidelines		
Defining the key characteristics of a proposal (EAG1) (EPA 2012)	Key proposal characteristics that capture all key features of the proposal relevant to the EP Act have been defined.	The proposal falls within, and does not require changes to, the key characteristics table of the approved Gorgon Gas Development as defined in Schedule 1 of Statement No. 800
Timelines for EIA of Proposals (EAG6) (EPA 2010a).	Discussed in consultation with OEPA and agreement reached on proposed assessment timelines.	An indicative schedule for the proposal, which includes information on expected assessment timelines, is included in Section 1.3.2.
Checklist for documents submitted for EIA on marine and terrestrial biodiversity.	The checklist has been used to ensure this Environmental Review is suitable to facilitate timely consideration by the EPA	The completed checklist is included in Appendix 4.
EPA Guidelines specific to individual key environmental	Environmental surveys and subsequent assessment have been conducted taking into account the relevant EPA guidelines.	The EPA guidelines relevant to preliminary key environmental factors are presented in: Table 7-1

Criteria	Outcome	Location
factors		Table 7-4 Table 7-6 Table 7-8

6.3 Relevant Studies

The environmental baseline of this Environmental Review has been informed by desktop research and the results of environmental surveys, including those undertaken for the Gorgon Gas Development approvals and subsequent Baseline Reports and Monitoring Programs as required under the Ministerial Conditions for the approved Gorgon Gas Development. For copies of previous survey reports related to the approved Gorgon Gas Development refer to Chevron Australia's website:

http://www.chevronaustralia.com/ourbusinesses/gorgon/environmentalresponsibility/environmentalapprovals.aspx

Surveys have also been conducted specifically for the proposal relevant to the key ecological factors identified by the EPA. The reports for these surveys are included in Appendix 5.

The sections below summarise the relevant surveys and studies conducted for the approved Gorgon Gas Development and the proposal. The sampling and survey methodologies included consideration of the relevant EPA Guidelines. The depth of studies completed to date provides a robust understanding of the Barrow Island environment, including flora and vegetation, and terrestrial and subterranean fauna.

6.3.1 Flora and Vegetation

There is substantial information on the flora and vegetation of Barrow Island, with numerous surveys conducted for previous assessments as part of the Gorgon Gas Development and, more recently, for the proposal. These include:

Mattiske and Associates (1993) established more than 100 quadrats for vegetation mapping at a scale of 1:25 000 and classified plant communities based on major landform types, soil types, and dominant species (including cluster analysis of percentage foliage cover in quadrats). This refined the vegetation units of Buckley (1983). The resulting vegetation mapping extended across the entire island, including the land involved in this proposal.

RPS Bowman Bishaw Gorham (BBG) and Mattiske Consulting (2005) surveyed and mapped vegetation within an area of approximately 1683 ha, or approximately 11% of Barrow Island, surrounding the Gas Treatment Plant and existing administration/operations complex site, and encompassing the land involved in this proposal, for the Gorgon Gas Development EIS/ERMP (Chevron Australia 2005). Vegetation communities were surveyed, mapped and reported in accordance with EPA Guidance No. 51 (EPA 2004). Seventy-two permanent vegetation quadrats (50 × 50 m and 10 × 50 m) were established and surveyed in September and October 2003 and in January 2004. Additional surveys over the Gas Treatment Plant site were undertaken in April and May 2004 following cyclonic rains, to collect annual species.

Basic statistics of the percentage cover observations were calculated using the SYSTAT statistical software package, with histograms of each taxon prepared to check statistical distributions of the taxa. PATN software was used to analyse both the data recorded in the vegetation plots and a merged dataset that included previous survey data. Initial data analyses were undertaken on presence/absence, percentage live foliage cover, and total percentage foliage cover, by plot and by individual quadrat. Finally, hierarchical clustering was undertaken and dendrograms were produced for each combination of association measure and clustering strategy before comparing and interpreting the outputs in relation to other data, notes, and aerial photographs.

Vegetation communities were described on the basis of the relationships between plots in the cluster analysis, tables of alive and dead species, cover and original field plot community descriptions, and Trudgen's (2002) vegetation classification system. This characterisation allowed species with less than two per cent cover to be considered.

More recently, Astron Environmental Services (Astron) undertook a vegetation and flora survey over the development envelope in October 2013, using methods consistent with EPA Guidance Statement No. 51 (EPA 2004). Fifteen quadrats and three relevés were surveyed to characterise the vegetation and flora values. The survey report is included in Appendix 5.

Figure 6-1 shows the extent of areas in the Town Point vicinity that were the subject to flora and vegetation surveys undertaken for the EIS/ERMP of the approved Gorgon Gas Development and specifically for the proposal.

6.3.2 Terrestrial Fauna

Numerous fauna surveys have been undertaken on Barrow Island. Most recently, and with relevance to the proposal, these include the following.

Bamford and RPS BBG undertook surveys of mammals and reptiles in November and December 2003, and in October 2004 using methods consistent with EPA Guidance Statement No 56 (EPA 2004a) (Bamford and RPS BBG 2005). The surveys were conducted over an area of approximately 658 ha at Town Point, including over the land included in this proposal, for the Gorgon Gas Development EIS/ERMP (Chevron Australia 2005). The study included observations of fauna and habitats, including Boodie warren searches, from transects spaced 50 m apart across the entire investigation area. Based on the surveys, the terrestrial fauna values of the area were described, including recorded and/or estimated abundances of fauna of conservation significance and the relative importance of habitats evaluated.

A PhD student from the University of Western Australia surveyed for active and inactive Boodie warrens across a large section of Barrow Island in 2002, and the data was incorporated into Chevron Australia's Geographical Information System, updating the survey of Boodie warrens within fifty 1 km^2 blocks across Barrow Island by Short *et al.* (1989).

Subsequent mammal surveys have been conducted within and/or in the vicinity of approved Gorgon Gas Development sites to meet the requirements of monitoring programs developed by Chevron Australia in accordance with environmental conditions of approval for the Gorgon Gas Development. These include:

- The Barrow Island Spectacled Hare-wallaby (*Lagorchestes conspicillatus conspicillatus*) and Barrow Island Euro (*Macropus robustus isabellinus*) is monitored under the Mammal Transects (Spotlighting) Program. Annual surveys have been conducted since 2010. This program aims to collect information on the abundance of these mammal species and associated demographics to diagnose any observed declines in abundance that may be attributable to the approved Gorgon Gas Development (Chevron Australia 2012b). Approximately 60 one-kilometre transects were surveyed over a range of habitats.
- The Mammal Trapping Program monitors three conservation-significant species: the Barrow Island Boodie (*Bettongia lesueur*), Barrow Island Spectacled Hare-wallaby, and the Barrow Island Golden Bandicoot (*Isoodon auratus barrowensis*). Annual surveys have been conducted since 1998, during spring (September to October) (Chevron Australia 2012b). Mammal trapping is undertaken at 14 established trapping grids (Biota Environmental Sciences [Biota] 2013).

Quantitative surveys of landbirds across Barrow Island were undertaken by Sedgwick (1978) and Pruett-Jones and O'Donnell (2004). Sedgwick (1978) surveyed across Barrow Island in August 1976 in eight 0.5 ha quadrats. Pruett-Jones and O'Donnell (2004) surveyed across Barrow Island in September and October 2001 at 178 two-hectare quadrats in six major vegetation zones.

Landbirds and littoral birds were surveyed monthly from September 2003 to October 2004 as part of the preparation of the Gorgon Gas Development EIS/ERMP (Chevron Australia 2005). Survey areas included those associated with the Gorgon Gas Development and encompassed the area that is the subject of this proposal.

Surveys including transects across the proposal area have been conducted under the White-winged Fairy-wren (Barrow Island) Monitoring Program annually since 2009 to meet the requirements of monitoring programs developed by Chevron Australia in accordance with environmental conditions of approval for the Gorgon Gas Development. These surveys are timed to coincide with the typical White-winged Fairy-wren (Barrow Island) breeding season.

Surveys of White-winged Fairy-wren (Barrow Island) have occurred across a range of habitats across Barrow Island by Pruett-Jones and Tarvin 2001, and have also included a study of nest site selection by Bamford and Moro (2011) to determine the vegetation types that support nesting of this species on Barrow Island. Nest searches were conducted on Barrow Island by ornithologists over seven consecutive days in August and September 2005, coinciding with the White-winged Fairy-wren (Barrow Island) breeding season, over an area of approximately 1000 ha.

Invertebrate groups including short-range endemics were surveyed within and/or in the vicinity of the Gorgon Gas Development infrastructure sites at Town Point for the Gorgon Gas Development EIS/ERMP by systematic pit trapping in November and December 2003. Pit trapping was complemented by hand foraging methods in late 2003 and in August 2004. Extensive subsequent surveys of invertebrate fauna have been completed on Barrow Island in accordance with the requirements of approval conditions for the Gorgon Gas Development, including targeted monitoring of SREs and as part of the non-indigenous species surveillance programs.

Termite mounds have been mapped by Chevron Australia within 500 m of the approved Gorgon Gas Development tenure based on the interpretation of aerial imagery at a scale of 1:1000. This mapping was expanded to include the development envelope in October 2013.

Raptor nests have been mapped by Chevron Australia, based on the investigations completed for the EIS/ERMP (Chevron 2005) and subsequent monitoring surveys.

Biota (2013) provided a site-specific assessment of the fauna values of the land associated with the proposal, particularly in relation to conservation significant species. The assessment included a review of the results of monitoring programs on Barrow Island as well as a field survey over the development envelope in October 2013, primarily focused on detecting Boodie warrens but also noting other habitats of the area. The survey report is included in Appendix 5.

Figure 6-2 shows the extent of areas in the Town Point vicinity that were the subject of terrestrial fauna surveys undertaken for the EIS/ERMP of the approved Gorgon Gas Development and specifically for the proposal.

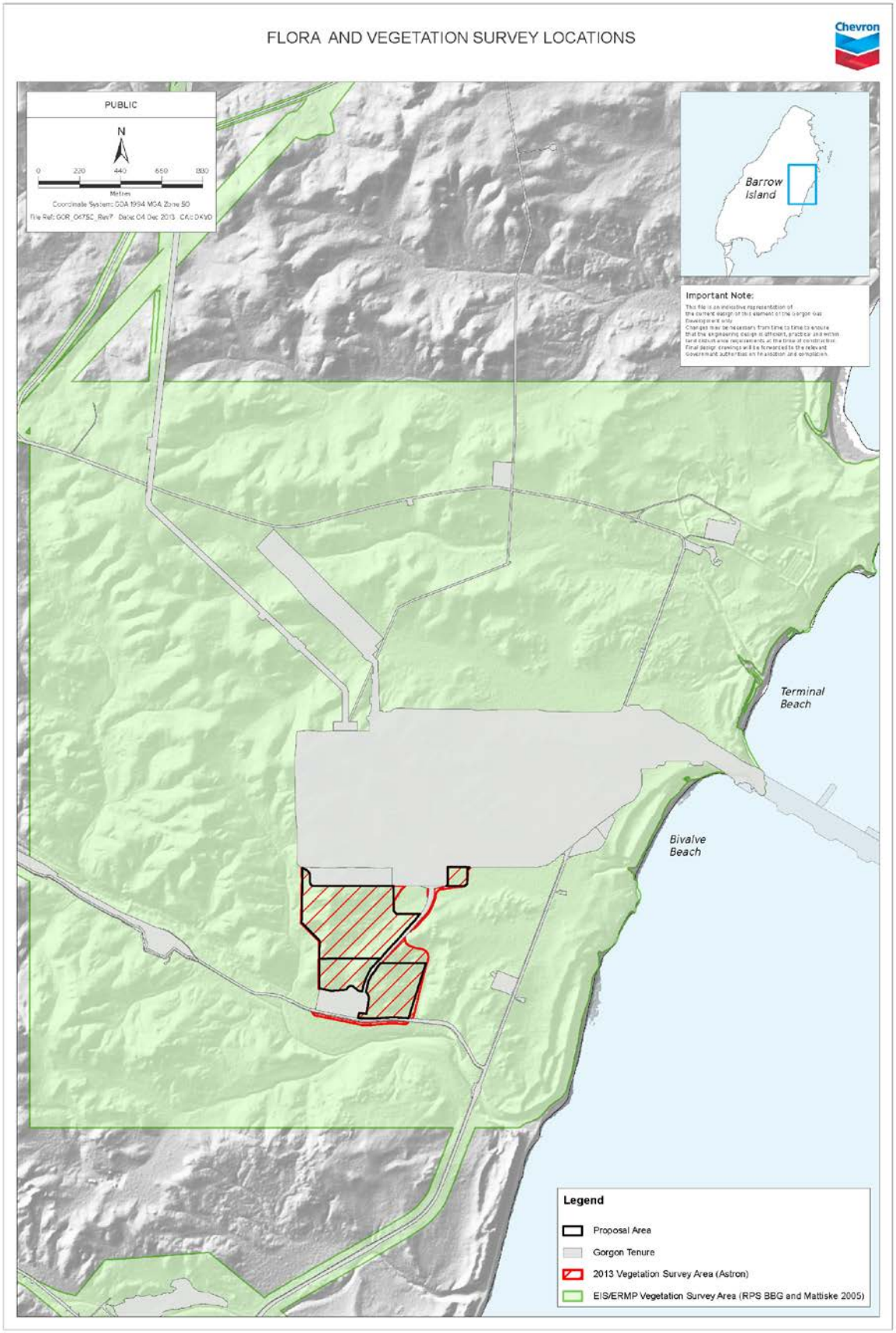


Figure 6-1 Flora and Vegetation Survey Locations

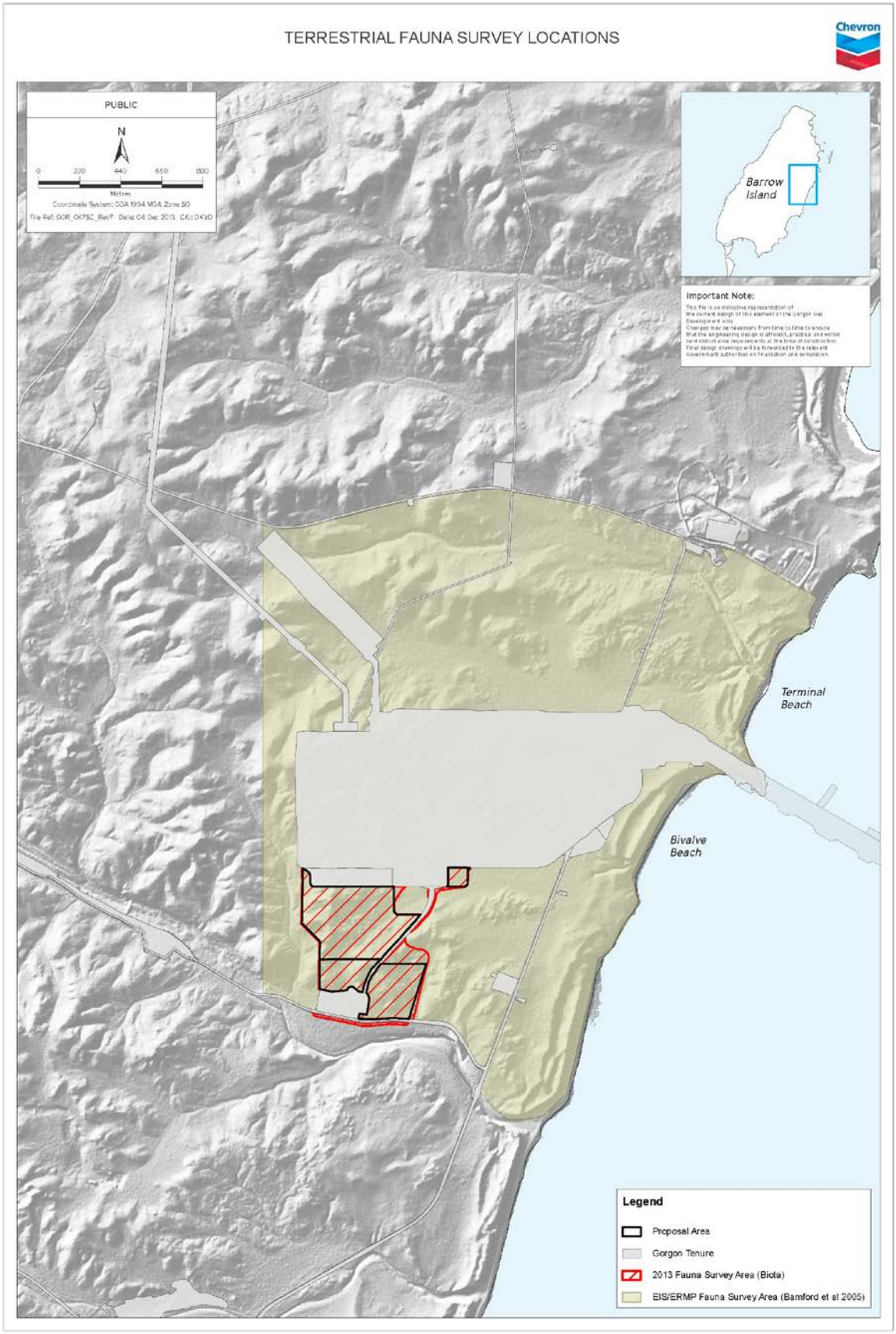


Figure 6-2 Terrestrial Fauna Survey Locations

6.3.3 Subterranean Fauna

The subterranean ecosystems of Barrow Island have been studied since the 1990s, with seven sampling visits by the Western Australian Museum over a decade (Humphreys 2001).

Biota subsequently completed six phases of sampling within and/or in the vicinity of the Gorgon Gas Development infrastructure sites at Town Point for the Gorgon Gas Development (reported in Biota 2007). Sampling was undertaken in 2002 and 2003 to support the Environmental, Social and Economic Review of the Gorgon Gas Development (ChevronTexaco Australia 2003) and subsequently during a 19-month survey between November 2004 and July 2006, as described in the Gorgon Gas Development EIS/ERMP (Chevron Australia 2005). This sampling was undertaken at 46 sites for troglofauna and 37 sites for stygofauna. These sampling efforts were completed in accordance with then current EPA Guidance (EPA 2003, 2007) and focused on both development impact areas and on other parts of Barrow Island (Biota 2013a).

Monitoring of subterranean fauna has continued since the approval of the Gorgon Gas Development and 10 phases of subterranean fauna sampling over the Town Point hinterland have now been completed. This includes 75 bores within a 4 km radius of the development envelope (40 sampled for troglofauna and 68 for stygofauna).

Humphreys *et al.* (2013) has recently provided an update of the expanded knowledge of the subterranean fauna of Barrow Island.

Biota has undertaken a site-specific subterranean fauna study to confirm and/or update the subterranean fauna values of the development envelope identified by previous work, with reference to the expectations of contemporary EPA Guidance Statements. This has included results of sampling in November 2013 from new bores established in the existing administration/operations complex site. The survey report is included in Appendix 5.

7.0 Impact Assessment

The proposal does not involve any activities or facilities that were not assessed as part of the approved Gorgon Gas Development. Rather, it involves conducting some of the same activities for the approved Gorgon Gas Development in a location on Barrow Island that will require clearing over an additional area of land, and siting facilities in a location not previously specified. The proposal area falls within the area at Town Point that has been the subject of considerable environmental survey which provides a robust understanding of its environmental values, particularly those of relevance to this proposal. The environmental implications of the development of gas processing and support infrastructure within this environment, including all of the activities/facilities associated with this proposal, have been reviewed in detail through multiple assessment processes (Section 1.3.1.1). As development envelope does not exhibit any environmental values that were not present within the area of potential effects from the approved Gorgon Gas Development, the potential impacts to relevant environmental factors for the proposal can be predicted with confidence.

7.1 Flora and Vegetation

7.1.1 EPA Objective

To maintain representation, diversity, viability, and ecological function at the species, population, and community level (EPA 2013a).

7.1.2 Relevant Policies, Plans, Guidelines

Chevron Australia's assessment of this factor has been undertaken with consideration of the relevant EPA Position Statements and Guidance detailed in Table 7-1

Table 7-1 Western Australian Policy Relating to Vegetation and Flora

Policy, Plan, Guideline	Intent
EPA Position Statement No. 3 – Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA 2002)	Encourages proponents to focus their attention on the significance of biodiversity and therefore the need to develop and implement best practice in terrestrial biological surveys. It also enables greater certainty for proponents in the EIA process by defining the principles the EPA will use when assessing proposals that may impact on biodiversity values.
EPA Guidance Statement No. 51 – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA 2004)	Provides guidance and information to environmental consultants and proponents about expected standards and protocols for flora and vegetation surveys.
EPA Position Statement No. 2 – Environmental Protection of Native Vegetation in Western Australia (EPA 2000)	Provides an overview of the EPA's position on the clearing of native vegetation in WA with particular reference to clearing within the agricultural area.
EPA Guidance Statement No. 6 – Rehabilitation of Terrestrial Ecosystems (EPA 2006).	Provides guidance on the rehabilitation of terrestrial areas no longer required following construction into viable ecological systems.

7.1.3 Environmental Baseline

The vegetation and flora of Barrow Island exhibits floral affinities with both the arid Pilbara Region and the Cape Range area of the Australian mainland (Chevron Australia 2012b). It has been studied since the 1960s and is generally well documented. The area involved in the proposal has been subject to previous localised disturbance from seismic activities associated with the existing oilfield and with CO_2 injection baseline monitoring for the approved Gorgon Gas Development. Vegetation abutting existing infrastructure may have also been subject to indirect disturbance. However, the vegetation in the area is considered largely undisturbed.

7.1.3.1 Flora

The Western Australian Herbarium has identified and confirmed 226 plant taxa from 131 genera and 68 families on Barrow Island (Chevron Australia 2012b). All plant taxa on Barrow Island occur on the mainland, except for *Cucumis* sp. Barrow Island (D.W. Goodall 1264) and *Amaranthus* sp. Barrow Island (R Buckley 6884).

No Declared Rare Flora listed under the Wildlife Conservation Act have been recorded on Barrow Island (Chevron Australia 2012b).

Three Priority Flora species have been collected on Barrow Island, namely:

- the annual Priority 1 daisy species *Helichrysum oligochaetum*, which was recorded twice on Barrow Island by Mattiske and Associates (1993) but has not been recorded since
- the Priority 2 species *Cucumis* sp. Barrow Island (D.W. Goodall 1264) (identified in Chevron Australia 2005 as *Mukia* sp. Barrow Island (D.W. Goodall 1264) but since renamed).
- the Priority 3 species *Corchorus congener*. This spreading shrub is widely distributed on parts of Barrow Island and also recorded from Cape Range on the mainland (Chevron Australia 2012b).

Of the three priority flora species known from Barrow Island, only *Corchorus congener* was recorded at low abundance within the study area. This species is relatively abundant and widespread across Barrow Island (Astron 2011). *Cucumis* sp. Barrow Island (D.W. Goodall 1264) has previously been recorded with 10 km of the development envelope, but has not been observed in the study area (Astron 2013).

In addition to flora identified as having conservation significance, botanical assessments undertaken on behalf of Chevron Australia have identified 40 species of plant as 'significant' on Barrow Island because of restricted distribution or vulnerability to disturbance (Chevron Australia 2012b). Of these, two are identified as being present in the development envelope: *Hakea lorea* subsp. *lorea.* and *Melaleuca cardiophylla*. *Melaleuca cardiophylla* is one of the dominant flora species recorded within the study area, while only three individuals of *H. lorea* subsp. *lorea* were recorded. (Astron 2013). Both species are considered to have low regenerative capacity when subject to disturbance compared to other flora on Barrow Island (Astron 2011), although *M. cardiophylla* has been reported to re-establish in disturbed sites (Mattiske Consulting 1997).

Both of these species are known from outside the study area, particularly *M. cardiophylla* (Astron 2013). This erect-to-spreading shrub is widespread in the central part of Barrow Island on upland limestone areas (Mattiske 1993). On the mainland, it has largely been collected along the WA coast between Perth and Karratha (Western Australian Herbarium 2008, cited in Chevron Australia 2012b). *Hakea lorea* subsp. *lorea* is not known to be abundant on Barrow Island, but appears to be more widespread than originally recorded in the Mattiske (1993) survey, being found in a number of habitats (Astron 2013).

No introduced flora has been recorded within the study area.

7.1.3.2 Vegetation

Astron (2013) report the majority of the development envelope extends over low outcropping limestone rises, which are dominated by shrub steppe of *Melaleuca cardiophylla* over *Triodia wiseana* and *T. angusta* hummock grasslands. A small area of loamy flats is also present, where the dominant shrub species changes to *Acacia bivenosa*. This vegetation is considered typical of vegetation on comparable landforms across Barrow Island (Astron 2013). The vegetation was in 'excellent' (Trudgen 1988) condition with no visible signs of disturbance recorded (Astron 2013).

There are no Threatened Ecological Communities listed under either State or Commonwealth legislation on Barrow Island. DPaW have listed two vegetative Priority Ecological Communities (PEC) on Barrow Island:

- *Triodia angusta* dominated creekline vegetation (Barrow Island) (Priority 1)
- coastal dune native tussock grassland dominated by *Whiteochloa airoides* (Priority 3).

The development envelope does not contain either of the landforms that support these communities (Figure 7-1) and no PECs have been recorded on the site (Astron 2013).

The vegetation of Barrow Island has been mapped at a range of scales over different areal extents. Mapping to formation level is available for the entire island with more recent mapping to association level over a limited area, generally within and surrounding areas proposed to be developed for the approved Gorgon Gas Development. Regardless of classification level, there are no mapped vegetation types that are restricted or largely restricted to the development envelope. All vegetation types within the development envelope occur elsewhere on Barrow Island, outside impact areas.

The vegetation formations (Mattiske and Associates 1993) that occur within the development envelope are presented in Table 7-2. Four vegetation formations have been mapped in the area—V1, L7, D2, and F1. The development envelope also includes areas of disturbance and unvegetated rocky ground. The vegetation of the development envelope is dominated by V1 (hummock grassland of *Triodia wiseana* with mixed emergent shrub species on valley slopes), which comprises approximately 18 ha of the development envelope, and L7 (hummock grassland of *Triodia wiseana* with dense pockets of *Melaleuca cardiophylla* on limestone ridges), which comprises approximately 11 ha of the site. The development envelope covers less than 1% of the mapped distribution of each of these vegetation formations across Barrow Island.

Based on the more restricted mapping using the vegetation community/association level classifications described in the environmental reviews of the Gorgon Gas Development (Chevron Australia 2005, 2008), five vegetation associations (Table 7-3 and Figure 7-2) are present within the development envelope (Astron 2013). The dominant associations within the development envelope are V1m (approximately 17 ha) and L7b (approximately 13 ha). Association V1m consists of *Melaleuca* and *Acacia* heath over mixed *Triodia* hummock grassland on limestone slopes and ridges. Association L7b comprises open low shrubland of *Melaleuca* and *Acacia* over closed *Triodia* hummock grassland on limestone slopes and ridges.

These vegetation associations extend into adjacent areas and all have secure representation in the nature reserve outside the development envelope. The proposal area comprises less than 8% of the currently mapped area of any of these vegetation associations (Table 7-3). However, the mapping to this level has only been undertaken over approximately 2, 500 ha, or approximately 11% of Barrow Island, and has been restricted to areas in the vicinity of approved Gorgon Gas Development infrastructure. Consequently, it is likely that the actual (island-wide) proportion of any vegetation association that is contained within the proposal area is substantially lower than indicated by the current mapping.

Table 7-2 Vegetation Formations Present in the Development Envelope

Vegetation Formation[1]	Total Area (m^2) of Vegetation Type Mapped on Barrow Island	Area (m^2) Disturbed by Oilfield	Area (m^2) Within Existing Gorgon Gas Development Tenure	Area (m^2) Within Development Envelope	Total Area Disturbed (Existing and Proposed disturbance)	Proportional Additional Area Disturbed by Gas Development	Proportional Increase in Cumulative Disturbance
D2: Hummock Grassland of *Triodia angusta* along minor creek-lines and drainage lines	10 966 838	2 379 188	295 117	**17 820**	24.55%	0.24%	0.32%
F1: Hummock Grassland of *Triodia angusta* on red earth flats and drainage lines	15 671 859	434 320	662 104	**13 674**	7.08%	0.11%	0.12%
L7: Hummock Grassland of *Triodia wiseana* with dense pockets of *Melaleuca cardiophylla* on limestone ridges	15 834 055	517 614	710 140	**105 340**	8.42%	0.77%	0.83%
V1: Hummock Grassland of *Triodia wiseana* with mixed emergent shrub species on valley slopes	68 229 290	3 357 333	1 018 378	**183 818**	6.68%	0.29%	0.31%

Notes:

[1] Based on Mattiske and Associates 1993

Table 7-3 Vegetation Associations Present in the Development Envelope

Vegetation Association[1]	Total Area (m^2) of Vegetation Association within Area Mapped[2]	Area (m^2) Within Existing Gorgon Gas Development Tenure	Area (m^2) Within Development Envelope	Area (m^2) Within Proposal Area[3]	Increase (%) in Clearing of Area Mapped[3,4]
F8a: *Acacia bivenosa* shrubland over mixed *Triodia* hummock grassland on flats and valley floors	1 900 331	642 126	**7918**	7394	0.39%
L7b[5]: Open low shrubland of *Melaleuca* and *Acacia* over closed *Triodia* hummock grassland on limestone slopes and ridges	2 030 490	124 756	**128 095**	112 823	5.56%
V1d[5]: Shrubland of *Acacia bivenosa* with low scattered *Pentalepis* shrubs over mixed *Triodia* hummock grassland on limestone slopes and low ridges	93 741	5796	**10 839**	7367	7.86%
V1k[5]: Scattered *Hakea* over low open *Melaleuca* shrubland over *Triodia* hummock grassland on limestone hillslopes and minor drainage lines	1 211 395	316 495	**58 316**	49 404	4.08%
V1m[5]: *Melaleuca* and *Acacia* heath over mixed *Triodia* hummock grassland on limestone slopes and ridges	1 914 340	367 669	**156 669**	143 665	7.50%

Notes:
1 Associations as described in assessment documents for Gorgon Gas Development (Chevron Australia 2005, 2008)
2 'Area Mapped' is the total area of Barrow Island over which vegetation has been mapped to this level by survey to date. Mapping is restricted to vicinity of Gorgon Gas Development infrastructure and covers approximately 2500 ha or approx. 11% of the total area of Barrow Island (23 567 ha).
3 Based on the nominal proposal area boundaries as shown in Figure 1-1.
4 Proportions presented are relative to the Area Mapped and not to the total extent of vegetation on Barrow Island.
5 Vegetation association considered to be 'significant'.

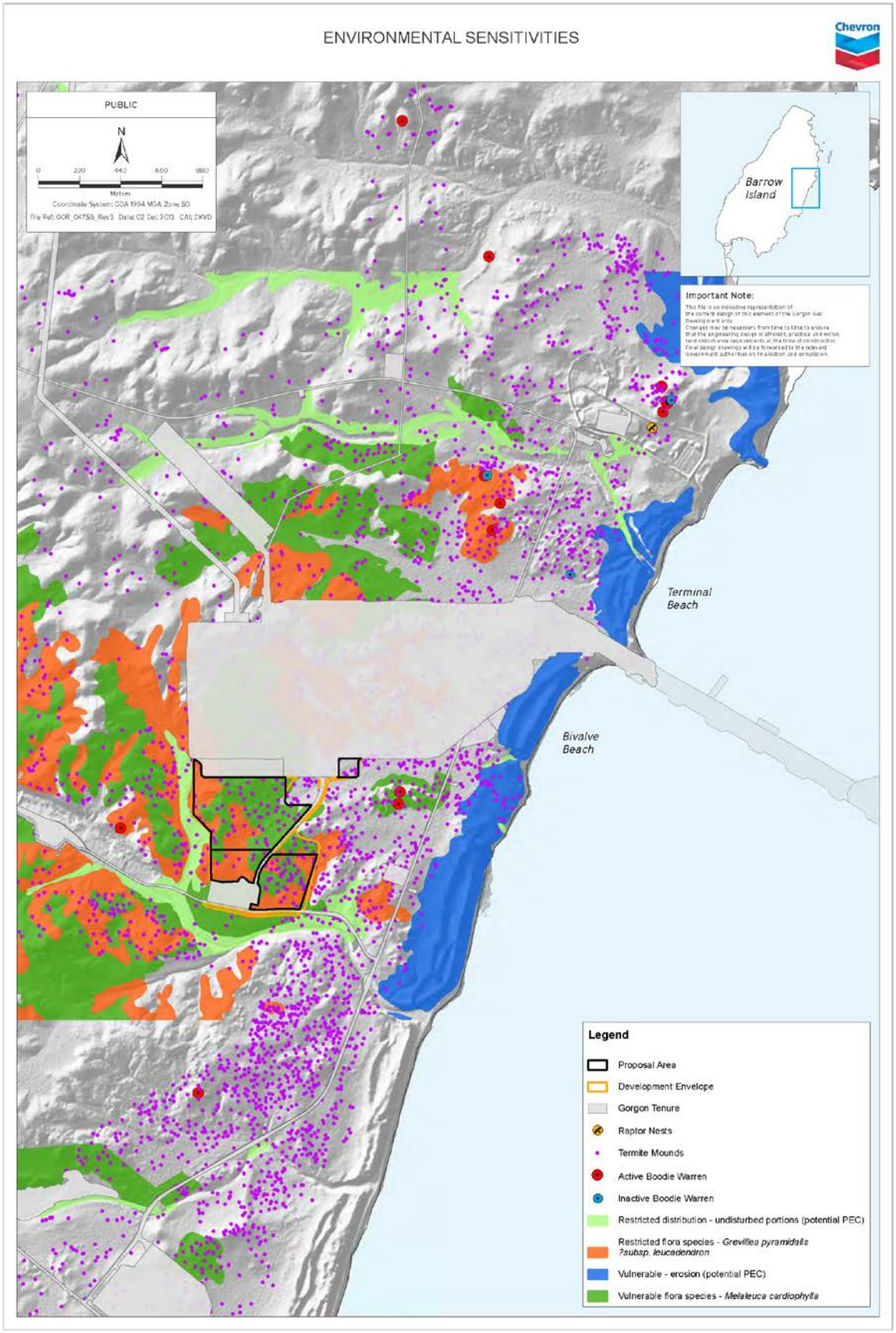


Figure 7-1 Environmental Sensitivities in and around the Development Envelope

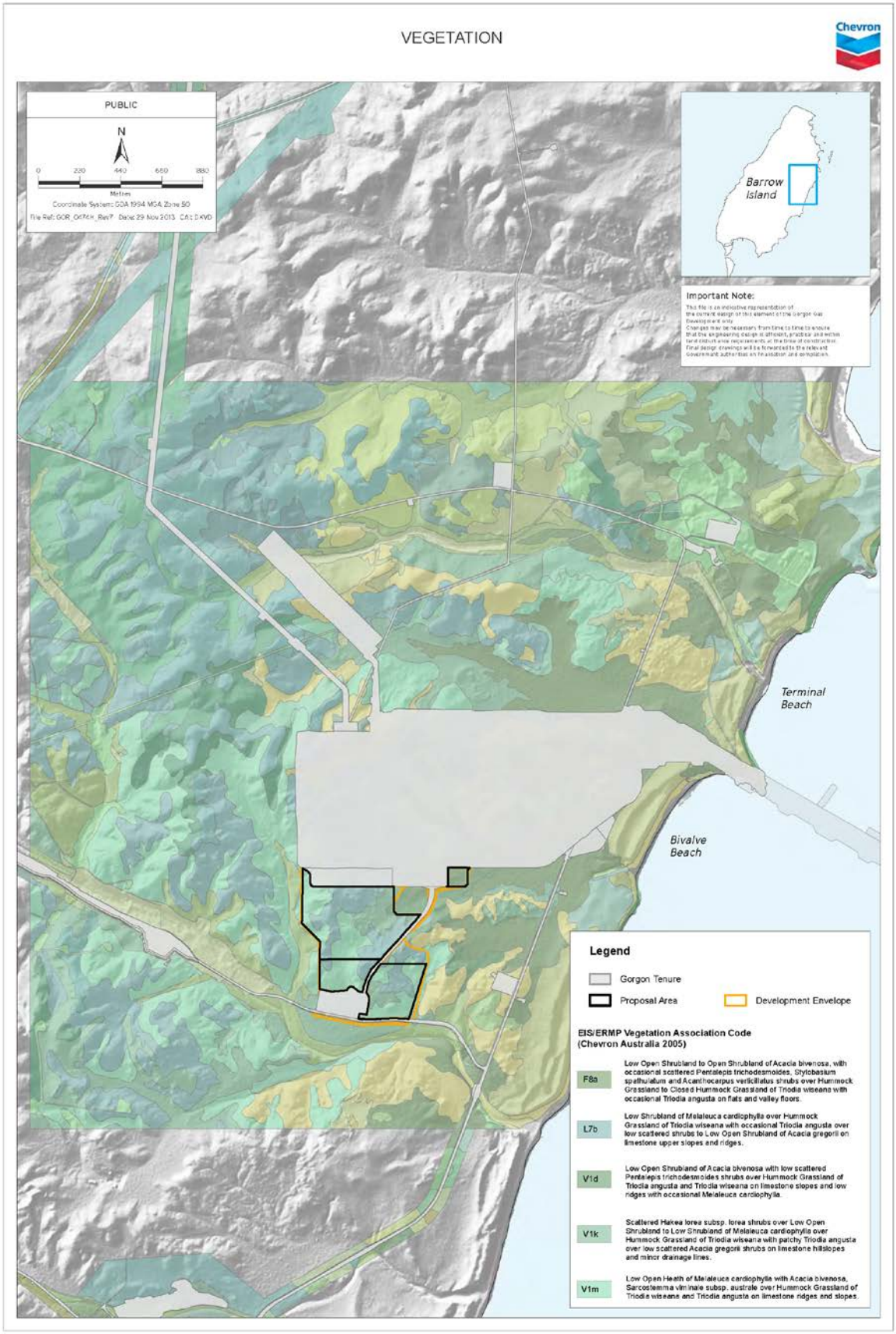


Figure 7-2 Vegetation Associations Present in the Development Envelope

7.1.4 Assessment of Potential Impacts

The proposal will require clearing over up to 32 ha of land during site preparation works, resulting in a corresponding reduction in the Barrow Island extent of the flora and vegetation involved, until the area is rehabilitated. The area involved comprises approximately 0.1% of Barrow Island. Indirect effects to vegetation may also occur in adjacent areas (e.g. from dust emissions or sediment run-off during construction of the proposal); however, monitoring associated with the considerably larger extent of clearing that has been undertaken to date for the approved Gorgon Gas Development suggests this is unlikely to have a significant impact on any vegetation or flora (Chevron Australia 2012b).

No Declared Rare Flora under the Wildlife Conservation Act or threatened flora listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* will be affected by the clearing. One Priority Three species, *Corchorus congener*, may be affected, but this plant is broadly distributed across Barrow Island and on the mainland (Chevron Australia 2012b).

All vegetation communities that will be affected by clearing associated with the proposal are well represented outside the impact areas. Based on island-wide mapping of vegetation (Mattiske 1993), the area to be cleared would represent a negligible (<1%) proportion of any individual vegetation type. The development envelope involves no more than 12% of the currently mapped extent of any of the vegetation associations that are present on the area. However, the mapping to association level covers only approximately 11% of Barrow Island, and actual clearing will take place over an area smaller than the development envelope (up to 32 ha within the 36 ha development envelope). Therefore, the actual (island-wide) proportion of the distribution of any vegetation association affected is expected to be substantially lower.

Impacts to vegetation from clearing over the proposal area would be cumulative with the approved clearing for the approved Gorgon Gas Development as well as previous disturbance on Barrow Island associated with the existing operating oilfield. The proposal would increase the clearing associated with the approved Gorgon Gas Development from approximately 1.3% to 1.4% of Barrow Island. Based on estimates of historical oilfield disturbance (Chevron Australia 2005, 2008), the additional clearing associated with the proposal would increase the total cumulative clearing on Barrow Island from approximately 6.6% to approximately 6.7% of Barrow Island. Cumulative clearing on Barrow Island of individual vegetation formations affected by the proposal ranges from approximately 7.1% to 24.6%, of which a negligible proportion (<1%) would result from the proposal (Table 7-2).

Clearing and earthworks for the proposal, and associated vehicle, equipment, and personnel movements, have the potential to spread weeds. There are no weeds in the development envelope (Astron 2013) so the potential for impacts to vegetation from the introduction or spread of weeds relates to their possible translocation from other areas on Barrow Island. Comprehensive weed hygiene measures have been developed for the approved Gorgon Gas Development and are proposed to be applied to the proposal (Section 7.1.5), along with the ongoing weed surveillance and control program that is undertaken on Barrow Island. This surveillance has confirmed that the weed hygiene measures being implemented for the approved Gorgon Gas Development have successfully prevented any proliferations of existing weeds or new weed establishments on Barrow Island as a result of the clearing and earthworks undertaken to date. The much smaller scale of earthworks associated with the proposal is therefore not predicted to result in any significant indirect impacts to flora or vegetation through the spread of weeds.

Potential dust emissions from proposal activities, notably during clearing and earthworks, are proposed to be controlled through the same measures applied to construction of the much larger Gas Treatment Plant site and other works associated with the approved Gorgon Gas Development. This includes frequent watering down of disturbed areas during earthwork activities. Monitoring of vegetation in areas adjacent to the Gas Treatment Plant site during construction for the approved Gorgon Gas Development has shown that there has been no adverse effects from dust (Chevron Australia 2013). Given the much smaller area of earthworks

for the proposal compared to that of the approved Gorgon Gas Development, and because most roads on Barrow Island that will be used by the proposal are now sealed, significantly lower quantities of dust are expected to be generated by the proposal and no detectable impacts from dust on flora or vegetation are predicted.

The surface water hydrology in the proposal area will be affected through site preparation activities, which has the potential to affect vegetation in the immediate vicinity of the proposal area. Potential impacts to vegetation from changes to hydrology or sedimentation are proposed to be mitigated through the implementation of surface drainage management consistent with that for the approved Gorgon Gas Development (Section 2.3). This includes appropriate stormwater design and management strategies, including maintaining existing drainage catchments to the extent practicable, maximising on-site infiltration of uncontaminated water and installation of sediment control measures where uncontaminated stormwater from the proposal area is directed to natural drainage channels. Drainage flows from the proposal area into the ephemeral drainage line to the west of the site will be modelled to confirm that resulting velocities will remain below levels that may cause erosion. Contouring of surfaces will be used to direct runoff to gabion systems, similar to those installed at the Gas Treatment Plant site, to ensure sediment movement into adjacent areas is minimised. Monitoring of the potential effects of drainage from construction of the approved Gorgon Gas Development to date has confirmed that these measures have successfully prevented adverse affects from stormwater runoff. Appropriately managed drainage from the smaller proposal area is therefore not predicted to result in significant impacts to flora or vegetation, including that of the drainage line to the west of the proposal area.

In addition to the effects from routine activities, the proposal has the potential for impacts to vegetation from an unplanned fire. In the unlikely event of an unplanned fire originating from the proposal occurring outside the proposal area, vegetation will be impacted. However, due to the existence of the operating oilfield, and associated hydrocarbons infrastructure, as well as the approved Gorgon Gas Development, comprehensive fire prevention and control measures are maintained on Barrow Island to ensure that the risk of a bushfire from development activities is minimised. With the considerable controls in place to both minimise the likelihood of an unplanned fire occurring and to limit the spread of any fire, the probability of a bushfire being caused by the proposal and affecting a large enough area to have significant effects on vegetation is considered to be very low.

7.1.5 Management of Potential Impacts

Potential impacts to flora and vegetation from the proposal will be minimised through a combination of avoidance and mitigation. Site selection was informed by comprehensive flora and vegetation studies, including specific surveys over the development envelope, and in accordance with relevant EPA guidance documents, to ensure that areas of particular conservation significance (e.g. creekline vegetation) were avoided.

A comprehensive suite of measures to ensure that effects to flora and vegetation are minimised during construction, operations and closure phases are proposed to be implemented consistent with the objectives, management measures, contingency measures, triggers, and monitoring that are approved for the Gorgon Gas Development. Management of potential impacts for the approved Gorgon Gas Development has ensured no unacceptable effects on flora or vegetation have taken place on Barrow Island to date. Key proposed management measures include:

- rehabilitating areas that are no longer required, such as temporary laydown areas, in accordance with approved strategies developed in consultation with relevant agencies and described in the Post-construction Rehabilitation Plan (Chevron Australia 2009b)
- ensuring clearing activities are appropriately controlled through an internal Vegetation Clearing Permit System, and monitoring and reporting the success of the system in accordance with the Vegetation Clearing and Audit Common User Procedure (Chevron Australia 2012c)

- minimising the potential for the introduction and/or spread of weeds through the implementation of the Weed Hygiene Common User Procedure (Chevron Australia 2011b), which includes requirements for:
    - determining if areas proposed for vegetation removal are within an of higher risk of containing weeds (Weed Hygiene Zone (WHZ)), by referencing the maps contained in the Barrow Island GIS
    - surveying the area for the presence of weeds prior to commencing clearing
    - ensuring all machinery or equipment entering the area is inspected and confirmed to be clean and free of soil, seeds, and plant material prior to entering the area for vegetation removal.
- ensuring potential effects from sedimentation are minimised through appropriate management of run-off and drainage, as described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a)
- implementing dust control measures during construction, including the use of fresh (reverse osmosis) water or treated, recycled wastewater for dust suppression, as described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a)
- monitoring dust levels and for the effects of dust on vegetation in the vicinity of construction works, as described in the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b)
- monitoring for sedimentation in creek lines adjacent and/or downstream of the development envelope, as described in the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b)
- minimising the risk of fire from construction activities and maintaining adequate on-site resources and procedures to effectively control a fire if necessary.

Chevron Australia proposes to seek minor amendments to the relevant approved Gorgon Gas Development environmental management plans (EMPs) to incorporate the proposal, as appropriate (Appendix 1). As outlined in Section 4.1, these amendments would not involve changes to the management measures or monitoring strategies of the EMPs, but rather minor changes to text and/or figures to incorporate the project description and associated environmental aspects, as described in this Environmental Review, into the existing plans. These EMPs include the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a), the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b), the Terrestrial and Marine Quarantine Management System (Chevron Australia 2010b), the Solid and Liquid Waste Management Plan (Chevron Australia 2012d), the Post-construction Rehabilitation Plan (Chevron 2009b) and Gorgon Fire Management Plan (Chevron Australia 2009a) (Appendix 6).

Management of closure activities over the proposal area is proposed to be consistent with closure management for the approved Gorgon Gas Development and to be incorporated into the Project Site Rehabilitation Plan and the Decommissioning and Closure Plan, when developed in accordance with the relevant conditions of approval for the Gorgon Gas Development.

7.1.6 Predicted Environmental Outcome

No TECS, PECs, or Declared Rare Flora under the Wildlife Conservation Act are predicted to be affected by the proposal. The proposal will result in the unavoidable loss of a small proportion of the flora and vegetation on Barrow Island. The extent of impact will be minimised through the proposed implementation of a suite of management measures developed and approved for the Gorgon Gas Development, including avoidance of areas containing vegetation of particular conservation significance and rehabilitation of any areas no longer required for the

future construction and operation of the approved Gorgon Gas Development as per the Post-construction Rehabilitation Plan (Chevron Australia 2009b).

Impacts to vegetation and flora during the construction, operations and closure phases of the proposal are predicted to be restricted to the proposal area. The plants and vegetation types that will be affected are well represented in secure populations elsewhere on Barrow Island.

The proposal will introduce a negligible increase in cumulative impacts to vegetation and flora on Barrow Island. With the management proposed the impacts, including cumulative impacts, to flora and vegetation will not compromise the representation, diversity, viability, or ecological function of any species, population, or community of flora or vegetation on Barrow Island.

The GJVs consider that potential impacts to flora and vegetation will be managed such that the residual impacts are not significant and the EPA's environmental objective for this factor (Section 7.1.1) is met.

7.2 Terrestrial Fauna

7.2.1 Relevant EPA Objective

To maintain representation, diversity, viability, and ecological function at the species, population, and assemblage level (EPA 2013a).

7.2.2 Relevant Policies, Plans, Guidelines

Chevron Australia's assessment of this factor has been undertaken with consideration of the relevant EPA Position Statements and Guidance detailed in Table 7-4.

Table 7-4 Western Australian Policy Relating to Terrestrial Fauna

Policy, Plan, Guideline	Intent
EPA Guidance Statement No. 56 – Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia (EPA 2004a)	Provides direction and information on general standards and protocols for terrestrial fauna surveys to environmental consultants and proponents engaged in EIA activities.
EPA Guidance Statement No. 6 – Rehabilitation of Terrestrial Ecosystems (EPA 2006)	Provides guidance on the rehabilitation of terrestrial areas no longer required following construction into viable ecological systems.
Technical guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2010b).	Provides advice on fauna sampling techniques and methodologies and the analysis, interpretation and reporting requirements for EIA.
EPA Guidance Statement No. 20 – Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia (EPA 2009)	Provides direction and information on general standards and protocols for short-range endemic invertebrate fauna to environmental consultants and proponents engaged in EIA activities.

7.2.3 Environmental Baseline

7.2.3.1 Terrestrial Fauna

Barrow Island is a Class A Nature Reserve, reflecting its importance as a refuge for wildlife species. Thirteen species of terrestrial mammals have been recorded as resident on Barrow Island, with a further two species of bats recorded as vagrants (Chevron Australia 2012b).

Six of these mammal species are protected under the Wildlife Conservation Act:

- Black-flanked Rock-wallaby (*Petrogale lateralis lateralis*)
- Barrow Island Euro (*Macropus robustus isabellinus*)
- Spectacled Hare-wallaby (*Lagorchestes conspicillatus conspicillatus*)
- Barrow Island Golden Bandicoot (*Isoodon auratus barrowensis*)
- Boodie (*Bettongia lesueur*)
- Water Rat (*Hydromys chrysogaster*).

With the exception of the Black-flanked Rock-wallaby, which inhabits the west coast of Barrow Island, and the Water Rat, which is a coastal species, all of these species have widespread distributions and are likely to occur in or near the proposal area.

Barrow Island also hosts 45 species of terrestrial reptiles and one species of frog. None of the terrestrial reptile and amphibian species on Barrow Island are listed as Threatened Species under the Wildlife Conservation Act.

Of the 119 bird species recorded on Barrow Island, two (the Australian Bustard and the White-winged Fairy-wren [Barrow Island]) are protected under the Wildlife Conservation Act. The White-winged Fairy-wren (Barrow Island) is widespread on Barrow Island (Chevron Australia 2012b) and known to be present in the area likely to be affected by the proposal. The Australian Bustard (*Ardeotis australis*) is considered to be only a vagrant visitor to Barrow Island from the mainland (Chevron Australia 2012b).

More than 2200 terrestrial invertebrate species have been identified to date on Barrow Island, none of which are listed as requiring special protection under the Wildlife Conservation Act, or listed as priority species by DPaW. Several of these invertebrate species have been identified as SREs, but surveys have shown that most of these species are widespread on Barrow Island (Chevron Australia 2013). The EPA Guidance for the Assessment of Environmental Factors (EPA 2009)—citing Harvey (2002)—recognises that SREs have specialised habitat characteristics, including vine thickets, boulder piles, isolated hills, vegetated gullies, and freshwater habitats. None of these habitats, or other relictual habitats that may be important for SREs have been identified within the development envelope.

No fauna species are known to be restricted to the development envelope, and all fauna recorded from the site, including threatened species, are considered to have secure populations on Barrow Island. Biota (2013) has described the terrestrial fauna values of the development envelope, with emphasis on species of conservation significance (Appendix 5). This included estimates of the numbers of each of the threatened fauna species that may inhabit the 32 ha proposal area, based on the most recent estimates of population numbers and densities on Barrow Island (Table 7-5).

Table 7-5 Threatened Fauna Species that may be present in (inhabit) the Development Envelope

Species	Scientific Name	Estimated Barrow Island Population	Number of Individuals Estimated within Development Envelope
Barrow Island Euro	*Macropus robustus isabellinus*	1234	2
Spectacled Hare-wallaby	*Lagorchestes conspicillatus conspicillatus*	7411	8
Barrow Island Golden Bandicoot	*Isoodon auratus barrowensis*	Between 39 688 and 46 ,225	Between 47 and 72
Barrow Island Boodie	*Bettongia lesueur*	4500	0
the White-winged Fairy-wren	*Malurus leucopterus edouardi*	10 684	25

Source: Biota 2013

Further description of the likely occurrence of species of conservation significance in the development envelope is provided below.

Barrow Island Euro

The Barrow Island Euro (*Macropus robustus isabellinus*) is widespread across landforms and vegetation communities on Barrow Island (Chevron Australia 2012b), although it is reported as more numerous in the vicinity of cliffs and other features providing shade on Barrow Island (Chevron Australia 2005), which do not occur in the development envelope. No euros have been recorded in the development envelope, although it is estimated two individuals may occur over 32 ha within this area, compared to a population estimate of 1234 individuals across Barrow Island (Biota 2013).

Spectacled Hare-wallaby

The Spectacled Hare-wallaby (*Lagorchestes conspicillatus conspicillatus*) is reported as widespread across landforms and vegetation communities on Barrow Island (Chevron Australia 2012b). However, the highest densities of individuals have been recorded from the coastal complex and dune system vegetation types (Biota 2013), which do not occur in the development envelope. Based on the density estimates calculated for the vegetation that occurs in the area, eight Spectacled Hare-wallabies are expected to occur within the 32 ha proposal area compared to a population estimate of 7411 individuals across Barrow Island (Biota 2013). Translocation programs undertaken by DPaW, with funding from Chevron Australia, since 2010 have also successfully stocked populations of this species on Hermite Island.

Barrow Island Golden Bandicoot

The Barrow Island Golden Bandicoot (*Isoodon auratus barrowensis*) shelters in limestone crevices, spinifex tussocks, and termite mounds across most of Barrow Island, and is quick to occupy artificial habitats (Chevron Australia 2012b). It is estimated that between 47 and 72 Bandicoots may be present within the development envelope, compared to the Barrow Island population estimations of 46 225 and 39 688 based on the 2012 and 2013 surveys respectively (Biota 2013). This species has now also become established on Hermite Island, Doole Island, and at Lorna Glen on the mainland, with translocations from Barrow Island conducted by DPaW, with funding from Chevron Australia, since 2010.

Boodie

The expected number of Boodies (*Bettongia lesueur*) on Barrow Island is approximately 4500 individuals (Biota 2013). Boodies have also been subject to successful translocations from Barrow Island, with a secure population established on Alpha Island and large numbers now within the fenced enclosure at Lorna Glen on the mainland.

Unlike many of the other terrestrial mammals on Barrow Island, Boodies are strongly associated with their burrows, which are usually in well-drained limestone cap-rock or caves (Chevron Australia 2012b). There are no Boodie warrens in the development envelope and recent site surveys indicated limited evidence of foraging use, with no significant trails typical of consistent Boodie pathways (Biota 2013). The results of tagging studies of Boodies that include three of the four warrens nearest the development envelope suggest the area is not a movement corridor for this species. No individuals from warrens east of the development envelope have been recorded at the warren in the west (as shown in Figure 7-3). This would indicate that Boodie individuals do not regularly move between these warrens (Biota 2013).

White-winged Fairy-wren

The White-winged Fairy-wren (*Malurus leucopterus edouardi*) is a common landbird on Barrow Island (Chevron Australia 2012b). It is abundant in most habitats on Barrow Island, especially those with complex vegetation structure (Chevron Australia 2012b). White-winged Fairy-wrens (Barrow Island) have been found to occur in a range of plant species including *Melaleuca cardiophylla*, *Acacia bivenosa*, *Acacia coriacea*, *Hakea lorea*, *Grevillea pyramidalis*, and *Triodia* species (RPS BBG 2006). The development envelope consists mostly of vegetation types that contain *M. cardiophylla,* which appears to be a preferred habitat for the White-winged Fairy-wren (Barrow Island). It is estimated that 25 individuals may be present within the development envelope, compared to the Barrow Island population estimations of more than 10 000 individuals (Biota 2013). The White-winged Fairy-wren (Barrow Island) has been successfully translocated and is now reported to be established on Hermite Island.

7.2.3.2 Terrestrial Fauna Habitat

The EPA defines habitat as *'[t]he natural environment of an organism or a community, including all biotic and abiotic elements; a suitable place for it to live'* (EPA 2004, 2004a).

The fauna habitats within the proposal area are well represented in adjacent areas and elsewhere on Barrow Island, and there is no indication that the proposal area contains (Figure 7-3).any habitats of critical importance to any species of terrestrial fauna.

Fauna habitat is considered significant for Barrow Island (Chevron Australia 2005, 2008) if it:

- supports an unusually high species richness or abundance compared to other parts of Barrow Island
- contains faunal habitats not well represented in other parts of Barrow Island
- contains habitat for site-restricted fauna of high conservation significance
- is in a location where development impacts may extend beyond the boundaries of the site and the impacts may lead to the disruption of ecological processes.

The Barrow Island terrestrial habitats identified as significant (Chevron Australia 2012b) are:

- Boodie warrens, important habitat for Boodies, which are fauna of high conservation significance
- termite mounds, which perform an important function in the organic matter cycle (Chevron Australia 2005) and may provide shelter for reptiles, birds, and mammals (including the Golden Bandicoot) on Barrow Island,
- nests of raptors (birds of prey), which are not represented on Barrow Island in high numbers, and which provide habitat for fauna of high conservation significance.

There are no Boodie warrens or raptor nests located in the development envelope (Figure 7-3).

Mapping of termite mounds indicates that they occur within the development envelope in similar densities to adjacent areas. According to Perry (1972), termite mounds are not distributed uniformly across Barrow Island; being most abundant on the flats south of the geological fault between Junction Beach and Eagles Nest Point, and at North Whites Beach on the west coast (Chevron Australia 2012b). Approximately 130 termite mounds are present in the development envelope (Figure 7-3), out of approximately 7000 termite mounds mapped near the approved Gorgon Gas Development. The termite mound mapping covers an area of approximately 4145 ha, which is approximately 18% of Barrow Island. Therefore, the termite mounds within the development envelope represent a small proportion (<2%) of all termite mounds on Barrow Island.

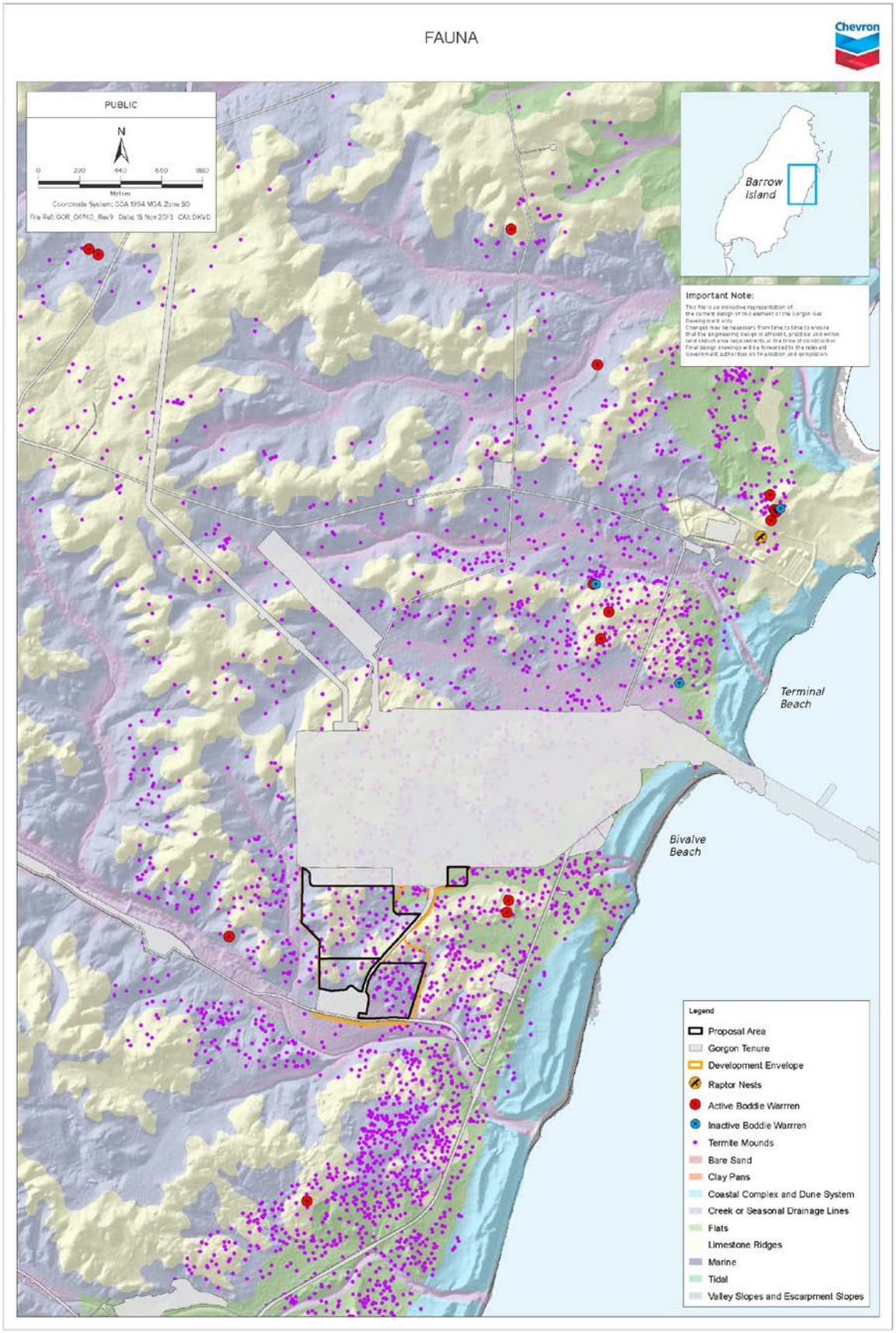


Figure 7-3 Fauna Habitats in and around the Development Envelope

The vegetation associations within the development envelope include *M. cardiophylla* shrubland, which provides habitat for the White-winged Fairy-wren (Barrow Island). Previous studies indicate this bird also occupies a range of other vegetation types (Bamford and RPS BBG 2005). Recent studies of nesting in this species (Bamford and Moro 2011) show that the White-winged Fairy-wren (Barrow Island) is not restricted or even largely restricted to *M. cardiophylla* for nest site selection on Barrow Island, but is a generalist. *M. cardiophylla* is widespread on limestone ridges and flats in the central and eastern parts of Barrow Island. The extent of *M. cardiophylla* in the development envelope represents less than 1% of its total mapped area (Buckley 1983) across Barrow Island and it is abundant across adjacent areas (Biota 2013; Astron 2013).

7.2.4 Assessment of Potential Impacts

The proposal has the potential for detrimental effects to terrestrial fauna through loss or displacement of individuals that use the land involved, direct physical interaction with vehicle/equipment movements associated with the preparation or use of the land, and/or indirect effects from noise and vibration during construction of the proposal. The proposal also has the potential to result in accidental fire, which, if unchecked, could impact fauna and fauna habitat in adjacent areas.

Clearing of vegetation and structural habitats, e.g. termite mounds, in the proposal area may result in displacement or loss of the fauna that currently use the area. Fauna habitats within the area proposed to be cleared are well represented outside the development envelope and the area does not contain any habitats of critical importance to any species of terrestrial fauna. There are no Boodie warrens or raptor nests in the development envelope, and the density of termite mounds is similar to (or less than) that across large areas of Barrow Island.

Although construction machinery engaged in vegetation clearing activities has the potential to impact some individuals of small fauna (e.g. invertebrates), it is expected that many of the larger mobile species, including birds and reptiles, will actively relocate, thereby avoiding direct impacts from physical interaction. Combined with the pro-active relocation undertaken as part of the management of clearing works (Section 7.3.5), a significant direct impact to fauna populations through physical interaction is not expected.

Assessment of the impacts for the approved Gorgon Gas Development concluded the greatest risk to fauna from physical interaction was posed by road traffic. The proposal will involve limited road traffic, and this is expected to be largely during daylight hours and over a relatively short time period. Conversely, it is expected that following site establishment, the consolidation of laydown and operations facilities closer to the Gas Treatment Plant site will reduce the construction duration (through increased efficiencies) of the approved Gorgon Gas Development, and will reduce overall transport requirements for the approved Gorgon Gas Development, thereby reducing the number of accidental road casualties (Section 5.0).

An accidental fire resulting from clearing and earthwork activities is expected to be extinguished rapidly. Such a fire may result in the loss of low numbers of individuals of small, less mobile fauna, such as invertebrates, if vegetation is impacted. Impacts to vegetation from fire would also result in short-term effects on fauna habitat, with animals expected to return to the area once the vegetation re-established (Chevron Australia 2008). However, with the fire response capacity available on Barrow Island, the probability of a bushfire being caused by the proposal and affecting a large enough area to have significant effects on fauna is considered to be very low.

Indirect effects to fauna, including from noise and vibration emissions resulting from the construction of the proposal, are not expected to result in significant impacts. The land involved in the proposal is immediately adjacent to the Gas Treatment Plant site and construction activities will be completed within the construction period of the approved Gorgon Gas Development. Given the relatively small scale of earthworks and the expected absence of extensive traditional explosive blasting, noise and vibration from the proposal is expected to result in little change to prevailing noise regimes. Noise-sensitive fauna may temporarily vacate

the immediate vicinity of noise-generating activities, but would be expected to return to normal behaviour when the noise has stopped. Resulting short-term behavioural responses in fauna are likely to involve low numbers of any species and are predicted to have no consequences at individual, population, and/or species level.

The number of each threatened fauna species estimated to use the area (Table 7-5) represents less than 0.25% of their populations on Barrow Island. Management of clearing for the proposal will include collection and relocation of fauna where practicable, and the translocation of a number of threatened species has previously been successfully undertaken for the approved Gorgon Gas Development. All threatened fauna species have secure populations on Barrow Island and widespread distributions (Chevron Australia 2005, 2012b) and even (conservatively) assuming the loss of this number of individuals, population viability of any species is not expected to be affected. Cumulative with the clearing for the approved Gorgon Gas Development and with historical disturbance associated with the operating oilfield, the overall proportion of habitat disturbance would increase as a result of the proposal from approximately 1.3% to 1.4% and from approximately 6.6% to 6.7% respectively. This level of incremental increase would have a negligible effect on the diversity, distribution, or ecological function of any fauna species and is not expected to result in significant impacts at local or regional levels. Further detail of the likely impacts to each of the threatened terrestrial fauna species expected to occur in the proposal area is provided below.

Barrow Island Euro

The proposed development envelope does not contain critical or even preferred habitat for the Barrow Island Euro and the small number of individuals that may be displaced by clearing and earthworks within the proposal area represents an insignificant (<0.2%) proportion of the estimated Barrow Island population. Experience from the operating oilfield indicates that euros acclimatise readily to nearby human activity and are frequently seen close to operating infrastructure. Displaced animals are likely to persist in adjacent habitats with no reduction in the viability of local or broader populations.

Spectacled Hare-wallaby

The development envelope does not contain the vegetation types that support high densities of the Spectacled Hare-wallaby on Barrow Island (Biota 2013). Consequently the proposal has the potential to affect a very small proportion (<0.15%) of the estimated Barrow Island population of this species. Likely impacts are limited to displacement of a very few (<10) individuals out of the >7000 wallabies estimated to be on Barrow Island. Spectacled Hare-wallabies have previously been successfully translocated from Barrow Island by DPaW and relocated within Barrow Island by Chevron Australia. The movement of a small number of animals from the proposal area is not expected to have significant impacts to the Spectacled Hare-wallaby at either population or species level.

Barrow Island Golden Bandicoot

The Barrow Island Golden Bandicoot is the most abundant of the protected mammals on Barrow Island, with recent population estimates of around 40 000 individuals. The species is readily relocated and the likely impacts of the proposal are limited to displacement of small numbers to other areas of suitable habitat, with the proposal area recolonised as and when rehabilitation occurs. More than 250 bandicoots have been translocated by DPaW from Barrow Island since 2010 as part of reintroduction programs and the species is regularly relocated from accommodation facilities by Chevron Australia. Displacement of the up to 72 bandicoots estimated to occur in the proposal area is unlikely to result in significant impact on local or Barrow Island populations of this species.

Boodie

The development envelope does not contain any Boodie warrens and recent site survey suggests the area may not be extensively used by this species, with no significant

evidence of Boodie movements across the site (Biota 2013). The available evidence on Boodie interactions from nearby warrens (Biota 2013) suggests that use of the development envelope is unlikely to significantly affect population dynamics for this species since it would not represent a restriction to observed patterns of movement nor fragmentation of the ranges associated with local warrens. Large areas of similar habitat exist in uncleared areas to the immediate south, west, and east of the proposed development envelope, providing potential foraging habitat. Given the relatively low numbers of Boodies recorded from the nearest warrens, a small localised reduction in available habitat is not expected to result in significant impact to this species on Barrow Island. The warrens nearest the site, including to the south, are proposed to be monitored to confirm this prediction.

White-winged Fairy-wren

The White-winged Fairy-wren is the second most abundant landbird on Barrow Island, with an estimated population of 10 684 individuals, and is now also reported to be established on Hermite Island. The estimated 25 individuals in the development envelope represent less than 0.25% of the Barrow Island population. These individuals are likely to be displaced to adjacent areas of similar habitat by the clearing and earthworks on the proposal area. The *Melaleuca cardiophylla* shrubland habitat that occurs on the development envelope is widespread over adjacent areas (Biota 2013) and more broadly over Barrow Island (Astron 2013). The proposal area represents less than 1% of the mapped extent (Buckley 1983) of this species of shrub on Barrow Island, and the White-winged Fairy-wren (Barrow Island) is also known to use other vegetation types on Barrow Island (Bamford and Wilcox 2005; Pruett-Jones and Tarvin 2001), including for nesting (Bamford and Moro 2011). Based on the estimates of Bamford and Wilcox (2005), the proposal area would represent less than 0.5% of the White-winged Fairy-wren habitat on Barrow Island. White-winged Fairy-wrens have previously been successfully translocated by DPaW. Displacement of the small numbers of birds that use the proposal area is unlikely to have significant adverse consequences for either local or Barrow Island populations of this species.

Consolidation of construction and operations support activities/facilities into the proposed area may result in those activities/facilities being located closer to the coast in comparison to other sites such as the Old Airport. If these activities/facilities have significant artificial lighting requirements, they could contribute to effects from light spill on to the beaches on the east coast of Barrow Island that seasonally support turtle nesting.

Changes to light regimes on turtle nesting beaches are known to have the potential to adversely affect nesting females and/or turtle hatchlings that are emerging from nests. During consultation with DPaW, the potential for any changes to light regimes to have cumulative effects to turtles using Terminal and Bivalve beaches was highlighted, as these beaches have experienced some changes in profile subsequent to the construction of the MOF. The API Guidelines require the Environmental Review to discuss potential affects from lighting on these beaches, based on available information.

The additional land involved in the proposal extends between the western (inland) sector of the Gas Treatment Plant site and the administration/operations complex. At its closest, it is over 800 m from the nearest turtle nesting beach. The beaches of the area are generally backed by a dune system (Chevron Australia 2005), which provides an effective barrier to direct light spill from terrestrial infrastructure. Modelling of light emissions from the Gas Treatment Plant site indicates that light spill to Terminal or Bivalve beaches could only occur if sources are substantially (>60 m) elevated (URS 2013).

The proposed use of the land will not involve establishing any facilities with significantly elevated (>20 m) or intense light sources, particularly compared to those required on the Gas Treatment Plant. The Gas Treatment Plant site lies between the additional land and Terminal Beach and the additional land is approximately 900 m from Bivalve Beach, at its closest.

Use of the land is expected to generally be restricted to daytime hours only, and with the design and operational restrictions on lighting that will be applied to the additional area (Chevron Australia 2007), it is considered unlikely that the lighting associated with construction or use of the proposal area would cause a discernible difference in the light regimes prevailing on the beaches. Therefore, the proposal is expected to have negligible detrimental environmental effects on turtles. Additional monitoring of light levels and turtle activity on the beaches closest to the proposal area is proposed to be undertaken to confirm this prediction.

7.2.5 Management of Potential Impacts

Potential impacts to terrestrial fauna from the proposal will be minimised through a combination of avoidance and mitigation strategies. Site selection was informed by comprehensive fauna studies, including specific surveys over the proposal area and surrounds in accordance with relevant EPA guidance documents, to ensure areas of particular conservation significance (e.g. Boodie warrens) were avoided.

A comprehensive suite of measures to ensure that effects to terrestrial fauna are minimised are proposed to be implemented during construction, operation and closure phases consistent with the objectives, management measures, contingency measures, triggers, and monitoring that are approved for the Gorgon Gas Development. Management of potential impacts for the approved Gorgon Gas Development has ensured no unacceptable effects on terrestrial fauna have taken place on Barrow Island to date. Key proposed management measures include:

- undertaking measures to reduce fauna exposure to impacts or reduce the severity of impacts in accordance with the Fauna Handling and Management Common User Procedure (Chevron Australia 2013c). Specific measures described in the Procedure include:
    - targeted searches for fauna in shelters, if present, will be undertaken prior to clearing, and animals caught during these searches will be relocated to suitable habitat outside impact areas.
    - mechanical clearing will progress in a slow, systematic manner so as not to confuse or trap evacuating fauna. Clearing will (where reasonably practicable) progress towards an undisturbed area that will not be impacted by roads and construction facilities
    - fauna will be flushed opportunistically immediately prior to and during clearing of vegetation
    - inspections of cleared areas will be made immediately after clearing, and fauna handlers will be called in if displaced or injured animals are found
    - open excavations, including trenches, will incorporate measures to reduce fauna access and entrapment and will be inspected for trapped fauna at least daily
- enforcing stringent controls on vehicle speed limits, including a maximum 40 km/h limit from dusk to dawn
- requiring all drivers to have completed fauna awareness inductions and Barrow Island specific driver training
- restricting construction activities to daylight hours wherever practicable
- regular worksite inspections and annual audit to ensure the light management strategies and measures are in place and effective
- monitoring fauna populations linked to adaptive management responses if effects exceed predictions
- minimising the risk of fire from construction activities and maintaining adequate on-site resources and procedures to effectively control a fire if necessary

- rehabilitating areas that are no longer required, such as temporary laydown areas, in accordance with approved strategies developed in consultation with relevant agencies and as described in the Post-construction Rehabilitation Plan (Chevron Australia 2009b)
- monitoring of light and turtle hatchlings on turtle nesting beaches adjacent the development envelope.

Chevron Australia proposes to seek minor amendments to the relevant approved Gorgon Gas Development EMPs to incorporate the proposal, as appropriate (Appendix 1). As outlined in Section 4.1, these amendments would not involve changes to the management measures or monitoring strategies of the EMPs, but rather minor changes to text and/or figures to incorporate the project description and associated environmental aspects, as described in this Environmental Review, into the existing plans. These EMPs include the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a), the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b), the Terrestrial and Marine Quarantine Management System (Chevron Australia 2010b), the Solid and Liquid Waste Management Plan (Chevron Australia 2012d), the Post-construction Rehabilitation Plan (Chevron Australia 2009b) and Gorgon Fire Management Plan (Chevron Australia 2009a) (Appendix 6).

Management of closure activities over the proposal area is proposed to be consistent with closure management for the approved Gorgon Gas Development and to be incorporated into the Project Site Rehabilitation Plan and the Decommissioning and Closure Plan, when developed in accordance with the relevant conditions of approval for the Gorgon Gas Development.

7.2.6 Predicted Environmental Outcome

The proposal is expected to result in the unavoidable loss of a small proportion of widely distributed fauna habitat, the displacement (and possibly loss) of low numbers of fauna from the proposal area, and short-term behavioural effects in some fauna in adjacent areas during construction of the proposal. However, the limited scale of disturbance and the presence of surrounding unaffected areas of similar habitat will restrict the potential for the proposal to have significant adverse effects on any of Barrow Island's fauna populations.

The development envelope has been selected to avoid restricted habitats of particular significance to threatened species, notably Boodie warrens. The fauna habitats within the proposal area, including termite mounds, are well represented elsewhere on Barrow Island and the extent of habitat that will be affected, including cumulative with existing disturbance on Barrow Island, is not predicted to alter the distribution or viability of any fauna population. Disturbed areas no longer required for the future construction and operation of the Gorgon Gas Development will be rehabilitated in accordance with the Post-construction Rehabilitation Plan (Chevron Australia 2009b), further reducing the increase in extent of habitat loss on Barrow Island.

Management of proposal construction activities, including collection and relocation of threatened species prior to clearing where practicable, is expected to ensure the number of individuals of any species affected by the proposal is minimised such that impacts to diversity and ecological function are avoided. All the species involved, including listed threatened species, have secure populations on Barrow Island and are well represented outside the impact areas, within the Barrow Island nature reserve. The expected reduction in overall construction duration and road traffic for the approved Gorgon Gas Development as a result of implementing the proposal is likely to correspondingly reduce the effects on fauna from physical interactions.

The GJVs consider that potential impacts to terrestrial fauna will be appropriately managed such that the residual impacts are not significant and the EPA's environmental objective for the factor (Section 7.2.1) is met.

7.3 Subterranean Fauna

7.3.1 Relevant EPA Objective

To maintain representation, diversity, viability and ecological function at the species, population and assemblage level (EPA 2013a)

7.3.2 Relevant Policies, Plans, Guidelines

Chevron Australia's assessment of this factor has been undertaken with consideration of the relevant EPA Position Statements and Guidance detailed in Table 7-6.

Table 7-6 Western Australian Policy Relating to Subterranean Fauna

Policy, Plan, Guideline	Intent
EPA Position Statement No. 3 – Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA 2002)	Encourages proponents to focus their attention on the significance of biodiversity and therefore the need to develop and implement best practice in terrestrial biological surveys. It also enables greater certainty for proponents in the EIA process by defining the principles the EPA will use when assessing proposals that may impact on biodiversity values.
Guidance Statement No. 54a, Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia (EPA 2007)	Specifically addresses survey design and sampling methods for subterranean fauna. It provides information that the EPA will consider when assessing proposals where subterranean fauna is a relevant environmental factor in an assessment.
EPA Guidance Statement No. 12, Consideration of Subterranean Fauna in Environmental Impact Assessment in Western Australia (EPA 2013)	Provides a general guide how subterranean fauna are considered in an EIA in WA and provides advice to proponents on the level of information and survey required and how to analyse the results as part of the EIA process.

7.3.3 Environmental Baseline

7.3.3.1 Subterranean Fauna

Barrow Island is recognised as being of high conservation significance for subterranean fauna communities (Chevron Australia 2012b). The Barrow Island subterranean fauna community is listed by the DPaW as a Priority 1 PEC.

There are two broad categories of fauna that have adapted to subterranean conditions and that are generally considered to comprise true subterranean fauna:

- stygofauna – groundwater-dwelling aquatic fauna
- troglofauna – obligate cave- or karst-dwelling terrestrial fauna occurring above the water table.

A total of 63 stygofauna species and 19 troglobitic species are known from Barrow Island (Humphreys *et al.* 2013). Ten of these species are listed as Schedule 1 species under the Wildlife Conservation Act (Table 7-7). Most of the troglofauna and stygofauna species that have been well-collected, that have a taxonomic frame of reference, and for which genetic or morphological work has been completed, have demonstrated a wider distribution on Barrow Island (Biota 2013a; Chevron Australia 2012b). The Blind Snake and Blind Eel have to date only been recovered through sub-surface petroleum activities with both known only from single locations distant from the development envelope.

Extensive sampling for subterranean fauna has been undertaken over the area inland of Town Point, where the proposal is located. This includes a number of bores located within or immediately adjacent the outer boundaries of the development envelope (Appendix 5) which,

along with data from bores in surrounding areas, provide adequate information to confidently characterise the subterranean fauna values of the site. Until approvals to access the land within the proposal area are received, drilling of bores cannot be undertaken within the area itself. However, over 85 sampling events for stygofauna and 105 samplings of troglofauna have been undertaken in bores within 1000 m of the development envelope and a total of 75 bores have been sampled for subterranean fauna, including 40 for troglofauna and 68 for stygofauna, within a 4 km radius of the site. Additional bores are proposed to be installed and sampled within the proposal area following grant of tenure, and incorporated into the existing monitoring programs for the approved Gorgon Gas Development described in the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b), by amendment to the text/figures describing the location of monitoring bores as appropriate.

Table 7-7 Protected Subterranean Fauna on Barrow Island

Common Name	Scientific Name	Status
	Amphipoda *Nedsia fragilis*	Schedule 1[1]
	Amphipoda *Nedsia humphreysi*	Schedule 1[1]
	Amphipoda *Nedsia hurlberti*	Schedule 1[1]
	Amphipoda *Nedsia sculptilis/macrosculptilis*	Schedule 1[1]
	Amphipoda *Nedsia straskraba*	Schedule 1[1]
	Amphipoda *Nedsia urifimbriata*	Schedule 1[1]
Barrow Cave Gudgeon	*Milyeringa justitia*	Schedule 1[1]
Blind Snake	*Ramphotyphlops longissimus*	Priority 2[2, 3]
Blind Eel	*Ophisternon* sp.	Schedule 1[1]
	Schizomida *Draculoides bramstokeri*	Schedule 1[1]
	Spirobolida *Speleostrophus nesiotes*	Schedule 1[1]

1 Status under the Wildlife Conservation Act: Sch 1 = Schedule 1: Fauna that is rare or is likely to become extinct

2 DPaW Current Threatened and Priority Fauna Ranking: P2 = Priority Two: Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.

3 The record of the stygal eel, Ophisternon sp., has not been identified to species level. Given the wide range of Ophisternon candidum in stygal ecosystems in the Pilbara, the Blind Eel is taken to be O. candidum for the purposes of conservation status.

The sampling effort to date from within 500 m of the boundaries of the development envelope is consistent with the suggested magnitude of sampling to support impact assessment described in EPA (2007). Within the 200 m radius of the site that falls within the potential zone of disturbance (TDF) identified for the approved Gorgon Gas Development, which corresponds to the 'impact zone' outlined in EPA (2007) there are less samples. However, given the indications of continuity in habitat and population distributions across the locality that encompasses the development envelope from the extensive sampling conducted to date (Biota 2013a), the subterranean fauna values of the site are considered adequately understood in the context of the proposal footprint and surrounding areas, consistent with the objective of survey described in EPA (2013a). The available information enables assessment of the likelihood of subterranean habitat and taxa being restricted to the site, and of the scale and consequences of potential impacts from the proposal.

Subterranean fauna specialists Biota has characterised the subterranean fauna values of the development envelope based on review of records from the bores within a 4 km radius of the

site, including recently installed bores established on the existing administration/operations complex site (Appendix 5). In accordance with EPA (2013), the review has included consideration of both physical and biological surrogates to determine likely continuity of population distributions within and outside the development envelope.

Based on this review (Biota 2013a), it appears likely that the subterranean values in the development envelope are very similar to those present in adjoining areas, with the distribution and representation of both stygal and troglobitic taxa north and south of the development envelope suggesting connectivity of habitats and populations. All species collected in reasonable numbers occur both north and south of the development envelope, indicating that their distributions extend throughout the locality.

Three Schedule 1 species are likely to be present within the development envelope; all are listed as Vulnerable under the Wildlife Conservation Act. These comprise:

- Barrow Cave Gudgeon *Milyeringa justitia*
- the troglobitic schizomid *Draculoides bramstokeri*
- the troglobitic millipede *Speleostrophus nesiotes.*

All occur more widely on Barrow Island.

The higher rank taxonomic composition of the stygofauna from the locality is dominated by crustacean taxa, particularly the Copepoda and Amphipoda, and is typical of that recorded from Barrow Island generally (Biota 2013a). Most species are also known from other locations on Barrow Island. The ostracod *Pilbaracandona* sp. nov., known only from a bore at the south-east boundary of the development envelope, is the only stygal taxa not recorded to date elsewhere on Barrow Island.

The troglobitic fauna assemblage is also typical of that recorded more widely from Barrow Island, and is numerically dominated by arachnid taxa, primarily the order Schizomida (Biota 2013a). Of the five species recorded from bores nearest the development envelope, four occur more widely in the locality or in the remaining areas of Barrow Island. One undescribed symphylan specimen, recovered from a bore approximately 139 m east of the development envelope, is the only representative of this order recorded from Barrow Island (Biota 2013a).

Considering the general pattern of broader distributions for many taxa on Barrow Island, and the apparent connectivity in habitats, the surrogacy approach described by the EPA (2013a) would suggest that wider distributions are likely for subterranean species that occur in the development envelope. At the time of assessment for the initial Gorgon Gas Development, seven subterranean taxa had been recorded only from development areas (EPA 2006a), however subsequent targeted sampling in accordance with conditions of approval for the Gorgon Gas Development has now demonstrated the wider distribution of all but one of these taxa. It is proposed that the same survey requirements, as described in the Short Range Endemics and Subterranean Fauna Monitoring Plan (Chevron Australia 2011c), would be placed on subterranean taxa from the proposal area and expected that this would similarly confirm wider representations for the assemblage in the area.

7.3.3.2 Subterranean Fauna Habitat

The geology of Barrow Island is conducive to supporting highly rich subterranean fauna with widespread distributions (EPA 2007).

The development envelope is immediately adjacent to the Gas Treatment Plant site, and likely to exhibit very similar subterranean habitats (Biota 2013a). Interpretation of the available geological evidence (Biota 2007, 2013a) suggests the area contains a range of habitats suitable for use by stygofauna and troglofauna, including:

- air- and water-filled cavities, with size ranges including sub-metre dimensions
- abundant fractures in the more brittle, high-strength lithologies

- solution cavities in competent lithologies
- voids developed in uncompacted sands
- detrital sediment.

A review of the geological information suggests that strata (e.g. interbedded sand/limestone) on Barrow Island, including in the Town Point area, are relatively continuous (Biota 2007) and the distributions of both stygal and troglobytic taxa to the north and south of the development envelope suggest connectivity of habitats through the area and surrounds (Biota 2013a). Larson *et al.* (2013) reports (citing Humphreys 2002) that habitat suitable to support the Barrow Cave Gudgeon may extend over approximately 7,800 ha (approx. 35%) of Barrow Island.

7.3.4 Assessment of Potential Impacts

Preparation of the land will require vegetation clearing and earthworks, including 'cut and fill' activities, to provide a suitable landform to support the intended uses. This may involve removal of up to 6 m of the material in some (elevated) areas of the proposal area. However, excavation will not intersect the water table and dewatering will not be required. Groundwater abstraction is also not proposed and consequently the proposal has no potential for direct impact to groundwater levels or associated direct or indirect impact to subterranean fauna from these activities.

Ground disturbance, particularly excavation, may result in the direct loss of troglofauna and/or troglobitic habitat within the area involved. Significant levels of noise and vibration could adversely affect subterranean fauna or the integrity of karstic strata, small fissures, or crevices in the karst that provides habitat to subterranean fauna, within the proposal area. Clearing and subsequent use of the land may also locally alter surface inputs (e.g. rainfall recharge, nutrients, sediments) into subterranean habitats, including groundwater, which has the potential to cause indirect impacts to subterranean fauna.

Excavation will be required over only part of the proposal area, and generally involve relatively shallow depths. Requirements for rock removal will likely be limited to an even smaller area. If blasting is required, non-explosive chemical blasting or contained drill-and-blast, will be the preferred options Therefore, potential impacts to subterranean fauna or habitat resulting from noise and vibration emissions is likely to be limited to the karst substrate immediately below the areas where earthworks are conducted.

The shallow groundwater of Barrow Island is considered to comprise a connected aquifer, with flow beneath the development envelope in a general west to east direction towards the coast. Groundwater flow from undisturbed catchments to the east of the site will contribute to groundwater levels and groundwater quality beneath the site. The development envelope does not contain stands of *Ficus* trees reported to be an important contributor of surficial inputs to groundwater nutrient levels (Biota 2013a) and comprehensive management is proposed to be implemented (Section 7.3.5) to ensure effects on surface water drainage patterns and/or groundwater quality will be minimised. Monitoring of groundwater parameters to measure potential indirect affects to subterranean fauna from the approved Gorgon Gas Development has indicated no impact from clearing and earthworks to date (Chevron Australia 2013a); this clearing and earthworks has included preparation of the Gas Treatment Plant site (approximately 160 ha) and the administration/operations complex site (approximately 7.5 ha). This monitoring result is consistent with the recent identification of a Barrow Cave Gudgeon from a sampling bore on the existing administration/operations complex site, indicating that construction activities have not impacted this species. Consequently, any localised alterations in infiltration patterns and/or sediment or nutrient inputs as a result of the clearing and use of the proposal area —which are of a much smaller scale than the approved Gorgon Gas Development—are unlikely to significantly affect groundwater levels or quality, or have associated impacts on subterranean fauna.

Sampling results and geological information suggest that the subterranean fauna at the proposal area is likely to have a wider distribution across Barrow Island (Biota 2013a). As a

result, affects from the proposal are likely to involve a relatively small proportion of the populations of subterranean fauna species that are represented elsewhere. All the Schedule 1 species likely to occur in the development envelope are known from other locations on Barrow Island and the proposal area would involve only a very small percentage of available habitat on Barrow Island. For the Barrow Cave Gudgeon for example, the 32 ha proposal area would represent approximately 0.4% of its reported habitat extent on Barrow Island.

There are no large caves or other surface geological features known from development envelope that might suggest particular value as subterranean habitat, or the presence of large-scale geomorphologic features that might create potential barriers to gene flow between adjacent habitats. Bore logs from locations surrounding the development envelope indicate continuity in geological strata.

Cumulative ground disturbance on Barrow Island (including over areas for the approved Gorgon Gas Development and combined with historical disturbance associated with the operating oilfield), would increase as a result of the proposal from approximately 1.3% to 1.4% and from approximately 6.6% to 6.7% of Barrow Island respectively. However, most of this disturbance has not involved excavation and the frequent collection of subterranean fauna from bores located within areas that have been previously subject to ground disturbance and/or subsequent use for development purposes suggests that the extent of disturbance to subterranean fauna habitat and/or populations on Barrow Island may be considerably less.

Given the relatively small area involved with this proposal, the likely broader distributions of the taxa and habitat present, and the results of monitoring of construction impacts to date, effects to subterranean fauna from the proposal are expected to involve only a proportion of their distribution on Barrow Island. As none of the threatened species recorded from the area are restricted to the development envelope, and given the apparent trend of widespread distributions for subterranean fauna on Barrow Island in general (Biota 2013a), the limited extent of impact resulting from the clearing and earthworks associated with the proposal, including cumulative with previous disturbance, is unlikely to change the viability of any subterranean fauna on Barrow Island.

7.3.5 Management of Potential Impacts

Potential impacts to subterranean fauna from the proposal will be minimised through a combination of avoidance and mitigation strategies. Potential impacts to groundwater levels and/or direct impact to subterranean fauna from groundwater abstraction have been avoided through the use of water from the approved Gorgon Gas Development Reverse Osmosis facilities. Dewatering will also not be undertaken, thus avoiding potential impacts to subterranean fauna that may occur from this activity.

A comprehensive suite of measures to ensure potential effects to subterranean fauna are minimised during construction, operations and closure phases are proposed to be implemented consistent with the objectives, management measures, contingency measures, triggers, and monitoring that are approved for the Gorgon Gas Development. Management of potential impacts for the approved Gorgon Gas Development has ensured no unacceptable effects on subterranean fauna have taken place on Barrow Island to date. Key management measures proposed include:

- minimising the extent and depth of excavations associated with cut and fill activities to that required to meet operational requirements
- not undertaking any on-site dewatering or groundwater abstraction
- installing liquid waste collection and treatment systems to ensure contamination of groundwater is avoided, as described in the Solid and Liquid Waste Management Plan (Chevron Australia 2012d)

- designing and implementing surface water drainage systems as described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a) that:
    - mirror as closely as reasonably practicable the natural hydrological regime of the existing environment
    - minimise contamination of surface and ground water of the surrounding environment
    - maximise the infiltration of clean stormwater, where practicable, to minimise the environmental impact to stygofauna.
- reducing the potential for vibration effects to subterranean fauna and habitat by avoiding or minimising the use of traditional explosive blasting techniques
- implementing stringent controls on on-site storage and handling of oils and chemicals to minimise the potential for leaks and spills
- monitoring of groundwater characteristics as a surrogate indicator for stygofauna habitat, with outcomes linked to an adaptive management framework, as described in the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b)
- sampling of subterranean fauna to confirm the distributions of taxa known from development areas, as described in the Short Range Endemics and Subterranean Fauna Monitoring Plan (Chevron Australia 2011c).

Chevron Australia proposes to seek minor amendments to the relevant approved Gorgon Gas Development EMPs to incorporate the proposal, as appropriate (Appendix 1). As outlined in Section 4.1, these amendments would not involve changes to the management measures or monitoring strategies of the EMPs, but rather minor changes to text and/or figures to incorporate the project description and associated environmental aspects, as described in this Environmental Review, into the existing plans. These EMPs include the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a),the Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b), the Short Range Endemics and Subterranean Fauna Monitoring Plan (Chevron Australia 2011c) and the Solid and Liquid Waste Management Plan (Chevron Australia 2012d) Appendix 6).

Management of closure activities over the proposal area is proposed to be consistent with closure management for the approved Gorgon Gas Development and to be incorporated into the Project Site Rehabilitation Plan and the Decommissioning and Closure Plan, when developed in accordance with the relevant conditions of approval for the Gorgon Gas Development.

7.3.6 Predicted Environmental Outcome

The proposal may result in impacts to individuals of some subterranean fauna species that have broader distributions on Barrow Island. It may also result in a very small reduction in the extent and/or quality of subterranean fauna habitat available on Barrow Island. No conservation significant species as listed under the Wildlife Conservation Act are expected to be significantly impacted.

Comprehensive monitoring and management programs have been developed to ensure that any unpredicted impacts would be rapidly detected and reported, and appropriately addressed through adaptive management responses in consultation with relevant environmental agencies.

The proposal area represents a very small (approximately 0.1%) proportion of Barrow Island and effects to subterranean fauna and/or habitat are expected to be restricted to only a portion of the underlying habitat. Given the extent of prospective subterranean fauna habitat on Barrow Island and in the region, and the wider distributions of the species involved, the potential

impacts of the proposal, including cumulative impacts with other disturbance on Barrow Island, are considered unlikely to alter the current representation, diversity, viability, or ecological function of any species, population, or assemblage of subterranean fauna.

The GJVs consider that the potential impacts to subterranean fauna will be adequately managed such that the residual risks are not significant and the EPA's environmental objective for this factor (Section 7.3.1) is met.

7.4 Offsets

7.4.1 Relevant EPA Objective

To counterbalance any significant residual environmental impact and risks through the application of offsets (EPA 2013a).

7.4.2 Relevant Policies, Plans, Guidelines

Determining the appropriateness for the application of offsets has been undertaken with consideration of the relevant EPA Position Statements and Guidance detailed in Table 7-4.

Table 7-8 Western Australian Policy Relating to Offsets

Policy, Plan, Guideline	Intent
Position Statement 9: Environmental Offsets (EPA 2006b)	Provides overarching advice about the intent and appropriate use of environmental offsets, and establishes a purpose, scope and principles for environmental offsets that the EPA will consider.
Environmental Protection Bulletin 1: Environmental Offsets – Biodiversity (EPA 2008a)	Provides overarching advice on environmental offsets, including when offsets are appropriate and different types of environmental offset.
Guidance Statement 19: Environmental Offsets – Biodiversity (EPA 2008a)	Specifically addresses environmental offsets for proposals or schemes that impact on biodiversity and provides specific advice, particularly in relation to the technical application of biodiversity offsets and the presentation of offsets packages to the EPA.
West Australian Governments Environmental Offsets Policy (EPA 2011)	Seeks to ensure that environmental offsets are applied in specified circumstances in a transparent manner to engender certainty and predictability, while acknowledging that there are some environmental values that are not readily replaceable.

7.4.3 Assessment of Need for Offsets

Environmental offsets are a component in the Western Australian Government's and EPA's broader approach to the environment, and may be required when significant residual impacts remain after avoidance and mitigation measures have been undertaken. Offsets can be required with the goal of achieving net environmental benefit (EPA 2006b, 2008a). The Government's Environmental Offsets Policy (EPA 2011) and various EPA policies on environmental offsets make it clear, however, that offsets are not appropriate for all projects. They are not to be applied to minor environmental impacts. They are only to be required where there are significant residual impacts, and even then, only required as a "last resort" and as a "last line of defence" to deal with those significant impacts.

After considering the Government and EPA's environmental offsets policies, it is concluded that environmental offsets should not be included as part of this proposal, for the following reasons.

Due to avoidance measures, no significant impacts will result from the proposal

The proposal has been limited to disturbing the minimum area (up to 32 ha) necessary to achieve its objectives. Its location has been selected to ensure that no restricted significant fauna habitats (eg Boodie warrens, raptor nests) are present. Further, its location has also been selected to avoid any impact on marine or coastal areas and there are no DRF, TEC or PEC on the site. The avoidance measures that have been applied mean that the proposal will not result in any significant impacts, even before management measures have been taken into account. Given that the policies provide that offsets are not required or appropriate except where there are significant impacts, offsets are not considered appropriate for this proposal.

The 32 ha of uncleared land that is proposed to be used for the proposal represents a very small (approximately 0.1%) proportion of Barrow Island and the area of long term clearing would be even smaller. Cumulative levels of direct disturbance (inclusive of disturbance associated with the Barrow Island oilfield) to vegetation on Barrow Island would remain below 10%, and the area of land involved in this proposal does not contain any vegetation or habitats critical to fauna species or that are not represented elsewhere in the Barrow Island nature reserve.

The proposal will result in minor residual impacts only once management measures have been considered

With the mitigation measures that are proposed to be implemented in addition to the avoidance measures described above, the proposal will result in even lower, in fact minor, environmental impacts only. Given that the relevant policies provide that offsets are not required or appropriate except where there are significant residual impacts, offsets are not considered appropriate for this proposal.

Assessment of potential impacts from the proposal to relevant environmental factors, including detailed assessment of potential impacts to vegetation and fauna (Section 7.1 to Section 7.3.6) demonstrates that, with the management proposed, the EPA's objectives will be met for all factors and there will be minimal adverse effects to the biodiversity and conservation values of Barrow Island. In addition, all of the area will be subject to rehabilitation and restoration consistent with the Post-construction Rehabilitation Plan, Project Site rehabilitation Plan, and the Decommissioning and Closure Plan. Consequently, the residual impacts to the island's biodiversity and conservation values will be minor, and do not trigger a requirement for offsets.

The Barrow Island Act (as proposed to be amended) will allow for the use of up to 332 ha of uncleared land on Barrow Island for gas processing project purposes. The Gorgon Gas Processing and Infrastructure Agreement (State Agreement) ratified in Schedule 1 of the Barrow Island Act, which applies to the entire Gorgon Gas Development, includes a package of Net Conservation Benefits which the proponent, together with its joint venture partners, is required to fund to ensure the provision of net environmental, social, and economic benefits for current and future generations. These Net Conservation Benefits are defined to be 'demonstrable and sustainable additions to, or improvements in, biodiversity conservation values of Western Australia targeting, where possible, the biodiversity conservation values affected or occurring in similar bio-regions to Barrow Island'. These Net Conservation Benefits are therefore akin to environmental offsets as described in the policies.

The Western Australian Government offsets policy notes that offsets can be applied through various legislative mechanisms and states that duplication of offsets should be avoided. It would therefore be inconsistent with the policy to propose additional environmental offsets to the Net Conservation Benefits which already apply to the proposal by virtue of the Barrow Island Act and State Agreement, as this would result in duplication of offsets.

Additional Undertakings

In addition to the Net Conservation Benefits required under the Barrow Island Act and State Agreement, the GJVs have also agreed to several additional undertakings to ensure environmental protection, as set out in the preamble to Statement No. 800.

These include:

- Funding of a North West Shelf Flatback Turtle Conservation Program
- Funding of a North West Shelf Flatback Turtle Intervention Program (if required)
- Funding of a Threatened Species Translocation and Reintroduction Program
- Eradication of any non-indigenous species that establish on Barrow Island following commencement of the Gorgon Project
- Funding of government auditing and surveillance of marine activities

Of these, the most relevant to land clearing involves the fauna translocation program, where funding is provided for threatened fauna that are expected to be displaced from cleared areas to be collected and then introduced to other suitable locations in Western Australia. The fauna translocation from Barrow Island for the use of 300 ha of uncleared land has already been conducted. Sufficient funding remains to translocate the number of animals that might be affected by clearing over the up to 32 ha proposal area.

As noted above, the Western Australia Government offset policy states that duplication of offsets should be avoided. It is therefore inappropriate to propose additional environmental offsets to the additional undertakings which already apply to the proposal, as this would result in duplication of offsets.

Barrow Island Act permits use of uncleared land in the nature reserve

Although the proposal involves land clearing in a nature reserve, the clearing will not result in significant impacts. In such a case, the policies do not provide that offsets are required.

A nature reserve such as Barrow Island would normally be considered to be a critical asset which needs to be fully protected and conserved as a whole for the State to fulfil its statutory and policy requirements. However in this case the Barrow Island Act and State Agreement are specifically proposed (as amended) to allow for the use of the small portion of uncleared land within the nature reserve which is part of the Gorgon Gas Development and the proposal. Full protection and conservation of this portion (332 ha) of the reserve is therefore no longer contemplated for the duration of its use for gas processing project purposes, albeit that the Barrow Island Act and State Agreement preserve its underlying reserve status. This suggests that the portion of the nature reserve which is permitted to be used by the Gorgon Gas Development and the proposal cannot be considered a critical asset for the purpose of determining environmental offset requirements. The clearing for the proposal will be limited to the area of uncleared land allocated by the Barrow Island Act (as proposed to be amended) and, with the management proposed, potential impacts to vegetation in adjacent areas will be minimal. Consequently, the clearing of vegetation associated with the proposal will not result in significant residual impacts to a critical or high value environmental asset and does not require offsets.

7.4.4 Impacts Mitigation Hierarchy

The GJVs are committed to protecting the environmental and conservation values of Barrow Island during the construction, operation, and future decommissioning of the proposal. To assist in meeting this commitment, the GJVs have a clear objective in the development of the proposal to avoid, minimise, rectify and reduce all potential impacts associated with the proposal. This approach is consistent with the State Government's Environmental Offsets Policies and, more specifically, with the mitigation hierarchy described in relevant EPA documents (EPA 2006b, 2008), as summarised in Table 7-9. Appendix 7 contains the completed EPA Offsets Reporting Form.

The proposal has been designed and will be implemented to avoid, minimise, rectify, and reduce the potential for significant adverse impacts. This includes management of the potential impacts of the proposal, in combination with those of the approved Gorgon Gas Development, through the proposed implementation of the approved Gorgon Gas Development EMPs, with changes to those EMPs to increase the scope of the EMPs' coverage so that they clearly manage the potential impacts of the proposal.

7.4.5 Predicted Environmental Outcome

The GJVs consider that the measures contained within the environmental management framework proposed to be applied to the proposal are consistent with the State Government's Environmental Offsets Policies and the EPA hierarchy of avoidance, minimisation, rectification, and reduction (EPA 2006b).

With application of the management measures proposed, all potentially significant impacts will be avoided or minimised and there will be no significant residual impacts to critical or high value environmental assets, meeting the EPA's objective for this factor.

Application of the existing Net Conservation Benefits program and additional undertakings will ensure that the use of uncleared land on Barrow Island for gas processing project purposes, including the proposal, will fulfil the stated goal of the EPA offset policies of achieving net environmental benefit.

Table 7-9 Mitigation Hierarchy

Mitigation Hierarchy Elements	Proposed Mitigation
Avoid	• Proposal area reduced from an initial 100 ha requirement to 32 ha through a process that identified and included only facilities and activities from the approved Gorgon Gas Development that were essential to relocate in order to optimise cost and performance efficiencies • Location selected to ensure no PEC present • Location selected to avoid restricted significant fauna habitats (e.g. Boodie warrens, raptor nests) • No marine or coastal component
Minimise (limit magnitude)	• Clearing and earthworks minimised as far as practicable • Site selected to be contiguous with other infrastructure sites (reduced edge effects) • Management measures applied to all impacts consistent with the objectives, management measures, contingency measures, triggers, and monitoring that are currently approved for the Gorgon Gas Development
Rectify (restore, repair)	• Monitoring linked to adaptive management framework • Rehabilitation of land disturbed for construction when no longer required • Contingency plans developed and implemented
Reduce (over time)	• Adaptive management framework aims to continually improve environmental performance • Decommissioning and rehabilitation of facilities and sites at the end of operations

8.0 Conclusion

Chevron Australia proposes to undertake clearing and earthworks within the proposal area, and to use the proposal area for activities/facilities of the approved Gorgon Gas Development. The proposal will effectively increase the Gorgon Gas Development's total tenure on Barrow Island to encompass the 332 ha uncleared land allocated for gas processing purposes by the (as proposed to be amended) Barrow Island Act.

Use of the land will not introduce any activities or facilities that are new or different from the approved Gorgon Gas Development. Consequently, the additional detrimental environmental effects from the proposal relate primarily to the requirement for additional clearing and earthworks on Barrow Island. Preliminary key environmental factors for the proposal have been identified by the EPA to include:

- Flora and Vegetation
- Terrestrial Fauna
- Subterranean Fauna
- Offsets.

As a result of the proposal, the total area of uncleared land on Barrow Island occupied by the approved Gorgon Gas Development will increase from approximately 1.3% of Barrow Island to approximately 1.4%, and the cumulative area of the approved Gorgon Gas Development and historical disturbance associated with the existing oilfield will increase from approximately 6.6% to approximately 6.7%.

Assessment of the proposal's impacts has been informed by the extensive baseline information collected over the area for the approved Gorgon Gas Development, augmented by site-specific investigations by subject matter experts for the key environmental factors relevant to the proposal.

The land involved comprises landforms, vegetation, and habitat types that have widespread distributions outside the development envelope. There are no critical habitats for threatened fauna on the land, nor flora or fauna known to be restricted to the vicinity of the development envelope.

Chevron Australia has undertaken extensive stakeholder engagement regarding development on Barrow Island, and all relevant stakeholders have been consulted regarding the proposal. Consultation will continue during the proposal's construction and operation phases.

The information from technical studies and stakeholder consultation has been applied to optimise the environmental outcomes of the proposal. The site has been selected to avoid features of particular environmental significance, and comprehensive management will be implemented, as outlined in Section 7.0 and described in the relevant EMPs (as proposed to be amended) for the Gorgon Gas Development (Appendix 6), to ensure all identified environmental issues are appropriately addressed.

With the management proposed, it is concluded that

- The proposal will result in only an incremental increase in disturbance to any vegetation type on Barrow Island with no declared rare flora or threatened ecological communities affected.
- The extent of long-term reduction in available fauna habitat will be negligible and likely impacts will be limited to low numbers of animals that have secure populations elsewhere on Barrow Island.
- No subterranean fauna species listed under the Wildlife Conservation Act are expected to be adversely impacted and the proportion of prospective subterranean fauna habitat affected is expected to be minimal.

- All issues raised by stakeholders can be readily addressed and concerns raised are limited to those previously considered in relation to gas development on Barrow Island.
- Significant residual impacts on biodiversity assets of 'high' or 'critical' value are not predicted and environmental offsets are not required.

The GJVs consider that any potential environmental impacts from the proposal will be adequately managed such that residual effects to relevant factors will not result in significant impacts nor compromise the EPA's objectives, and therefore the proposal is environmentally acceptable.

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Appendix 1 Proposed Amendments to Gorgon Management Plans

Appendix 1 Proposed Amendments to Gorgon Environmental Management Plans Relevant to Key Factors

Table A1-1 Proposed Amendments

Update	Terrestrial and Subterranean Baseline State and Environmental Impact Report	Terrestrial and Subterranean Environmental Protection Plan	Vegetation Clearing and Audit Common User Procedure	Fauna Handling and Management Common User Procedures	Traffic Management Common User Procedure	Terrestrial and Subterranean Environment Monitoring Program	Terrestrial and Marine Quarantine Management System	Weed Hygiene Common User Procedure	Short Range Endemics and Subterranean Fauna Monitoring Plan	Fire Management Plan	Post-Construction Rehabilitation Plan	Topsoil Management Plan	Liquid and Solid Waste Management Plan
Detail of Project approvals updated to include approvals for additional land.	Terms, Definitions and Abbreviations Executive Summary 1.0 Introduction 2.1.1 Overview 6.0 Terrestrial Disturbance Footprint 9.0 References	Terminology, Definitions and Abbreviations 1.0 Introduction 2.1.1 Overview 4.0 Management of Impacts 8.0 References	Terminology, Definitions and Abbreviations 1.0 Introduction 6.0 References	Terms, Definitions and Abbreviations 1.0 Introduction 6.0 References	Terminology, Definitions and Abbreviations 1.0 Introduction 5.0 References	Terminology, Definitions and Abbreviations 1.0 Introduction 2.1.1 Overview 3.1 Stressors 7.0 References	1.5 Environmental Approvals 2.1.1 Overview 10.0 References Appendix 1 Terminology, Definitions and Abbreviations	Terminology, Definitions and Abbreviations 1.0 Introduction 8.0 References	Terminology, Definitions and Abbreviations 1.0 Introduction 7.0 References	Terminology, Definitions and Abbreviations 1.0 Introduction 7.0 References	Terminology, Definitions and Abbreviations 1.0 Introduction 2.1.1 Overview 8.0 References		Terminology, Definitions and Abbreviations Executive Summary 1.4 Approvals 8.0 References
Figures updated to incorporate the new area for the additional land.	Figure 1-2 Maps listed in Section 10 Maps.	Figure 1.2 Figure 2.1				Figure 1-2 Figure 2-1 Figures 4-3 to Figure 4-6	Figure 1-2 Figure 2-1		Figure 1-2 Figure 2-1 Figures 3-1 to Figure 3-11 Figure 4-1 Figure 4-2	Figure 1.2	Figure 1.2 Figure 2.1	Figure 3-1	Figure 1-2 Figure 2-3
Text updated to include additional consultation undertaken with relevant stakeholders.	1.5.6 Stakeholder Consultation	1.5.6 Stakeholder Consultation				1.6.2 Stakeholder Consultation	1.8 Stakeholder Consultation		1.5.5 Stakeholder Consultation	1.5.7 Stakeholder Consultation	1.5.6 Stakeholder Consultation		1.5.6 Stakeholder Consultation
Text and/or figures detailing the reference sites, at risk sites and monitoring sites updated to accommodate the additional land.						4.4 Monitoring Site Locations							
Description of areas and/or numbers of environmental features to be disturbed updated to include the additional land.	Table 4-7 Include additional area of clearing of *Melaleuca cardiophylla.* Table 4-2 Include additional area of clearing for the vegetation formations D2, F1,												

	L7 and V1. Update the total areas of clearing and the total percentages to be cleared. Table 6-8 Update the number of termite mounds that are significant and in the terrestrial disturbance given the additional land.												
Update text/table to extend requirements for further monitoring/survey to incorporate additional land.	Update Table 4-23 to state "Survey for, and locate, terrestrial and subterranean taxa currently only found in the Gas Treatment Plant site and the additional land area".								4.0 Further Study and Survey of Subterranean Fauna Update text throughout Section 4.0 to state "Gas Treatment Plant and additional land area" where it is discussing ongoing surveying to locate subterranean fauna currently restricted to the Gas Treatment Plant.				
Area of uncleared land under the *Barrow Island Act 2003* (WA) updated to include additional land.	4.2.2.1 Clearing	Table 5.1	2.1.1 Barrow Island Act 2003 (WA)										
Update to include topsoil from additional land in description of volumes, sources and storage of topsoil.												1.0 Introduction 3.0 Topsoil Recovery, Direct Lay and Topsoil Storage Appendix 1 Compliance Reporting Table	
Update list of areas identified as potentially available for rehabilitation on completion of construction to include the area of additional land that may be rehabilitated after construction.											2.1.1 Overview		

Appendix 2 Potential Impacts to Other Environmental Factors as a Result of the Proposal

Table A2-1 Assessment of Other Environmental Factors

Factor and EPA Objective	Existing Environment (Vicinity of the Proposal)	Potential Environmental Impacts (and whether considered 'preliminary key factor' for assessment)	Management of Impacts	Expected Environmental Outcome
Benthic Communities and Habitat To maintain the structure, function, diversity, distribution and viability of benthic communities and habitats at local and regional scales.	The proposal is entirely terrestrial and located approximately 800 m (at its closest point) from the coast	The proposal does not involve any marine components or discharges to the marine environment. No potential impacts to benthic communities and habitat have been identified. *Not considered a preliminary key factor*	No potential impacts so no additional management required	With no impacts identified, the EPA objective is met
Coastal Processes To maintain the morphology of the subtidal, intertidal and supratidal zones and the local geophysical processes that shape them.	The proposal is entirely terrestrial and located approximately 800 m (at its closest point) from the coast	The proposal is located away from the coast, removing the potential for impacts to coastal processes. *Not considered a preliminary key factor*	No potential impacts so no additional management required	With no impacts identified, the EPA objective is met
Marine Environmental Quality To maintain the quality of water, sediment and biota so that the environmental values, both ecological and social, are protected.	The proposal is entirely terrestrial and located approximately 800 m (at its closest point) from the coast	The proposal does not involve any discharges to the marine environment. No potential impacts to marine environmental quality have been identified. *Not considered a preliminary key factor*	No potential impacts so no additional management required	With no impacts identified, the EPA objective is met
Marine Fauna To maintain the diversity,	Turtle nesting occurs on Inga Beach and Yacht Club Beach North, to the east of the development envelope. The	The proposal does not involve any discharges to the marine environment that	• Construction and operation activities over proposal area generally limited to daylight hours	No direct light spill to turtle nesting beaches.

Factor and EPA Objective	Existing Environment (Vicinity of the Proposal)	Potential Environmental Impacts (and whether considered 'preliminary key factor' for assessment)	Management of Impacts	Expected Environmental Outcome
geographic distribution and viability of fauna at the species and population levels.	proposal is entirely terrestrial and located approximately 800 m (at its closest point) from these turtle nesting beaches.	may affect marine fauna. Light emissions could affect turtles if received at turtle nesting beaches. No net increases are expected in the overall number of aircraft flights or vessel movements to Barrow Island as a result of the proposal. *Not considered a preliminary key factor*	• All facilities subject to the approved Gorgon Gas Development's Basis of Design for lighting (Chevron Australia 2007), which includes specific lighting design requirements. • Monitoring of turtles on turtle nesting beaches conducted for approved Gorgon Gas Development with management feedback loops, as described in the approved Long-term Marine Turtle Management Plan (Chevron Australia 2013b).	Negligible change to prevailing light regimes. No impact to turtles or other marine fauna predicted. EPA objective is met.
Landforms To maintain the variety, integrity, ecological functions and environmental values of landforms and soils.	Landforms and soils in the development envelope are typical of broad areas on Barrow Island, with none restricted to the development envelope. Landforms identified as significant on Barrow Island are coastal foredunes, fossil beds, cliffs and gorges, and caves, rock shelters and sinkholes. None of these significant landforms have been identified in the development envelope. Soils in the vicinity of the proposal are characterised by up to 10 m of sands and clays overlaying limestone.	Removal or disturbance of landform and soil in the proposal area. Localised changes to landform or soils from erosion or sedimentation resulting from the proposal altering drainage patterns. Erosion from the proposal area, caused by wind, water, resulting in sedimentation in adjacent areas. *Not considered a preliminary key factor*	• Development envelope selected to avoid significant landforms on Barrow Island • Extent of excavation reduced via site selection and use of terracing • Topsoil managed consistent with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevon Australia 2012a) • Surface water management consistent with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a) • Rehabilitation of landforms in areas no longer required by the Gorgon Gas Development consistent with the measures described in the Post-Construction Rehabilitation Plan (Chevron Australia 2009b)	Localised disturbance or loss of landforms and soils that have widespread distribution on Barrow Island. Effects limited to very small (approximately 0.1%) extent of Barrow Island. Rehabilitation reduces extent of longer term impacts. No adverse effects on ecological function or environmental values of landforms/soils on Barrow Island. Stressors to landforms and soils from the proposal will be adequately managed such that the residual effects, including cumulative effects[2], are environmentally acceptable. EPA objective is met.

Factor and EPA Objective	Existing Environment (Vicinity of the Proposal)	Potential Environmental Impacts (and whether considered 'preliminary key factor' for assessment)	Management of Impacts	Expected Environmental Outcome
Terrestrial Environmental Quality To maintain the quality of land and soils so that the environment values, both ecological and social, are protected.	No existing contamination is expected at the development envelope as this area has experienced no previous industrial use.	Localised and temporary soil contamination as a result of inappropriate disposal of wastes or accidental leaks or spills of small volumes of hazardous materials. *Not considered a preliminary key factor*	• All wastes managed consistent with the measures described in the Solid and Liquid Waste Management Plan (Chevron Australia 2012d) • Leaks and spills managed consistent with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a)	No significant effects to land/soil quality through contamination. Potential stressors to terrestrial environmental quality from the proposal will be adequately managed such that the residual effects, including cumulative effects[2], are environmentally acceptable and the EPA objective is met.
Hydrological Processes To maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.	No permanent surface water bodies in the vicinity of the development envelope. No surface water features identified as significant on Barrow Island are present within the development envelope. The proposal overlies only a very small portion of a shallow unconfined aquifer on Barrow Island.	Localised sedimentation of natural drainage systems from erosion following vegetation clearing. Disturbance to natural drainage patterns in areas adjacent to the proposal. Change in water infiltration and recharge rates where hardtopping and surface water drainage is installed and resulting in localised change in groundwater level *Not considered a preliminary key factor*	• Development envelope selected to avoid major drainage channels and other significant surface water features. • Use of hydrological modelling to inform drainage strategy and design • Majority of proposal area will not be hard-topped, to reduce impacts to infiltration • Management of drainage consistent with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a) • Surface water management consistent with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a) • Monitoring of groundwater consistent with the monitoring described in Terrestrial and Subterranean Environment Monitoring Program (Chevron Australia 2013b)	Localised minor alteration of surface water drainage patterns but no significant changes to prevailing hydrological regimes of groundwater or surface water such that existing uses, including ecosystem maintenance, are not compromised. Stressors to hydrological processes adequately managed such that residual effects, including cumulative effects[2], are environmentally acceptable. EPA objective is met.

Factor and EPA Objective	Existing Environment (Vicinity of the Proposal)	Potential Environmental Impacts (and whether considered 'preliminary key factor' for assessment)	Management of Impacts	Expected Environmental Outcome
			• Monitoring of ecological elements that may be affected by altered hydrological regimes consistent with the monitoring as described in Terrestrial and Subterranean Environment Monitoring Program • Rehabilitation of surface water drainage patterns in areas no longer required by the Gorgon Gas Development consistent with the measures described in the Post-Construction Rehabilitation Plan (Chevron Australia 2009b)	
Inland Waters Environmental Quality To maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected	No permanent surface water bodies in the vicinity of the development envelope. No surface water features identified as significant on Barrow Island are present within the development envelope. The shallow unconfined aquifer has a brackish boundary between fresh and saline water.	Localised surface water and groundwater contamination through spills or leaks, or solid or liquid wastes. *Not considered a preliminary key factor*	• All wastes managed consistent with the measures described in the approved Solid and Liquid Waste Management Plan (Chevron Australia 2012d) • Leaks and spills managed consistent with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a)	No significant reduction in quality of groundwater and surface water on Barrow Island. Potential stressors to inland waters environmental quality from the proposal will be adequately managed such that the residual effects, including cumulative effects[2], are environmentally acceptable. EPA objective is met.
Air Quality To maintain air quality for the protection of the environment and human health and amenity.	Barrow island is an arid sub-tropical environment with a mostly hot and dry climate, which can result in elevated dust levels during windy conditions.	Temporary decrease in local air quality resulting from vehicle / equipment exhaust (NOx, SOx) Temporary decrease in local air quality resulting from dust emissions during construction *Not considered a preliminary*	• Dust control measures implemented consistent with the measures described in the Terrestrial and Subterranean Environment Protection Plan (Chevron Australia 2010a) which includes requirements for dust suppression using reverse osmosis water and/or treated wastewater.	Dust generated during vegetation clearing and earthworks managed to avoid impacts to the environment and human health (based on experience gained from the approved Gorgon Gas Development). Gaseous emissions generated by this proposal are expected

Factor and EPA Objective	Existing Environment (Vicinity of the Proposal)	Potential Environmental Impacts (and whether considered 'preliminary key factor' for assessment)	Management of Impacts	Expected Environmental Outcome
		key factor		to be negligible, primarily consisting of emissions from vehicles and machinery associated with vegetation clearing and earthworks. The stressors to air quality from the proposal will be adequately managed such that the residual effects, including cumulative effects[2], are environmentally acceptable and the EPA objective is met.
Amenity To ensure that impacts to amenity are reduced as low as reasonably practicable	No residential, recreational or tourism land use on Barrow Island, with access generally restricted to workforce personnel and DPaW staff.	The proposal does not have the potential to affect local social amenity values. The proposal will have minimal requirement for goods, and these will be met via existing transportation arrangements for the approved Gorgon Gas Development. No additional transport movements to or from Barrow Island required. *Not considered a preliminary key factor*	No potential impacts so no additional management required	With no impacts identified, the EPA objective is met.
Heritage To ensure that historical and cultural associations are not adversely affected.	The Western Australian Department of Indigenous Affairs Register of Aboriginal Sites lists 13 archaeological sites for Barrow Island, all outside the development envelope. To date, surveys conducted on Barrow Island have not identified any sites (including ethnographic and historical	Loss or damage to undiscovered heritage during clearing and earthworks *Not considered a preliminary key factor*	• Preconstruction heritage surveys to confirm the absence of heritage materials or sites of significance • Management of vegetation clearing and earthworks consistent with the measures described in the Aboriginal Cultural Heritage Management Plan, which requires that any materials	The proposal is not expected to impact on any cultural heritage sites. Management of earthworks minimises risk of impact to potential undiscovered heritage materials or sites.

Factor and EPA Objective	Existing Environment (Vicinity of the Proposal)	Potential Environmental Impacts (and whether considered 'preliminary key factor' for assessment)	Management of Impacts	Expected Environmental Outcome
	sites) within the Gorgon Gas Development or the development envelope. Development envelope does not contain landforms considered to be highly prospective for cultural heritage material.		discovered are appropriately recorded, reported and protected.	EPA objective is met.
Human Health To ensure that human health is not adversely affected.	No sensitive land uses in the vicinity of the proposal area. The Barrow Island workforce are housed at the Butler Park (Construction Village), and Chevron Australia Camp which are approximately 2 km and 2.5 km south of the proposal area, respectively.	The proposal does not involve environmental stressors with the potential to adversely affect human health. *Not considered a preliminary key factor*	No stressors have been identified with the potential to impact on the social environment. Workforce and public health and safety is considered to be managed through meeting the appropriate standards for human health in the workplace, the effective implementation of Chevron Corporation's Operational Excellence Management System, Chevron Australasia Business Unit Policy 530 – Operational Excellence, and Chevron Corporation's incident- and injury-free culture.	With no impacts identified, the EPA objective is met.
Rehabilitation and Closure To ensure that premises are closed, decommissioned and rehabilitated in an ecologically sustainable manner, consistent with agreed outcomes and land uses, and without unacceptable liability to the State.	For the Gorgon Gas Development, the GJVs have committed to decommissioning and rehabilitation strategy aimed at ensuring the long-term preservation of the environmental values of Barrow Island as a Class A Nature Reserve. These include development and implementation of the Post-construction Rehabilitation Plan (Chevron Australia 2009b), a Project Site Rehabilitation Plan, and a Decommissioning and Closure Plan.	Not rehabilitating may result in long-term loss of vegetation and flora species in the proposal area. Localised erosion of soils may result in sedimentation of natural drainage systems from erosion. *Not considered a preliminary key factor*	Decommissioning and rehabilitation managed via the same measures described for approved Gorgon Gas Development where applicable, including as described in the approved Post-construction Rehabilitation Plan. (Chevron Australia 2009b)	Closure and rehabilitation of proposal area will be adequately managed such that areas/facilities are closed, decommissioned and rehabilitated consistent with agreed outcomes and land uses, and without unacceptable liability to the State. EPA objective is met.

Notes: [2] Cumulative impacts are defined as the potential incremental impacts of the proposal when combined with the approved Foundation Project and WA Oil.

Appendix 3 Impact Assessment Criteria

Table A3-1 Object and Principles of the *Environmental Protection Act 1986* (WA)

Principle	Aim	Proposal Considerations
Precautionary	Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation	Chevron Australia proposes to manage potential impacts using measures consistent with those contained within the comprehensive framework of environmental monitoring and management plans approved for the Gorgon Gas Development, as relevant to the proposal and amended where relevant to incorporate the proposal. This framework includes environmental monitoring and management programs that aim to address uncertainties over environmental impacts, including measures to implement precautionary management despite a lack of full scientific understanding of potential impacts, monitoring to improve scientific understanding and detect if/where effects exceed predictions, and adaptive management strategies to ensure no unacceptable environmental impacts.
Inter-generational equity	The present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations	Under the approved Gorgon Gas Development, the GJVs have committed to a set of management measures aimed at ensuring the long-term conservation of the environmental values of Barrow Island as a Class A Nature Reserve. These include the Post-construction Rehabilitation Plan (Chevron Australia 2009b) and a Decommissioning and Closure Plan. The GJVs intend to apply the same set of management measures to the proposal where applicable, e.g. where activities are the same, and with relevant amendments, to protect the Barrow Island environment and maintain it for future generations.
Biodiversity	Conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making	Achievement of this principle lies at the heart of the permission granted to the GJVs under the Barrow Island Act for the restricted use of Barrow Island for gas processing purposes. This responsibility underpins the GJVs' approach for developing and implementing the approved Gorgon Gas Development and the proposal. It is evidenced by the environmental management plans required under Ministerial Conditions for the approved Gorgon Gas Development for the management of potential environmental impacts. Potential effects on biodiversity from this proposal will be managed consistent with the objectives, management measures, contingency measures, triggers and monitoring which are currently approved for the Gorgon Gas Development (and with amendments to incorporate the proposal) and have ensured the approved Gorgon Gas Development has not led to any unacceptable effects on biodiversity. With the management proposed, the small scale of disturbance associated with this proposal will not compromise the biological diversity or ecological integrity of Barrow Island.
Valuation	Improved valuation, pricing, and incentive mechanisms should be promoted (e.g. 'polluter pays' principle, consideration of life cycle costs)	As the proponent on behalf of the GJVs, Chevron Australia's internal decision-making processes and tools will be used for the proposal. The environmental implications (including their associated costs where relevant) are incorporated into these systematic decision-making processes, which aim to deliver world-class performance in safety, health, environment, reliability, and efficiency. The proposal will result in an improvement in environmental performance of the approved Gorgon Gas Development in parallel with improved economic efficiency.

Principle	Aim	Proposal Considerations
Waste minimisation	All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment	Reasonable and practicable measures will be taken to reduce wastes generated by the proposal. These measures are driven by Chevron Australia's Operational Excellence business philosophy (Section 1.5), which includes the aim of managing the efficient use of resources, and by a key element of the ABU Policy 530, which requires 'working to prevent pollution and waste; striving to continually improve environmental performance; and limiting impacts from operations'. This principle is also reflected in the various environmental management plans that were approved for the Gorgon Gas Development including the Solid and Liquid Waste Management Plan (Chevron Australia 2012d). The proposal is planned to minimise waste consistent with the measures from these environmental management plans.

EPA Administrative Procedures

The Environmental Impact Assessment Administrative Procedures (EPA 2012) as required under the EP Act identify the criteria for API level of assessment for Category A projects (the category for this proposal), the assessment procedure, and the information requirements.

The information requirements identified in the procedures are identified in Table A3-2, with reference to the location of the information in this proposal document.

Table A3-2 EPA Principles for Environmental Management

Information Requirements	Reference
Description of the proposal and provision of spatial datasets, information products, and databases required	Proposal description (Section 2.0) Electronic spatial data provided on CD
Details of the consultation process and outcomes	Stakeholder Consultation (Section 4.0)
Relevant information on the receiving environment and its conservation values in a regional and local setting	Environmental Baseline Sections: • Vegetation and Flora (Section 7.1.3 to 7.1.3.2) • Terrestrial Fauna (Section 7.2.3 to 7.2.3.2) • Subterranean Fauna (Section 7.3.3 to 7.3.3.2)
Identification of the limited number of preliminary key environmental factors and demonstration that the potential direct, indirect, and cumulative impacts on the environment for each factor can be readily managed to meet the EPA's environmental objectives. The findings of any surveys and investigations undertaken to support this assessment should be included, with the technical reports provided as appendices	Section 6.1 Section 7.1 Section 7.2 Section 7.3 Section 7.4 Section 8.0 Appendix 2 Appendix 5
Assessment of the degree of certainty with which the environmental impacts can be predicted	Section 7.0
Identification of other potential impacts or activities of the proposal that can be regulated by other government agencies, under other statutes and an acknowledgement of the need to comply with these	Chevron Australia acknowledges the need to comply with statutes relevant to the proposal, including those that regulate activities with the potential to cause environmental effects. Further information is contained within: • Section 2 • Section 7 • Appendix 2 • Table A3-5
Justified statement of how the object of the Act (see clause 3, paragraph 1) and Principles of EIA for the Proponent (see clause 5) have been addressed and how the proposal meets all of the criteria for API Category A.	The object of the EP Act is to protect the environment of Western Australia. This document identifies the key potential environmental impacts associated with the proposal, the management and mitigation measures that will be implemented to protect the environment, and the resulting predicted environmental outcome. Detail of how the Principles of EIA for the Proponent have been addressed are provided in Table A3-3. Detail of how the proposal meets the criteria for API Category A is provided in the Environmental Review and in Table A3-4.

Table A3-3 Principles of EIA for the Proponent

Principle for Proponent	Reference
Consult with all stakeholders, including the EPA, DMAs, other relevant government agencies, and local community as early as possible in the planning of the proposal, during the environmental review, and assessment of their proposal, and where necessary during the life of the project	Chevron Australia has undertaken stakeholder engagement that provides a mechanism for stakeholders to identify concerns and improvement opportunities. Stakeholder consultation has included the EPA, all DMAs, relevant government agencies, representatives of local community, industry, indigenous, scientific and eNGO groups. Consultation commenced as early as possible, continued during the environmental review and will continue during construction and operations phases as appropriate. Details of the stakeholder engagement process and outcomes are presented in Section 3.0.
Ensure the public is provided with sufficient information relevant to the EIA of a proposal to be able to make informed comment, prior to the EPA completing the assessment report	The proposal was defined in the referral and comment was sought from the public during the seven day public review period that followed the submission of the referral to the EPA on 25 October 2013. Stakeholders were also provided directly with information relevant to the EIA of the proposal, including by letters and briefings, and given opportunity to make informed comment via the stakeholder engagement programs detailed in Table 3-1.
Use best practicable measures and genuine evaluation of options or alternatives in locating, planning, and designing their proposal to mitigate detrimental environmental impacts and to facilitate positive environmental outcomes and a continuous improvement approach to environmental management.	Alternative options to the proposal, including the 'no development' option, were evaluated. The extensive baseline information collected over the area for the oilfield and the approved Gorgon Gas Development was applied to identify alternative sites that were evaluated to ensure the proposal site that poses the least potential environmental impact was chosen (Section 1.4.3). The potential environmental impacts associated with the proposal have been identified, assessed and comprehensively analysed (Section 7). Chevron Australia's OEMS, which is a standardised approach to consistently deliver and continually improve performance, will be applied to drive a continuous improvement approach to environmental management. A comprehensive suite of management and mitigation measures will be implemented to ensure no unacceptable environmental outcomes occur (Section 4, Section 7, Appendix 2). Monitoring associated with the approved Gorgon Gas Development and proposed to be applied to the proposal is linked to management feedback mechanisms to identify specific areas where improvements in environmental management may be applied to further positive outcomes.
Identify the environmental factors likely to be impacted and the aspects likely to cause impacts in the early stages of planning for their proposal. The onus is on the proponent through the EIA process to demonstrate that the unavoidable impacts will	The environmental factors that have the potential to be impacted by the proposal have been identified (Section 6, Appendix 2) and the aspects of the proposal that may impact them assessed (Section 7, Appendix 2). Detailed EIA has

Principle for Proponent	Reference
meet the EPA objectives for environmental factors and therefore their proposal is environmentally acceptable.	demonstrated that, with the proposed mitigation and management of these potential impacts, the proposal will meet the EPA's environmental objectives (for the relevant environmental factors) and that the proposal is environmentally acceptable.
Identify in their environmental review, subject to the EPA's guidance: • best practicable measures to avoid, where possible, and otherwise minimise, rectify, reduce, monitor, and manage impacts on the environment • responsible corporate environmental policies, strategies, and management practices, which demonstrate how the proposal can be implemented to meet the EPA's environmental objectives for environmental factors.	Best practicable measures proposed to be implemented to avoid and/or minimise, rectify, reduce, monitor, and manage impacts on the environment as described in the relevant EMPs for the approved Gorgon Gas Development and proposed to be applied to the proposal have been identified in the Environmental Review (Section 4, Section 7, Appendix 2) . Protecting people and the environment is a core company value for Chevron (Section 1.5). Chevron Australia's 'Operational Excellence' business philosophy includes the aim of identifying and mitigating key environmental risks (see Section 1.5.1), and by a key element of the ABU Policy 530 (Figure 1-3): namely 'working to prevent pollution and waste; striving to continually improve environmental performance; and limiting impacts from our operations'. How the proposal will be implemented within this management framework to meet the EPA's environmental objectives for the relevant environmental factors has been demonstrated throughout this Environmental Review.

Source: EPA 2012

Table A3-4 Criteria for API Category A Level of Assessment

Criteria	Proposal
The proposal raises a limited number of key environmental factors that can readily be managed and for which there is an established condition-setting framework	The proponents initial assessment of the proposal as outlined in the Referral identified only three preliminary key environmental factors (flora and vegetation, terrestrial fauna, subterranean fauna). EPA review of the Referral identified only four (flora and vegetation, terrestrial fauna, subterranean fauna, and offsets) preliminary key environmental factors. There is an established condition setting framework for these factors, including specifically for proposals on Barrow Island. The key environmental factors identified by this Environmental Review are a subset of those assessed for the approved Gorgon Gas Development, for which there are established conditions of approval which are considered appropriate to apply to the proposal and which will readily manage it's impacts.
The proposal is consistent with established policies, guidelines and standards	The proposal is consistent with all relevant established policies, guidelines and standards, and this is demonstrated in the Environmental Review document. Assessment against EPA objectives is provided in the document.
The proponent can demonstrate that it has	The appropriate and effective stakeholder consultation undertaken for the proposal is described in the Environmental Review. Chevron

Criteria	Proposal
conducted appropriate and effective stakeholder consultation, in particular with DMAs	Australia has undertaken face to face meetings with all relevant DMAs. All appellants on the previous approval for the Gorgon Gas Development, relevant NGOs, industry groups and representatives, indigenous groups and independent scientific representatives have been included in the consultation program. All relevant stakeholders have been provided with information describing the proposal and its environmental aspects, along with proposed management. Stakeholders were provided with opportunities and contacts to seek further information and to provide feedback on the proposal. Feedback was incorporated into the planning and/or assessment and management of the proposal described in the Environmental Review as appropriate.
There is limited or local concern only about the likely effect of the proposal, implemented, on the environment.	No comments from the public were received when the Referral was published. Proactive stakeholder engagement undertaken by the Proponent indicates concerns about the likely effects to the environment from implementation of the proposal are limited to issues previously raised and addressed for gas development on Barrow Island.

Table A3-5 Other Required Approvals

Agency/Authority	Approval required
Barrow Island Act Minister	Development Proposals or variations
Minister for Lands	Project Land Tenure (changes to lease, licence and easements)
Shire of Ashburton	Local Government Development/Planning Application and Building Permits (if required)
Department of Environmental Regulation	Construction Works Approvals and Licenses to Operate (if required)
Department of the Environment	EPBC Act Approval pertaining to impacts to matters of National Environmental Significance (if required)

Appendix 4 Biodiversity Checklist

Checklist for documents submitted for EIA on marine and terrestrial biodiversity

This checklist is from Appendix 2 of the EPA's Draft Environmental Assessment Guideline No. 6 on Timelines for Environmental Impact Assessment of Proposals.

Purpose

It is hoped that this checklist will be useful to environmental consultants and proponents both during the proponent's initial project planning and environmental scoping process, and specifically in the final checking of documents they intend to submit to the Environmental Protection Authority (EPA) for environmental impact assessment (EIA). This checklist may be refined and reviewed periodically to refer to additional EPA guidance documents.

The purpose of this checklist is to provide the basis for consultants and proponents to conduct initial in-house screening of the quality of their EIA documents. The intent is to more clearly define a minimum standard for the fundamental elements of EIA documentation that is expected to be met before documents are submitted to the EPA. Meeting this minimum standard should, in turn, facilitate timely consideration of documents by the EPA.

The checklist has been set out in four parts. Part 1 addresses general elements of document quality. Parts 2 and 3 deal with key EIA requirements specific to marine and terrestrial biodiversity/marine water quality impacts respectively. Part 4 sets out the requirements for proponent certification of the checklist.

To confirm that each element has been addressed, proponents are asked to place a tick in the boxes provided. Where an element of the checklist is not relevant to the proposal, checking the box with "N/A" will be adequate.

A copy of this checklist certified by an appropriate proponent representative as complete and accurate must be lodged with EIA documentation submitted to the EPA. Completed checklists will be reviewed by the EPA when documents are lodged. **Incomplete or inaccurate checklists will be returned for proponents to address outstanding matters before the EPA will commence its review of EIA documents.**

It should be noted that the EPA's acceptance of a complete and accurate checklist simply indicates that basic requirements in terms of document quality and general comprehensiveness have been met. **The EPA's acceptance of the checklist does not imply adequacy of technical work or appropriateness of 'policy' application / interpretation.** These matters are reviewed in more detail later in the EIA process.

THE CHECKLIST

Part 1 – General Quality of Documents

Ensure that the following standard elements are present in all documentation (including appendices):

- A clear and concise title that outlines basic information about the proposal and purpose of the document. ✓
- Date and document revision number. ✓
- Information identifying the document's author and publishing entity. ✓
- All issues identified in a scoping guideline or scoping document have been addressed and covered in the report. ✓
- Complete and correct tables of contents, maps, tables and figures. ✓
- Suitably-sized scale maps placing the proposal into both a regional and local context. ✓
- Figures, plates, maps, technical drawings or similar including scale bar, legend, informative caption, labels identifying important or relevant locations/features referred to in the document text. ✓
- All survey site locations and derived data products (e.g. benthic habitat maps, vegetation maps) have been provided in map and appropriate GIS-based electronic database forms. ✓
- All survey data from terrestrial biological surveys have been provided in electronic database form (Access/Excel). ✓
- Proposed infrastructure is shown on scale maps and associated spatial data and are provided in an appropriate GIS-based electronic database form ✓
- A list of references that have been cross-checked to ensure that all references in the reference list are cited in the text (and vice versa). ✓
- All information based on 'expert' opinion/judgement are explicitly attributed, by name and qualification, to a person/s or organisation. ✓
- Where relevant, appendices are attached to the main EIA document that describe the detailsof technical work undertaken to underpin the content of the main document, and explicitly attributed by name to the author/s and (if applicable) their organisation. ✓
- Description(s) of the proposal are internally consistent throughout all documentation and arecouched to allow potential environmental impacts to be placed in local and regional contexts, including cumulative impacts of existing and approved developments. ✓

Please identify relevant sections of the report in the box below.

- Section 1.3 Proposal Overview
- Section 2.0 Proposal Description
- Section 7.0 Impact Assessment

- Descriptions of the local and regional environmental features most likely to be directly or indirectly affected by the proposal.

Please identify relevant sections of the report in the box below.

- Section 6.3 Relevant Studies
- Section 7.0 Impact Assessment
- Appendix 2 Potential Impacts to non-Key Environmental Factors as a result of the Proposal
- Appendix 5 Survey Reports

Part 2 – Marine Environmental Issues

For proposals likely to impact on arid zone tropical mangroves in the Pilbara, the EIA document describes how potential impacts have been addressed in the context of Guidance Statement No. 1 (April 2001).

If applicable, please identify relevant sections of the report in the box below.

Not Applicable

For proposals likely to impact on benthic primary producer habitat, the EIA document describes how potential impacts have been addressed in the context of Environmental Assessment Guideline No. 3 (December 2009), including:

- Details of the measures taken to address the Overarching Environmental Protection Principles;
- Scale benthic habitat maps showing the current extent and distribution of benthic habitats and the areas of habitat predicted to be lost if the proposal proceeds;
- Descriptions of technical work (e.g. benthic habitat surveys) carried out to underpin the benthic habitat map (e.g. a technical appendix); and
- Clearly set out calculations of cumulative loss.

If applicable, please identify relevant sections of the report in the box below.

Not Applicable

For proposals that involve marine dredging activities, potential impacts have been addressed in the context of the Environmental Assessment Guideline No. 7 for Marine Dredging Proposals (September 2011) to ensure that the predicted extent, severity and duration of impacts to benthic habitats are presented in a clear and consistent manner.

If applicable, please identify relevant sections of the report in the box below.

Not Applicable

For proposals that involve any type of waste discharge or disposal in State coastal waters between Mandurah and Yanchep, or off the Pilbara coast, potential impacts are couched in the context of the *State Environmental (Cockburn Sound) Policy 2005*, *Perth's Coastal Waters: Environmental Values and Objectives* (EPA, 2000), or *Pilbara Coastal Water Quality Project Consultation Outcomes* document (DoE, 2006) and relevant guidance provided in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC/ARMCANZ, 2000).

If applicable, please identify relevant sections of the report in the box below.

Not Applicable

For proposals that involve any type of waste discharge or disposal in State coastal waters outside of the areas described above, potential impacts are couched in the context of the guidance provided in the *State Water Quality Management Strategy Document No. 6*

(Government of WA, 2004) and the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC/ARMCANZ, 2000).

If applicable, please identify relevant sections of the report in the box below.

Not Applicable

For proposals with potential to impact on an existing or proposed marine conservation reserve, potential impacts are couched in the context of the guidance provided in the relevant indicative or final Management Plan for the reserve on the advice of DEC or another designated management agency.

If applicable, please identify relevant sections of the report in the box below.

Not Applicable

If numerical modeling has been carried out to inform the prediction of environmental impacts, the report(s) associated with this modeling, including the key assumptions, is (are) provided as a technical appendix.

If applicable, please identify the relevant appendix in the box below.

Not Applicable

Part 3 – Terrestrial Biodiversity Issues

For proposals with the potential to impact on areas of native vegetation, or other natural environments.

For proposals likely to impact on native flora and vegetation/plant communities, the EIA document describes how potential impacts have been addressed in the context of EPA Guidance Statement No. 51, *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment* (June 2004), including:

- Determining the level of flora and vegetation survey consistent with that expected in Table 3 (Appendix 2);
- Describing the survey area and methodologies, including reference to timing, duration, survey effort, any survey limitations, and the nomenclature used (WA Herbarium);
- Maps and text describing the survey area/plot sites, location of significant species, vegetation mapping, vegetation condition assessment and predicted extent of impact on the vegetation,
- A comprehensive list of flora species identified and assessment of threatened, priority or other significant flora / Ecological Communities (TECs, PECs) known or reasonably expected to occur in the area (as defined in Guidance Statement No. 51); and
- Evaluating the impact of the proposal on the species/communities, including reference tothe extent of regional clearing of the vegetation complex/type and ecological linkage.

If applicable, please identify relevant sections of the report in the box below.

- Section 6.3.1 Flora and Vegetation
- Section 7.1 Flora and Vegetation
- Appendix 5 Survey Reports

For proposals likely to impact on vertebrate fauna or fauna habitat, the EIA document describes how potential impacts have been addressed in the context of EPA Guidance Statement No. 56, *Terrestrial Fauna Surveys for Environmental Impact Assessment* (June 2004), including:

- Determining the level of fauna survey consistent with that expected in Table 3 (Appendix 2) of Guidance Statement No. 56;
- Describing the survey methodologies in the context of EPA and DEC (2010) Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment, including reference to timing, duration and survey effort used to sample each of the fauna groups sampled, any survey limitations and the nomenclature used (WA Museum/Birds Australia);
- Maps and text describing the survey area, fauna habitats and predicted extent of impact on the habitat; and
- A comprehensive list and assessment of vertebrate fauna known or reasonably expect to occur in the area, including Specially Protected and other significant fauna (as defined in Guidance Statement No. 56), and an evaluation of the impact of the proposal on the species and key habitat/s.

If applicable, please identify relevant sections of the report in the box below.

- Section 6.3.2 Terrestrial Fauna
- Section 7.2 Terrestrial Fauna

- Appendix 5 Survey Reports

For proposals with the potential to impact on short range endemic (SRE) invertebrate fauna or SRE habitat, the EIA document describes how potential impacts have been addressed in the context of EPA Guidance Statement No. 20, *Sampling of Short Range Invertebrate Fauna for Environmental Impact Assessment in Western Australia* (May 2009), including:

- Early initial assessment for restricted habitat types that have potential to support SRE fauna, including advice from the WA Museum and the DEC/OEPA.
- Maps and text describing the survey area, potential SRE habitats and regional context and extent of predicted impact on the habitat.
- Describing the survey methodologies, including reference to timing, duration and survey effort used to sample each of the fauna groups sampled, and any survey limitations.
- A survey report with assessment of SRE fauna found or reasonably expected to occur in the area, including any Specially Protected and other significant fauna, their known occurrence/habitats locally and their wider status if known, and an evaluation of the risk of the proposal to long-term survival of the species and community.

If applicable, please identify relevant sections of the report in the box below.

- Section 6.3.2 Terrestrial Fauna
- Section 7.2.3.1 Terrestrial Fauna
- Appendix 5 Survey Reports

For proposals with the potential to impact on subterranean (stygofauna and troglofauna) fauna, the EIA document describes how potential impacts have been addressed in the context of EPA Guidance Statement No. 54 and 54a, *Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia* (Draft 2007), including:

- Early initial desktop review to determine if the site has potentially suitable geology/ substrate habitat that could support subterranean fauna, including advice from the WA Museum and the DEC/OEPA and a pilot study, if appropriate;
- A subterranean fauna survey report, if the site has a very high or high likelihood of supporting subterranean fauna, or a pilot study indicated that the site supports a significant subterranean fauna;
- Maps and text identifying and describing the survey sites/area, and the geology/ habitat supporting subterranean fauna, and extent of predicted impacts on the habitat (Note the survey area should extend beyond the predicted impact zone);
- Describing the survey methodologies (see Guidance Statement No. 54a), including reference to timing, duration and survey effort used to sample each of the fauna groups sampled, species identification, and any survey limitations; and
- A comprehensive list and assessment of subterranean fauna recorded or reasonably expected to occur in the area, including any Specially Protected and other significant fauna and their known occurrence/habitats locally and their wider status if known, and an evaluation of the risk of the proposal to long-term survival of the species and community.

If applicable, please identify relevant sections of the report in the box below.

- Section 6.3.3 Subterranean Fauna
- Section 7.3 Subterranean Fauna
- Appendix 5 Survey Reports

Part 4 – Proponent's Certification of Completeness and Accuracy of Responses

Name

David Lee

Position

Greater Gorgon Government Approvals Manager

Signature

pp. J E .....

Date

05 December 2013

Appendix 5 Survey Reports

Appendix 6 Management Plans Relevant to the Proposal

Approved Gorgon Gas Development EMPs are available from Chevron Australia's website on the Environmental Approvals page, which can be found at the following address:

http://www.chevronaustralia.com/ourbusinesses/gorgon/environmentalresponsibility/environmentalapprovals.aspx

The approved Gorgon Gas Development EMPs referred to in this Environmental Review can also be accessed via the respective hyperlinks.

Fire Management Plan

http://www.chevronaustralia.com/Libraries/Chevron_Documents/FMP_Rev_1_G1-NT-PLNX0000272_1.pdf.sflb.ashx

Post-construction Rehabilitation Plan

http://www.chevronaustralia.com/Libraries/Chevron_Documents/PCRP_Rev_1_G1-NT-PLNX0000303.pdf.sflb.ashx

Terrestrial and Subterranean Environmental Protection Plan

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Terrestrial_and_Subterranean_Environment_Protection_Plan_-_G1-NT-PLNX0000294.pdf.sflb.ashx

Terrestrial and Marine Quarantine Management System

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Terrestrial_and_Marine_Quarantine_Management_System.pdf.sflb.ashx

Weed Hygiene Common User Procedure

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Gorgon_Project_Weed_Hygiene_Common_User_Procedurepdf.pdf.sflb.ashx

Topsoil Management Plan

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Gorgon_Project_Topsoil_Management_Plan.pdf.sflb.ashx

Vegetation Clearing and Audit Common User Procedure

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Vegetation_Clearing_Audit_Common_User_Procedure.pdf.sflb.ashx

Solid and Liquid Waste Management Plan

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Gorgon_Project_Solid_and_Liquid_Waste_Management_Plan_1.pdf.sflb.ashx

Terrestrial and Subterranean Environment Monitoring Program

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Gorgon_Project_Terrestrial_and_Subterranean_Environment_Monitoring_Program.pdf.sflb.ashx

Short Range Endemics and Subterranean Fauna Monitoring Plan

http://www.chevronaustralia.com/Libraries/Chevron_Documents/The_Short_Range_Endemics_and_Subterranean_Fauna_Monitoring_Plan.pdf.sflb.ashx

Fauna Handling and Management Common User Procedure

http://www.chevronaustralia.com/Libraries/Chevron_Documents/Gorgon_Project_Fauna_Handling_Common_User_Procedure.pdf.sflb.ashx

Appendix 7 EPA Offsets Form

Environmental Protection Authority

GOVERNMENT OF WESTERN AUSTRALIA

Environmental offsets reporting form

See *EPA Guidance Statement No. 19: environmental offsets - biodiversity*

Please note that the EPA may request additional information.

Section A: Administrative information
1. Proposal or scheme name: Gorgon Gas Development, Additional Construction Laydown and Operations Support Area
2. Summary of proposal or scheme: Chevron Australia Pty Ltd (Chevron Australia) proposes to undertake clearing and earthworks over up to 32 hectares (ha) of uncleared land (proposal area) on Barrow Island within an approximately 36 ha development envelope adjoining existing Gorgon Gas Development infrastructure sites on Barrow Island. Activities and facilities of the approved Gorgon Gas Development will be relocated to the proposal area.
Section B: Type of environmental asset (s) – State whether Critical or High Value, describe the environmental values and attributes
No Critical or High Value Assets are restricted to the proposal area. The potentially affected area contains the following Critical or High Value Assets, as defined by the EPA (EPA 2006). **Public Conservation Reserve System** Barrow Island is a Class A nature reserve, but the proposal area falls within the allocation for gas processing project purposes under the proposed amendment to the *Barrow Island Act 2003* (WA). **Native Vegetation** Native vegetation in good condition exists in the proposal area and surrounding areas of nature reserve **Biodiversity** Declared Threatened Fauna, under the *Wildlife Conservation Act 1950* (WA), from the proposal area: • Barrow Island Euro (*Macropus robustus isabellinus*) • Spectacled Hare-wallaby (*Lagorchestes conspicillatus conspicillatus*) • Barrow Island Golden Bandicoot (*Isoodon auratus barrowensis*) • Boodie (*Bettongia lesueur*) • White-winged Fairy-wren (*Malurus leucopterus edouardi*) • *Draculoides bramstokeri*

- *Speleostrophus nesiotes*
- *Milyeringa justitia*

The Priority 3 species, *Corchorus congener*, is broadly distributed across Barrow Island and present within the proposal area.

Section C: Significant impacts (describe the significant adverse environmental impacts related to the proposal or scheme before mitigation measures are applied)

Potential impacts on critical or high value environmental assets from the proposal before the application of any avoidance, mitigation and management measures or rehabilitation include:

1. Approximately 32 ha of vegetation clearing which will result in the loss and/or disturbance to vegetation and flora species of the area until rehabilitated.
2. Habitat loss for conservation significance fauna associated with vegetation clearing and the displacement of fauna due to clearing and earthworks.
3. Degradation of the surrounding habitat due to the introduction and spread of weeds.
4. Temporary loss of fauna and habitat as a result of wildfire ignited by clearing and earthworks.

Avoidance measures have ensured that that there will be no significant adverse environmental impacts related to the proposal before mitigation measures are applied.

Section D: Mitigation measures (describe all measures to Avoid, Minimise, Rectify and Reduce)

No clearing outside areas allocated for gas processing project purposes by *Barrow Island Act 2003* (WA) (to be amended).

Location selected to avoid features of conservation significance:

- no DRF, TEC or PEC present
- no restricted significant fauna habitats (eg Boodie warrens, raptor nests)
- no major drainage channels
- no marine or coastal component

All disturbance areas have been subjected to biological surveys and have been selected at the design phase to minimise impacts to flora and fauna (and fauna habitats) of conservation significance.

Clearing restricted to 32 ha, comprising approximately 0.1% of Barrow Island and (cumulative with other direct disturbance) retaining over 90% of the available habitat on Barrow Island.

Approval conditions proposed to apply to ensure no Material or Serious Environmental Harm outside the approved TDF during construction or operations

Management measures applied to all impacts consistent with the objectives, management measures, contingency measures, triggers and monitoring which are currently approved for the Gorgon Gas Development, including:

- Dust suppression and surface drainage management
- Monitoring linked to adaptive management framework
- Contingency plans developed and implemented, including for fire
- Areas cleared for construction rehabilitated when no longer required– in accordance with approved Post-construction Rehabilitation Plan
- Trapping and relocation of threatened species where appropriate prior to clearing. Flushing and shepherding of fauna prior to and during clearing activities
- Proven quarantine measures in place to ensure no introduction/spread of weeds

Site selected to be contiguous with other infrastructure sites (reduced edge effects)

Adaptive management framework aims to continually improve environmental performance

Construction areas disturbed as part of the proposal but no longer required for the future construction and operation of the Gorgon Gas Development will be rehabilitated in accordance with the Post-construction Rehabilitation Plan.

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Upon project closure and decommissioning, final rehabilitation will occur in accordance with an approved project site rehabilitation plan.

Section E: Significant residual impacts (describe all the significant adverse residual impacts that remain after all mitigation attempts have been exhausted)
Residual impacts resulting from the Proposal are not anticipated to be significant.
Section F: Proposed offsets for each significant residual impact (identify direct and contributing offsets). Include a description of the land tenure and zoning / reservation status of the proposed offset site. Identify any encumbrances or other restrictions on the land that may impact the implementation of the proposed offset and provide evidence demonstrating how these issues have been resolved.
The proposal is encompassed by the 332ha allocation of uncleared land in the Barrow Island Act 2003 (WA) as proposed to be amended. Requirements for Net Conservation Benefits and Additional Undertakings for the use of 332 ha of uncleared land for gas processing project purposes on Barrow Island stipulated in Schedule 1 of the Barrow Island Act 2003 (WA) as proposed to be amended. Offsets under EP Act not required to be consistent with offsets policies
Section G: Spatial data relating to offset site/s (see *EPA Guidance Statement No. 19: environmental offsets- biodiversity*, Appendix 4)
N/A
Section H: Relevant data sources and evidence of consultation (consultation with agencies, relevant stakeholders, community and references to sources of data / information). Include details of specific environmental, technical or other relevant advice and information obtained to assist in the formulation of the offset.
N/A

Environment Protection Authority. 2006. Environmental Offsets Position Statement No. 9. http://www.epa.wa.gov.au/docs/1863_PS9.pdf