

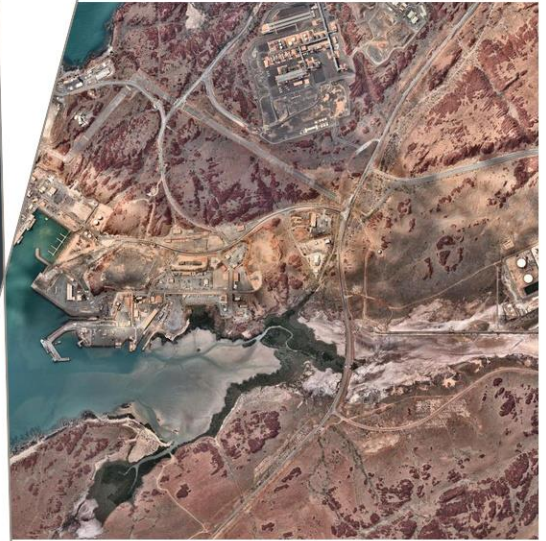


PERDAMAN

Perdaman Urea Project

Draft Environmental Scoping Document

Assessment No. 2184 (WA) – 2018/8383 (Commonwealth)



Prepared for Perdaman Chemicals and Fertilisers Pty Ltd by Cardno

Rev 4.4

30 May 2019

DRAFT

Invitation to make a submission

The Environmental Protection Authority (EPA) invites people to make a submission on the draft Environmental Scoping Document (ESD) for this proposal.

Perdaman Chemicals and Fertilisers Pty Ltd (Perdaman) (the Proponent) proposes to establish a state of the art Urea Production Plant within the proposed Burrup Strategic Industrial Area, approximately 8 km from Dampier and 20 km north-west of Karratha on the north-west coastline of Western Australia (WA). The draft ESD has been prepared in accordance with the EPA's Procedures Manual (Part IV Divisions 1 and 2). The draft ESD outlines the work and information required as well as 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 (ERD).

The draft ESD is available for a public review period of 2 weeks from Wednesday 5th June 2019 closing on Wednesday 19th June 2019.

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 and information 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, timing and procedure of the environmental review and outlines the work and/or information required to identify or predict the direct, indirect and cumulative impacts of the proposal. 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 and/or information 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.

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- > Attach any reference material, if applicable. Make sure your information is accurate and relevant.

The closing date for public submissions is **19 June 2019**.

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

Alternatively submissions can be:

- > posted to: Chairman, Environmental Protection Authority, Locked Bag 10, Joondalup DC, WA 6919, or
- > delivered to: the Environmental Protection Authority, Prime House, 8 Davidson Terrace, Joondalup, WA 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.

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Proposal Name:	Perdaman Urea Project (the Project)
Proponent:	Perdaman Chemicals and Fertilisers Pty Ltd
Assessment number:	2184 under Part IV <i>EP Act</i>
Location:	Sites C & F – Burrup Strategic Industrial Area (BSIA) Multi-user Infrastructure Corridor –BSIA Dampier Port
Local Government Area:	City of Karratha
Public review period:	Environmental Scoping Document – 2 weeks Environmental Review Document – 12 weeks
EPBC reference no:	2018/8383

1 Introduction

On 28th November 2018, the Environmental Protection Authority (EPA) determined that the above Proposal is to be assessed under Part IV of the *Environmental Protection Act 1986 (EP Act)*. A referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* covering the Project was submitted to the Commonwealth Department of the Environment and Energy (DoEE) online on 21st December 2018 (Referral #2018/8383).

The level of assessment under the *EP Act* is Public Environment Review (s. 40(2) and s. 40(4)) with 12 weeks public review.

The purpose of the Environmental Scoping Document (ESD) is to define the form, content, timing and procedure of the environmental review, required by s. 40(3) of the *EP Act*. Perdaman Chemicals and Fertilisers Pty Ltd (the Proponent) has prepared this draft ESD according to the procedures in the EPA's Procedures Manual.

Form

The EPA requires that the form of the report on the environmental review required under s. 40 (Environmental Review Document, ERD) is according to the *Environmental Review Document template*.

Content

The EPA requires that the Environmental Review Document (ERD) addresses matters of relevance for environmental impact assessment pursuant to the Western Australian *EP Act*. Where the proposal is also a controlled action and to be assessed under the *EPBC Act* through the s.87 accreditation provisions, the ERD shall also satisfy the information requirements under both regulatory regimes, including the content outlined in Sections 2 to 6 of this ESD.

Timing

Table 1-1 sets out the timeline for the assessment of the Proposal agreed between the EPA, the Commonwealth DoEE and the Proponent.

Table 1-1 Assessment Timeline [Consistent with the EPA's EIA (Part IV Division 1 and 2) Procedures Manual]

Key Assessment milestones	Completion Date
EPA approves ESD	22 July 2019
EPA notifies Proponent and publishes ESD (1 week from approval)	29 July 2019
Proponent submits first draft ERD	29 July 2019
EPA provides comment on first draft ERD (6 weeks from receipt of ERD)	4 September 2019
Proponent submits revised draft ERD (1 week from receipt of EPA comments)	11 September 2019*
EPA authorises release of ERD for public review (2 weeks from EPA approval of ERD)	25 September 2019*
Proponent releases ERD for public review for 12 weeks	1 October 2019*
Close of public review period	24 December 2019*
EPA provides Summary of Submissions (3 weeks from close of public review period + 1 week for Departmental shutdown between Christmas and New Year)	21 January 2020*
Proponent provides Response to Submissions (1 week from receipt of submissions summary)	28 January 2020*
EPA reviews the Response to Submissions (4 weeks from receipt of Response to Submissions and subject to EPA meeting dates)	25 February 2020*
EPA prepares draft assessment report and completes assessment (6 weeks from EPA accepting Response to Submissions)	7 April 2020*
EPA finalises assessment report (including two weeks consultation on draft conditions) and gives report to Minister (6 weeks from completion of assessment)	19 May 2020*

* Note – These completion dates will need to be extended if additional revised versions of the draft ERD or Response to Submissions document are required.

Procedure

The EPA requires the Proponent to undertake the Environmental Review according to the procedures in the *Administrative Procedures* and the *Procedures Manual*.

Assessment under the EPBC Act, s.87 Accreditation Provisions

The Proposal has been referred to the Commonwealth DoEE (EPBC ref No 2018/8383) and determined on 28th March 2019 to be a controlled action under the *EPBC Act*. The Commonwealth DoEE has determined that the Proposal can be assessed under the accredited process provisions in section 87(1)(a) of that Act.

The relevant controlling provisions for this Proposal are:

- > National Heritage Places (sections 15B & 15C);
- > Listed Threatened Species (sections 18 & 18A);
- > Listed Migratory Species (sections 20 & 20A); and
- > Commonwealth Marine Areas (sections 23 & 24A).

This ESD includes work and/or information required to be carried out and reported on in the ERD in relation to matters of national environmental significance (MNES). The Environmental Review Document will also address the matters in Schedule 4 of the *Environmental Protection and Biodiversity Conservation Regulations 2000*.

The ERD will include a separate section relating to “Impacts on the environment of the Commonwealth Marine Areas” for the consideration of the Commonwealth DoEE. This separate section will not form part of EPA’s assessment of the Proposal. However, the EPA will consider potential impacts on marine turtles in States waters under the environmental factor Marine Fauna.

MNES that may be impacted by the Proposal will be identified in the ERD and the potential impacts on these matters addressed within each relevant preliminary environmental factor identified in Table 3-1¹. Where risks of relevance to MNES cannot practicably be eliminated, reduced or mitigated to avoid significant impacts, proposed offsets to address significant residual impacts on MNES will also be discussed in the ERD.

2 The Proposal

The Proponent proposes to establish a state of the art urea production plant using natural gas as feedstock in the Burrup Strategic Industrial Area (BSIA), approximately 8 km from Dampier and 20 km north-west of Karratha on the north-west coastline of WA (Attachment A, Figure 1). The BSIA is a state designated area for industrial development managed by LandCorp. The Project has been granted Project of State Significance status under the Lead Agency Framework by the WA Government. The Project has been granted Major Project Facilitation Status (MPFS) through the Commonwealth government's program.

The urea plant will have a production capacity of approximately 2 million tonnes per annum (Mtpa) on Sites C and F within the BSIA on the Burrup Peninsula (Attachment A, Figure 2 and 3). The project involves piping natural gas from the nearby Woodside LNG plant to the project site under a long-term commercial off-take agreement. The approvals for the connection from the Dampier to Bunbury Natural Gas pipeline (DBNGP) to the plant's battery limits will be the responsibility of the gas supplier (Woodside). The Project will transport urea product along the existing East West Common User Service Corridor, via a closed conveyor, for shipment from the nearby Dampier Port.

Native Title was determined by the Federal Court of Australia not to exist over the Burrup Peninsula (refer to the Ngarluma-Yindjibarndi Determination - Federal Court Number WAD6017/1996). However, prior to this determination, the State executed the Burrup Maitland Industrial Estates Agreement (BMIEA) with the Ngarluma-Yindjibarndi, Wong-Goo-Tt-Oo, Yaburara and Mardudhunera people, which agreed the developable industrial sites and locations that would be subject to payments by eventual proponents developing those sites. Under the BMIEA, the Native Title parties consented to the compulsory acquisition and extinguishment of Native Title in the BSIA in return for, among other things, the grant of freehold interests in non-industrial land on the Burrup Peninsula to relevant approved body corporate (which in this case is the Murujuga Aboriginal Corporation). The acquisition of Native Title over the BSIA land took place under the future act procedure of the *Native Title Act 1993* (Cth).

While the BMIEA provided for compulsory acquisition pursuant to Australian law and established an Approved Body Corporate for the purposes of the BMIEA implementation, connection to country across the Development Envelope for a range of Aboriginal individuals and groups pursuant to customary Aboriginal law survives the compulsory acquisition. This continuing connection to country is relevant and must be considered for determining relevant stakeholder interests pursuant to the *EP Act* and the *Aboriginal Heritage Act*.

The BMIEA provided a variety of benefits to local Indigenous people through: financial compensation; establishment of various employments; training; educational support; establishment of a Rock Art Study to monitor the industries emissions; and the development of a Roebourne Enhancement Scheme. The Murujuga Aboriginal Corporation 2006 (MAC) is the approved body corporate for the BMIEA. It oversees the implementation and contractual obligations contained in the BMIEA.

The proposed location (Sites C and F) falls within the industrial areas defined by the BMIEA. Site C and the intervening portion of land are both part of the area to which proponent payments under the BMIEA apply. Site F is not subject to these payments as it was treated as "existing industry" under the BMIEA (having previously been used as a laydown site).

¹ In relation to controlling provision "Commonwealth Marine Areas", on the basis of feedback from DoEE, it is noted that as Listed Migratory Species is triggered in the controlled action decision in relation to a range of identified marine species, Commonwealth Marine Area is also then triggered. This is because, according to the EPBC Act Policy Statement 1.1 *Significant Impact Guidelines – Matters of National Environmental Significance* an action is likely to have a significant impact on the environment of the CMA if there is a real chance or possibility that the action will have a substantial adverse effect on a population of a marine species or cetacean, including its life cycle and distribution. A 'population' of a species is defined in the EPBC Act as an occurrence of a species in a particular area. In addressing the population impacts in State waters, the Proponent will also demonstrate the level of impact applicable in Commonwealth marine areas as required for this trigger.

The Project site is located adjacent to Murujuga National Park. Murujuga National Park is freehold land on the Burrup Peninsula, owned by the Murujuga Aboriginal Corporation (MAC) and leased back to the State of Western Australia. Murujuga National Park is jointly managed by representative of MAC and the Department of Biodiversity Conservation and Attractions (DBCA).

The BSIA is the location of a number of established industrial facilities. Although not implemented, development proposals occupying Sites C and F have also previously been subject to assessment and were approved pursuant to Part IV of the *EP Act* and the *EPBC Act*.

The area between Sites C and F was examined by the Department of Jobs, Tourism, Science and Innovation (JTSI) and LandCorp to establish the technical feasibility of amalgamating these two discontinuous land parcels to a single amalgamated industrial location. Based on the Phase 1 results of this feasibility study, the preferred site layout option is to split the urea plant footprint into two parts which are aligned with Sites C and F. The two sites would be connected by a 30 m wide easement to accommodate an elevated causeway for road and infrastructure requirements. The Proponent will address environmental and heritage impacts as a result of use of Sites C and F and the connecting causeway.

The granulated urea product will be transported by closed conveyor along the existing East West Service Corridor through to Dampier Port, where new facilities will include a stockpile and loading arm. Approvals for the conveyor, storage and loadout facilities will be the responsibility of the Proponent. Pilbara Ports Authority (PPA) will be responsible for the shipping berths, and any necessary associated impact assessment within the Dampier Port.

Brine discharge will be under commercial arrangements to Water Corporation's existing licenced facility which has already undergone detailed environmental assessment, conditioning and ministerial approvals.

It is proposed that the existing public access road to Hearson Cove will be realigned to the existing gazetted road reserve at the northern extent of Site F. Another realignment option to the southern extent of Site F was also considered.

The northern realignment option would result in the public road bisecting the Project operational footprint and necessitates substantial infilling to achieve a road surface above the 1 in 100 year flood level. It is noted that the environmental impact of this alignment was assessed in EPA Bulletin 985 (July 2000) and approved as part of Ministerial Statement 552 on 14 September 2000. Details of road realignment options will be discussed further in the ERD and a preferred alignment will be described.

The regional location of the Proposal is shown in Attachment A (Figure 1 and 2), the Development Envelope and indicative footprint of the Proposal is delineated in Attachment A (Figure 3). The Proponent will outline alternatives considered in the ERD, including process design options, site selection and layout alternatives.

The key characteristics of the Proposal are set out in Tables 2-1 and 2-2. The key Proposal characteristics may change due to the findings of studies and investigations conducted and the application of the risk management hierarchy by the Proponent. The potential impacts of any such changes will be assessed in the Environmental Risk Assessment (ERA) as outlined in Section 4.

Table 2-1 Summary of the proposal

Item	Detail
Proposal title	Perdaman Urea Project
Proponent name	Perdaman Chemicals and Fertilisers Pty Ltd
Short description	The Proponent intends to construct and operate a urea plant with a production capacity of approximately 2 million tonnes per annum (Mtpa) on Sites C and F within the Burrup Strategic Industrial Area (BSIA) on the Burrup Peninsula. Natural gas for the urea plant will be sourced from a nearby domestic gas plant. The urea product will be transported via closed conveyor to the nearby Dampier Port for export via Panamax vessels.

Table 2-2 Location and proposed extent of physical and operational elements

Element	Location	Proposed extent
Physical elements		
Site C& F	Figures 2&3	Site C: Approximately 34 ha Site F: Approximately 38 ha Causeway: Approximately 1.5 ha
Gas Supply Pipeline	Figure 3	Clearing of 1 ha to link to existing gas pipeline easements.
Ammonia Plant	Figure 3	3,500 tpd nominal capacity - no 3rd party sales
Urea Production Plant	Figure 3	Footprint approximately 73.5 ha. 6,200 tpd nominal capacity, granulated product Nominal 2.05 Mtpa
Infrastructure and Logistics Buildings	Figure 3	including: <ul style="list-style-type: none"> ▪ Administration buildings; ▪ Operation control room; ▪ Maintenance workshop; ▪ Parts and materials warehousing; and ▪ Plant security.
Utility Block	Figure 3	<ul style="list-style-type: none"> ▪ Air separation (~2,200 tpd); ▪ Power generation (~ 100 MW) ▪ Water treatment; ▪ Cooling water; ▪ Flare; ▪ Firefighting facilities; and ▪ Other utilities.
Laydown associated with Construction	Figure 3	Clearing/fill of approximately 50 ha.
Product Conveyor to Port	Figure 3	Closed conveyor along the existing East West Service Corridor (10ha) which is already disturbed. Clearing of 1ha to connect from site boundary to the East West Service Corridor (3 options under consideration).
Product Storage Areas	Figure 3	Ammonia: Storage of a maximum of 10,000 tonnes capacity on plant site in refrigerated tank Urea (plant site): minimum 75,000 tonnes capacity, fully enclosed shed Urea (port site): 75,000 tonnes capacity, fully enclosed shed
Operational elements		
Gas Supply (Natural Gas)	Figure 3	130 terajoules per day supplied via a gas pipeline
Urea Formaldehyde Input	Figure 3	11 ktpa approximately
Power Supply	Figure 3	Internal generation
Water Supply	Figure 3	25.2 Glpa from existing sea water supply by Water Corporation.
Stormwater	Figure 3	Stormwater to be treated on site prior to discharge.
Wastewater	Figure 1	Input to existing licenced WaterCorp Brine discharge pipeline
Saline Water Discharge	Figure 1	12-13 Glpa approximately (subject to feed water salt content) to be disposed as input to existing licenced saline pipeline to sea, subject to commercial agreement with Water Corporation
Solid Waste		Some solid waste from site water treatment residue to appropriate disposal site Spent catalyst/resins to appropriate disposal sites

Element	Location	Proposed extent
		Construction waste streams to be recycled where such services are available from waste management contractors. Residual wastes to local landfill in accordance with landfill classification
Energy Efficiency		Approximately 21 GJ/t urea (LHV) Approximately 5.1 Gcal/t urea (LHV)
Material Transport	Figure 1&3	Transport of urea (granules) through conveyor to Dampier Port along existing service corridor
Urea Shiplading System	Figure 3	Travelling (closed) conveyor-fed, cantilever arm loader with direct discharge to ship hold via chute. Nominal loading capacity of 2,200 tonnes per hour.
Shipping	Figure 3	Urea 50-100 times per year, depending on destination port limits on vessel capacity
Noise		< 35 dB(A) at nearest noise sensitive premises < 65 dB(A) at plant boundary
Air Emissions		
Oxides of Nitrogen (NO _x) (as NO ₂)		319 tpa approximately from power generation and fired heater
Carbon Dioxide (CO ₂)		0.7 Mtpa approximately. Includes 0.07 Mtpa of CO ₂ supplied in natural gas.
Sulphur Dioxide (SO ₂)		5 tpa approximately
Methane (CH ₄)		Traces, < 1 tpa
Ammonia (NH ₃)		400 tpa maximum, to be minimised as practicable during detailed engineering design
Urea Particulates		353 tpa maximum, to be minimised as practicable during detailed engineering design.
Methanol		< 1tpa
Dust		Construction and fugitive operational emissions

The Project timeline is outlined in Table 2-3.

Table 2-3 Project Timeline

Timeline	Description
October 2018 – May 2020	Environmental assessment, Basic engineering, Financial Closure
May 2020 – Q3 2020	Detailed engineering, Procurement, Construction starts
Q3 2020 – Q4 2023	Construction, Mechanical completion
Q1 2024	Commissioning of the Plant, Start-up
Q2 2024	Full production
2049 (estimated)	Decommissioning

3 Preliminary key environmental factors and scope of work

The preliminary key environmental factors for the environmental review are:

1. **Coastal Processes**
2. **Marine Environmental Quality**
3. **Marine Fauna**
4. **Flora and Vegetation**
5. **Terrestrial Fauna**
6. **Inland Waters**
7. **Air Quality**
8. **Social Surroundings**

Table 3-1 outlines the work required for each preliminary 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.

Other environmental factors or matters are addressed in Section 4.

Table 3-1 Preliminary key environmental factors and required work

1. Coastal Processes	
EPA objective	To maintain the geomorphic processes that shape coastal morphology so that the environmental values of the coast are protected.
Relevant activities	Construction activities associated with the use of a causeway interconnecting Site C and Site F and then operation of project related infrastructure that connects the two sites.
Potential impacts and risks	<p>The site layout and design has been revised since the Third party referral in May 2018, to optimise the location of the process plant infrastructure within Sites C and F, and to construct a causeway between the two areas.</p> <p>The proposed causeway interconnecting Sites C and F has the potential to impact on coastal processes, particularly tidal movements. This could affect groundwater salinity and hydrodynamics which in turn could result in impacts to intertidal and supratidal vegetation. The Project will comply with State and national guidelines as well as Pilbara Ports Authority regulations and Environmental Management Plan.</p>
Required work	<ol style="list-style-type: none"> 1.1. Review the potential impacts associated with the Proposal on coastal processes. 1.2. Describe water movements and the period and frequency that the area either side of the causeway is flooded, pre- and post-construction, including under cyclonic conditions. 1.3. Describe the potential consequences of any changes to sediment erosion and deposition and to adjacent benthic communities and habitats. 1.4. Demonstrate how the Proposal has been located and designed to avoid, minimise and mitigate impacts to coastal processes. 1.5. Demonstrate and document how the EPA's objective for this factor can be met. 1.6. To the extent that residual impacts cannot be avoided, reduced, mitigated or subsequently restored, describe the implementation of appropriate offsets.
Relevant policy and guidance	<p><u>EPA Policy and guidance</u></p> <ul style="list-style-type: none"> - EPA (2016) <i>Statement of Environmental Principles, Factors and Objectives</i> - EPA (2016) Environmental Factor Guideline: <i>Coastal Processes</i> <p><u>Other policy and guidance</u></p> <ul style="list-style-type: none"> - ANZEC and ARMCANZ (2000) <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i>
2. Marine Environmental Quality	
EPA objective	To maintain the quality of water, sediment and biota so that environmental values are protected.
Relevant activities	The discharge of wastewater from the urea project into King Bay via the Water Corporation's Multi-User Brine Return Line (MUBRL) could change current operational parameters of that approved facility.
Potential impacts and risks	<ul style="list-style-type: none"> ▪ Localised changes to water quality associated with the brine discharge through the licensed Water Corp brine disposal line. ▪ EPA assessment Reports 1014 and 1044 assessed the environmental aspects of the operation of the MUBRL. ▪ Ministerial Statement 594 provides all necessary approvals to allow the Project to input to the MUBRL.

- EPA assessment Reports 1014 and 1044 and Ministerial Statement 594 both provide approval for “*Potentially, other desalination plants at other developers’ sites*”. The assessment concluded that “*the factor of marine flora and fauna can be managed to meet the EPA’s objective to maintain the ecological function, abundance, species diversity and geographic distribution of marine flora (seagrass and macro-algae) and marine fauna. Modelling indicates that the EQC guidelines will be met apart from within a 40m mixing zone at the outfall. The predicted increase in seawater temperature near the outfall is considered to be acceptable. Impacts will be limited to local infauna, while nearby coral reef systems are not predicted to be affected...*”
- The Project’s wastewater will not be discharged directly to the environment.
- The Project’s wastewater will be discharged under commercial arrangement into the approved MURBL.
- The Project’s wastewater discharge into the MURBL will not impact the ability of the MURBL to meet approved specification and therefore the potential risk is unlikely to arise.

Required work

- 2.1. Confirm that the Project wastewater discharge quantity can be accommodated by the WaterCorp approved MUBRL.
- 2.2. Demonstrate how all reasonable and practicable steps have been taken to prevent or minimise the wastewater discharge and associated contaminants from the Proposal.
- 2.3. Describe the volume, composition and frequency of waste water discharge from the urea plant to the MUBRL.
- 2.4. Undertake modelling to demonstrate that the residual contaminants in the predicted wastewater discharge from the Proposal, in combination with other future industrial discharges to the MUBRL, will not compromise the ability of the Water Corporation to meet the requirements of Ministerial Statement 594 and the ANZECC and ARMCANZ (2000) species protection level water quality guidelines within the 0.01 km² mixing zone as recommended in the EPA Report 1044.
- 2.5. Prepare a monitoring and management plan prior to construction that establishes acceptable water quality targets for the urea plant discharge to the MUBRL and the monitoring locations, frequency, measurement protocols, assessment protocols, management commitments and reporting arrangements for demonstrating the water quality targets are met.

Relevant policy and guidance

EPA Policy and guidance

- EPA (2016) *Statement of Environmental Principles, Factors and Objectives*
- EPA (2016) *Environmental Factor Guideline: Marine Environmental Quality*
- EPA (2016) *Technical Guidance: Protecting the Quality of Western Australia’s Marine Environment*

Other policy and guidance

- ANZEC and ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*
- Australian New Zealand Food Standards Code
- DOE (2006) *Pilbara Coastal Water Quality Consultation Outcomes – Environmental Values and Environmental Quality Objectives*, Marine Series Report No 1
- Western Australian Shellfish Quality Assurance Program
- National Water Quality Management Strategy

3. Marine Fauna

EPA objective

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

	In the context of this objective: Ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements.
Relevant activities	<p>Construction of the port-side infrastructure and product shipment, light spill from project facilities.</p> <p>Construction activities associated with the use of a causeway interconnecting Site C and Site F and operation of the project related infrastructure that connects the two sites.</p>
Potential impacts and risks	<ul style="list-style-type: none"> ▪ Accidental discharges. ▪ Underwater noise during construction can negatively impact marine fauna. ▪ Inappropriate lighting can alter natural turtle behavior during the nesting season. ▪ Introduction of marine pests associated with vessel movements. <p>The Project will comply with State and national guidelines as well as Pilbara Ports Authority regulations and procedures with regards to vessels movements, loading-unloading and biosecurity procedures.</p> <p>The proposed urea plant processing facility is located in proximity to Burrup Road and the mangroves and supratidal to intertidal flat area near the eastern side of King Bay.</p> <p>With regard to the potential for turtle activity at the Port Facility, the site has been determined, based on a desktop assessment, to not be suitable habitat for nesting marine turtles.</p>
Required work	<ol style="list-style-type: none"> 3.1. Describe the marine fauna likely to be impacted by the Proposal, including identification of critical habitat and ecological windows for affected species (including, but not limited to, the Loggerhead Turtle – <i>Caretta caretta</i>, the Green Turtle - <i>Chelonia mydas</i>, the Leatherback Turtle – <i>Dermochelys coriacea</i>, Hawksbill Turtle – <i>Eretmochelys imbricate</i> and the Flatback Turtle – <i>Natator depressus</i>). 3.2. Assess the values and significance of marine fauna likely to be impacted by the Proposal. 3.3. Quantify the likely direct and indirect impacts to marine fauna in terms of the extent, duration and severity. 3.4. Outline the proposed mitigation measures and monitoring strategies to avoid and/or minimise impacts on marine fauna. 3.5. To the extent that residual impacts cannot be avoided, reduced, mitigated or subsequently restored, describe the implementation of appropriate offsets.
Relevant policy and guidance	<p><u>EPA Policy and guidance</u></p> <ul style="list-style-type: none"> - EPA (2016) <i>Statement of Environmental Principles, Factors and Objectives</i> - EPA (2016) Environmental Factor Guideline: <i>Marine Fauna</i> - EPA (2016) Technical Guidance: <i>Protecting the Quality of Western Australia's Marine Environment</i> <p><u>Other policy and guidance</u></p> <ul style="list-style-type: none"> - Department of the Environment and Energy (DoEE) (2018) <i>Threat abatement plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans</i> - DoEE (2017) <i>Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa)</i> - DoEE (2017) <i>Habitat critical to the survival of marine turtles in Australian Waters</i>

- DoEE (2017) Recovery plan for marine turtles in Australia 2017-2027
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2013) Significant Impact Guidelines 1.1 – Matters of National Environmental Significance
- DEWHA (2008) *Threat abatement plan for predation by the European red fox.*
- DEWHA (2008) *Approved Conservation Advice for Dermochelys coriacea (Leatherback Turtle)*
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012) *Marine bioregional plan for the North-west Marine Region.* Prepared under the *EPBC Act 1999*
- DSEWPaC (2012) EPBC Act *Environmental Offsets Policy*
- Government of Western Australia (2014) *Environmental Offsets Guidelines*
- Government of Western Australia (2011) *Environmental Offsets Policy*
- Pilbara Ports Authority (7 March 2018) *Vessel Introduced Marine Pest Risk Assessment Procedure, Port of Port Hedland*
- Pilbara Ports Authority Environmental Management Plan (2018-2019)
- Threatened Species Scientific Committee (TSSC) (2009) *Commonwealth Listing Advice on Dermochelys coriacea.* DEWHA.

4. Flora and Vegetation

EPA objective	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.
Relevant activities	Flora and vegetation will need to be cleared to facilitate the construction of the urea plant and associated infrastructure.
Potential impacts and risks	<ul style="list-style-type: none"> ▪ Fragmentation of populations, isolation of populations/occurrences. ▪ Impacts on habitat that supports the flora and vegetation. ▪ Impacts on other species with important ecological functions, e.g. pollinators, seed dispersal vectors, essential symbiotic fungi. ▪ Changes in air quality including dust deposition. ▪ Introduction or promotion of weeds and/or disease, and temporary impacts such as fire. ▪ Altered hydrology, including alteration of surface water flow. <p>A flora and vegetation survey has been undertaken at the site. The results of this and any future follow-up surveys, if required, will be presented and discussed in the ERD and considered in the context of previous records and survey reports relevant to the area. Where surveys were undertaken prior to scoping, justification will be provided to demonstrate that they are relevant and consistent with current EPA Guidance.</p>
Required work	<ol style="list-style-type: none"> 4.1. Characterise the flora and vegetation within the proposed project area including its significance within a wider regional context. 4.2. Identify and characterise the flora and vegetation of areas that may directly or indirectly be impacted by the proposal in accordance with Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment, December 2016. This should include sampling more broadly to inform local and regional context. 4.3. Review and revise as appropriate, matters in relation to the northern option for realignment of Hearson Cove Road to further inform and update the previous considerations pursuant to EPA Bulletin 985 and Ministerial Statement 552 on relevant environmental impacts. 4.4. Provide an analysis of the vegetation and significant flora species present and likely to be present within the proposed development envelope, including any potential indirect impact areas outside of the project footprint. Include a quantitative

assessment of levels of impact on significant flora, priority ecological communities and all vegetation units. Index of Biodiversity Surveys for Assessments (IBSA) data package will be provided with the draft ERD.

- a. For significant flora, this includes:
 - i. Establish a regional baseline context
 - ii. Number of individuals and population records in the context of the Murujuga national park and other surveyed sites
 - iii. Numbers and proportions of individuals and populations directly or potentially indirectly impacted, and
 - iv. Number / proportions / populations currently protected within the conservation estate (where known)
 - b. For significant ecological communities and all vegetation units this includes:
 - i. The area of representation in the project area (in hectares) and relative to representation in the Murujuga national park directly or potentially indirectly impacted, and
 - ii. Proportion / hectares of the species, community or vegetation unit currently protected within conservation estate
- 4.5. Demonstrate application of the mitigation hierarchy and that all reasonable and practicable measures have been taken to reduce the proposed project footprint based on progress in the Proposal design and understanding the environmental impacts.
- 4.6. Outline the proposed mitigation measures and monitoring strategies to avoid and/or minimise impacts on flora and vegetation.
- 4.7. To the extent that residual impacts cannot be avoided, reduced, mitigated or subsequently restored, describe the implementation of appropriate offsets.

Relevant policy and guidance

EPA Policy and guidance

- EPA (2016) *Statement of Environmental Principles, Factors and Objectives*
- EPA (2016) Environmental Factor Guideline: *Flora and Vegetation*
- EPA (2016) Technical Guidance: *Flora and Vegetation Surveys for Environmental Impact Assessment*

Other policy and guidance

- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2012) EPBC Act *Environmental Offsets Policy*

5. Terrestrial Fauna

EPA objective

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

In the context of this objective: Ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements.

Relevant activities

Clearing of flora and vegetation, physical disturbance to facilitate the construction of the urea plant and associated infrastructure and noise during construction.

Operation of the urea plant, vehicle movements.

Potential impacts and risks

- Terrestrial fauna habitat loss, degradation or fragmentation as a result of the Project.

- Reduction of the diversity and abundance of species in the area.
- The introduction or promotion of weeds, introduced feral fauna or pests and disease.
- Reduced or prevention of access to feeding or roosting habitats.
- Disruption of the dispersal of individuals required to colonise new areas inhibiting maintenance of genetic diversity between populations.
- Disruption of pollinators and seed dispersal vectors.
- Noise and anthropogenic impact on threatened terrestrial fauna species including the Red Knot, the Ghost Bat, the Pilbara Olive Python and the Northern Quoll.

A Level 1 terrestrial fauna survey has been undertaken at the site. The results of this and any further relevant surveys, if required, will be presented and discussed in the ERD. The Burrup has been well studied and the baseline ecology is well known, therefore risks are calculable.

Required work

- 5.1. Characterise the terrestrial fauna within the proposed project area including its significance within a wider regional context.
- 5.2. Undertake fauna surveys, as required and in accordance with the EPA Technical Guidance, in areas that are likely to be directly or indirectly impacted as a result of the Proposal. Where surveys were undertaken prior to scoping, justification will be provided to demonstrate that they are relevant and consistent with current EPA Guidance.
- 5.3. Describe the impacts and risks associated with the proposal on the identified species including, but not limited to, the Olive Python (Pilbara subspecies) (*Liasis olivaceus barroni*), the Northern Quoll (*Dasyurus hallucatus*) and the Ghost Bat (*Macroderma gigas*).
- 5.4. Identify the potential impacts to the Priority 1 Priority Ecological Community (PEC) – Burrup Peninsula Rock Pool Communities, including Short-Range Endemics (SREs).
- 5.5. Identify likelihood of EPBC Act conservation significant species to occur within/near the proposed project area, including:
 - a. Information on the abundance, distribution, ecology, and habitat preference of the listed species.
 - b. Information on the conservation value of each habitat type from a local and regional perspective, including the percentage representation of each habitat type on site in relation to its local and regional extent.
 - c. If a population of a listed species is present on the site, its size and the importance of that population from a local and regional perspective.
 - d. An assessment of the risk of impact to any listed threatened species as a result of project activities.
 - e. IBSA data package will be provided with the draft ERD.
- 5.6. Analyse the extent of clearing, including the type of habitat to be cleared or impacted, and determine the significance of impact in relation to terrestrial fauna, including the listed threatened species and listed migratory species.
- 5.7. Review and revise as appropriate, matters in relation to the northern option for realignment of Hearson Cove Road to further inform and update the previous considerations pursuant to EPA Bulletin 985 and Ministerial Statement 552 on relevant environmental impacts.
- 5.8. Demonstrate application of the mitigation hierarchy to avoid and minimise impacts to terrestrial fauna.

- 5.9. Describe the proposed mitigation measures and monitoring strategies to avoid and/or minimise impacts on terrestrial fauna.
- 5.10. To the extent that residual impacts cannot be managed to ALARP, describe the implementation of appropriate offsets.
- 5.11. Demonstrate and document how the EPA's objective for this factor can be met.

Relevant policy and guidance

EPA Policy and guidance

- EPA (2016) *Statement of Environmental Principles, Factors and Objectives*
- EPA (2016) Environmental Factor Guideline: *Terrestrial Fauna*
- EPA (2016) Technical Guidance: *Terrestrial Fauna Survey*
- EPA (2016) Technical Guidance: *Sampling Methods for Terrestrial Vertebrate Fauna*
- EPA (2016) Technical guidance: *Sampling of short range endemic invertebrate fauna*

Other policy and guidance

- Commonwealth of Australia (1996) *The National Strategy for the Conservation of Australia's Biological Diversity*
- Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*
- Department of the Environment (DoE) (2015) *Wildlife Conservation Plan for Migratory Shorebirds*
- DoE (2015) *Threat abatement plan for predation by feral cats*
- DoEE (2017) *Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2011) *Survey Guidelines for Australia's Threatened Reptiles*
- DEWHA (2010) *Survey Guidelines for Australia's Threatened Bats*
- DEWHA (2010) *Survey Guidelines for Australia's Threatened Birds*
- DEWHA (2009) *Significant impact guidelines for 36 migratory shorebirds species (EPBC Act Policy Statement 3.2.1)*
- DEWHA (2008) *Threat abatement plan for predation by the European red fox.*
- DEWHA (2008) *Approved Conservation Advice for Liasis olivaceus barroni (Olive Python – Pilbara subspecies)*
- Department of Sustainability, Environment, Water, Population and Communities (2011) *Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses*
- Government of Western Australia (2014) *Environmental Offsets Guidelines*
- Government of Western Australia (2011) *Environmental Offsets Policy*
- Hill, B.M. & S.J. Ward (2010) *National Recovery Plan For the Northern Quoll Dasyurus hallucatus*
- Threatened Species Scientific Committee (2016) *Conservation Advice Calidris canutus Red knot.*
- Threatened Species Scientific Committee (2005) *Commonwealth Listing Advice on Northern Quoll (Dasyurus hallucatus)*

6. Inland Waters

EPA objective

To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.

Relevant activities

The proposed plant and infrastructure layout and associate construction and operational activities have the potential to impact on the hydrological regimes and quality of surface water and groundwater.

Potential impacts and risks	<ul style="list-style-type: none"> ▪ Potential groundwater and surface water impacts during construction and operation of the plant ▪ Changes of surface water flows <p>At this stage based on an initial risk assessment on the current design concept, the plant site layout has been optimised to mitigate the risk of obstruction of surface water flows.</p> <p>The site layout and design has been revised since the Third party referral in June 2018 to optimise the location of the process plant infrastructure within Sites C and F, and to construct a causeway between the two areas. The footprint of this proposed layout will not significantly impede surface water flow associated with tides and surface run off from surrounding areas.</p> <p>The potential for realignment of the Hearson Cove Road into the existing gazetted road reserve at the northern edge of Site F would require infill to ensure the road was at a level above the 1 in 100 year flood level. This could result in potential groundwater and surface water impacts.</p>
Required work	<ol style="list-style-type: none"> 6.1. Identify and describe the environmental values and significance of the hydrological regime within the development envelope. 6.2. Assess the potential impacts from construction and operation of the Proposal on the dependent environmental values identified. 6.3. Review and revise as appropriate matters in relation to the northern option for realignment of Hearson Cove Road to further inform and update the previous considerations pursuant to EPA Bulletin 985 and Ministerial Statement 552 on relevant environmental impacts. 6.4. Demonstrate application of the mitigation hierarchy and that all reasonable and practicable measures have been taken to ensure hydrological regime and groundwater and surface water quality are maintained. 6.5. Develop an environmental monitoring program to outline the proposed monitoring regime to ensure the objectives for surface water and groundwater quality are being achieved and to include contingency measures in the event that they are not met. 6.6. Demonstrate and document how the EPA's objective for this factor can be met.
Relevant policy and guidance	<p><u>EPA Policy and guidance</u></p> <ul style="list-style-type: none"> - EPA (2016) <i>Statement of Environmental Principles, Factors and Objectives</i> - EPA (2016) Environmental Factor Guideline: <i>Inland Waters</i>
7. Air Quality	
EPA objective	To maintain air quality and minimise emissions so that environmental values are protected.
Relevant activities	Operation of the urea plant and dust/particulate emissions from construction activities.
Potential impacts and risks	<ul style="list-style-type: none"> ▪ Air emissions from the proposed urea plant have the potential to impact on sensitive receptors including nearby rock art and contribute to a cumulative industrial emissions load that could increase the potential for significant impact to the values of the National Heritage Listed (NHL) place. ▪ Air emissions from the proposed urea plant have the potential to contribute to climate change.
Required work	<ol style="list-style-type: none"> 7.1. Characterise existing (baseline) air quality and local and regional meteorology within the Murujuga airshed, drawing on the findings of relevant studies and publicly available monitoring datasets. This would be undertaken either separately by the Proponent, or collaboratively with other industry data custodians.

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- 7.2. Identify the key air pollutants of potential concern and characterise the emissions from the Project and other existing and proposed future industrial emission sources and both existing and proposed future shipping activities within the Murujuga airshed, within the context of the current air emissions inventory for the region.
- 7.3. Identify the key sensitive receptors in terms of potential health and amenity impacts and heritage values within the Murujuga airshed.
- 7.4. Evaluate the potential incremental impact of air emissions from the Project on key receptors in the vicinity of the project area.
- Undertake air dispersion modelling. The objective of this modelling is to predict the potential ambient air quality impacts of the Project. This will include scenarios considering the emissions from the Project (in isolation), the increased emissions that would be generated during start-up, upset conditions, and shutdown; and the incremental cumulative impact of the Project considering other industry currently operating (or approved to operate but yet to be built) and proposed future industrial facilities such as Wesfarmers Downstream Chemical Production Facility² in the project area. Emissions from existing and proposed future shipping activities will also be included in the cumulative air quality modelling scenarios³. Contour plots and tables listing the modelled ambient ground level concentrations for the air pollutants of concern for the relevant modelling scenarios will be included.
 - Evaluate the potential incremental human health and amenity impact of the Project by assessing predicted pollutant concentrations in the ambient air at key receptors against relevant ambient air quality standards.
 - Evaluate the potential incremental risk of impact upon rock art by assessing predicted pollutant deposition rates at key sensitive receptors. This assessment will be done within the context of the Murujuga Rock Art Strategy (released on 15 February 2019), which provides a monitoring, analysis and decision-making framework to protect Aboriginal rock art located on the Dampier Archipelago and Burrup Peninsula listed National Heritage Place.
- 7.5. Identify and justify all reasonable and practicable emission reduction equipment and proposed technologies, and demonstrate the use of industry best practice pollution control technology and plant processes including benchmarking against world's best practice for urea production plants.
- 7.6. Characterise greenhouse gas emissions (type and quantities) from the Project and estimate the expected direct and indirect greenhouse gas emissions in accordance with the *National Greenhouse and Energy Reporting Act 2007* (NGER Act), and assess the contribution to regional, state, national, and international greenhouse gas emissions.
- 7.7. Analyse greenhouse gas intensity (i.e. quantity of carbon dioxide equivalent - CO₂-e generated per tonne of product produced) and compare with published current benchmarked world's best practice for urea production plants, equipment and operations. Develop a Greenhouse Gas Management Plan and detail the management and mitigation measures that will be used to reduce greenhouse gas emissions and improve operational efficiency using the mitigation hierarchy, including the management and
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²In relation to proposed future industrial facilities it is noted that as these facilities are only proposals and not yet approved, relevant primary emissions data may not be accessible in the public domain. While best endeavours will be used to access relevant primary data, where this cannot be sourced the modelling will include generic surrogate information for a comparable plant and sited in the proposed development location.

³ In relation to emissions from shipping it is noted that primary data recording emissions from actual individual or aggregate shipping movements in the Port of Dampier is not available. Therefore an appropriate surrogate dataset as agreed with the Air Quality Branch and WA EPA will be incorporated in the model to account for this source of emissions into the Murujuga airshed.

mitigation measures that can be implemented over time to achieve a long-term reduction in greenhouse gas emissions. Identify and justify the contemporary best practice management and mitigation measures that will be implemented.

- 7.8. Include information on the development of an Air Quality Management Plan and the objectives, management and mitigation measures, trigger and contingency actions, and monitoring of air emissions and ambient air quality, that will be employed to ensure that residual impacts are not greater than predicted. Potential credible opportunities to achieve a long-term reduction in air emissions of concern using best practice measures will be identified and evaluated in the ERD.
- 7.9. Demonstrate and document how the EPA's objective for this factor can be met.
- 7.10. Predict the extent, severity, and duration of any residual impacts associated with the air pollutant and greenhouse gas emissions from the Project that may be expected after implementing the proposed management and mitigation measures.

Relevant policy and guidance

EPA Policy and guidance

- EPA (2016) *Statement of Environmental Principles, Factors and Objectives*
- EPA (2016) *Environmental Factor Guideline: Air Quality*
- NSW EPA (2016) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*

Other policy and guidance

- Commonwealth of Australia (1999). *Environment Protection and Biodiversity Conservation Act*
- DEC (2010) *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated site remediation and other related activities*
- DEC (2006) *Guidance Notes: Air Quality and Air Pollution Modelling*
- DEC (2004) *Western Australia State Greenhouse Strategy – Western Australia Greenhouse Task Force*
- National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) 2013
- National Environmental Protection Measure (NEPM) for Ambient Air Quality (NEPC, 2015)
- DWER (2019). *Murujuga Rock Art Strategy*.

8. Social Surroundings

EPA objective

To protect social surroundings from significant harm.

The “social surroundings” of man are his aesthetic, cultural, economic and social surroundings to the extent that those surroundings directly affect or are affected by his physical or biological surroundings.

Relevant activities

Construction and operation of the urea plant and cumulative air emissions, noise emissions, traffic changes.

Potential impacts and risks

- Impact on the amenity of the area and the values attributable to that amenity (including the Murujuga National Park cultural and biodiversity values).
- Changed arrangements for access to Hearson Cove resulting from the relocation of the access road. Hearson Cove Road provides access to Hearson Cove which is a unique and popular recreational place for the local community and visitors, as well as access to Deep Gorge which is a culturally significant place for local Aboriginal groups.
- Potential physical disturbance of Aboriginal heritage sites and rock art sites both within and external to the NHL boundary.
- Changes to cumulative noise levels due to the potential additional noise emissions from the construction and subsequent operation of the urea plant may impact on people, including those visiting Hearson Cove and Deep Gorge.

- Potential threat that the additional air emissions, and associated impacts of the proposed urea plant (e.g. local landscape disturbance, increased transport, increased shipping, increased industrial presence) may pose in relation to the potential World Heritage listing.

While the BMIEA provided for compulsory acquisition pursuant to Australian law and established an Approved Body Corporate for the purposes of the BMIEA implementation, connection to country across the Development Envelope for a range of Aboriginal people to customary Aboriginal law survives the compulsory acquisition. This continuing connection to country is relevant and must be considered for determining relevant stakeholder interests pursuant to the EP Act and the Aboriginal Heritage Act.

A preliminary Desktop Search of the Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry System (AHIS) was undertaken. The results confirm that registered and unregistered sites are known to occur within the Project area. This information will be included in the ERD.

Required work

- 8.1. Identify and characterise the existing amenity enjoyed in the area, including further stakeholder consultation processes.
- 8.2. Identify relevant locations of traditional cultural or heritage significance to Aboriginal people with a connection to country within the Project footprint, including further consultation with the Traditional Owners.
- 8.3. Identify, describe, document and map the natural, historical and cultural heritage values that may be impacted, including, but not limited to, those of the Dampier Archipelago (including Burrup Peninsula) National Heritage Listed Place, as well as proposed culturally appropriate avoidance and mitigation measures.
- 8.4. Ensure all responsibilities and requirements under the *Aboriginal Heritage Act 1972* are met, including any relevant and necessary Aboriginal heritage and cultural survey requirements.
- 8.5. Outline in detail and review traffic impacts of construction and operational aspects of the urea Project, particularly with respect to the relocation of the Hearson Cove access road and provide mitigation strategies to ensure impacts are avoided or minimised.
- 8.6. Conduct a landscape and visual impact assessment including an assessment of impacts from an aboriginal cultural context. This will include:
 - a. Description of the visual components of the proposal
 - b. Landscape character assessment and a viewshed analysis
 - c. Assessment of the likely range of visual impacts from indicative viewpoints within the public domain and any residential receptors, as well as considering cumulative impacts
 - d. Provide management strategies, if required, for minimising the visual impact from publicly assessable viewpoints and for residential receptors; and
 - e. Identify any significant issues for consideration in the plant design / layout.
- 8.7. Conduct analysis, modelling and predictions of impacts (including cumulative impacts) from odour, dust and noise emissions, including likely potential amenity impacts associated with various urea plant operating scenarios. This will include:
 - a. Ambient noise monitoring to determine the existing noise levels
 - b. Operational noise modelling and assessment
 - c. Construction noise and vibration impact assessment

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- d. Outline mitigation strategies to minimise potential impacts, including, but not limited to, potential impacts to the values of the NHL area
- 8.8. Provide a summary of proposed technologies, emission reduction equipment and management practices to demonstrate how potential impacts have been avoided or minimised.
- 8.9. Describe proposed management and monitoring arrangements to ensure residual impacts on amenity are not greater than predicted and achieve predicted outcomes/objectives.
- 8.10. Develop a specific Heritage Management Plan that outlines how heritage sites will be protected and preserved, including detail of the procedure, requirements and contingencies against local land and cultural heritage disturbance (including those associated with the realignment of Hearson Cove Road). This Management Plan will be endorsed by MAC as a representative of the Traditional Owners.
- 8.11. Summarise residual impacts on amenity, after considering avoidance and minimisation. If significant residual impacts remain, propose appropriate offsets.
- 8.12. Demonstrate and document how the EPA's objective for this factor can be met.
- 8.13. Outline an approach to improvement planning for industry best practical approach to emissions reduction and risk management relevant to amenity.

Relevant policy and guidance

EPA Policy and guidance

- EPA (2016) *Statement of Environmental Principles, Factors and Objectives*
- EPA (2016) Environmental Factor Guideline: *Social Surroundings*
- EPA (2004) Guidance Statement 41 - *Assessment of Aboriginal Heritage*
- Environmental Protection (Noise) Regulations 1997, a prescribed standard under the EP Act 1986.
- Draft Guideline on Environmental Noise For Prescribed Premises (May 2016) from the Department of Environment Regulation;
- Statement of Environment Principles, Factors and Objectives (June 2018) from the Environmental Protection Authority.

Other policy and guidance

- *Aboriginal Heritage Act 1972*
 - Commonwealth of Australia (1999) *Environment Protection and Biodiversity Conservation Act*
 - Department of Aboriginal Affairs & Department of the Premier and Cabinet (2013) *Due Diligence Guidelines (Version 3.0)*
 - Department of the Environment (2016) *Engage Early. Guidance for proponents on best practice Indigenous engagement for environmental assessments under the EPBC Act*
 - Environment and Sustainability Directorate, Department for Planning and Infrastructure (2007) *Visual Landscape Planning in Western Australia*
-

4 Other environmental factors or matters

The Proponent is aware that other factors or matters may be identified during the course of the environmental review that were not apparent at the time that this ESD was prepared.

If this situation arises, the Proponent will consult with the EPA and the Commonwealth DoEE to determine whether these factors and/or matters need to be addressed in the ERD, and if so, to what extent.

5 Stakeholder consultation

The Proponent plans to consult further with stakeholders who are affected by, or are interested in the Proposal. This includes the decision-making authorities (see Section 6), other relevant state (and Commonwealth) government agencies and local government authorities, the local community and environmental non-government organisations.

The Proponent plans to consult with relevant stakeholder throughout the EIA process. This consultation has commenced during the development of this ESD and will be continued through the environmental review process.

Where consultation identifies further potential environmental factors or matters these will be reviewed through the EIA process and discussed with the EPA and the Commonwealth DoEE as outlined in Section 4. Relevant risks will be eliminated, mitigated or managed to ALARP. This may include revisions to Project designs, footprint or layouts to achieve this outcome.

Consultation will be by a combination of targeted presentation/workshops with identified stakeholders as well as broader public consultation through open days and distributed media. There will also be online capacity to lodge queries for consideration in the ERD see – <https://www.perdamanindustries.com.au/cardno/>

At this stage, the Proponent has identified the following stakeholders. Additional stakeholders may be identified during the assessment:

Indigenous

- > Signatories of the BMIEA and respective registered Native Title claimants of the Ngarluma Yindjibarndi Native Title claim, the Yaburara Mardudhunera Native Title claim and the Wong-Goo-Tt-Oo Native Title Claim.
- > Murujuga Aboriginal Corporation (MAC)
- > Ngarluma Yindjibarndi Foundation Limited (NYFL)⁴

Other Indigenous stakeholders with business interests relevant to the Proposal area or Project, similar to NYFL, are expected to be identified as the consultation processes progress.

Specific targeted consultation with regards to the cultural NHL values will be undertaken and documented in the Stakeholder engagement plan. This document will include:

- > Evidences regarding output of meaningful Indigenous engagement regarding the Proposal, including:
 - Evidence demonstrating the Proponent has notified Traditional Owners or cultural sites, and sought culturally appropriate mitigation strategies for identified cultural heritage values within the proposed Project area.
 - Evidence that Indigenous people with interest in area, specifically Traditional Owners, understand the Proposal and potential impacts on heritage values and place.
 - Evidence that identifies concerns that Indigenous people identified during consultation about impacts to heritage values and how they have been addressed.

⁴ Ngurranga Tours is a NYFL business and several of the tours conducted by this business are directly linked to Murujuga.

-
- Detail any MOUs, agreements/plans (including those with confidentiality arrangements) proposed by the Proponent to manage Indigenous heritage values.
 - Written confirmation from Indigenous people and representative body that they are satisfied with the consultation process, information provided, and proposed actions to mitigate impacts on heritage values.

WA Government

- > Conservation Commission
- > Department of Planning, Lands and Heritage
- > Department of Biodiversity Conservation and Attractions
- > Department of Mines, Industry Regulation and Safety
- > Department of Planning, Lands and Heritage
- > Department of Jobs, Tourism, Science and Innovation
- > Department of Water and Environmental Regulation
- > Horizon Power
- > Main Roads Western Australia
- > LandCorp
- > Pilbara Development Commission
- > Pilbara Ports Authority
- > Water Corporation

Local Government

- > City of Karratha

Commonwealth Government

- > Commonwealth Department of the Environment and Energy

Community and Environmental Non-Government Organisations

- > Conservation Council of WA
- > DBNGP (WA) Nominees Pty Ltd
- > Friends of Australian Rock Art (FARA)
- > Hon Robin Chapple MLC – 3rd party referrer under s.38 of EP Act
- > Hon Kevin Michel MLA
- > Hon Melissa Price MP
- > Karratha Chamber of Commerce
- > Quadrant Energy Australia Ltd
- > Rio Tinto
- > Telstra Corporation Ltd
- > University of Western Australia Centre for Rock Art Research & Management
- > Western Australian Museum
- > Westfarmers Chemicals, Energy & Fertilisers Limited
- > Woodside Energy Ltd
- > Yara Pilbara Fertilisers Pty Ltd
- > Yara Pilbara Nitrates Pty Ltd

The Proponent will document the following in the ERD:

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

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6 Decision-making authorities

At this stage, the EPA has identified the following decision-making authorities for the Proposal for the purpose of a State decision. Additional decision-making authorities may be identified during the assessment.

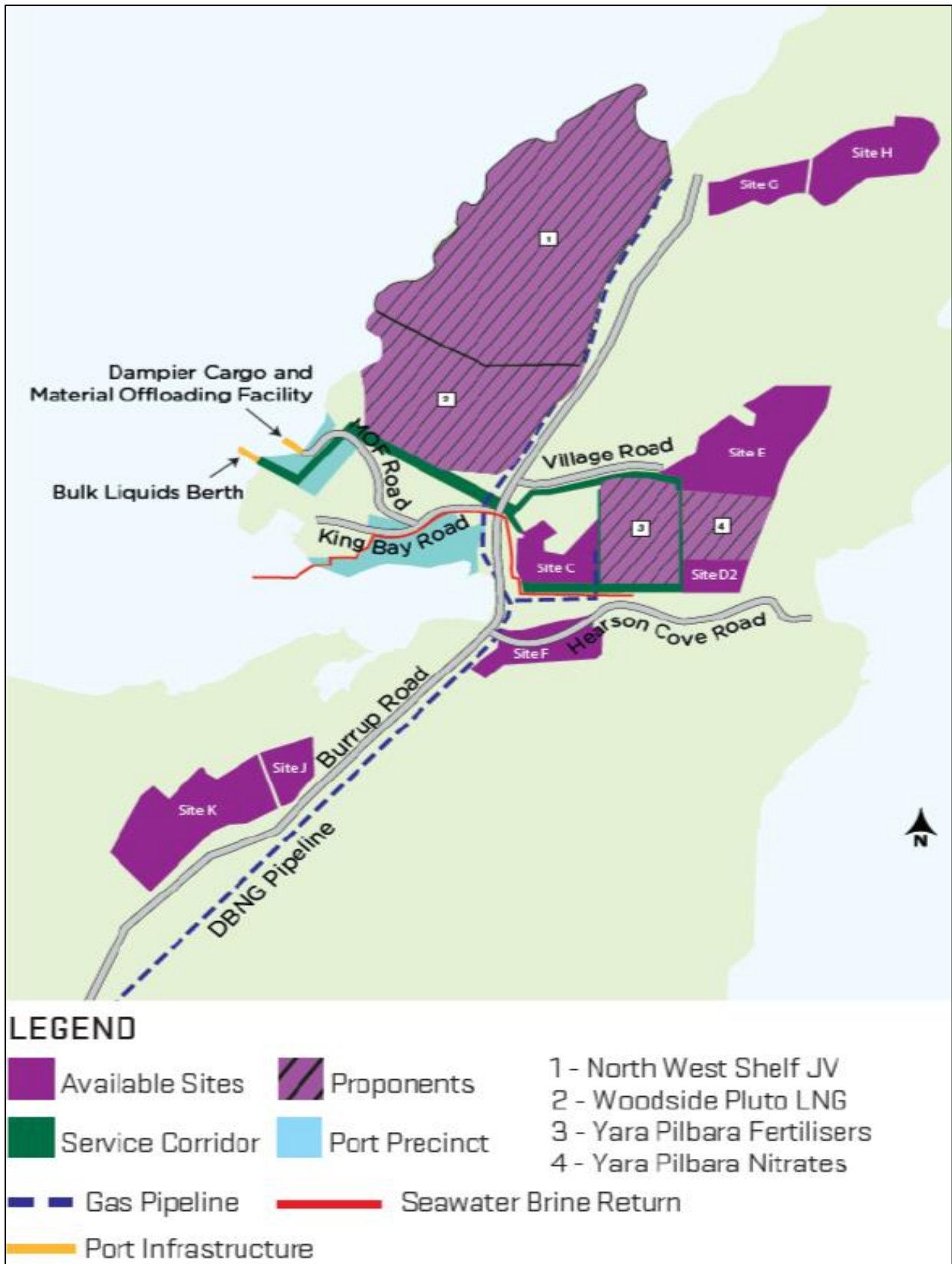
Table 6-1 Decision Making Authorities

Decision making Authority	Relevant Legislation (and Approval)
1. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> (disturb threatened flora or fauna)
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i>
3. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> (Section 18 approval to disturb Aboriginal heritage sites)
4. Minister for Lands	<i>Western Australian Land Authority Act 1992 (WA)</i> (Approval of ground lease for Project site and conveyor infrastructure)
5. Minister for Ports	<i>Pilbara Ports Authority Act 1999</i> and <i>Pilbara Ports Authority Regulations 2001</i> (Port ground lease and approval to develop materials handling infrastructure at Dampier Port)
6. Chief Executive Officer, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> (Part V Works Approval and Licence)
7. Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety	<i>Dangerous Goods Safety Act 2004</i> and associated <i>Dangerous Goods Safety Regulation 2007</i> (Approvals for the construction and operation of a Major Hazard Facility, explosives manufacture, and transport of dangerous goods)
8. Chief Executive Officer, City of Karratha	<i>Building Act 2011</i> and <i>Planning and Development Act 2005 (WA)</i> (Development approvals and permits)

Attachment A: Figures

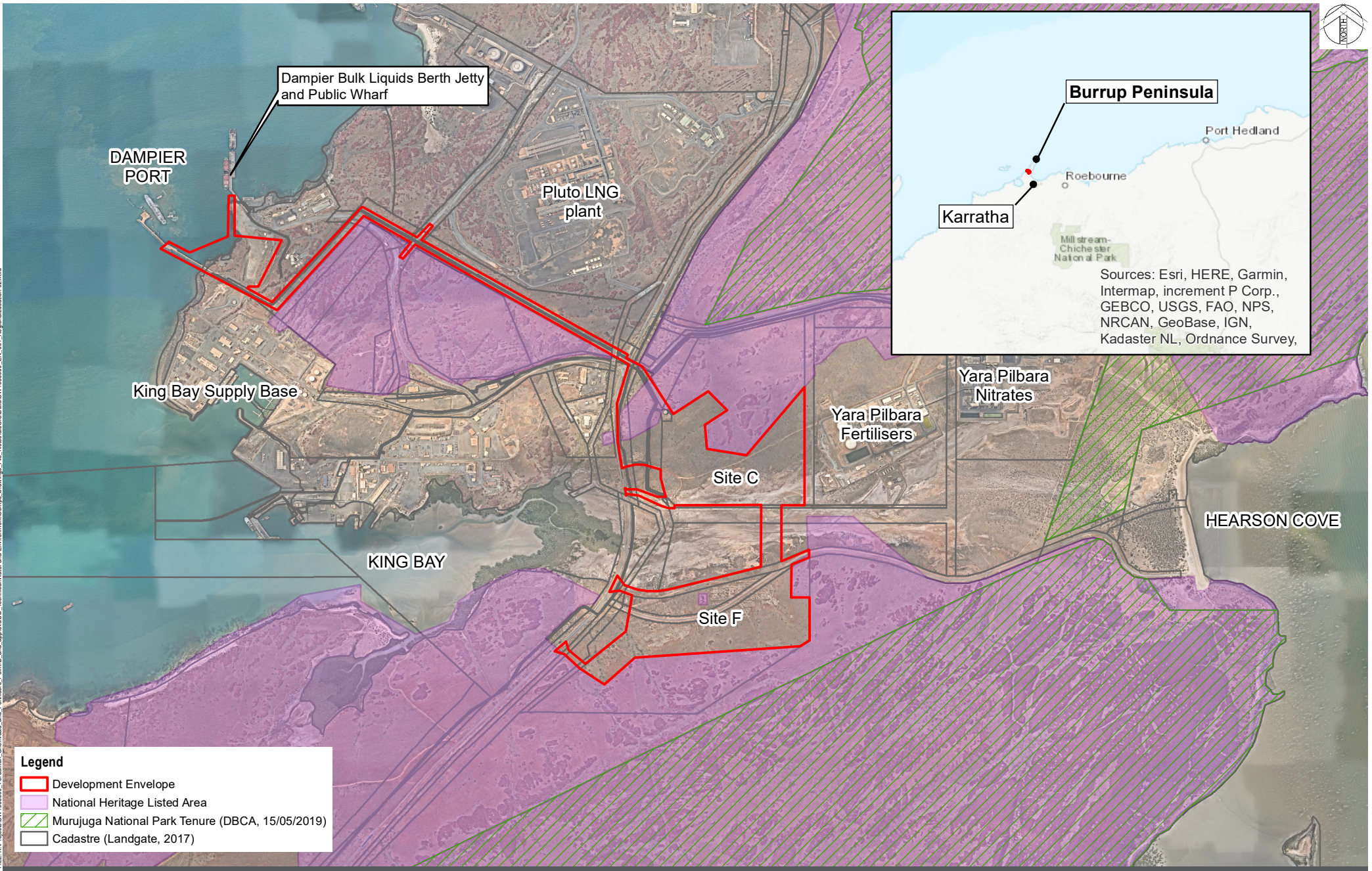
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Figure 1 Perdaman Allocated Sites (C & F) within the BSIA (JTSI, 2018)



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DATE PLOTTED: 15/05/2019 14:44:33 BY: MAELLE BOURDAS
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Legend

-  Development Envelope
-  National Heritage Listed Area
-  Murujuga National Park Tenure (DBCA, 15/05/2019)
-  Cadastre (Landgate, 2017)



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Date
15/05/2019
Size
A4
Scale
1:28,000



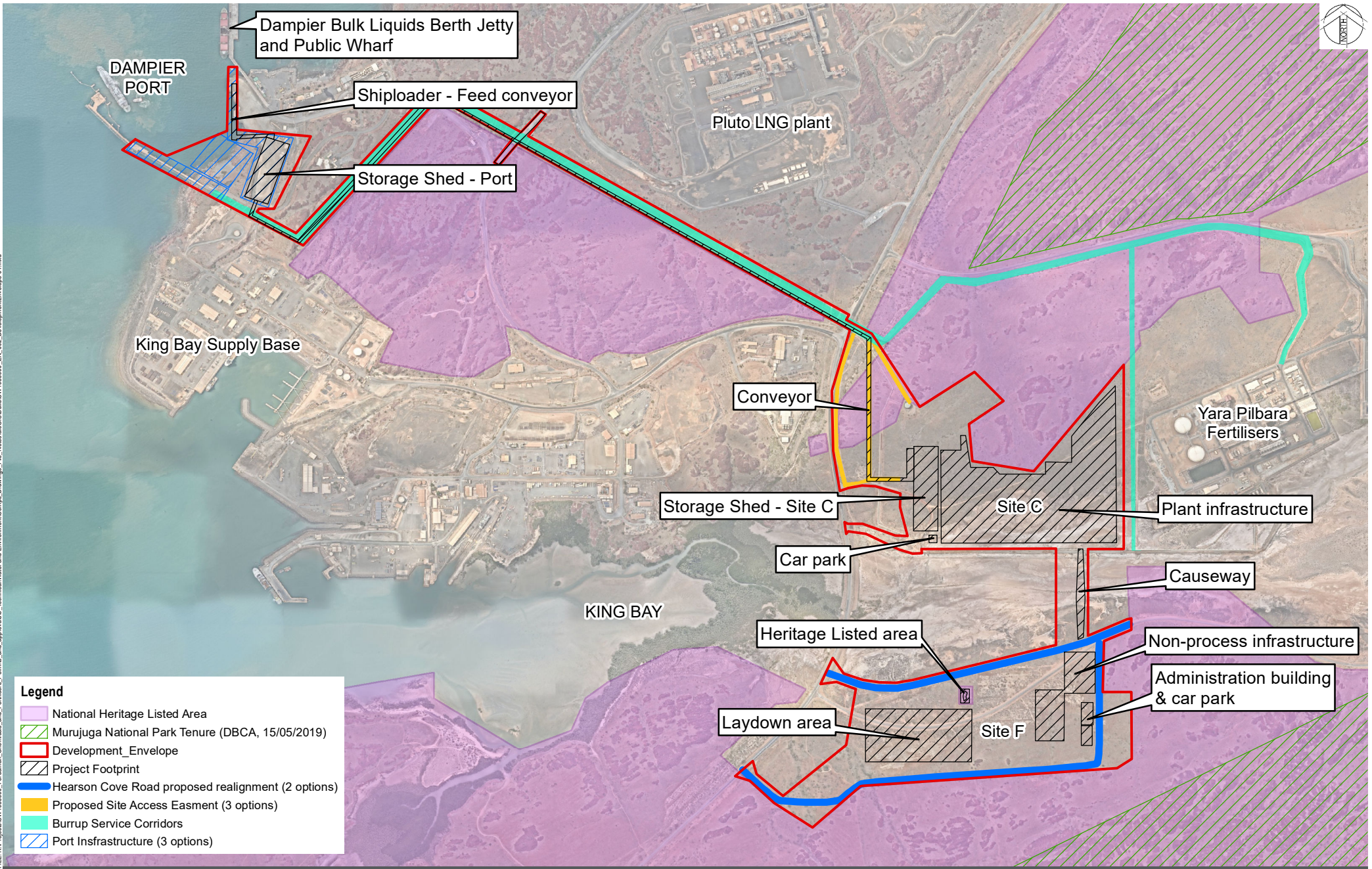
REGIONAL LOCATION

PERDAMAN UREA PROJECT
ENVIRONMENTAL SCOPING DOCUMENT

FIGURE 2
CW1055600_EN_001_REGIONALLOCATION 02

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DATE PLOTTED: 16/05/2019 09:45 AM BY: MABELLE BOUDOS
FILE: K:\Projects\CW1055600\PERDAMAN UREA PROJECT\Permitted Chemicals and Partnerships\Permits and approvals\6. Technical\Water and Environment\Comps Drawings\Fig. Notes\acGISB\acGISB\CW1055600_EN_002_DevelopmentEnvelope_04.mxd



- Legend**
- National Heritage Listed Area
 - Murujuga National Park Tenure (DBCAs, 15/05/2019)
 - Development_Envelope
 - Project Footprint
 - Hearson Cove Road proposed realignment (2 options)
 - Proposed Site Access Easment (3 options)
 - Burrup Service Corridors
 - Port Infrastructure (3 options)



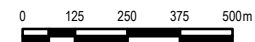
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DEVELOPMENT ENVELOPE AND INDICATIVE INFRASTRUCTURE

PERDAMAN UREA PROJECT
ENVIRONMENTAL SCOPING DOCUMENT

FIGURE 3



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