



**GASCOYNE GATEWAY LTD**

# **Scoping document**

## **Single Jetty Deep-water Port & Renewables Hub**



Document No Rev 2: 4023-001  
10th November 2021

Unit 38-39  
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Nedlands, WA

Gascoyne Gateway LTD

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## Synopsis

*The Environmental Protection Authority (EPA) has determined that the Single Jetty Deep-water Port & Renewables Hub proposal is to be assessed under Part IV of the Environmental Protection Act 1986 (EP Act). The purpose of this document is to define the form, content, timing and procedure of the environmental review required by section 40(3) of the EP Act. Gascoyne Gateway LTD has prepared this environmental scoping document (ESD) according to the procedures in the EPA's Environmental Impact Assessment (Part IV Divisions 1 and 2) procedures manual 2016.*

## Disclaimer

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## 1. Invitation to make a submission

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The Environmental Protection Authority (EPA) invites public submissions on the draft Environmental Scoping Document (ESD) for this proposal.

Gascoyne Gateway LTD is proposing to, build and operate a new single jetty deep-water port and renewables hub, located 10km south of Exmouth township. The port is proposed to provide the Exmouth Gulf's existing marine traffic with a better place to berth, including tourist vessels, and enabling the Royal Australian Navy to bring its vessels to Exmouth. The draft ESD has been prepared in accordance with the EPA's Environmental Impact Assessment Procedures Manual (Part IV Divisions 1 and 2) 2021. The draft ESD outlines the work required and key areas of focus for the environmental review. The proponent will undertake this work and the information will be used to prepare an Environmental Review Document.

The draft ESD is available for a public review period of 4 weeks from 15 November 2021, closing on Monday 13 December 2021.

### **Why write a submission?**

The EPA seeks information that will inform the EPA's consideration of the likely effect of the proposal, if implemented, on the environment.

The EPA will use the information in the submissions to identify any additional preliminary key environmental factors/issues and the type and extent of any additional work for the environmental review that should be included in the ESD.

Submissions will be treated as public documents unless provided and received in confidence, subject to the requirements of the Freedom of Information Act 1992.

### **Why not join a group?**

It may be worthwhile joining a group or other groups interested in making a submission on similar issues. Joint submissions may help to reduce the workload for an individual or group. If you form a small group (up to 10 people) please indicate all the names of the participants. If your group is larger, please indicate how many people your submission represents.

### **Developing a submission**

The draft ESD specifies the form, content, indicative timing and procedure of the proponents environmental review. The ESD also outlines the preliminary key environmental factors, any specific work required and key areas of focus for the environmental review. The likely environmental impacts and the proposed management measures will be addressed in the Environmental Review Document after the proponent undertakes the studies outlined in the ESD.

You may agree or disagree with, or comment on, the general issues discussed in the draft ESD or on specific elements.

When making comments on the draft ESD:

- Suggest other preliminary key (i.e., most important) environmental factors and/or any additional work you consider would be appropriate.



Clearly state your point of view and give reasons for your conclusions.

- Reference the source of your information, where applicable.
- Suggest recommendations or alternatives.

What to include in your submission?

Include the following in your submission to make it easier for the EPA to consider your submission:

- your contact details – name and address
- date of your submission
- whether you want your contact details to be confidential
- summary of your submission, if your submission is long
- list points so that issues raised are clear, preferably by environmental factor
- refer each point to the page, section and if possible, paragraph of the draft ESD
- attach any reference material, if applicable.

Make sure your information is accurate.

The closing date for public submissions is: 13 December 2021

The EPA prefers submissions to be made electronically via the EPA's at <https://consultation.epa.wa.gov.au>.

Alternatively, submissions can be:

- posted to: Chair, Environmental Protection Authority, Locked Bag 10, Joondalup DC, WA 6919, or
- delivered to: Environmental Protection Authority, Prime House 8 Davidson Terrace, Joondalup Western Australia 6027.

If you have any questions on how to make a submission, please contact EPA Services at the Department of Water and Environmental Regulation on 6364 7000.



## 2. Introduction

<b>Proposal name:</b>	<b>Single Jetty Deep-water Port &amp; Renewables Hub</b>
Proponent:	<b>Gascoyne Gateway LTD</b>
Assessment number:	2302
Location:	The site selected is next to the existing light industrial area at Mowbowra Creek that lies 10 kilometres south of the Exmouth township.
Local government area:	Shire of Exmouth
Public review period:	Environmental Review Document – 12 weeks
EPBC Act reference number:	2021/8942

The Environmental Protection Authority (EPA) has determined that the Single Jetty Deep-water Port & Renewables Hub proposal (hereafter 'the proposal') is to be assessed under Part IV of the *Environmental Protection Act 1986* (EP Act). The purpose of this document is to define the form, content, timing and procedure of the environmental review required by section 40(3) of the EP Act.

Gascoyne Gateway LTD ('the proponent') has prepared this environmental scoping document (ESD) according to the EPA's *Environmental impact assessment (Part IV Divisions 1 and 2) procedures manual 2016* (EPA procedures manual).

### 2.1 Structure of this report

For compliance with section 40(3) of the EP Act, the EPA requires this ESD to follow its *Environmental document review template*.

### 2.2 Content

See sections 2 to 6 of this ESD for the content that the EPA requires.

### 2.3 Timing

See Table 2-1 for the assessment timeline that the EPA and Gascoyne Gateway has agreed on.

Table 2-1: Assessment timeline

<b>Key assessment milestones</b>	<b>Completion date</b>
Draft environmental scoping document released for public review (4 weeks)	15 November 2021
Proponent responds to submissions and submits revised ESD	January 2022
EPA approves environmental scoping document (ESD)	February 2022
Proponent submits the first draft of the environmental review document (ERD)	February 2022
EPA/DAWE comments on first draft of the ERD	April 2022
Proponent submits revised draft ERD	May 2022
EPA authorises release of ERD for public review	June 2022

Proponent releases ERD for public review for 12 weeks	June 2022
Close of the public review period	September 2022
EPA provides a summary of submissions	October 2022
Proponent provides a response to submissions	November 2022
EPA/DAWE reviews the response to submissions	December 2022
EPA prepares draft assessment report and completes an assessment	February 2023
EPA finalises assessment report	March 2023

## 2.4 Procedure

The EPA requires the proponent to undertake the environmental review according to the procedures in the *Environmental impact assessment (Part IV Divisions 1 and 2) administrative procedures 2016 and the procedures manual*.

When the EPA endorses the ESD, it will make the document available on the [EPA website](#) and append it to the ERD.

## 2.5 Accredited assessment under the EPBC Act

The proponent referred the project to the Department of Agriculture, Water and the Environment (DAWE). Subsequently the EPA and DAWE have determined the proposal to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is being assessed by the Australian Government and the State of Western Australia as an accredited assessment. The relevant matters of national environmental significance (MNES) for this proposal are:

- Listed threatened species and communities (sections 18 and 218A)
- Listed migratory species (sections 20 and 20A)
- The world heritage values of a declared world heritage property (sections 12 and 15A)
- The heritage values of a national heritage place (sections 15B and 15C)
- Commonwealth land (section 26 and 27A)

This ESD includes work that must be carried out and reported in the ERD document concerning MNES. The ERD will also address the matters in Schedule 4 of the Environment Protection and Biodiversity Regulations 2000.

The ERD will have a dedicated EPBC Act chapter that discusses impacts to matters of national environmental significance (MNES) including ‘whole of environment’ and identifies suitable avoidance, mitigation, management, and (if appropriate) offset measures.

This chapter will detail the impacts and mitigation measures on the following protected matters:

- Humpback Whale (*Megaptera novaeangliae*) – Vulnerable, Migratory
- Marine turtles:
  - Loggerhead Turtle (*Caretta caretta*) – Endangered, Migratory Marine
  - Green Turtle (*Chelonia mydas*) – Vulnerable, Migratory Marine
  - Hawksbill Turtle (*Dermochelys coriacea*) – Vulnerable, Migratory Marine
  - Leatherback Turtle (*Dermochelys coriacea*) – Endangered, Migratory Marine
  - Flatback Turtle (*Natator depressus*) – Vulnerable, Migratory Marine
- Sharks

- Whale Shark (*Rhincodon typus*) – Vulnerable, Migratory, Marine
- Grey Nurse Shark (*Carcharias taurus*) – Vulnerable
- Short-nosed Seasnake (*Aipysurus apaefrontalis*) – Critically endangered
- Subterranean Fauna
  - Blind Gudgeon (*Milveringa veritas*) - Vulnerable
  - Blind Cave Eel (*Ophisternon candidum*) – Vulnerable
- Seabirds and migratory shorebirds
  - Australian Fairy Tern (*Sternula nereis nereis*) - Vulnerable
  - Eastern Curlew (*Numenius madagascariensis*) – Critically Endangered
  - Bar-tailed Godwit (*Limosa lapponica baueri*) – Migratory, Marine
  - Common Greenshank (*Tringa nebularia*) – Migratory, Marine
  - Grey-tailed Tattler (*Tringa brevipes*) - Migratory
  - Ruddy Turnstone (*Arenaria interpres*) – Migratory
- Dugong (*Dugong dugon*) – Migratory, Marine
- Ningaloo Coast World Heritage Property
- Ningaloo Coast National Heritage Place
- Commonwealth land within Exmouth Gulf

Defence equities may also be impacted. Baseline surveys proposed under the various environmental factors will be designed to capture these impacts for lighting (Study 54 and 120), noise (Studies 118, 119, 124 and 126), and dust (Studies 118, 119, 124 and 126) that will have corresponding mitigation measures and management plans during the assessment process.

Information about any offsets that may be required for MNES will potentially include:

- the type of offset proposed
- the extent to which the proposed offset actions correlate with, and adequately compensate for, the significant residual impacts of the proposed action on the protected matter
- suitability of the location of any proposed offset site for the protected matter
- conservation gain to be achieved by the offset; that is, positive management strategies that improve the site or avert the future loss, degradation or damage of the protected matter
- the time it will take to achieve the proposed conservation gain
- level of certainty that the proposed offset will be successful
- current land tenure of any proposed offset and the method of securing it
- managing the offset for the life of the impact.

The ERD will discuss the proponent's environmental history, including any instance of non-compliance with Australian environmental regulations.

DAWE will require a 'Whole of Environment' approach due to potential impacts on Commonwealth land. This will mean the Commonwealth will consider impacts to landscapes/soils, coastal processes, ocean forms/processes/life, water resources, pollutants/chemicals/toxic substances, plants, animals, peoples and communities, and heritage. Most of these concerns are addressed in the WA EPA key environmental factors. There will be additional discussions on landscapes/soils (Study 129) and pollutants/chemicals/toxic substances (Study 30) in addition to the studies presented in the ESD.

In deciding whether or not to approve the proposed action under the EPBC Act, the Australian Minister for Agriculture, Water and the Environment must consider economic and social matters. The ERD will include an appendix detailing the social and economic costs and benefits of undertaking the proposed action



including, but not limited to, the basis of any estimation of costs and benefits and potential employment opportunities.

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### 3. The proposal

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Gascoyne Gateway LTD (the proponent) proposes to privately fund, build and operate a new Single Jetty Deep-water Port and Renewables Hub (the proposal) about 10 km south of the Exmouth townsite in Western Australia. The port will provide reliable, year-round berthing for a broad range of ships, including cruise ships, defence, and border security. It would be constructed within a development envelope approximately 4.19 km<sup>2</sup> in size.

At the overview level, the proposal's key attributes are summarised as follows:

- Single access jetty
- Several berths based on bathymetry at the offshore jetty abutment
- Small dredging volume with all material brought ashore or used in construction
- A jetty on piles across the nearshore/dune intersect to allow coastal longshore processes
- Onshore strategic port land
- Renewables precinct
- Desalination infrastructure
- Fuel storage

<b>Proposal title</b>	<b>Single Jetty Deep-water Port &amp; Renewables Hub</b>
<b>Proponent</b>	Gascoyne Gateway LTD
<b>Short description</b>	<ul style="list-style-type: none"> <li>■ Gascoyne Gateway Ltd plans to build, own and operate a multi-purpose marine facility in Exmouth. The project has been designed primarily with cruise liners and associated eco-tourism activity in mind to meet immediate state tourism outcomes. Other marine trade sectors are intrinsic to the business model to ensure the project's long-term financial viability. Thus the project will be a multi-purpose facility to capture diverse revenue streams. The project will not be utilised for livestock or iron ore.</li> <li>■ The site selected is next to the existing light industrial area that lies 10 kilometres south of the Exmouth township. This 'greenfields' project will have a port precinct footprint of approximately 259.62 ha land side and 62.76 ha marine side – this is necessary for the variety of activities to be undertaken at the multi-purpose facility. See</li> <li>■ Table 3-1 for more details about the development envelope.</li> <li>■ Design is based around a combination rock groin (breakwater) and pylon steel construction to a 'T' section berth-face to support the anticipated vessels. This berth face will require about 12.0 metres of depth (at chart datum) to meet design vessel draughts. This will be achieved by both natural depth and some dredging of sand and seabed limestone at the berth pocket.</li> </ul>

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Table 3-1: Key characteristics

Element	Proposal extent
<b>Marine components</b>	
Basin dimensions	360 m x 1100 m Nom.
Dredging area and volume	Area = 0.50 km <sup>2</sup> (50.1 ha) Volume = 1,128,251 m <sup>3</sup>
Basin depth	-4 to -12m LAT
Number of berths	Five Berth 1 – 7m Berth 2- 13.5m Berth 3- 11.5m Berth 4 – 11.5m Berth 5 – 9.5m
Offshore infrastructure	Small laydown area to support the operation at the seaward side, 200 m x 230 m
Total marine disturbance	<ul style="list-style-type: none"> <li>■ Development envelope – 85 ha (which includes a 25 m buffer on marine infrastructure footprint.</li> <li>■ Marine infrastructure footprint = 62.76 ha, which includes: <ul style="list-style-type: none"> <li>■ 12.63 ha marine infrastructure</li> <li>■ 50.13 ha dredge footprint.</li> </ul> </li> </ul>
Desalination plant	<ul style="list-style-type: none"> <li>■ The capacity of 2 ML/day potable water.</li> <li>■ Intake 6 ML/day of seawater.</li> <li>■ 4 ML/day of seawater concentrate (brine) to be discharged back to the ocean at approximately 70 ppt.</li> </ul>
<b>Terrestrial components</b>	
<ul style="list-style-type: none"> <li>■ Operational areas</li> <li>■ Fuel storage</li> <li>■ Water storage</li> <li>■ Renewables precinct</li> <li>■ Desalination</li> </ul>	<ul style="list-style-type: none"> <li>■ Development envelope – 334.12 ha landside which includes: <ul style="list-style-type: none"> <li>■ open space buffers of 74.5 ha.</li> </ul> </li> <li>■ Development footprint – leaving permanent clearing of no more than 259 ha, broken up as: <ul style="list-style-type: none"> <li>■ 171.43 ha as renewables</li> <li>■ 28.57 ha for fuel storage</li> <li>■ 59.62 ha as strategic port land.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>■ Renewables precinct</li> </ul>	<ul style="list-style-type: none"> <li>■ Solar and wind components to be confirmed during the study.</li> <li>■ Wind turbines and associated electrical infrastructure: <ul style="list-style-type: none"> <li>■ Up to 12 wind turbines generating up to 3.5 MW, with each turbine being up to 250 m tall from the ground to the top rotation limit of the highest blade tip.</li> <li>■ With no more than 1 wind turbine per 14 hectares</li> </ul> </li> <li>■ PV solar panels and associated electrical infrastructure: <ul style="list-style-type: none"> <li>■ The Solar PV will be deployed in modules. The panels will be mounted on low-impact steel frames and there will be inverters installed among the solar panels.</li> </ul> </li> </ul>



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- Battery – 264 MWh battery system.

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Development footprint	No more than 322 ha
Development envelope	No more than 419 ha

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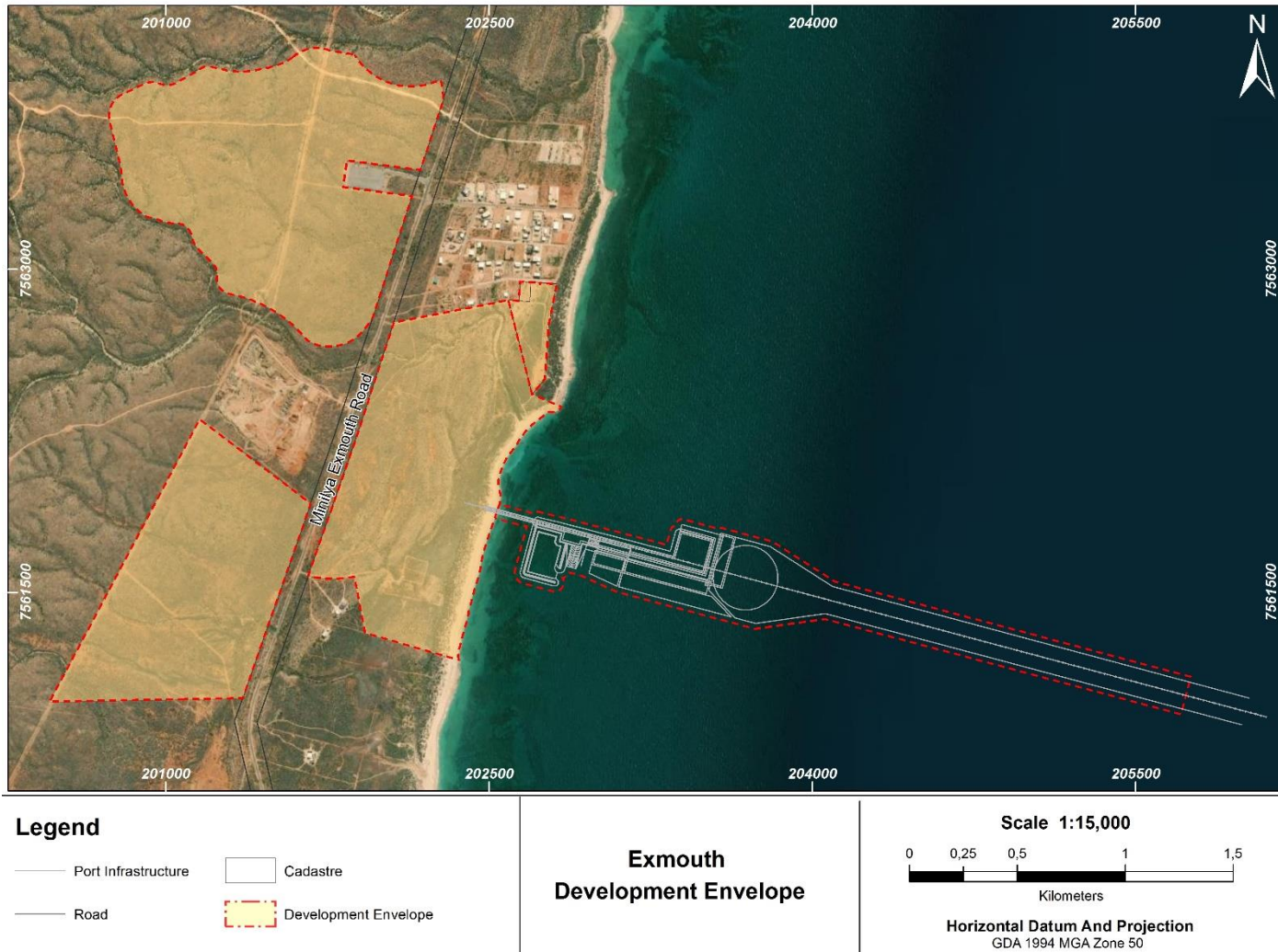


Figure 3-1: Proposed development envelope

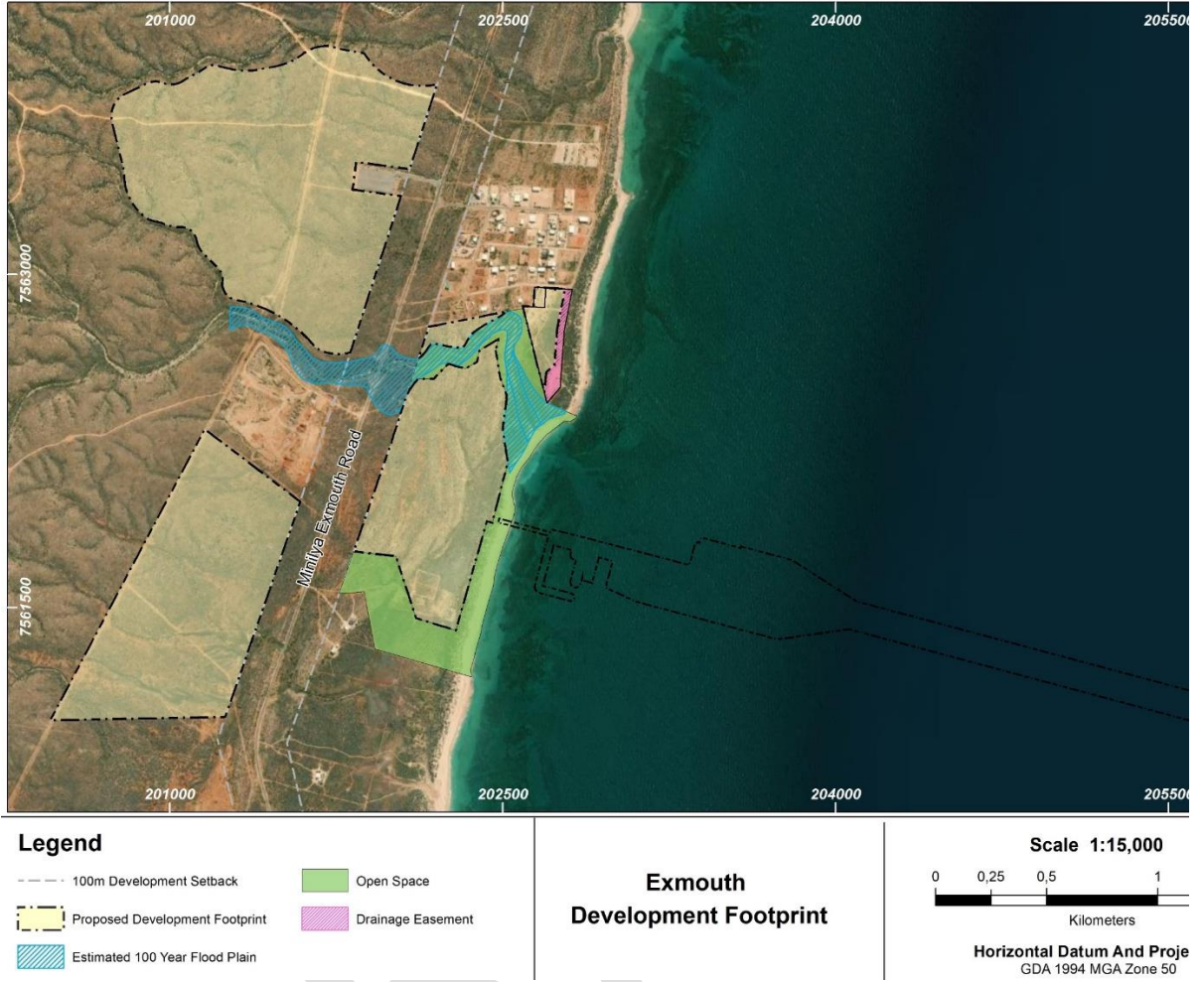


Figure 3-2: Proposal development footprint

## 4. Preliminary key environmental factors and required work

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The primary key environmental factors for the environmental review are:

1. Benthic communities and habitat
2. Coastal processes
3. Marine environmental quality
4. Marine fauna
5. Flora and vegetation
6. Subterranean fauna
7. Terrestrial fauna
8. Inland waters
9. Social surroundings

Table 4-1 recognises the regional context of the proposal and outlines the work necessary for issues that cut across multiple preliminary environmental factors.

Table 5-1 to Table 5-9 outlines the work required for each primary key environmental factor and contains the following elements for each factor:

- **EPA factor** and **EPA objective** for that factor.
- **Relevant activities** – the proposal activities that may have a significant impact on that factor.
- **Potential impacts and risks** to that factor.
- **Required work** for that factor.
- **Relevant policy and guidance** – EPA (and other) guidance and policy relevant to the assessment.

The Studies address the EPA's six expectations (EPA's s16e recommendation) of future activities and developments in the Exmouth Gulf as outlined in the report to the Minister (EPA 2021). These are covered within the scoping document as follows:

- Broad regional context – Study 1
- Critical site selection – Study 1 and 2
- Protect key social surroundings values – Environmental factor Social Surrounds - Table 4.9
- Adaptable design and infrastructure – Study 4
- Cumulative impacts, and – Study 3
- Climate change considerations. – Environmental factor Greenhouse gas emissions - Table 4.10

Table 4-1: Regional context and integrating issues

<p><b>Regional context</b></p>	<p>The proposal is located within the Shire of Exmouth, with the preferred location being about 10 km south of the Exmouth township. Construction and operational activities may impact the Exmouth Gulf, Ningaloo Marine Park, Ningaloo Coast World Heritage Property/ Ningaloo Coast World Heritage Place, Cape Range Subterranean Waterways, and Qualing Pool the significant environmental values they support.</p>
<p><b>Required work</b></p>	<p>The EPA has identified the following issues, which cut across multiple preliminary vital factors that need to be addressed in the ERD.</p> <ol style="list-style-type: none"> <li>1. Undertake a regional site selection study incorporating Matters of National Environmental Significance (MNES)</li> <li>2. Provide information regarding the selection process for the proposed site, including examining the alternative options considered and the environmental constraints and values at risk for each alternative option, to demonstrate that the proposed site has been selected to avoid and minimise impacts and the protection of key values in Exmouth Gulf and its surrounds including MNES. Note: Information regarding the environmental constraints and values at risk for the alternative options should be supported by environmental data.</li> <li>3. Discuss the regional and cumulative impacts of other existing or reasonably foreseeable development in the vicinity of the proposal with the potential to impact the same receptors and environmental values and MNES.</li> <li>4. Undertake a study to demonstrate adaptability in design and approach to protect the key values and ecological processes in a dynamic ecosystem. This includes iterations of current designs, utilising feedback from stakeholders and community consultation groups and working with nature principles.</li> <li>5. Provide details of proposed care and maintenance and decommissioning, and closure of the proposal. Provide details of the potential risks and impacts to environmental values, and details of mitigation and management measures to ensure that the impacts are not more significant than predicted.</li> </ol>



## 5. Preliminary key environmental factors and required work

### 5.1 Table 5-1: Benthic communities and habitat

Benthic communities and habitat	
<b>EPA objective</b>	To protect benthic communities and habitats so that biological diversity and ecological integrity are maintained.
<b>Relevant activities</b>	The aspects of the proposal that may impact benthic communities and habitats include: <ul style="list-style-type: none"><li>■ installation of the trestle structure, rock groyne and steel pilings</li><li>■ dredging around the berths and approach channel</li><li>■ increased vessel activity (associated with construction and operation of the facility).</li></ul>
<b>Potential impacts and risks</b>	The potential impacts arising from the proposal include: <ul style="list-style-type: none"><li>■ temporary increase in water column turbidity due to nearshore construction activities and dredging offshore</li><li>■ temporary release of contaminants from marine sediments during nearshore construction and dredging activities</li><li>■ increased vessel activity from operations introducing invasive marine species</li><li>■ increased vessel activity bringing the potential for spills.</li><li>■ Direct impacts to BCH from dredging and infrastructure</li><li>■ Indirect impacts to BCH due to altered sediment and water movement and flows caused by infrastructure such as causeways and breakwaters</li><li>■ Potential for BCH to be impacted by changes to marine environmental quality during construction and operation of the facility (e.g. brine discharge)</li><li>■ Potential for BCH to be affected by increased shading and sedimentation associated with propellor wash from vessel movement near the approach channel and turning basin.</li><li>■ Unplanned releases of chemicals or hydrocarbons associated with proposal activities, including storage on land</li></ul>



## Benthic communities and habitat

Direct impacts to benthic communities and habitat will likely be limited to areas of bare sand and sparse filter feeders (from dredging) and reef veneer in the coastal areas (from the construction of the rock groyne). Indirect impacts from dredging and construction will be subject to detailed assessment following completion of additional field surveys and collection of metocean data.

### Required work

6. Characterise the environment by designing and conducting a benthic communities and habitat survey to map the spatial extent of benthic habitats accurately. Based on the findings of the surveys, produce geo-referenced maps showing the extent and distribution of the different benthic communities and habitats across the defined Local Assessment Unit offshore of the proposal. Geo-referenced maps of benthic communities and habitats should also be provided for the anchorage areas. This characterisation should also identify any critical windows of environmental sensitivity for benthic communities, particularly corals and any seasonality for seagrasses.  
Note: if surveys were undertaken at the referral stage, survey results/mapping and a demonstration of how the *Technical guidance – protection of benthic communities and habitats* (EPA 2016) has been followed are to be included in the ERD.
7. Assess the values and significance of benthic communities and habitats within the proposal area and adjacent areas, and describe these values in a local and regional context.
8. Identify elements of the proposal that may affect benthic communities and habitat, including direct and indirect impacts, for construction and operation. This should include impacts in the event of an accidental spill or incident.
9. Undertake modelling to predict the direct and indirect impacts of dredging, including using the Impact Zonation Scheme consistent with the EPA's technical guidance on dredging.
10. Predict the likely impact of repeated exposure to sediment plumes caused by propellor wash on adjacent BCH (this may require modelling using actual measurements of the extent, duration and intensity of prop wash associated plumes).
11. Predict the residual impacts from the proposal, both direct and indirect, on benthic communities and habitat after demonstrating how the mitigation hierarchy has been applied. Impact predictions are to:

## Benthic communities and habitat

- a. Include the likely extent, severity and duration of direct and indirect impacts of the proposal on benthic communities and habitats. Predictions for both construction and operational impacts include the most likely worst-case and the most likely best-case loss scenarios.
  - b. Address any irreversible loss of, or serious damage to, benthic communities and habitat, in the context of *Technical guidance – protection of benthic communities and habitats* (EPA 2016) , including an appropriately defined local assessment unit and assessing the significance of any loss, including cumulative loss.
  - c. Include a risk assessment identifying potential impacts to benthic communities and habitat: that provides habitat for conservation-significant or locally important marine fauna; that provides habitat for commercial and recreational fisheries; and that may be potentially affected by shipping activities within the Exmouth Gulf, Ningaloo Marine Park Ningaloo Coast World Heritage Property/Ningaloo Coast World Heritage Place and Muiron Islands Marine Management Area. This risk assessment should consider accidental spills or incidents, including damage to or loss of control of vessels.
12. Identification of the risk of unplanned releases of chemicals or hydrocarbons associated with proposal activities to BCH, including from storage on land.
  13. Undertake brine outfall dilution modelling, to determine predicted mixing zone and determine the potential for impacts to adjacent BCH
  14. Include details of the monitoring and management during and after construction of the proposal and during ongoing operations to demonstrate that residual impacts are not greater than predicted at the proposal site.
  15. Describe the likely consequences for the ecological integrity and biological diversity of the benthic communities and habitats that the identified impacts may have and include a description of the likely impact of any changes on other dependent factors.
  16. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the *WA Environmental Offset Guidelines* (EPA 2014a). Where significant residual impacts remain, propose an appropriate offset package consistent with the *WA Environmental Offsets Policy* and associated guidelines and where residual impacts relate to EPBC Act-listed

## Benthic communities and habitat

threatened and migratory species the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (EPBC 2012a). Spatial data defining the areas of significant residual impacts should be provided.

17. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.

### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives*, (EPA 2020)
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986*, EPA, Western Australia, (EPA 2021)
- *Environmental factor guideline – benthic communities and habitats* (EPA 2016).
- *Technical guide – benthic communities and habitats* (EPA 2016).
- *Technical Guidance Environmental Impact Assessment of Marine Dredging Proposals*, (EPA 2021).

#### ***Other policy and guidance***

- *WA Environmental Offsets Policy* (EPA 2011a)
- *WA Environmental Offsets Guidelines* (EPA 2014b)
- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (EPBC 2012b)
- *Management plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015* (DPAW 2016a)
- *Technical guidance environmental impact assessment of marine dredging* (EPA 2021)



## 5.2 Table 5-2: Coastal processes

Coastal processes	
<b>EPA objective</b>	To maintain the geophysical processes that shape coastal morphology so that the environmental values of the coast are protected.
<b>Relevant activities</b>	<p>The aspects of the proposal that may impact coastal processes include:</p> <ul style="list-style-type: none"> <li>■ alteration of wave energy and dynamics, current patterns and interruption to longshore sediment transport caused by jetty construction across the nearshore zone</li> <li>■ construction of the rock groyne structure further offshore having the potential to trap sediment and causing changes to the morphology of the coastal zone and potentially impacting nearshore benthic communities and habitat</li> <li>■ closure and decommissioning.</li> </ul>
<b>Potential impacts and risks</b>	<p>Construction of the proposal may:</p> <ul style="list-style-type: none"> <li>■ locally alter wave and current conditions, interrupting existing longshore and cross-shore sediment dynamics</li> <li>■ trap sediment and cause further loss of nearshore benthic communities and habitat</li> <li>■ disrupt longshore sediment by altering downdrift sediment supply, causing dune and beach erosion adjacent to the proposal</li> <li>■ alter wave overwash and drainage during extreme flooding events, with possible implications for dune stability.</li> </ul>
<b>Required work</b>	<p>18. Characterise via modelling the environment by describing the current coastal processes in proximity to the proposal. This is to include, but not be limited to:</p> <ol style="list-style-type: none"> <li>a. conducting a detailed analysis of existing longshore sediment movements and variability over at least 20 years to estimate erosional and depositional patterns, including for cross-shore processes</li> <li>b. spatially quantify the coastal morphology by presenting beach profiles and bathymetry</li> <li>c. characterise erosion and inundation provided by extreme events, particularly the potential effects of severe tropical cyclones.</li> <li>d. at least 6 months of wave and current data collection near the proposed jetty.</li> <li>e. The spatial quantification of changes to coastal morphology should include aerial imagery</li> </ol> <p>19. The characterisation is to consider all temporal scales, including seasonal, inter-annual and episodic. The spatial scale must be adequate to address all coastal processes and patterns likely to be affected due to the proposal. The characterisation should</p>

## Coastal processes

extend beyond the limits of where impacts may potentially occur to provide a baseline for subsequent evaluation.

- a. Coastal inundation and sediment transport during cyclone events need to be assessed appropriately. Tropical cyclone Vance which passed the Exmouth coast as a category 5 cyclone in March 1999 needs to be modelled.
  - b. The impact of the proposed development on coastal sand dune stability needs to be assessed. The risk of dune breaching and rapid changes at the creek mouth entrance during cyclone flooding needs to be assessed.
20. Identify elements of the proposal that may potentially affect coastal processes, including direct and indirect impacts and construction and operation.
21. Mowbowra Creek, its role, and potential impacts of the proposed facilities on the hydrology, hydraulics and geomorphology of the Mowbowra Creek needs to be included in the assessment.
22. Predict the residual impacts from the proposal, both direct and indirect, after outlining any avoidance, mitigation and management options that will be applied. Impact predictions are to:
- a. Be provided at a sufficient scale to address all impacts resulting from the proposal to both alongshore and across-shore sediment transport.
  - b. Be informed by monitoring previously undertaken in the local area.
  - c. Predict near-field responses and beach erosion accretion rate and sand volumes to the proposed coastal facilities, including anticipated updrift and downdrift coastal change. Information should include forecast changes to beach morphology over the intended service life of the facility (e.g. predicted beach profiles).
  - d. Determine changes to local current and wave climate, longshore sediment movements and erosional and deposition patterns (including cross-shore processes).
  - e. Consider and assess the cumulative effects from and to any other approved or reasonably foreseeable coastal developments.
  - f. Be for both the short and long term (100-year planning horizon or planning horizon relevant to the facility's service life); be provided for best, most likely and worst-case scenarios; and consider the likely impacts of climate change within the service life of the facility.
  - g. Address the frequency, volume and potential environmental impacts of sand bypassing/back passing adjacent to the proposal.

## Coastal processes

- h. Address the requirements of State Planning Policy 2.6, particularly about the setback and coastal risk management.
23. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.
  24. Identify management and mitigation measures to ensure residual impacts are not greater than predicted.
  25. Outline the proposed ongoing governance arrangements to manage coastal processes, including the roles and responsibilities for sand bypassing/back passing requirements where required.
  26. Include details of monitoring and management that will apply during construction and operation to demonstrate and ensure that residual impacts to coastal processes are not greater than predicted.
  27. Identify the facility's proposed service life, the anticipated service life of the facility, and the due process of decommissioning. Include details of mitigation, monitoring and management that will apply during and after decommissioning.

### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives, (EPA 2020)*
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986, EPA, Western Australia, (EPA 2021)*
- *Statement of environmental principles, factors and objectives (EPA 2016)*
- *Environmental factor guideline – coastal processes(EPA 2016)*

#### ***Other policy and guidance***

- *State Planning Policy no. 2.6, State Coastal Planning Policy (DPLH 2006)*
- *Sea level change in Western Australia – application of coastal planning (Charlie Bicknell 2010)*
- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC 2012c)*



### 5.3 Table 5-3: Marine environmental quality

Marine environment quality	
<b>EPA objective</b>	To maintain the quality of water, sediment and biota so that environmental values are protected.
<b>Relevant activities</b>	<p>The aspects of the proposal that may impact marine environmental quality include:</p> <ul style="list-style-type: none"> <li>■ increased vessel activity in the region during construction, operation and maintenance</li> <li>■ increased vessel activity to the site may result in the introduction of non-native marine species</li> <li>■ water for the desalination plant, which will result in an increased discharge of brine from the ocean outfall.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>■ Construction of the proposal may temporarily affect water quality due to increased turbidity and the release of any nutrients and contaminants in disturbed sediment. This may also occur during closure and decommissioning.</li> <li>■ Placement of material for the construction and leaching of fines from the material may cause temporary turbidity during and after the material is placed.</li> <li>■ Vessel operations (including propeller wash) in shallow water may disturb sediments.</li> <li>■ Unplanned releases of chemicals or hydrocarbons associated with proposal activities including fuel storage on land; and accidental collisions or ship grounds.</li> </ul>
<b>Required work</b>	<ol style="list-style-type: none"> <li>28. Conduct monitoring as necessary to characterise the existing marine environmental quality (baseline water and sediment quality) in the area potentially affected by the proposal. The characterisation needs to be informed by assessing threats and pressures to marine environmental values, both ecological and social. The characterisation is to inform the environmental quality monitoring and management plans required in Table 5-3.</li> <li>29. Provide an environmental quality plan (EQP) that spatially defines the environmental values (EVs), environmental quality objectives (EQOs) and levels of ecological protection (LEPs) that apply to the area. The EQP shall be consistent with <i>Technical guidance – protecting the quality of Western Australia's marine environment</i> (EPA 2016) and have regard for the <i>Pilbara coastal water quality outcomes: environmental values and environmental quality objectives</i> (EPA 2006a)</li> <li>30. Identify elements, activities and potential inputs of the proposal which may potentially affect marine environmental quality for both construction and operation.               <ol style="list-style-type: none"> <li>a. Brine discharge from the desalination plant</li> </ol> </li> </ol>

## Marine environment quality

- b. Disturbance or exposure of acid sulphate soils.
  - c. Contamination of sediments from antifoulant and degradation of anticorrosion devices (sacrificial anodes)
  - d. Placement of rock for the breakwaters and leaching of fines may cause turbid plumes with potential ecological and social impacts.
31. Describe the marine system and the cause and effect pathways of each element, activity or input from the proposal on marine environmental quality.
32. Predict the extent, severity and duration of any impacts from the proposal after outlining any avoidance and mitigation options that will be applied. Impact predictions are to be presented in the context of the EQP for:
- a. Construction of coastal infrastructure – predicted impacts should also be presented spatially as an overlay to the EQP to identify where the EVs, EQOs and LEPs may not be achieved during construction.
  - b. Operation/maintenance of site – predicted impacts should also be presented spatially as an overlay to the EQP to identify where the EVs, EQOs and LEPs may not be achieved during operations/maintenance of the fabrication site.
33. Undertake modelling to predict the impacts of the breakwater and the harbour type facility on marine environmental quality, including the flushing characteristics and water residence times for the harbour type facility.
34. Identify the source and type of rock to be used for the infrastructure and the management strategies to be used to minimise impacts of construction on marine environmental quality.
35. Undertake brine outfall dilution modelling to determine predicted mixing zones required to meet the levels of ecological protection of the waters surrounding the outfall as described in the EQP.
36. Conduct whole effluent toxicity (WET) testing to determine and describe the toxicity of the brine discharge and predict the number of dilutions required to meet the different levels of ecological protection surrounding the outfall as shown in the Environmental Quality Plan (EQP).
37. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.
38. Identify management and mitigation measures to ensure residual impacts are not greater than predicted. The ERD is to include:
- a. A marine construction monitoring and management plan (MCMMP) that includes the protocols and procedures for monitoring

## Marine environment quality

- of key environmental quality indicators (e.g. turbidity, light attenuation coefficient, visual records etc.) and management of environmental quality to ensure that the construction of the proposal achieves the proposed EQOs/LEPs defined in the EQP.
- b. Include details of the monitoring and management during and after construction of the proposal and during ongoing operations to demonstrate that residual impacts to water quality are not greater than predicted.
  - c. A marine emergency response plan that includes procedures to be implemented during operations that specifically address measures to be implemented in the event of an accidental spill or incident, including damage to or loss of control of a ship any losses from land based storage facilities.
39. To monitor and manage the ongoing impacts to marine environmental quality a Monitoring and Management Plan should be included for the operation of the port facility. The monitoring should include, but not be restricted to, impacts on water and sediment quality of:
- a. Causeway
  - b. Harbour type facility
  - c. Brine discharge
  - d. Contaminants from shipping activities
40. Outline the proposed ongoing governance arrangements for the management of marine environmental quality, maintenance dredging and ongoing management for the port facility.

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### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives, (EPA 2020)*
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986, EPA, Western Australia, (EPA 2021)*
- *Environmental factor guideline – marine environmental quality (EPA 2016)*
- *Technical guidance protecting the quality of Western Australia's marine environment (EPA 2016)*

#### ***Other policy and guidance***

- *Pilbara coastal water quality outcomes: environmental values and environmental quality objectives (EPA 2006b)*



## Marine environment quality

- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (EPBC 2012d)
- *Management plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015* (DPAW 2016a)
- Western Australia's coastal waters are managed under the EPA's environmental quality management framework (EQMF), which sets levels of ecological protection to achieve various environmental quality objectives. The EQMF is based on the principles and guidelines of the *National Water Quality Management Strategy* (Australian Government 2018).

### 5.4 Table 5-4: Marine fauna

#### Marine fauna

<b>EPA objective</b>	To protect marine fauna so that biological diversity and ecological integrity is maintained.
<b>Relevant activities</b>	<p>The aspects of the proposal that may impact marine fauna include:</p> <ul style="list-style-type: none"> <li>■ construction of the trestle structure across the intertidal area</li> <li>■ construction of the rock groyne in the subtidal area</li> <li>■ piling and construction of the minimal offshore platform and buoys</li> <li>■ construction, operations and maintenance, shipping and support vessels</li> <li>■ operational shipping.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>■ Underwater noise from construction (pile driving and dredging activities) and the operation of the port (vessel noise) resulting in impacts to marine fauna including, hearing and/or behavioural impacts.</li> <li>■ The likely increase in vessel traffic in the Gulf with an associated increase in risk to marine fauna.</li> <li>■ Direct impacts and temporary displacement to marine fauna through noise and light, vessel movement, increased turbidity, strikes and entanglement during construction and operational activities.</li> <li>■ Loss or degradation of marine fauna habitat, including a reduction in the availability of foraging habitat or as a result of changes to coastal processes, from increased turbidity from construction and operation activities, including potential impacts from light spill from the offshore and onshore facilities.</li> <li>■ Increased risk of introduced marine species from vessels during both construction and operations.</li> </ul>

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- Potential impacts to commercial and recreational fishing species, through direct and indirect impacts from construction and operation such as changes to water and nutrient flows and processes, and habitat loss.
  - Unplanned releases of chemicals or hydrocarbons associated with proposal activities, accidental collisions and loss of control of ships or ship groundings.
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### Required work

41. Identify and assess the values and significance of marine faunal assemblages within the proposal area (including the Exmouth Gulf area and area of the Ningaloo Marine Park/Ningaloo Coast World Heritage Property/Ningaloo Coast World Heritage Place and Muiron Islands Marine Management Area which is potentially affected by the operation of the proposal) and describe these values in a local, regional and state context. For listed species, this must include information on the abundance, distribution (including spatial and temporal variation), ecology and habitat preferences. Where primary data is used from others, the likelihood of impacts needs to be qualified.
  42. Identify critical windows of environmental sensitivity for marine fauna in the proximity of the proposal area, including conservation significant or locally important marine fauna (including migratory coastal birds) and species important to commercial and recreational fisheries in the proposal area and immediately adjacent area.
  43. Describe the presence of marine fauna in the proximity of the proposal area, including marine mammals, other conservation-significant or locally important marine fauna (including migratory coastal birds) and species important to commercial and recreational fisheries in the proximity to the proposal area, and document any known uses of the area by them (e.g. foraging, migrating, calving and nursing, spawning, roosting and nesting etc.). For listed species, this must include:
    - a. population size and importance of the population from a local and regional perspective
    - b. information on the conservation value of each habitat type (e.g. breeding, migration, feeding, resting, interesting, etc.) from a local and regional perspective, including the percentage representation of each habitat site concerning its local and regional extent.
  44. Identify the construction and operational elements of the proposal that may affect the conservation of significant or locally important marine fauna and marine fauna habitat.
  45. Describe and assess the potential direct and indirect impacts of construction and operation of the proposal to marine mammals, other conservation-significant or locally important marine fauna (including migratory coastal birds) and species important to commercial and recreational fisheries and their habitat.
  46. Identify any significant gaps in knowledge for conservation-significant or locally important marine fauna in the proposal area and
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assess the importance and significance of those gaps concerning identifying and managing the proposal's impacts. Where required, conduct investigations to address these critical knowledge gaps.

47. Identify any known marine pests or pathogens in the area that are potentially affected by the proposal and adjacent waters. Conduct a risk assessment to identify whether the proposed activities are likely to introduce or extend the range of introduced marine pests or pathogens. Identify the control measures by which these may be avoided/mitigated.
48. Estimate the likely maximum number of vessel movements through the Gulf when the port is at peak capacity and assess likely risks and impacts to marine fauna based on this worst case scenario.
49. Conduct baseline surveys to determine the utilisation of the development envelope and surrounding area by dugongs.
50. Model and assess the impact pile driving on underwater noise and the effect on marine fauna.
51. Undertake a survey to determine the baseline noise in the Gulf. The survey should be undertaken at different times of the year including, but not restricted to periods of peak periods of tourism activity and Humpback whale presence in the Gulf.
52. Undertake noise modelling to predict the impact of vessels, based on maximum operational capacity, to marine fauna, including whales, dugong and turtles and other important fauna. The assessment should include critical windows of sensitivity such as Humpback whale calving.
53. Assess the cumulative impacts of the proposal on underwater noise and light and the impacts to marine fauna. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.
54. Establish baseline light levels, the guidance used to establish requirements for lighting, and provide evidence-based predictions for changes in light levels as a result of the construction and operation phase of the project. Ensure that lighting plans are designed in accordance with National Light Pollution Guidelines for Wildlife
55. Identify measures to mitigate adverse impacts on marine fauna in the proximity of the proposal area, including marine mammals, other conservation-significant or locally important marine fauna (including migratory coastal birds) and species important to commercial and recreational fisheries and their habitat. This includes management and monitoring protocols for:
  - a. introduced marine organisms during construction and operation and protocols to reduce the impacts to marine fauna during construction and operation to ensure that residual impacts to marine fauna are not greater than predicted. This should include procedures to be implemented in the event of an accidental spill or incident.
56. Predict the residual impacts from the proposal, both direct and indirect, after outlining any avoidance and mitigation options that

will be applied. This should include assessing the risk posed to any listed species as a result of the proposal. Impact predictions should consider both short-and long-term impacts and how the proposal may change marine fauna patterns of use and cumulative impacts.

57. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the *WA Environmental Offsets Guidelines* (EPA 2014c).
58. Where significant residual impacts remain, propose an appropriate offsets package consistent with the *WA Environmental Offsets Policy* and associated guidelines and where residual impacts relate to EPBC Act-listed threatened and migratory species the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (EPBC 2012e). Spatial data defining the area of significant residual impacts should also be provided.

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#### Relevant policy and guidance

##### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives*, (EPA 2020)
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986*, EPA, Western Australia, (EPA 2021)
- *Environmental factor guideline – marine fauna* (EPA 2016j)
- *Environmental assessment guideline (no. 5) for protecting marine turtles from light impacts* (EPA 2010)

##### ***Other policy and guidance***

- *National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds*, (Commonwealth of Australia 2020).
- *WA Environmental Offsets Policy* (EPA 2011f)
- *WA Environmental Offsets Guidelines* (EPA 2014j)
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC 2012k)
- *Biofouling biosecurity policy* (Department of Fisheries 2017 )
- *Marine bioregional plan for the North-west Marine Region* (DSEWPC 2012)
- *Management plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015* (DPAW 2016b)
- Relevant recovery plans, conservation advice and threat abatement plans for conservation-significant species that are known to occur or are likely to occur in the vicinity of the proposal area.



## 5.5 Table 5-5: Flora and vegetation

Flora and vegetation	
<b>EPA objective</b>	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.
<b>Relevant activities</b>	<ul style="list-style-type: none"> <li>■ Clearing of up to 259 ha of vegetation.</li> <li>■ Groundwater reinjection and alteration of surface water flows.</li> <li>■ Construction and operational activities.</li> <li>■ Closure and decommissioning.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>■ Natural clearing of flora and vegetation during construction.</li> <li>■ Indirect impacts on flora and vegetation from:               <ul style="list-style-type: none"> <li>■ dust during construction</li> <li>■ the introduction and spread of weeds</li> <li>■ fragmentation of vegetation</li> <li>■ changes to the surface or groundwater flows and quality.</li> </ul> </li> <li>■ Impacts to Groundwater Dependent Ecosystems (GDEs).</li> </ul>
<b>Required work</b>	<p>59. Determine the significance of any significant residual impacts on the identified environmental values by applying the Residual Impact Significance Model (page 11), and WA Offset Template (Appendix 1) in the <i>WA Environmental Offsets Guidelines</i> (EPA 2014e). Provide spatial data defining the area of significant residual impacts.</p> <p>60. Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the <i>WA Environmental Offsets Policy</i> and associated guidelines and where residual impacts relate to EPBC Act-listed threatened and migratory species the <i>Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy</i> (EPBC 2012g)</p> <p>61. In accordance with EPA Guidance conduct surveys to identify and characterise the flora and vegetation of areas in a local and regional context. If multiple surveys have been undertaken to support the assessment, a consolidated report should be provided including the integrated results of the surveys. If previous surveys are relied on for context, justification should be provided to demonstrate that they are relevant and consistent with EPA Guidance.</p> <p>62. All survey reports and data should be submitted via IBSA Submissions with the IBSA number provided for verification.</p>



## Flora and vegetation

63. Provide a figure/map of the survey effort applied in relation to the study area and development envelope, identifying the direct and indirect impact areas.
64. Identify and describe the flora species identified by the studies and surveys. Describe significant flora and provide an analysis of local and regional context, (refer to Environmental Factor Guideline – Flora and Vegetation for definition of significant flora).
65. Provide maps showing the recorded locations of significant flora in relation to the proposal and species distributions.
66. Identify and describe the vegetation present in the study area. Describe significant vegetation, and provide an analysis of local and regional context, (refer to Environmental Factor Guideline – Flora and Vegetation for definition of significant vegetation).
67. Provide maps showing the extent of all vegetation, and significant vegetation, in the study area, the development envelope, direct and indirect impact areas, and in the local and regional contexts.
68. Describe and quantify the extent of potential direct, indirect and cumulative impacts, including percentages, to all vegetation and significant flora and vegetation that may occur following implementation of the proposal during both construction and operations, in a local and regional context.
69. Provide tables with quantitative assessments of impact:
  - a. For significant flora, this includes:
    - i. number of individuals and populations in a local and regional context
    - ii. numbers and proportions of individuals and populations directly or potentially indirectly impacted, and
    - iii. numbers/proportions/populations currently protected within the conservation estate (where known).
  - b. For all vegetation units (noting threatened and priority ecological communities and significant vegetation) this includes;
    - i. area (in hectares) and proportions directly or potentially indirectly impacted, and
    - ii. proportions/hectares of the vegetation unit currently protected within conservation estate (where known).
70. Outline the proposed avoidance, mitigation and rehabilitation measures to reduce the potential impacts of the proposal. Predict the residual impacts from the proposal on flora and vegetation after considering and applying the mitigation hierarchy and considering cumulative impacts.
71. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the



## Flora and vegetation

environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.

### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives*, (EPA 2020)
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986*, EPA, Western Australia, (EPA 2021)
- *Environmental factor guideline – flora and vegetation* (EPA 2016l) – used to assess potential impacts as a result of the proposal.
- *Technical guidance – flora and vegetation surveys for environmental impact assessment* (EPA 2016m) – used in the survey design.

#### ***Other policy and guidance***

- *WA Environmental Offsets Policy* (EPA 2011f)
- *WA Environmental Offsets Guidelines* (EPA 2014j)
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC 2012k)
- *Instructions on how to prepare an Environmental Review Document*, EPA, March 2020
- *Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA)*, March 2020
- *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans*.
- *Environmental Offsets Policy, Environmental Protection and Biodiversity Conservation Act 1999* (DoSEWPC 2012).
- *Western Australian Environmental Offsets Template*, 2014
- *Relevant recovery plans, conservation advice and/or threat abatement plans for conservation significant species that are known to occur, or are likely to occur in the vicinity of the proposal area.*

### 5.6 Table 5-6: Subterranean fauna (stygofauna and troglofauna).

#### Subterranean fauna

#### **EPA objective**

To protect subterranean fauna so that biological diversity and ecological integrity are maintained.

## Subterranean fauna

### Relevant activities

- Clearing and excavation.
- The physical presence of infrastructure.
- Waste generation, storage and disposal, including brine and treated wastewater discharge.
- Closure and decommissioning.

### Potential impacts and risks

- Mortality and loss of habitat from excavation and physical presence of infrastructure.
- Impacts to subterranean fauna from:
  - changes to hydrological regimes and water quality
  - groundwater contamination.
- Impacts to the *Directory of Important Wetlands in Australia* Cape Range Subterranean Waterways WA006.

### Required work

72. In accordance with EPA Guidance conduct a desktop study to identify and characterise the subterranean fauna and their habitats in a local and regional context; and based on the results of the desktop study conduct:
  - a. a Basic (Level 1) survey and fauna habitat assessment; and/or
  - b. a Detailed (Level 2) survey include sampling inside and outside the impact areas that may be directly or indirectly impacted; and/or
  - c. targeted surveys for significant fauna that may be directly or indirectly impacted. If multiple surveys have been undertaken to support the assessment, a consolidated report should be provided including the integrated results of the surveys.
73. If previous surveys are relied on for context, justification should be provided to demonstrate that they are relevant and consistent with EPA Guidance.
74. All survey reports and data should be submitted via IBSA Submissions with the IBSA number provided for verification
75. Provide a map of the survey effort applied in relation to the study area, subterranean fauna habitats, and development envelope, identifying the direct and indirect impact areas.
76. Identify and describe the subterranean fauna habitats that may be impacted directly and indirectly by the proposal during construction and operations.

## Subterranean fauna

77. Describe the significance of these values in a local and regional context. Include relevant geological and hydrological information to determine habitat suitability and connectivity, including inside and outside the impact area.
78. Provide maps showing the extent of subterranean fauna habitats in relation to the proposal and species distributions, including the location of the Cape Range Subterranean Waterways wetland.
79. Identify and describe the fauna assemblages present and likely to be present within the development envelope that may be impacted by the proposal. Identify significant or restricted fauna and describe in detail their known ecology, likelihood of occurrence, habitats and known threats.
80. Map the locations of significant/restricted fauna records in relation to the subterranean fauna habitats, the study area, the development envelope, and direct and indirect impact areas.
81. Describe and quantify the extent of potential direct, indirect and cumulative impacts, including percentages, to habitats and significant species that may occur following implementation of the proposal during both construction and operations, in a local and regional context.
82. Provide a table of the proportional extents of each habitat within the study area and development envelope, and the predicted amount to be directly impacted and remaining. Consider any local or regional cumulative impacts, in particular the cumulative impacts to the Cape Range Subterranean Waterways.
83. Outline the proposed avoidance and mitigation measures to reduce the potential impacts of the proposal. Predict the residual impacts from the proposal on subterranean fauna after considering and applying the mitigation hierarchy and considering cumulative impacts.
84. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.
85. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the *WA Environmental Offsets Guidelines* (EPA 2014g)
86. Where significant residual impacts remain, propose an appropriate offsets package consistent with the *WA Environmental Offsets Policy* and associated guidelines and where residual impacts relate to EPBC Act-listed threatened and migratory species the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC 2012i)*. Spatial



## Subterranean fauna

data defining the area of significant residual impacts should also be provided.

### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives, (EPA 2020)*
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986, EPA, Western Australia, (EPA 2021)*
- *Environmental factor guideline – subterranean fauna (EPA 2016)*
- *Technical guidance – subterranean fauna survey (EPA 2016)*
- *Technical guidance – sampling methods for subterranean fauna (EPA 2016)*

#### ***Other policy and guidance***

- *Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA), March 2020*
- *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans.*
- *Western Australian Environmental Offsets Template, 2014*
- *Relevant recovery plans, conservation advice and/or threat abatement plans for conservation significant species that are known to occur, or are likely to occur in the vicinity of the proposal area*
- *WA Environmental Offsets Policy (EPA 2011d)*
- *WA Environmental Offsets Guidelines (EPA 2014h)*
- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC 2012j)*
- *Survey efforts for the blind gudgeon and blind cave eel must align with requirements in Survey guidelines for Australia's threatened fish and Guidelines for detecting fish listed as threatened under the EPBC Act. DSEWPC, 2011.*

## 5.7 Table 5-7: Terrestrial fauna

### Terrestrial fauna

#### **EPA objective**

To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.

## Terrestrial fauna

### Relevant activities

The aspects of the proposal that may impact terrestrial fauna include:

- clearing of fauna habitat in the construction footprint to accommodate the proposal's infrastructure
- the long-term (approximately 50 years) presence of finished access roads in linear corridors within the landscape of the development envelope, including ongoing vehicle movements
- installation of the trestle structure through the beach and intertidal habitat.

### Potential impacts and risks

Potential impacts arising from the proposal include:

- clearing of a total of 259 ha of native vegetation within the development envelope to accommodate the proposal's infrastructure
- potential direct and indirect impacts on threatened and priority fauna species (including direct loss or displacement of individuals during clearing or as a result of operational vehicle movements)
- risk of weed introduction and spread during construction activities, modifying fauna habitats with potential flow-on effects to fauna community structure
- potential for migratory shorebirds or other avifauna impacts through interaction
- barrier effects of the physical presence of infrastructure and fragmentation of habitat and populations
- degradation of habitat from the introduction and increased spread of weeds/dust
- alteration of fire regimes
- alteration of habitat as a result of changes to coastal processes or hydrodynamic/ hydrological regimes
- introduction of feral animals resulting in increased predation and competition.

### Required work

87. In accordance with EPA Guidance conduct a desktop study to identify and characterise the vertebrate and short-range endemic (SRE) invertebrate fauna and fauna habitats in a local and regional context; and based on the results of the desktop study conduct:
- a. a Basic (Level 1) survey and fauna habitat assessment; and/or
  - b. a Detailed (Level 2) survey include sampling inside and outside the impact areas that may be directly or indirectly impacted; and/or
  - c. targeted surveys for significant fauna that may be directly or indirectly impacted.

## Terrestrial fauna

- d. If multiple surveys have been undertaken to support the assessment, a consolidated report should be provided including the integrated results of the surveys. If previous surveys are relied on for context, justification should be provided to demonstrate that they are relevant and consistent with EPA Guidance.
  - e. All survey reports and data should be submitted via IBSA Submissions with the IBSA number provided for verification.
  - f. Provide a map of the survey effort applied in relation to the study area, terrestrial fauna habitats, and development envelope, identifying the direct and indirect impact areas.
  - g. **Note:** if surveys were undertaken at the referral stage, survey results and a demonstration of how the guidance was followed are included in the ERD. Ensure species database searches and taxonomic identifications are up-to-date. Where results from previous surveys are relied on for context, justification should demonstrate that they are relevant and consistent with EPA guidance.
88. Identify and describe the terrestrial fauna habitats identified by the studies and surveys. Describe significant fauna habitats, including but not limited to: SRE invertebrate microhabitats, refugia, breeding areas, key foraging habitat, movement corridors and linkages, (refer to Environmental Factor Guideline – Terrestrial Fauna for definition of significant fauna habitat).
  89. Provide maps showing the extent of terrestrial fauna habitats in relation to the proposal and species distributions.
  90. Identify and describe the fauna assemblages present and likely to be present within the development envelope that may be impacted by the proposal. Identify significant or restricted fauna and describe in detail their known ecology, likelihood of occurrence, habitats and known threats, (refer to Environmental Factor Guideline – Terrestrial Fauna for definition of significant fauna).
  91. Map the locations of significant/restricted fauna records in relation to the terrestrial fauna habitats, the study area, the development envelope, and direct and indirect impact areas.
  92. Describe and quantify the extent of potential direct, indirect and cumulative impacts, including percentages, to habitats and significant species that may occur following implementation of the proposal during both construction and operations, in a local and regional context.
  93. Provide a table of the proportional extents of each habitat within the study area and development envelope, and the predicted amount to be directly impacted and remaining. Consider any local or regional cumulative impacts.
  94. Outline the proposed avoidance and mitigation measures to reduce the potential impacts of the proposal. Predict the residual



## Terrestrial fauna

impacts from the proposal on terrestrial fauna after considering and applying the mitigation hierarchy and considering cumulative impacts.

95. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.
96. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the *WA Environmental Offsets Guidelines* (EPA 2014i).
97. Where significant residual impacts remain, propose an appropriate offsets package consistent with the *WA Environmental Offsets Policy* and associated guidelines and where residual impacts relate to EPBC Act-listed threatened and migratory species the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (EPBC 2012k). Spatial data defining the area of significant residual impacts should also be provided.

### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives*, (EPA 2020)
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986*, EPA, Western Australia, (EPA 2021)
- *Environmental factor guideline – terrestrial fauna* (EPA 2016) – used to assess potential impacts as a result of the proposal.
- *Technical guidance – sampling methods for terrestrial vertebrate fauna* (EPA 2016) – used in survey design, which included a desktop study and reconnaissance survey.
- *Technical guidance – terrestrial fauna surveys* (EPA 2016) – used in survey design.
- *Technical guidance – sampling of short-range endemic invertebrate fauna* (EPA 2016) – used to assess potential impacts as a result of the proposal.
- *EPA and DEC technical guide – terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020b)
- Instructions on how to prepare an Environmental Review Document, EPA, March 2020
- Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA), March 2020
- Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans



## Terrestrial fauna

- Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy, Department of Sustainability, Environment. Water. Population and Communities, October 2012.
- Western Australian Environmental Offsets Template, 2014
- Relevant recovery plans, conservation advice and/or threat abatement plans for conservation significant species that are known to occur, or are likely to occur, in the vicinity of the proposal area.

### **Other policy and guidance**

- *WA Environmental Offsets Policy* (EPA 2011e)
- *WA Environmental Offsets Guidelines* (EPA 2014i)
- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (EPBC 2012l)
- *Survey guidelines for Australia's threatened mammals* (DSEWPac 2011)
- *Survey guidelines for Australia's threatened reptiles* (DSEWPC 2011b)
- relevant recovery plans, conservation advice and threat abatement plans for conservation-significant species that are known to occur or are likely to occur in the vicinity of the proposal area.
- EPBC Act Policy Statement 3.21 - Industry Guidelines for avoiding, assessing and mitigating impacts on EBBC Act listed migratory shorebird species. DOEE, 2015.
- Wildlife Conservation Plan for Migratory Shorebirds. Commonwealth of Australia, 2006.
- National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory

## 5.8 Table 5-8: Inland waters

Inland waters	
<b>EPA objective</b>	To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
<b>Relevant activities</b>	<ul style="list-style-type: none"> <li>■ The physical presence of infrastructure.</li> </ul>

## Inland waters

- Alteration of natural drainage regimes, including from road construction and possible alteration of overwash and drainage pathways.
- Discharge of stormwater, brine and treated wastewater.
- Disturbance or exposure of acid sulphate soils has the potential to impact groundwater and surface water quality.
- Storage and handling of hydrocarbons and other chemicals.
- Contaminated groundwater.
- Closure and decommissioning.

### Potential impacts and risks

- Impacts on natural surface water flows and contamination of surface water due to the placement of infrastructure.
- Alteration of surface water flows may result in changes to natural erosion and deposition patterns, increasing the turbidity of surface water.
- Disposal of brine and treated wastewater has the potential to impact surface and groundwater resources.
- Exposure or disturbance of acid sulphate soils has the potential to impact water quality.
- Handling and storage of hydrocarbons and other chemicals can impact ground and surface water quality through spills and leaks.
- Groundwater Dependent Ecosystems
- Impacts to Ecologically Sensitive Areas (ESA) (the proposal lies within an ESA)
- Impact to other GW licensed users,
- Risk to human health from use of contaminated GW for irrigation
- Impacts to Qualing Pool (surface and groundwater).

### Required work

98. Characterise the baseline hydrological and hydrogeological regimes and water quality and quantity, both in a local and regional context (including a characterisation of the water exchange between the beach dune system and the Cape Range), including, but not limited to, water levels including the fluctuation of the aquifer system in response to tides and storm events, water chemistry, presence of acid sulphate soils, stream flows, flood patterns, spatial characteristics of the fresh/saline groundwater interface, aquifer characteristics and recharge potential.
99. A description of groundwater chemistry should be provided including a discussion on the potential for water quality impacts likely.

## Inland waters

100. Identify and assess impacts on other groundwater licence users.
101. Assess if any of the three GDE types occur in the project area and include an assessment of the impacts to the GDEs
102. Provide a detailed description of the design and location of the proposal with the potential to impact surface and groundwater, including the extent of discharges and reinjection and the disturbance of acid sulphate soils, if present.
103. Undertake hydrological investigations to determine the effects any proposed surface discharge, reinjection and modified drainage will have on the surface and groundwater quality and quantity of the likely direct and indirect impact areas considering cyclonic conditions, cumulative impacts and a range of climatic scenarios, including probable maximum precipitation.
104. Provide a detailed impact assessment on values of Qualing Pool including cumulative impacts on the water quality, including groundwater, to Qualing Pool from existing and future surrounding activities.
105. Identify any acid sulphate soils or sediment that could potentially be disturbed by the proposal.
106. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions.
107. Predict the residual impacts on hydrological processes and inland waters environmental quality, for direct, indirect and cumulative impacts, after considering avoidance and minimisation measures.
108. Identify management, mitigation, and monitoring methods to be implemented for the proposal to ensure residual impacts are not greater than predicted.
109. Where significant residual impacts remain and relate to MNES, propose an appropriate offsets package consistent with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (DoSEWPC 2012)*. Spatial data defining the area of significant residual impacts should also be provided.

### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives, (EPA 2020)*
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986, EPA, Western Australia, (EPA 2021)*



**Inland waters**

- *Environmental factor guideline – inland waters (EPA 2018)*

**Other policy and guidance**

- *Water in Mining Guideline (DoW 2013)*
- *Pilbara Water in Mining Guideline (DoW 2009)*
- *Pilbara Groundwater Allocation Plan – Appendix B (DoW 2013a)*
- *Identification and investigation of acid sulphate soils and acidic landscapes (DER 2015)*
- *Treatment and management of soil and water in acid sulphate soil landscapes (DER 2015b)*
- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC 2012m)*

**5.9 Table 5-9: Social surroundings**

**Social surroundings**

<b>EPA objective</b>	To protect social surroundings from significant harm.
<b>Relevant activities</b>	<p>The aspects of the proposal that may impact social surroundings include:</p> <ul style="list-style-type: none"> <li>■ construction and operation of the land and marine components of the proposal</li> <li>■ clearing during construction to accommodate the proposal's infrastructure, including access roads and the renewable energy hub</li> <li>■ construction and operation of the offshore infrastructure</li> <li>■ increased vessel activity in the region during construction and operation.</li> </ul>
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>■ Disturbance to Aboriginal heritage places and cultural associations within the area.</li> <li>■ Temporary and permanent constraints on access and traditional cultural activities.</li> <li>■ Changes to the environment may impact Aboriginal heritage places.</li> <li>■ Impacts on the heritage values of the Ningaloo Coast World Heritage Property and the Ningaloo Coast World Heritage Place.</li> </ul>

## Social surroundings

- Impacts on amenity values (including visual landscape, scenic and visual aesthetic values and recreational tourism) in a marine park.
- Impacts on social values (e.g. aesthetics, access and active use of coastal areas) in the proposal area (temporarily or permanently).
- Impacts on commercial fishing and recreational fishing operations/business (including, but not limited to aquarium fisheries; permit, sport and fly fisheries; prawn fisheries) and tourism activities in the proposal area.

### Required work

110. Characterise the heritage and cultural values of the proposal area, including the Ningaloo Coast World Heritage Property and the Ningaloo Coast World Heritage Place, Qualing Pool and the Cape range Subterranean Waterway and any other areas that may be indirectly impacted to identify sites of significant relevance within a wider regional context.
111. Conduct Aboriginal Heritage surveys in consultation with Traditional Owner groups and relevant knowledge holders. Consultation will be undertaken prior to the Aboriginal Heritage surveys to agree on survey approach and approved consultants to undertake the archaeological and ethnographical studies. Information supporting the ongoing consultation will be provided.
112. Provide a detailed description and figure(s) of the proposed disturbance and impacts to heritage sites, values and cultural associations, including the Ningaloo Coast World Heritage Property/Ningaloo Coast World Heritage Place, Qualing Pool and the Cape Range Subterranean Waterways associated with the proposal.
113. Assess changes to hydrology including groundwater to Aboriginal Heritage sites and sensitive areas, such as Qualing Pool.
114. Assess the impacts on heritage sites, values, and cultural associations, including the Ningaloo Coast World Heritage Property and the Ningaloo Coast World Heritage Place, associated with the proposal's implementation, including those resulting from changes to the environment that may impact cultural and heritage significance or values.
115. Predict the residual impacts on heritage sites, values and cultural associations for direct, indirect and cumulative impacts after considering the mitigation hierarchy.
116. Outline the mitigation and management measures to ensure that heritage sites, values and cultural associations (direct and indirect) are minimised and not greater than predicted.
117. Characterise the environment by describing the visual landscape character and scenic quality values and provide maps of the visual landscape units that may be visually affected. This should include but not be limited to landforms, vegetation, and

## Social surroundings

waterways/bodies and can be undertaken through three-dimensional modelling and photographs.

118. Characterise the current and any other reasonably foreseeable land and recreation uses and amenity values (including visual, noise, odour and dust) of the proposal area.
119. Identify and discuss the potential sources and impacts of noise (including resulting from an increase in vessels), dust, light-spill, and alteration to the proposal's landscape.
120. Assess impacts to the values of dark sky and risk to maintenance of low atmospheric pollution.
121. Design and undertake a visual impact assessment (VIA) for before, during construction, after construction, during operations, and after closure and decommissioning, to assess the impacts of the proposal on visual amenity following the Western Australian Planning Commission's *Visual landscape planning in Western Australia: a manual for evaluation, assessment, siting and design* (WAPC 2007).
122. The VIA will identify and describe the aspects of the proposal that may potentially affect the visual landscape character and scenic quality values both temporarily and permanently, using reference and vantage points of surrounding areas and using the area's viewer positions and perceptions.
123. Identify the environmental outcome that will be achieved during construction and operation of the proposal and the monitoring and/or management actions that will be undertaken to achieve the outcome. If plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPA's Instructions.
124. Predict the residual amenity impacts from the proposal on the landscape, land and recreation use and amenity values (including visual, noise, odour and dust) after considering and applying avoidance and minimisation measures.
125. Review the social implications of the proposal to planned activities within Ningaloo Marine Park, in the context of the stated objectives of each of the relevant social values outlined in the *Management plan for Ningaloo Marine Park and Muiron Islands Marine Management Area*.
126. Identify management and mitigation measures for the proposal to ensure residual impacts to land and recreation uses and amenities (including visual, noise, odour and dust) are not greater than predicted.
127. Conduct appropriate consultation to identify the potential impacts the proposal will have on the economic surroundings of people affected by the proposal (related to how the proposal directly affects the physical or biological surroundings), including concerning tourism, commercial fishing and recreational fishing operations/business.
128. Assess the potential for the project to substantially increase demand for, or reduce the availability of, community services or

## Social surroundings

infrastructure which have direct or indirect impacts on the environment, including water supply, power supply, roads, waste disposal, and housing.

- 129. Undertake a desktop assessment of soil landscape mapping over the Development Envelope.
- 130. Identify and discuss the potential impacts to the economic surroundings of the people referred to in scope 127 above. The discussion must include consideration of the mitigation hierarchy.  
Note: This should include considering information collected concerning impacts to the physical or biological surroundings as required by relevant scopes within the other preliminary key environmental factors.
- 131. Identify management and mitigation measures for the proposal to ensure impacts to economic surroundings are not greater than predicted.
- 132. Where significant residual impacts remain and relate to MNES, propose an appropriate offsets package consistent with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. Spatial data defining the area of significant residual impacts should also be provided

### Relevant policy and guidance

#### ***EPA policy and guidance***

- *Statement of environmental principles, factors and objectives*, (EPA 2020)
- *Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986*, EPA, Western Australia, (EPA 2021)
- *Environmental factor guideline – social surroundings* (EPA 2016) – used to consider potential impacts from the proposal on the social surroundings.

#### ***Other policy and guidance***

- *Aboriginal Heritage Act 1972*
- *Aboriginal heritage – due diligence guidelines, version 3.0* (DPLH 2013)
- *Guidance for the assessment of environmental factors – assessment of Aboriginal heritage* (EPA 2004) – used in the design of Aboriginal heritage surveys.
- *Visual landscape planning in Western Australia: a manual for evaluation, assessment, siting and design* (DPLH 2007)
- *Management plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015* (DPAW 2016c)

### Social surroundings

- *WA Environmental Offsets Policy (EPA 2011f)*
- *WA Environmental Offsets Guidelines (EPA 2014j)*
- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC 2012k)*

### 5.10 Table 5-10: Greenhouse Gas Emissions

#### Greenhouse Gas Emissions

<b>EPA objective</b>	To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change.
<b>Relevant activities</b>	The proposal aims to be completely reliant on renewables in the future and to provide the area with renewable capability and reducing reliance on fossil fuel energy sources.
<b>Potential impacts and risks</b>	<ul style="list-style-type: none"> <li>■ There will be a net greenhouse gas benefit from the proposal implementation</li> </ul>
<b>Required work</b>	<p><b>133.</b> Information that the factor GHG emissions has been considered for this proposal during both construction and operation</p> <ol style="list-style-type: none"> <li>a. Calculations showing the estimated emissions for Scope 1 GHG emissions and information detailing why Scope 2 and Scope 3 GHG emissions are not a consideration.</li> <li>b. Show how the proposal has taken steps to apply the mitigation hierarchy for this factor, referring to the GHG emission environmental factor guideline (EPA 2020).</li> </ol>
<b>Relevant policy and guidance</b>	<p><b><i>EPA policy and guidance</i></b></p> <ul style="list-style-type: none"> <li>■ Environmental Factor Guideline – Greenhouse Gas Emissions (EPA 2020)</li> </ul>



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## 6. Stakeholder consultation

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The proponent must consult with stakeholders who are affected by or are interested in the proposal. This includes the decision-making authorities (see Section 7), other relevant state government agencies, local government authorities, the local community and environmental non-government organisations.

The proponent must document the following in the ERD:

- identified stakeholders
- the stakeholder consultation undertaken and the outcomes
- decision-making authorities' specific regulatory approvals and any adjustments to the proposal as a result of consultation
- any future plans for consultation.

## 7. Decision-making authorities

At this stage, the EPA has identified the authorities listed in Table 7-1 as decision-making authorities (DMAs) for the proposal. Additional DMAs may be identified during the assessment.

Table 7-1: Decision-making authorities

Decision-making authority	Relevant legislation
Minister For Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> section 18 approval
Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> water extraction licence
Minister for Planning	<i>Planning and Development Act 2005</i> Town Planning Scheme amendment
Minister for Lands	<i>Land Administration Act 1997</i> section 91 licence
Minister for Environment	<i>Biodiversity Conservation Act 2016</i> take of threatened species and threatened ecological communities
Shire of Exmouth	<i>Planning and Development Act 2005</i> development approval
CEO, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> clearing permit
CEO, Department of Transport	<i>Jetties Act 1926</i> jetty licence
CEO, Department of Biodiversity, Conservation and Attractions	<i>Biodiversity Conservation Act 2016</i> take of flora and fauna
Chief Dangerous Goods Officer, Department of Mines, Industry, Regulation and Safety	<i>Dangerous Goods Safety Act 2004</i>

### 7.1 The Department of Agriculture, Water, and the Environment (DAWE)

Assessment documentation prepared for this referral will be assessed under an accredited process for the purposes of approval under the EPBC Act must. The documentation in addition to providing sufficient information for a decision, address the matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth) (Appendix A)

The ERD will have a dedicated EPBC Act chapter that discusses impacts to matters of national environmental significance (MNES) including 'whole of environment' and identifies suitable avoidance, mitigation, management, and (if appropriate) offset measures.

## 8. References

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- Australian Government (2018). National Water Quality Management Strategy Department of Agriculture and Water Resources. Canberra.
- Charlie Bicknell (2010). Sea Level Change in Western Australia Application to Coastal Planning Department of Planning Lands and Heritage. Western Australia.
- Commonwealth of Australia (2020). National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds.
- Department of Fisheries (2017 ). Department of Primary Industries and Regional Development Biofouling Biosecurity Policy Department of Primary Industries and Regional Development. Western Australia.
- DER (2015). Identification and investigation of acid sulphate soils and acidic landscapes. Department of Environment Regulation. Perth.
- DER (2015). Treatment and management of soil and water in acid sulphate soil landscapes. Department of Environment Regulation. Perth
- DoSEWPC (2012). EPBC Act environmental offsets policy. Department of Sustainability Environment Water Population and Communities.
- DPAW (2016). Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Plan Department of Parks and Wildlife. Western Australia
- DPLH (2006). State Planning Policy No. 2.6 State Coastal Planning Policy Department of Planning Lands and Heritage. Western Australia.
- DPLH (2007). Visual Landscape Planning in Western Australia: a manual for evaluation, assessment, siting and design Department of Planning Lands and Heritage. Perth.
- DPLH (2013). Aboriginal Heritage Due Diligence Guidelines. Department of Planning Lands and Heritage. Perth.
- DSEWPaC (2011). Survey Guidelines for Australia’s Threatened Mammals.
- DSEWPC (2011). Survey Guidelines for Australia’s Threatened Reptiles Department of Sustainability Environment Water Population and Communities. Canberra.
- DSEWPC (2012). Marine bioregional plan for the North-west Marine Region Department of Sustainability Environment Water Population and Communities. Western Australia
- EPA (2004). Guidance for the Assessment of Environmental Factors – Assessment of Aboriginal Heritage Environmental Protection Authority. Perth.
- EPA (2006). Pilbara Coastal Water Quality Consultation Outcomes: Environmental Values and Environmental Quality Objectives Environmental Protection Authority. Western Australia.
- EPA (2010). Environmental Assessment Guideline (No. 5) for Protecting Marine Turtles from Light Impacts Environmental Protection Authority. Western Australia.
- EPA (2011). WA Environmental Offsets Policy Environmental Protection Authority. Western Australia.
- EPA (2014). WA Environmental Offset Guidelines Environmental Protection Authority. Western Australia.
- EPA (2016). Environmental Factor Guideline-Social Surroundings, Government of Western Australia.
- EPA (2016). Environmental Factor Guideline - Coastal Processes Environmental Protection Authority. Western Australia

- EPA (2016). Environmental Factor Guideline - Marine Environmental Quality. Environmental Protection Authority. Perth.
- EPA (2016). Environmental Factor Guideline - Marine Fauna Environmental Protection Authority. Western Australia
- EPA (2016). Environmental Factor Guideline – Flora and Vegetation Environmental Protection Authority. Western Australia.
- EPA (2016). Environmental Factor Guideline – Subterranean Fauna. Environmental Protection Authority. Western Australia
- EPA (2016). Environmental Factor Guideline – Terrestrial Fauna. Environmental Protection Authority. Perth.
- EPA (2016). Environmental Factor Guideline: Benthic Communities and Habitats,. Environmental Protection Authority. Western Australia.
- EPA (2016). Statement of Environmental Principles, Factors and Objectives. Environmental Protection Authority. Western Australia.
- EPA (2016). Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment Environmental Protection Authority.
- EPA (2016). Technical Guidance – Protecting the quality of Western Australia's marine environment Environmental Protection Authority. Western Australia
- EPA (2016). Technical Guidance – Protection of Benthic Communities and Habitats. Environmental Protection Authority. Western Australia.
- EPA (2016). Technical Guidance – Sampling methods for subterranean fauna Environmental Protection Authority. Western Australia
- EPA (2016). Technical Guidance – Sampling methods for terrestrial vertebrate fauna. Environmental Protection Authority. Perth.
- EPA (2016). Technical Guidance – Sampling of short range endemic invertebrate fauna Environmental Protection Authority. Perth.
- EPA (2016). Technical Guidance – Subterranean fauna survey. Environmental Protection Authority. Western Australia
- EPA (2016). Technical Guidance – Terrestrial fauna surveys. Environmental Protection Authority.
- EPA (2018). Environmental Factor Guideline – Inland Waters Environmental Protection Authority. Perth
- EPA (2020). Statement of Environmental Principles, Factors and Objectives. Environmental Protection Authority. Western Australia.
- EPA (2020). Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment. Environmental Protection Authority. Perth
- EPA (2021). Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986. Environmental Protection Agency. Western Australia.
- EPA (2021). Technical Guidance Environmental Impact Assessment of Marine Dredging. Environmental Protection Authority. Perth.
- EPBC (2012). Environment Protection and Biodiversity Conservation Act 1999. Department of Sustainability; Environment Water Population and Communities. Australia



## **Appendix A. Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Regulations)**

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**Commonwealth Consolidated Regulations****ENVIRONMENT PROTECTION AND BIODIVERSITY  
CONSERVATION REGULATIONS 2000 - SCHEDULE 4  
Matters to be addressed by draft public environment  
report and environmental impact statement****ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION  
REGULATIONS 2000 - SCHEDULE 4****Matters to be addressed by draft public environment report and environmental impact  
statement**

([regulation 5.04](#))

**1 General information**

1.01 The background of the action including:

- (a) the title of the action;
- (b) the full name and postal address of the designated proponent;
- (c) a clear outline of the objective of the action;
- (d) the location of the action;
- (e) the background to the development of the action;
- (f) how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;
- (g) the current status of the action;
- (h) the consequences of not proceeding with the action.

**2 Description**

## 2.01 A description of the action, including:

- (a) all the components of the action;
- (b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;
- (c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;
- (d) relevant impacts of the action;
- (e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;
- (f) any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action;
- (g) to the extent reasonably practicable, any feasible alternatives to the action, including:
  - (i) if relevant, the alternative of taking no action;
  - (ii) a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action;
  - (iii) sufficient detail to make clear why any alternative is preferred to another;
- (h) any consultation about the action, including:
  - (i) any consultation that has already taken place;
  - (ii) proposed consultation about relevant impacts of the action;
  - (iii) if there has been consultation about the proposed action--any documented response to, or result of, the consultation;
- (i) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

## 3 Relevant impacts

### 3.01 Information given under [paragraph 2.01\(d\)](#) must include:

- (a) a description of the relevant impacts of the action;
- (b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;

(c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;

(d) analysis of the significance of the relevant impacts;

(e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

#### 4 Proposed safeguards and mitigation measures

4.01 Information given under [paragraph 2.01\(e\)](#) must include:

(a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;

(b) any statutory or policy basis for the mitigation measures;

(c) the cost of the mitigation measures;

(d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;

(e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;

(f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.

#### 5 Other approvals and conditions

5.01 Information given under [paragraph 2.01\(f\)](#) must include:

(a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:

(i) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy;

(ii) how the scheme provides for the prevention, minimisation and management of any relevant impacts;

(b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;

(c) a statement identifying any additional approval that is required;

(d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

## 6 Environmental record of person proposing to take the action

6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

(a) the person proposing to take the action; and

(b) for an action for which a person has applied for a permit, the person making the application.

6.02 If the person proposing to take the action is a corporation--details of the corporation's environmental policy and planning framework.

## 7 Information sources

7.01 For information given in a draft public environment report or environmental impact statement, the draft must state:

(a) the source of the information; and

(b) how recent the information is; and

(c) how the reliability of the information was tested; and

(d) what uncertainties (if any) are in the information.