PERDAMAN
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Threatened SpeciesManagement Plan

Perdaman Urea Project
Burrup Peninsula, Western Australia
PCF-PD

Proponent:
Perdaman Chemicals and Fertilisers Pty Ltd.ABN: 31 121 263 741

Date: 18 February 2022

Ministerial Statement: 1180

Assessment No:
2184 (WA)
2018/8383 (Commonwealth)

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PCF 4	09/02/2022	Submission for DAWE Approval	SCJV	Perdaman
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Executive Summary

Proposal Title	Perdaman Urea Project
Proponent name	Perdaman Chemicals and Fertilisers Pty Ltd.
Assessment Number	2184 (WA) & 2018/8383 (Commonwealth)
Ministerial Statement No.	Ministerial Statement Number 1180
Construction & Operations Commencement Dates	Construction is scheduled to commence March 2022. Operation of the facility is proposed to commence August 2025.
Purpose of the TSMP	This Threatened Species Management Plan (TSMP) has been prepared to comply with the Conditions for the Project implementation set out in the Ministerial Statement (MS) 1180. Condition 5 of MS 1180 includes the implementation Conditions and procedures for threatened species that are addressed within the TSMP. The purpose of this TSMP is to provide a framework which describes how the project will address, manage, monitor and mitigate impacts on Threatened Species. This TSMP provides monitoring actions for threatened species to demonstrate compliance with the environmental outcomes included in Condition 5-1 of MS 1180, and the approval granted under the EPBC Act. This plan supplements the PCF-PD-EN-PEMP Project Environmental Management Plan (PEMP) and Sub-Plans: PCF-PD-PN-FaMP Fauna Management Plan and PCF-PD-PN-FMP Flora Management Plan.
Key environmental factors and objectives	The key environmental factors and objectives relevant to the Threatened Species Management Plan (the Plan) include: Coastal processes - To maintain the geophysical processes that shape coastal morphology so that the environmental values of the coast are protected. Marine environmental quality - To maintain the quality of water, sediment and biota so that environmental values are protected. Marine fauna - To protect marine fauna so that biological diversity and ecological integrity are maintained. Flora and vegetation - To protect flora and vegetation so that biological diversity and ecological integrity are maintained. Terrestrial fauna - To protect terrestrial fauna so that biological diversity and ecological integrity are maintained. Ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements. Inland waters - To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
Condition clauses	To be determined.
Key provisions in the plan	The TSMP's key provisions are included in Section 7. This section details the outcome and management based actions, that will be applied for the life of the Project against each of the potential impacts.

FOREWORD

This Threatened Species Management Plan (TSMP) is a sub-plan of the overarching Project Environmental Management Plan (PEMP) for the Perdaman Urea Project. An overview of the structure of the PEMP and sub-plans is illustrated in Figure 1-1, with the position of the TSMP highlighted within the overall structure.

This plan shall be reviewed and updated as necessary throughout the construction, operation and decommissioning phases of the project. The review process is detailed in Section 15 Review and Continual Improvement of the PEMP.

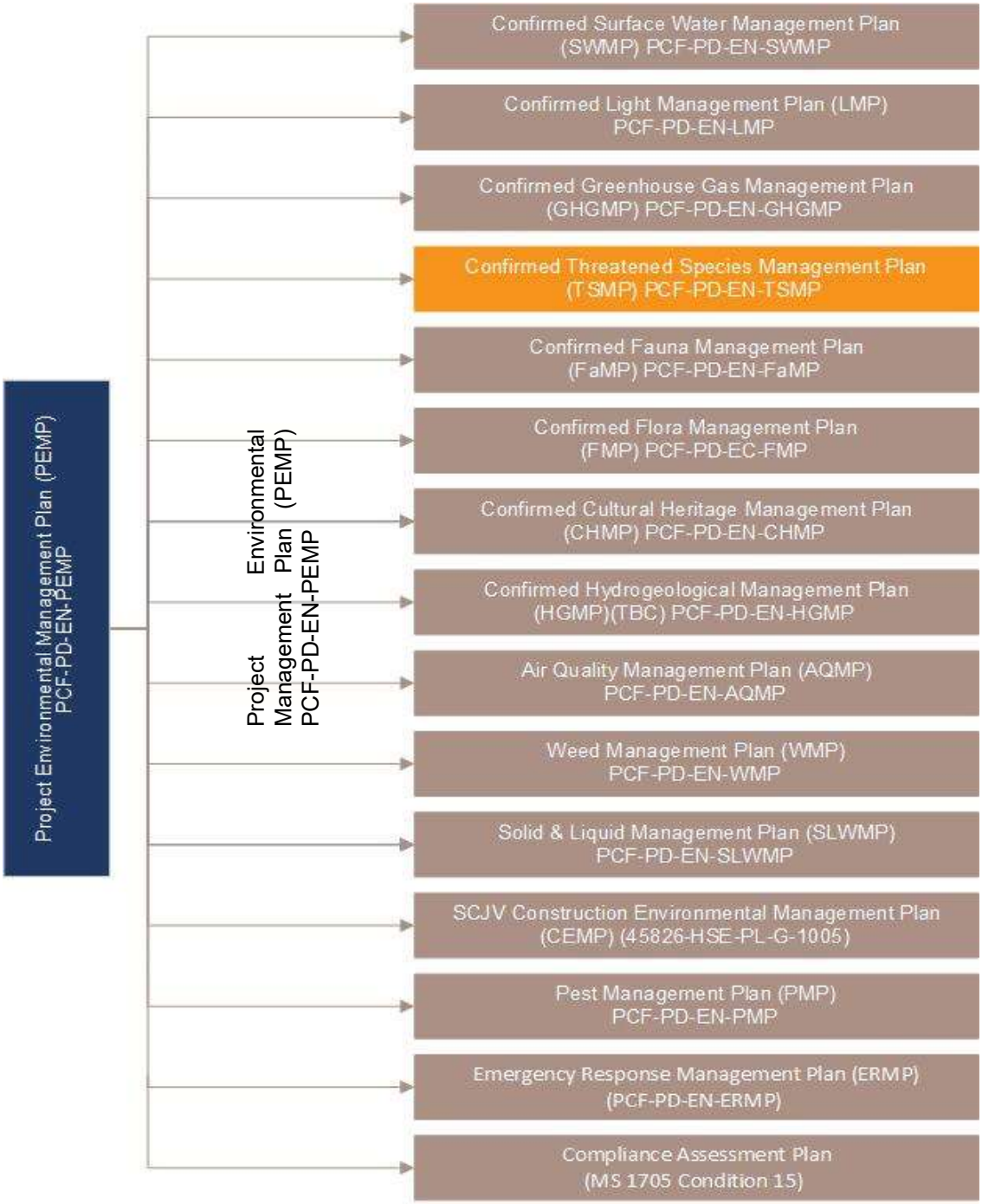

Figure 1-1 Structure of the Project Environmental Management Plan and supporting sub-plans.

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1 Introduction

Perdaman Chemicals and Fertilisers Pty Ltd (Perdaman) proposes to establish a state-of-the-art urea production plant within the Burrup Strategic Industrial Area (BSIA). The site is situated approximately 8 km from Dampier and 20 km north-west of Karratha on the north-west coast of Western Australia.

The key elements of this proposal include the design, engineering, construction and operation of the main urea production facility, administration, maintenance and storage infrastructure, conveyor and port storage and shiploading facilities (the Project).

The Project's construction and operational activities have the potential to impact listed threatened species under sections 18 and 18A and migratory species under sections 20 and 20A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Biological surveys and a desktop assessment identified a total of 32 threatened fauna species "may", are "likely" or are "known" to occur within a 10km buffer of the Project area. This included 21 terrestrial fauna species, 11 aquatic fauna species, and 9 migratory shorebirds. An additional 43 migratory species may occur in the area that are not listed as threatened. One threatened fauna species, the Ghost Bat (*Macroderma gigas*) and 7 migratory shorebirds were recorded within the Project area (APM, 2019).

The main potential threatened species impacts on the Project include the loss of fauna habitat as a result of reduction and/or fragmentation of fauna habitat, injury or death caused by vehicle strike, increase in introduced feral animals and weeds, artificial light pollution, noise, vibration, dust, fire, fauna entrapment, poisoning, debris, spill events, changes to marine and inland water quality, and changes to inland water flows at the project site.

A suite of strategies will be implemented throughout the construction and operational phases of the Project to minimise or abate these impacts. This includes minimising ground disturbance, avoiding where possible, potential threatened species habitat. Where clearing is required, inspections and removal of native fauna such as the olive python, prior to clearing will be undertaken. During rehabilitation works, threatened species fauna habitat for nesting, breeding or foraging will be established. Strict traffic speed limits will be enforced to avoid collision with fauna. Waste will be stored and disposed of in a way that does not attract vermin or native fauna. Light pollution impacts around the Port area will be managed to avoid impact on marine turtles. To protect bats, no barbed wire will be used on security fences, and markers will be used to highlight the barrier. Feral animal monitoring and control will be undertaken throughout the life of the project to protect native fauna.

These strategies establish the key environmental management measures which form the Project's legal requirements. Considering the management and mitigation measures outlined in this Threatened Species Management Plan (TFMP), impacts on terrestrial fauna and constituent habitats are likely to be minimal and affect habitat that is either widespread in the locality and the region, and/or has been previously disturbed.

Based on the mitigation measures and corresponding management actions outlined in this plan, the Project will be able to minimise impacts on the abundance, species diversity, geographic distribution and productivity of terrestrial fauna.

1.1 Purpose

Biological surveys and a desktop assessment identified a total of 32 threatened fauna species "may", are "likely" or are "known" to occur within a 10km buffer of the Project area. This included 21 terrestrial fauna species, 11 aquatic fauna species, and 9 migratory shorebirds. An additional 43 migratory species may occur in the area that are not listed as threatened. One threatened fauna species, the Ghost Bat (*Macroderma gigas*) was recorded within the Project area (APM, 2019).

The purpose of this TSMP is to provide a framework which describes how the project will address, manage, monitor and mitigate impacts on Threatened Species. This plan supplements the PCF-PD-EN-PEMP Project Environmental Management Plan (PEMP) and Sub-Plans: PCF-PD-PN-FaMP Fauna Management Plan and PCF-PD-PN-FMP Flora Management Plan.

1.2 Scope

The scope of the TSMP addresses both construction and operational activities for the life of the Project that could impact EPBC listed threatened species. It includes all Project areas including:

- Site C process plant and storage sheds;
- Site F administration, maintenance and storage buildings;

- Stormwater and brine holding ponds;
- Access roads within the project footprint;
- The causeway crossing the supra-tidal flat between sites C and F;
- The conveyor route to the west of site C and its route through the existing East West Service Corridor (EWSC); and
- Landside areas of the Port including storage, transfer and ship loading areas.

The scope of this TSMP does not include the construction of port facilities such as the wharf or any infill that may be required of the coastal area for the provision of a wharf and the urea storage facility. These works are to be managed by the Pilbara Port Authority (PPA) under separate approval and management systems.

1.3 Key Environmental Factors

Perdaman has identified six key environmental factors relevant to listed threatened and migratory species. The potential impactsof the Project that relate to each of these factors are detailed in Table 1-1 below.

Table 1-1 Project environmental factors and potential impacts

Environmental Factor	Potential Impacts
Flora and Vegetation	Clearing of native vegetation. Impact on significant flora species. Dust deposition. Hydrological changes. Waste management. Altered fire regimes. Introduction of weeds.
Terrestrial Fauna	Direct disturbance from noise, vibration, light, dust and fire and other anthropogenic activities. Indirect and cumulative impact through removal of breeding, nesting and foraging habitats and the introduction of predators. Habitat disturbance and fragmentation of fauna habitats as a result of construction through the reduction and/or fragmentation of vegetation and introduction of weeds. Fauna entrapment and/or poisoning causing injury or death during construction and operations. Inadvertent injury and/or mortality as a result of vehicle strikes from increased traffic during construction and operations. Injury and/or mortality as a result of increased waste material during construction and operations. Competition and direct mortality as a result of an increase in introduced feral animals. Injury and/or mortality as a result of a spill event.
Coastal Processes	A causeway interconnecting Sites C and F has the potential to impact on tidal movements. Depending on design, this could affect groundwater salinity, hydrodynamics, and sediment deposition which in turn could result in impacts to intertidal and supra-tidal habitat.
Marine Environmental Quality	Direct impact on marine water quality from the discharge of the Water Corporation outfall, which will contain the brine return from the urea plant. Impact from air emissions that deposit in the marine environment. Additional stormwater runoff from hardstand areas causing erosion and deposition of sediments reaching King Bay via the Supra-tidal flats.
Marine Fauna	Direct and cumulative impact from lighting spill. Accidental product discharge during ship loading. Underwater noise during construction. *Note: The WA EPA assessment report does not list this as a key environmental factor.*

Environmental Factor	Potential Impacts
Inland Waters	Alteration of surface drainage and water flow pathways, including surface, ground and tidal water flow to supra-tidal vegetation. A decrease in infiltration from rainfall and surface to groundwater within the Project site. Impact on surface and groundwater quality as a result of construction activities. Erosion of surface features and formation of features such as rills and gullies. Increase of surface water runoff volumes from hardstand surfaces. Degradation of water quality from elevated levels of suspended solids or contaminants in surface water runoff. Indirect impact on the mangrove communities of King Bay as a result of water quality changes.

2 Legislation, Commitments and Other Legal Obligations

2.1 Regulatory Obligations

Legislation relevant to threatened species management on the Project includes, but is not limited to:

- *Biodiversity Conservation Act 2016*
- *Biosecurity Act 2015*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Environmental Protection Act 1996*
- Environmental Protection Regulations 1987
- Environmental Protection (Clearing of Native Vegetation) Regulations 2004
- Environmental Protection (Noise) Regulations 1997
- Environmental Protection (Unauthorised Discharge) Regulations 1997

In addition to the aforementioned legislation, this management plan will be developed and regularly reviewed to comply with the commitments and legal obligations arising from the Project's statutory approvals.

2.2 Policy and Guidance

The following policies and guidance have been considered when developing this TSMP:

- Commonwealth of Australia (1996) The National Strategy for the Conservation of Australia's Biological Diversity.
- Department of the Environment (2015) Conservation Advice *Calidris ferruginea* curlew sandpiper. Canberra: Available from: http://www.environment.qov.au/biodiversity/threatened/species/pubs/856-conservationadvice.pdf.
- Department of the Environment (2015) Conservation Advice *Numenius madagascariensis* eastern curlew. Canberra. Available from: http://www.environment.gov.au/biodversity/threatened/species/pubs/847conservation-advice.pdf.
- Department of the Environment (2015) Wildlife Conservation Plan for Migratory Shorebirds. Canberra, ACT. Available from: http://www.environmert.qov.au/biodiversity/publications/wildlife-conservation-plan-miqratoryshorebirds- 2016.
- Department of the Environment (2015) Threat abatement plan for predation by feral cats. Canberra. Available from: http://www.environmentAov.au/biodiversity/threatened/publications/tap/threat-abatement-planferal-cats.
- Department of the Environment and Energy (2017) Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species.
- DoEE (2020) Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans. Canberra.
- Department of Environment and Energy, Water (2017) Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*). Canberra.
- Department of Environment and Energy (2017) Recovery Plan for Marine Turtles in Australia.
- Department of the Environment and Heritage (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005.
- Department of the Environment, Water, Heritage and the Arts (2008). Approved Conservation Advice for *Liasis olivaceus barroni* (Olive Python - Pilbara subspecies). Canberra. Available from: http://www.environment.qov.au/biodiversity/threatened/species/pubsj66699-conservation-advice.pdf.
- DEWHA (2008) Threat abatement plan for predation by the European red fox. Canberra. Available from:http://www.environment.qov.au/biodiversity/threatened/publications/tap/predation-european-red-fox.
- DEWHA (2009) Significant impact guidelines for 36 migratory shorebirds species (EPBC Act Policy

Statement 3.21.

- DEWHA (2010) Survey Guidelines for Australia's Threatened Bats.
- DEWHA (2011) Survey Guidelines for Australia's Threatened Reptiles.
- Department of Sustainability, Environment, Water, Population and Communities (2011) Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads. Canberra. Available from: http://www.environment.gov.au/resource/threat-abatement-plan-biolcqical-effects-includinq-lethal- toxicingestion-caused-cane-toads
- DSEWPaC (2012). Marine bioregional plan for the North-west Marine Region. Prepared under the Environment Protection and Biodiversity Conservation Act 1999. Available from: http://www.environment.gov.au/topics/marine/marine-bioregional-plans/north-west.
- EPA (2016) Environmental Factor Guideline: Terrestrial Fauna.
- EPA (2016) Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016.
- EPA (2016) Technical Guidance: Sampling Methods for Terrestrial Vertebrate Fauna.
- EPA (2016) Technical Guidance: Sampling of short range endemic invertebrate fauna.
- EPA (2016) Technical Guidance: Terrestrial Fauna Survey.
- EPA (2018) Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual.
- EPA (2018) Statement of Environmental Principles, Factors and Objectives.
- Government of Western Australia (2011) Environmental Offsets Policy.
- Government of Western Australia (2014) Environmental Offsets Guidelines.
- Hill, B.M. & S.J. Ward (2010) National Recovery Plan for the Northern Quoll *Dasyurus hallucatus*. Darwin. Available from: http://www.environment.gcv.au/resource/nationalrecovery-plan-northern-quoll-dasyurus-hallucatus.
- Threatened Species Scientific Committee (2005) Commonwealth Listing Advice on Northern Quoll (*Dasyurus hallucatus*). Available from: http://www.environment.gov.au/biodiversity/threatened/species/dasyurus-hallucatus.html.
- Threatened Species Scientific Committee (2009) Conservation Advice *Dermochelys coriacea* Leatherback turtle. Canberra.
- Threatened Species Scientific Committee (2011) Conservation Advice *Sternula nereis nereis* Australian fairy tern. Canberra.
- Threatened Species Scientific Committee (2016) Conservation Advice *Calidris canutus* Red knot. Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/855-conservationadvice- 05052016.pdf.
- Threatened Species Scientific Committee (2016) Conservation Advice *Celidris tenuirostriss* Great knot. Canberra. Available from: http://www.environment.gov.au/biodversity/threatened/species/pubs/862conservation-advice-05052016.pdf.
- Threatened Species Scientific Committee (2016) Conservation Advice *Charadrius mongolus* Lesser sand plover. Canberra.
- Threatened Species Scientific Committee (2016) Conservation Advice *Limosa lapponica baueri* Bar-tailed Godwit. Canberra.
- Threatened Species Scientific Committee (2016) Conservation Advice *Macroderma gigas* ghost bat. Canberra Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/174conservation-advice-05052016. pdf

2.3 Project Approvals

The Project must comply with all of the conditions included in its granted approvals. Perdaman will be responsible for ensuring all statutory approvals required for activities or infrastructure specific to Project needs

are attained in a timely manner.

Table 2-1 below includes indicative licenses and approvals potentially required for the Project, which may apply or contain conditions specifically related to the management of threatened species. This list is provided as a guide only, and is subject to change throughout the life of the Project.

A detailed approval register will be maintained by Perdaman to monitor the implementation and progress of conditions, and the achievement, renewal and surrender of all licenses throughout the life of the Project.

Table 2-1 Project statutory approvals and agreements.

Approval / Agreement	Purpose	Agency / Jurisdiction
EP Act 1986 - Part IV Approval - Ministerial Statement	EPA assessment of strategic proposal.	EPA
Environmental Protection and Biodiversity Conservation Act 1999 – s.18 & 18A listed threatenedspecies and s. 20 & 20A listed migratory species.	Meeting Commonwealth requirements for threatened species.	DAWE
Biodiversity Conservation Act 2016 - Fauna Taking (Relocation) Licence	Fauna relocation associated with trenching operations.	DBCA

2.4 Fauna Taking (Relocation) Licence

In compliance with the *Biodiversity Conservation Act 2016*, Perdaman will have on site an appropriately qualified individual that holds a Fauna Taking (Relocation) Licence to take or disturb fauna for the purpose of relocating.

This includes during normal plant operations and Project construction. Relocation of fauna may be required as part of any clearing or grubbing works, and where fauna could enter a work area / trench and need to be safely removed and relocated to a suitable location outside the Project's battery limits.

2.5 Ground Disturbance Permits

A Ground Disturbance Permit (GDP) is a permit issued by Perdaman for enabling works within defined battery limits, which have the potential to impact native vegetation, fauna, heritage or other environmentally sensitive values.

The GDP provides the Project personnel responsible for managing the ground disturbing activities with a summary of the key approval commitments and obligations obtained by or issued to Perdaman by regulators, tenure holders and other third parties.

Activities covered in the GDP include but are not limited to clearing and grubbing, grading open ground, movement of plant, equipment and vehicles and any other activity which will disturb or damage soil, waterways, habitat and, or vegetation.

A GDP could be issued through a standalone process or included in an overall approval to work procedure developed for the Project.

It is the responsibility of all project Personnel to ensure they submit to Perdaman an application form requestinga GDP at least two weeks prior to requiring access to the area being the subject of the GDP.

3 Roles and Responsibilities

The responsibility for threatened species management and compliance with this plan sits primarily with Perdaman.

It is the responsibility of the EPC Contractor (Saipem, Clough Joint Venture) (SCJV) and personnel to understand their scope of works and how fauna management applies to their activities during the construction program.

- All personnel undertaking Project activities have the following responsibilities as they relate to threatened species management and the Project's broader environmental requirements:
- Attending a Project Environmental Induction prior to commencing any work on site.
- Ensuring they are aware of the Project's environmental requirements as stipulated in the most current version of the TSMP and PCF-PD-PN-PEMP Project Environmental Management Plan (PEMP) and supporting documents.
- Reporting any environmental hazards, incidents, near misses and community complaints to their Supervisor.

In addition to these, role specific environmental responsibilities for the Perdaman Project team are outlined below.

3.1 Project Director

The Project Director will be responsible for and will have the authority to:

- Provide environmental leadership and ensure adequate resources are provided to effectively implement this plan;
- Be an emergency contact for the Project and provide required information to the Perdaman Board of Directors; and
- Endorse and support the Environment Policy and this plan.

3.2 Manager

The Project Manager is accountable for implementation of this plan on site. Responsibilities include:

- Ensuring that the requirements of this plan are implemented, maintained and communicated;
- Provide environmental leadership and ensure adequate resources are provided to effectively implement this plan;
- Participate in investigation of incidents and non-conformances and reviews of this plan; and
- Ensure work is planned and executed in compliance with environmental requirements.

3.3 Environment and Heritage Manager

The Environment and Heritage Manager is a site based Environmental Representative who has the authority and responsibility for reporting the implementation, compliance and effectiveness of this plan to the Management Team. The Environment and Heritage Manager will:

- Be an emergency contact and available to be contacted by Perdaman's other senior representatives;
- Communicate the requirements of this plan to site personnel;
- Provide documentation and support to managers and supervisors;
- Ensure project inductions are undertaken as per the this plan;
- Managing the Project's environment and heritage monitoring programs;
- Review and monitor corrective and preventative actions resulting from audits, incidents and non-conformances;
- Ensure identified risks are analysed and evaluated according to agreed criteria. Regularly review identified risks and controls and maintain a risk register.

- Oversee the implementation and management of the GDP process;
- Ensure regular inspections, observations, monitoring and audits are conducted to check the effectiveness of controls and that compliance is maintained;
- Review Project performance and compliance with site environmental and heritage requirements;
- Lead investigation and reporting of environmental and heritage incidents, non-conformances and response to community complaints;
- Inform external stakeholders of any relevant non-conformances, environmental and heritage incidents or public complaints and assist with regulator liaison, if required;
- Identify and implement corrective and preventative actions after incidents and share lessons learned within the Project team;
- Manage the submission and attainment of environmental and heritage approvals;
- Prepare a monthly Project environment and heritage report, presenting an update on key performance indicators, project outcomes, issues and incidents;
- Oversee review of existing and preparation of additional environmental management documentation, as required;
- Assure all Project activities are in accordance with statutory, approval and Project environmental and heritage requirements; and
- Attend and participate in regular Project meetings.

3.4 Environment Coordinator

The Environment Coordinator is a site based Environmental Representative of Perdaman responsible for:

- Coordination of the GDP process on site including preparing GDPs in consultation with the relevant Managers, issuing and releasing GDPs, verifying clearing boundaries, monitoring clearing works, and closing out GDP permits;
- Presenting Project environmental inductions to Project Personnel;
- Conducting regular inspections and audits in accordance with this plan;
- Consolidating emissions, consumption and monitoring data into a Monthly Environmental Report;
- Verifying rehabilitation works have been completed in accordance with the Rehabilitation Management Protocol;
- Providing environmental advice and information to the Project management team;
- Supporting the Environment and Heritage Manager with environmental incident investigations;
- Providing advice to the Environment and Heritage Manager about implementing, maintaining and reviewing this plan and associated documents; and
- Fulfilling the responsibilities of the Environment and Heritage Manager when they are on leave from site.

3.5 Construction Manager

- The Construction Manager is accountable for implementation of this plan on site during the Project's construction phase. Their responsibilities include:
- Planning construction Works in a manner that avoids or minimises impact to environment in line with this plan;
- Ensuring a GDP application is submitted and a GDP Permit is issued in a timely manner prior to the commencement of any ground disturbing works or activities being undertaken;
- Ensuring any ground disturbing works or activities undertaken are within the limits specified in the Works specific GDP;
- Providing environmental leadership and ensuring adequate resources are allocated to effectively

implement this plan;

- Stopping all work immediately if an unacceptable impact on the environment is likely to or has occurred;
- Ensuring that the appropriate level on induction and training has been provided to all site staff to minimise environmental impacts from Project works;
- Participate in investigations relating to construction related incidents resulting in breaches of environmental regulatory, licence or approval requirements; and
- Regularly liaise with the Environment and Heritage Manager regarding environmental aspects and impacts.

3.6 Operations Manager

The Operations Manager is responsible for the implementation of this plan during the construction and operational phases of the Project, including:

- Planning the commissioning and ongoing facility operations in a manner that avoids or minimises impact to environment in line with this plan;
- Providing environmental leadership and ensuring adequate resources are allocated to effectively implement this plan immediately if an unacceptable impact on the environment is likely to or has occurred;
- Ensuring that the appropriate level on induction and training has been provided to all site staff to minimise environmental impacts of the Project's commissioning activities and ongoing facility operations;
- Participate in investigations relating to construction related incidents resulting in breaches of environmental regulatory, licence or approval requirements; and
- Regularly liaise with the Environment and Heritage Manager regarding environmental aspects and impacts. In addition to these Perdaman personnel, Contractors engaged by Perdaman will provide adequate, tertiary qualified (in environmental management or similar qualification) and experienced site-based personnel to coordinate the management of environmental issues relevant to their scope of works.

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4 Project Overview

4.1 Project site and activities

Perdaman plans to construct and operate a state-of-the-art urea plant with a production capacity of approximately 2 million tonnes per annum (Mtpa) on the Burrup Peninsula in the North West of Australia (the Project).

The Project infrastructure including the main production facility (urea plant), administration, maintenance and storage infrastructure, conveyor and port storage and shiploading facilities are situated within the BSIA (Figure 4-2). The estate's close proximity to gas, port and other key infrastructure makes it an ideal location for the Project.

The BSIA is located in close proximity to the Murujuga National Park which covers an area of 4,913ha on the Burrup Peninsula. The area is considered to host the largest concentration of ancient rock art in the world. As such, the Project will apply effective management strategies that minimise or abate, actual or potential impacts on the environment, heritage and cultural values of the region.

The Project involves piping natural gas from the nearby Woodside operated LNG facility to the project site under a long term commercial off-take agreement. Natural gas is converted to urea and the final granulated product is transported by conveyor to the Dampier Port by closed conveyor along the East West Service route, where new facilities will include an enclosed stockpile shed and ship loading facilities.

Proven Urea production technology underpins each of the key stages of this project. The technologies being applied to the plant are equivalent to the industry best for the specific applications and successfully operate elsewhere in the world. The processing plant can be broadly considered in four sections, or Blocks, namely:

- Gas Block
- Product Block
- Utility Block
- Infrastructure and Logistics

Each of the Process Blocks is made up of a number of process units or physical sections of the plant. The major process sections are illustrated in Figure 4-1.

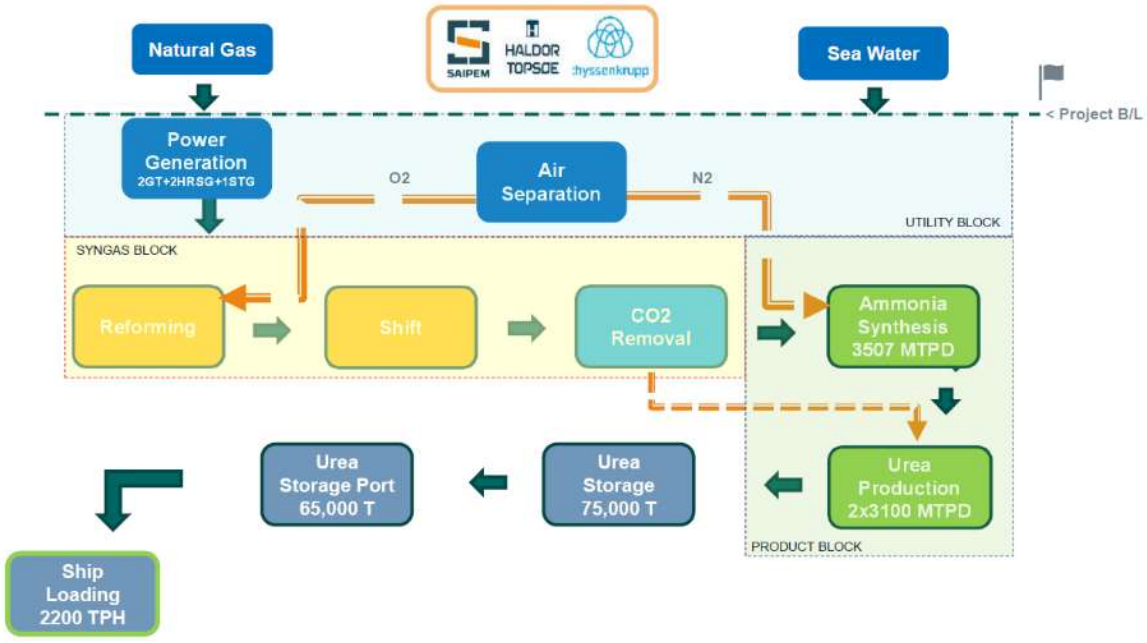


Figure 4-1 Process Block Diagram

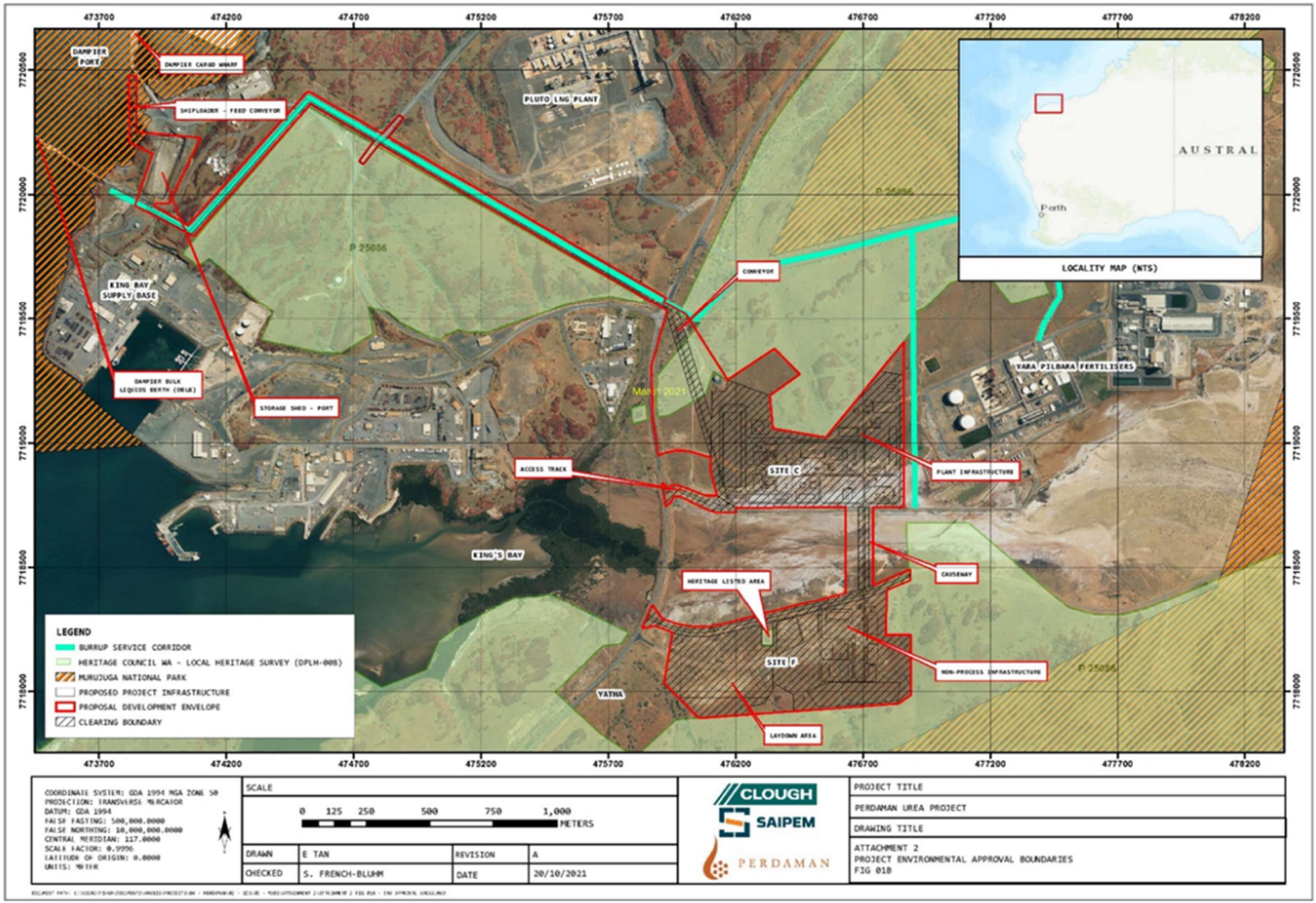


Figure 4-2 Project Site Layout and Adjoining Facilities.

4.2 Matters relating to the EPBC Act – Listed Threatened and Migratory Species

This TSMP focuses on the potential impacts the Project may have on listed threatened species under Sections 18 and 18A and listed migratory species under Sections 20 and 20A of the EPBC Act.

Habitat requirements and an assessment of the likelihood of occurrence for fauna species listed as threatened under the EPBC Act were identified through a desktop assessment. This included identification of 21 terrestrial fauna species, 11 aquatic fauna species and 9 migratory bird species which are 'known to', are 'likely to', or 'may' occur within a 10km buffer of the Project area.

Of these, the threatened fauna species "known to occur" or considered "likely to occur" in the project area are considered Matters of National Environmental Significance (MNES) that could be impacted by the Project. The 5 terrestrial species and migratory birds or species habitat listed in Table 4-1**Error! Reference source not found.** that "may occur", are not likely to be impacted by the project and hence are not considered as threatened species within this TSMP.

Table 4-1 lists these threatened and migratory terrestrial species and Table 4-2 lists these threatened and migratory aquatic fauna species within the 10km buffer of the Project site. They also provide a brief discussion of each species habitat requirements and their assessment summary. Section 6 provides further detail of each fauna habitat type within the Project area.

Table 4-1 Threatened terrestrial fauna species and migratory bird species identified within 10km buffer of project area

Scientific Name	Common Name	EPBC Act Status	Habitat Requirements	Assessment Summary
Species or species habitat 'known' to occur within 10km buffer of Project area.				
Calidris canutus	Red Knot	E	In close proximity to coastal waters such as mudflats and sandflats in estuaries. Also known to occur in salt ponds and salt lakes near the coast.	This species has been recorded in the Dampier region (DBCA, 2018) and less recently on the Burrup Peninsula (Worley Astron, 2006). The species is known to follow tide edges when foraging, and can be seenwith many other shore birds, such as the Red-necked Stint, which wasrecorded on site, within the samphire habitat. Given the proximity to Hearson Cove, and the presence of open flats within the Project Area,this species may use the area for both foraging and roosting. This species was not recorded on either of APM's surveys. The likelihood of the species occurrence in the Project area is M**oderate**.
Calidris ferruginea	Curlew Sandpiper	CR	Known to occupy drying near-coastal freshwater lakes and swamps. Predominantly occurring in the shallows of estuaries and attracted to near-coastal water bodies, such as salt ponds, salt lakes, sewage ponds, beaches and freshwater swamps and lakes.	This species has been recorded in the Dampier region (DBCA, 2018) and historically on the Burrup (Worley Astron, 2006). This species mayuse the Project area during the wet season, though records suggest that the species prefers undisturbed islands and islets. The likelihood of the species occurrence in the Project area is **Moderate**.
Calidris tenuirostris	Great Knot	CR	Often seen in large flocks of hundreds to thousands of birds. Forages over inter-tidal flats. Will reside in sheltered coastal mudflats of estuaries, lagoons and mangrove swamps. Sometimes uses salt lakes but rarely inland waters.	This species has been historically recorded on the Burrup Peninsula (Worley Astron, 2006). It was not recorded during either of APM's (2019) surveys. The samphire /mudflat habitat exist in the Project area is likely fairly open for this species and it does not that contain the mangrove swamps it prefers. The likelihood of the species occurrence in the Project area is **Low**.
Charadrius leschenaultii	Greater Sand Plover	V	Resides in large mixed-species flocks on coastal, intertidal mudflats and sandbanks of sheltered bays. Less common on coastal salt marshes and brackish or freshwater wetlands.	This species has been recorded northeast of Rosemary Island on an islet called Lady Nora within the Dampier archipelago and Hearson Cove. This species is a regular migrant between August and May and ismost common in northern Australia. The species is not expected to be reliant on the Project area habitats given it prefers sheltered bays and intertidal mudflats. The likelihood of the species occurrence in the Project area is M**oderate**.

Scientific Name	Common Name	EPBC Act Status	Habitat Requirements	Assessment Summary
Charadrius mongolus	Lesser Sand Plover	E	Inhabits intertidal sandflats and mudflats, beaches and sandbars and reef flats.	This species has been historically recorded on Dolphin Island in the Dampier region. This species sometimes overwinters in northern Australia. It is abundant in Queensland, and uncommon elsewhere in Australia. This species is not expected to rely on habitats present in theProject area, especially as this species does not breed in Australia. The likelihood of the species occurrence in the Project area is L**ow**.
Dasyurus hallucatus	Northern Quoll	E	Inhabits rocky outcrops and mezzo formations in areas with Eucalyptus woodlands.	This species has been previously recorded on Dolphin Island in the Dampier region and on the Burrup Peninsula in various locations, including a sighting at the port area of King Bay warehouse. The likelihood of the species occurrence in the Project area is **Moderate**.
Liasis olivaceus barroni	Olive Python (Pilbara subspecies)	V	Occurs in a range of habitats from savannah woodlands to monsoonal forests. Typically, in areas of rocky hills, outcrops and ranges.	This species has been historically recorded on Dolphin Island in the Dampier region and in King Bay, Hearson Cove and in many locations around the Karratha Gas Plant and Pluto LNG facility, particularly where artificial water sources occur (open water pit) It is often recorded aroundthe built environment and highly disturbed areas. APM did not record the species on either of the surveys. The likelihood of the species occurrence in the Project area is H**igh**.
Limosa lapponica baueri	Bar-tailed Godwit (baueri)	V	This species forages over coastal dunes. Has been observed amongst sand and mud flats in estuarine and beach areas, as well as near-coastal salt ponds and salt lakes.	This species has been recorded in the Dampier region on Dolphin Island and Hearson Cove (DBCA, 2018). This species may forage overthe salt ponds and mud flats present in the Project area. The likelihood of the species occurrence in the Project area is M**oderate**
Numenius madagascariensis	Eastern Curlew	CR	Predominately found in estuarine systems, saltmarshes, tidal mudflats and mangroves. Can be found in brackish or freshwater lakes.	This species has been recorded at Nickol Bay (east coast of Burrup) (DBCA, 2018). This species is a common migrant to the north, northeast and southeast of Australia. The likelihood of the species occurrence in the Project area is M**oderate**.
Sternula nereis nereis	Australian Fairy Tern	V	Habitat includes sheltered coasts, bays, inlets, estuaries, coastal lagoons, ocean beaches and also inland salt ponds and lakes and wetlands near the coast. However, it favours sand spits of islets in river-mouth channels, where they can forage on the seaward side of reefs and islands. Breeding known	This species has been recorded on Egret Island on the Dampier archipelago (DBCA, 2018). This species would be more inclined to usethe sheltered and undisturbed bays within the islands and islets of the archipelago. The likelihood of the species occurrence in the Project area is L**ow**.

Scientific Name	Common Name	EPBC Act Status	Habitat Requirements	Assessment Summary
			to occur within the wider 10km buffer area.	
Tringa nebularia	Common Greenshank	M	Predominantly found in sheltered coasts, mudflats and saltmarshes. Breeding covers an extensive range in the Northern Hemisphere.	This species does not breed in Australia, however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia. This species are known to occur within the 10km buffer of the Project area. The likelihood of the species occurrence in the Project area is M**oderate**.
Pluvialis fulva	Pacific Golden Plover	M	Predominantly found in sheltered sandy and muddy shores on islands and the mainland. Breeding In the Pilbara occurs between March and November. Nests are a shallow scrape in the sand in the open or among low lying vegetation.	This species is widespread along the Pilbara and Kimberley coasts between North-West Cape and the Northern Territory border. This species is known to occur within the 10km buffer of the Project area. The likelihood of the species occurrence in the Project area is M**oderate**.
Hydroprogne caspia	Caspian Tern	M	The Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs.	Breeding occurs from the Recherche Archipelago to Dirk Hartog Island and Faure Island in Shark Bay, and also in the Pilbara region from around Point Cloates to North Turtle Island, and more rarely, in the Kimberley. The likelihood of the species occurrence in the Project area is **Low**.
Tringa brevipes	Grey-tailed Tattler	M	This species is often found on sheltered coasts with reefs and rock platforms or with intertidal mudflats. It can also be found at intertidal rocky, coral or stony reefs as well as platforms and islets that	There are a few scattered records for the species along the south coast near the Eyre Bird Observatory, Point Malcolm, Rossiter Bay, Shark Lake Nature Reserve and surrounding swampland. It is found in the south-west between Augusta and Cervantes. The Grey-tailed Tattler is widespread from Houtman Abrolhos and the mainland adjacent to the Kimberley Division. It has also been recorded inland at Lake Argyle and on islands off

Scientific Name	Common Name	EPBC Act Status	Habitat Requirements	Assessment Summary
			are exposed at low tide. It has been found around shores of rock, shingle, gravel or shells and also on intertidal mudflats in embayments, estuaries and coastal lagoons, especially fringed with mangroves.	the coast. The likelihood of the species occurrence in the Project area is **Low**.
Numenius phaeopus	Whimbrel	M	The Whimbrel is often found on the intertidal mudflats of sheltered coasts. It is also found in harbours, lagoons, estuaries and river deltas, often those with mangroves, but also open, unvegetated mudflats.	It is common and widespread from Carnarvon to the north-east Kimberley Division. The likelihood of the species occurrence in the Project area is M**oderate**.
Pandion haliaetus	Osprey	M	This species occurs in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia.	The breeding range of the Eastern Osprey extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in NSW. The total range (breeding plus non-breeding) around the northern coast is more widespread, extending from Esperance in Western Australia to NSW. The distribution of the species around the northern coast (south-western Western Australia to south-eastern NSW) appears continuous except for a possible gap at Eighty Mile Beach. Breeding is known to occur within the region of the Project area. The likelihood of the species occurrence in the Project area is M**oderate**.
Calidris ruficollis	Red-necked Stint	M	Mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and sometimes on stony or rocky shores, reefs or shoals.	The Red-necked Stint breeds in Siberia and sporadically in north and west Alaska. It spends winter in Australasia, mostly in Australia, with smaller numbers in New Guinea and New Zealand. During the non-breeding season, over 80% of the global population resides in Australia. The likelihood of the species occurrence in the Project area is Low.
Species or species habitat 'likely' to occur within 10km buffer of Project area.				
Macroderma gigas	Ghost Bat	V	Inhabits arid spinifex hillsides, open savannah woodland, tall open	This species has been recorded on the Burrup Peninsula about 4 km northeast of the Project Area (DBCA, 2018) and more recently by APM

Scientific Name	Common Name	EPBC Act Status	Habitat Requirements	Assessment Summary
			forest etc. They roost in sandstone or limestone caves or under boulder piles and abandoned mines. They prefer to roost deep in the cave system and in a relatively open space in the cavity. This has to do with humidity and temperature in the microclimate that caves produce. Females roost with young preferentially in the large open cavity far from the cave entrance.	during the post-wet season survey. This species was once distributed over the entire north of Australia but is now restricted to pockets within tropical areas. This is partly due to the introduction of the Cane Toad, but also loss and disturbance of roost sites and loss of foraging habitat through inappropriate management and dramatic land-use change (DENR, 2016). The species has been recorded in the Project area.
Species or species habitat which 'may' occur within 10km buffer of Project area.				
Limosa lapponica menzbierri	Northern Siberian Bar-tailed Godwit	CR		
Macronectes giganteus	Southern Giant Petrel	E		
Pezoporus occidentalis	Night Parrot	E		
Rhinonicteris aurantia (Pilbara form)	Pilbara Leaf-nosed Bat	V		
Rostratula australis	Australian Painted Snipe	E		

Where E = Endangered, V = Vulnerable, CR = Critically Endangered and M = Migratory

Table 4-2 Threatened aquatic fauna species and migratory aquatic species identified within 10km buffer.

Species	Common Name	EPBC Act Status	Type of Presence
Species or species habitat 'known' to occur within area			
Caretta caretta	Loggerhead Turtle	E	Foraging, feeding or related behaviour known to occur within area
Megaptera novaeangliae	Humpback Whale	V	Species or species habitat known to occur within area
Chelonia mydas	Green Turtle	V	Breeding known to occur within area
Eretmochelys imbricata	Hawksbill Turtle	V	Breeding known to occur within area
Natator depressus	Flatback Turtle	V	Breeding known to occur within area
Pristis clavata	Dwarf Sawfish, Queensland Sawfish	V	Species or species habitat known to occur within area
Aipysurus foliosquama	Leaf-scaled Seasnake	CR	Species or species habitat known to occur within area
Tursiops aduncus	Spotted Bottlenose Dolphin	M	Migratory
Species or species habitat 'likely' to occur within area			
Aipysurus apraefrontalis	Short-nosed Seasnake	CR	Species or species habitat likely to occur within area
Balaenoptera musculus	Blue Whale	E	Species or species habitat likely to occur within area
Dermochelys coriacea	Leatherback Turtle, Leathery Turtle	E	Breeding likely to occur within area
Carcharias Taurus (west coast population)	Grey Nurse Shark (west coast population)	V	Species or species habitat likely to occur within area
Pristis zijsron	Green Sawfish, Dindagubba, Narrowsnout Sawfish	V	Breeding likely to occur within area
Mobula birostris	Giant Manta Ray	M	Migratory
Species or species habitat that 'may' to occur within area			
Dugong dugon	Dugong	M	Migratory

Where E = Endangered, V = Vulnerable, CR = Critically Endangered and M = Migratory

5 Study and Survey Findings

As part of the Project's environmental assessment process, Animal Plant Mineral (APM) was engaged to undertake:

- Desktop fauna studies of the Study Area; and
- Multi-season and terrestrial vertebrate fauna surveys of the Study Area.

Pendoley Environmental were engaged to undertake a Marine Fauna Desktop Assessment (Pendoley, 2019) to identify potentially impacted marine fauna, quantify the likely direct, indirect and cumulative impacts and advise on appropriate mitigations (**Attachment A**).

APM's post-wet season field surveys followed the passage of Cyclone Veronica which crossed Karratha in March 2019. The Karratha Aero weather station (BOM station 00408310, 10 km to the south of the Survey Area) recorded 70 mm of rainfall associated with the passage of the cyclone. This rainfall created sufficient post-wetseason survey conditions.

Two fauna surveys were conducted at the Project Area; an initial level 1 fauna survey prior to the wet season of 2018 / 2019 and a level 2 survey conducted immediately after that wet season. A full bird census, camera trapping, spotlight surveys, and bat surveys were carried out in both surveys, while a full terrestrial fauna trapping survey was conducted in the post-wet season survey. Four broad fauna habitats are present within the Project Area; rocky outcrops, hummock grasslands on mid-slopes, drainage lines, and samphire shrublands and supra-tidal flats.

The Protected Matters Search Tool identified a total of 58 migratory EPBC Act listed species in a 10 km search radius from the Project area:

- Migratory Marine Birds - 9
- Migratory Marine Species - 20
- Migratory Terrestrial Species – 3
- Migratory Wetlands Species – 29

The full report for this survey, Perdaman Urea Project – Pre and Post-wet season Biological Survey (APM, 2019) is included in **Attachment B.**

5.1 Terrestrial Fauna

The Ghost Bat (*Macroderma gigas*) was recorded using acoustic bat detectors on two occasions (Figure 5-1) during the post wet season survey. It is listed as Vulnerable under both Commonwealth and State legislation. However, no roost sites were identified during the surveys, indicating that the bats roost nearby (possibly at Murujuga National Park to the south), and forage over the Project Area. The drainage line in the south-west of the Project Area provides suitable foraging habitat for this species. This area has been excised from the Project Development Envelope and will not be impacted. One of the recommendations of the confidential heritage survey report to JTSI covering the Project, which was endorsed by Murujuga Aboriginal Corporation (MAC) and the Circle of Elders, is to excise the ceremonial site (the "Yatha") in the south-west corner of Site F from Perdaman's Development Envelope. Perdaman has subsequently agreed to this recommendation, which in turn has provided further protection of drainage line habitat in this area. The realignment of Hearson Cove Road to the north of Site F has also protected this area.

Rocky outcrops present at the northern and southern fringes of the Project Area (

Figure 5-2) were searched for the Northern Quoll (*Dasyurus hallucatus*) and the Pilbara Olive Python (*Lialis olivaceus barroni*). While neither of these species was recorded during the survey, both are highly cryptic, and may occur within the Project Area. Disturbance of rocky outcrops will be minimised as much as practicable and limited to maximum clearance of 0.16 ha.

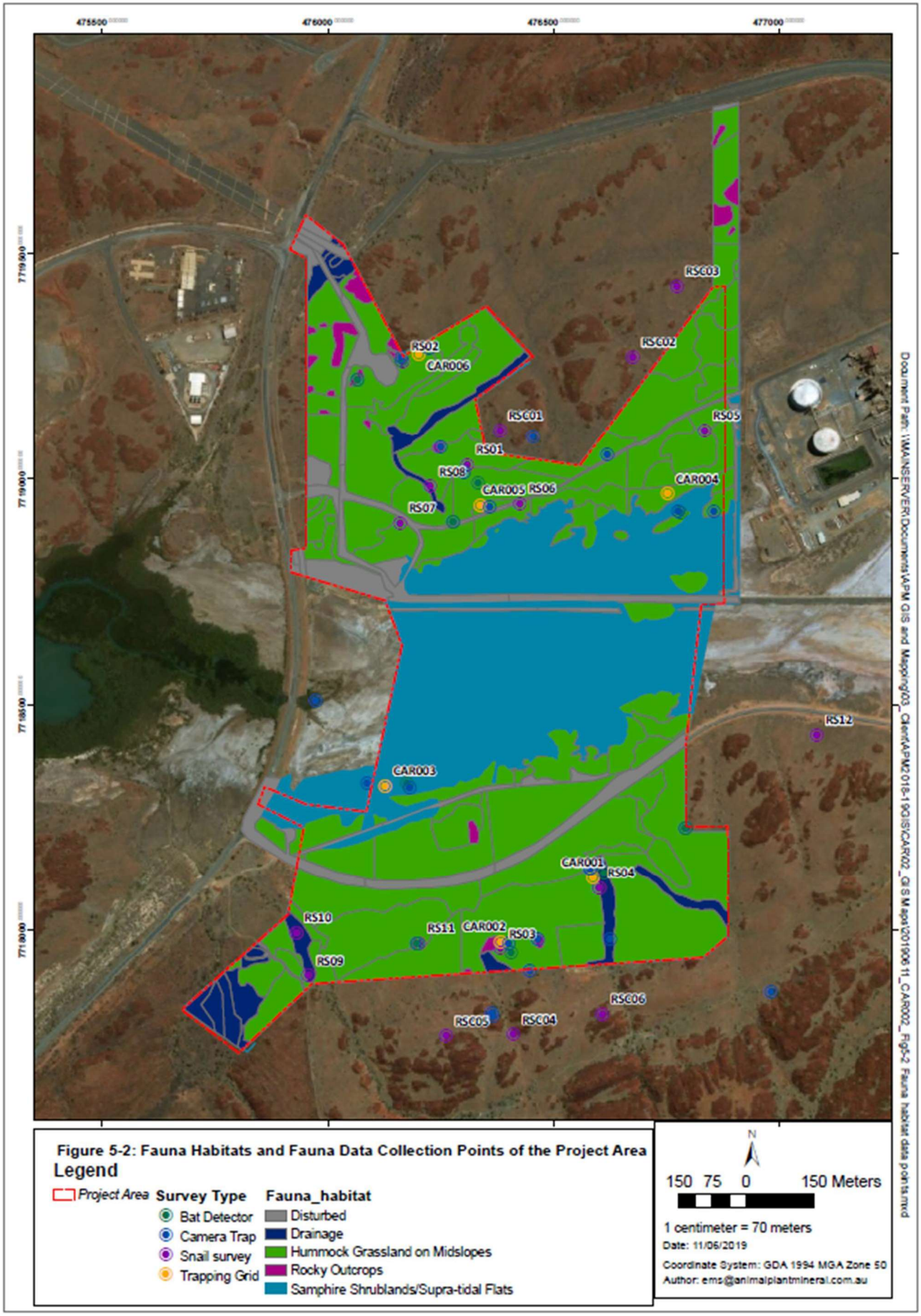


Figure 5-1 Terrestrial fauna habitats and fauna data collection points of the Project area

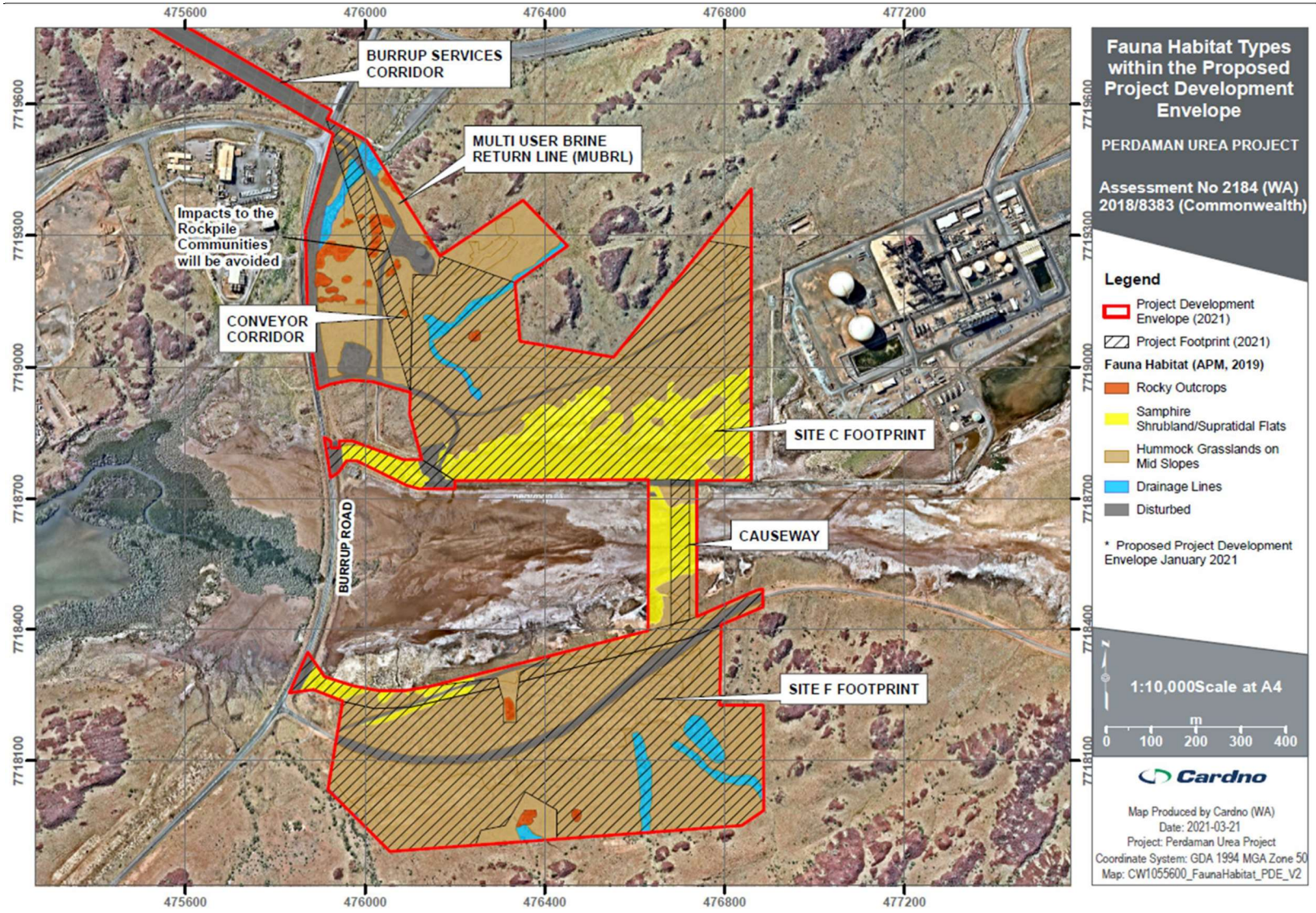


Figure 5-2 Fauna habitats within the Project Development Envelope.

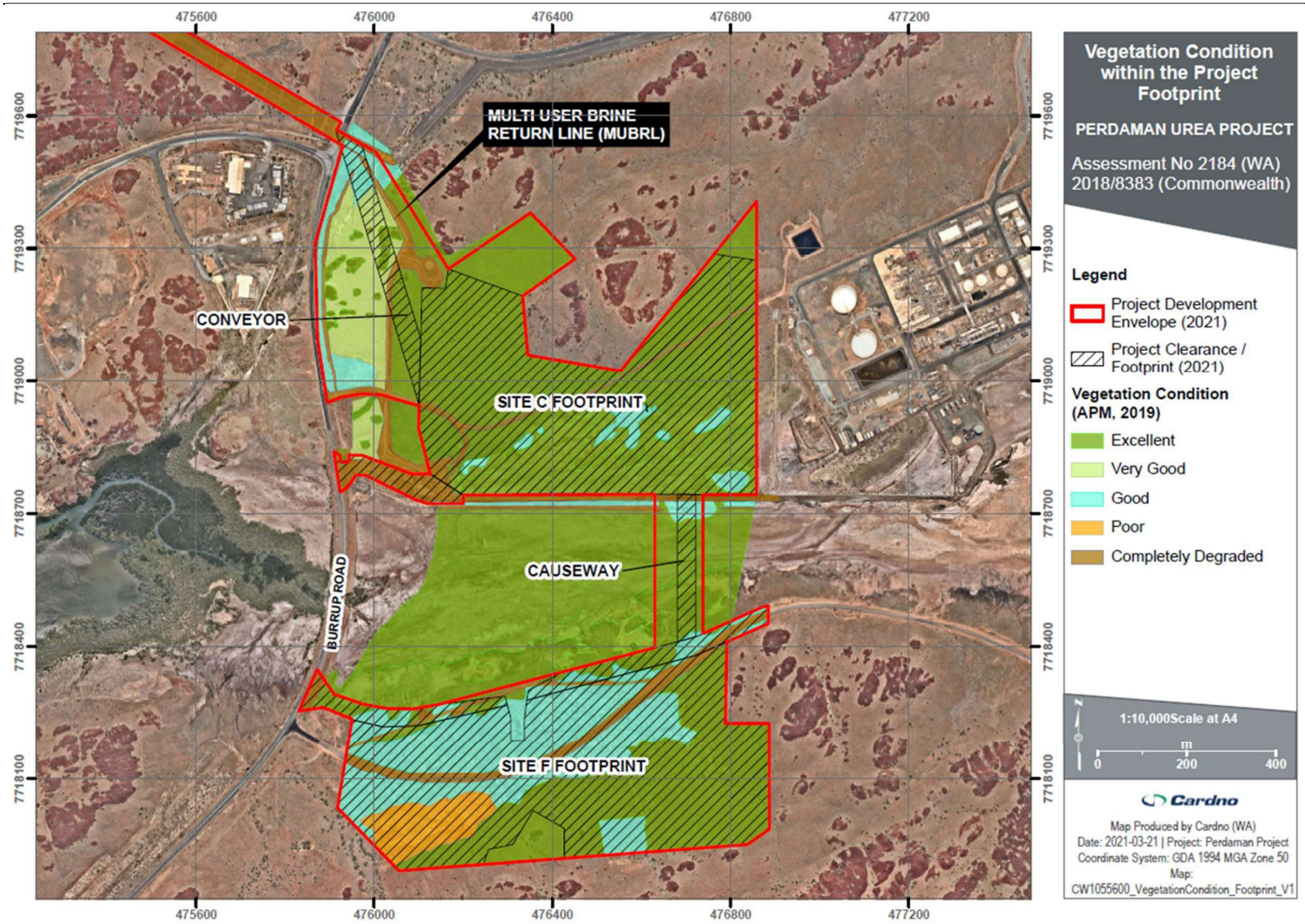


Figure 5-3 Vegetation condition within the Project Footprint

5.2 Marine Fauna

Threatened and migratory marine species, including marine turtles are protected under the EPBC Act and the Western Australian *Biodiversity Conservation Act 2016,* however the WA EPA did not consider marine fauna as a key environmental factor for the Project.

Of the seven marine turtle species found globally, the following five are EPBC Act listed threatened species which are known or likely to occur in the Project area.

- Green turtle (*Chelonia mydas*)
- Hawksbill turtle (Eretmochelys imbricate)
- Leatherback turtle (*Dermochelys coriacea*)
- Flatback turtle (*Natator depressus*)
- Loggerhead turtle (*Caretta caretta*)

A survey undertaken by Pendoley Environmental in 2006 determined that Holden Beach located approximately 1.5km northeast of the Project's Port area, did not support a major green or flatback sea turtle nesting rookery, though evidence of flatback turtles was recorded. However, the region has been identified as habitat critical to the survival of flatback (*Natator depressus*), green (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*) due to high density nesting and the importance of the Dampier Archipelago for these species. Further, Dampier Archipelago forms part of the Biological Important Area for the above-mentioned species and the Olive ridley turtle (*Lepidochelys olivacea*).

Light spill and other direct interference of the coastal rocky habitat is not expected to have any impact on protected sea turtles, given that there is such a low level of nesting activity within the bay north of this site, and that the bay present just southwest appears to be of poor habitat quality and too small to be of valueto turtles. It is unlikely either flatback or green turtles are, or have been, using the bay adjacent to the Projectarea for nesting.

Potential impacts on other listed threatened marine fauna known or likely to occur within the area, including humpback whale, dwarf sawfish, short-nosed sea snake, blue whale, green sawfish and grey nurse shark, white shark and whale shark will be limited to those associated with onshore activities, such as spills and sediment in runoff.

At the beginning of assessment of the proposal, marine fauna was identified as a preliminary key environmental factor when the EPA decided to assess the proposal and in the Environmental Scoping Document (ESD).

The EPA considers it is unlikely that the proposal would have a significant impact on Marine Fauna and that the impacts to this factor are manageable. Accordingly, the EPA did not consider marine fauna to be a key environmental factor at the conclusion of its assessment, despite the presence of threatened marine species being present in the proposal area (EPA, 2021).

The threatened marine fauna identified within 10km buffer of the project area is shown in Table 5-1 below.

Table 5-1 Threatened aquatic fauna species identified within 10km buffer.

Species	Common Name	EPBC Status	Type of Presence
Species or species habitat 'known' to occur within area			
Caretta caretta	Loggerhead Turtle	E	Foraging, feeding or related behavior known to occur within area
Megaptera novaeangliae	Humpback Whale	V	Species or species habitat known to occur within area
Chelonia mydas	Green Turtle	V	Breeding known to occur within area
Eretmochelys imbricata	Hawksbill Turtle	V	Breeding known to occur within area
Natator depressus	Flatback Turtle	V	Breeding known to occur within area

Species	Common Name	EPBC Status	Type of Presence
Pristis clavata	Dwarf Sawfish, Queensland Sawfish	V	Species or species habitat known to occur within area
Aipysurus foliosquama	Leaf-scaled Seasnake	CR	Species or species habitat known to occur within area
Tursiops aduncus	Spotted Bottlenose Dolphin	M	Migratory
Species or species habitat 'likely' to occur within area			
Aipysurus apraefrontalis	Short-nosed Seasnake	CR	Species or species habitat likely to occur withinarea
Balaenoptera musculus	Blue Whale	E	Species or species habitat likely to occur withinarea
Dermochelys coriacea	Leatherback Turtle, Leathery Turtle	E	Breeding likely to occur within area
Carcharias Taurus (westcoast population)	Grey Nurse Shark (west coast population)	V	Species or species habitat likely to occur withinarea
Pristis zijsron	Green Sawfish, Dindagubba, Narrowsnout Sawfish	V	Breeding likely to occur within area
Mobula birostris	Giant Manta Ray	M	Migratory
Species or species habitat that 'may' occur within area			
Dugong dugon	Dugong	M	Migratory

Where E = Endangered, V = Vulnerable, CR = Critically Endangered and M = Migratory

5.3 Avifauna / Migratory Birds

A range of migratory shorebirds and waders were observed during the fauna survey including:

- Red-capped Plover (Charadrius ruficapillus);
- Grey-tailed Tattler (*Tringa brevipes*);
- Caspian Tern (Hydroprogne caspia);
- Whimbrel (Numenius phaeopus);
- Red-necked Stint (*Calidris ruficollis*);
- Eastern Osprey (*Pandion haliaetus*);
- Pacific Golden Plover (*Pluvialis fulva*); and
- Common Greenshank (*Tringa nebularia*).

However, no threatened migratory bird species were recorded during the survey.

Supra-tidal flats within the Project area and mangrove vegetation surrounding King Bay to the west provide locally important habitat for a range of species, especially waders and shorebirds. The Project, however, will avoid direct disturbance of this habitat type. In addition, the vehicle access that crosses the supra-tidal flats will be designed with culverts to avoid alteration of surface water flows, mitigating potential indirect impacts to downstream habitats.

A desktop assessment identified 41 migratory bird species. About 35 bird species are listed as "known to occur" within the 10km buffer area and 2 species "likely to occur". Further, 4 have been identified as "may occur" within the area. Refer to **Error! Reference source not found.** for the full list of EPBC Act listed bird species identified within a 10 km buffer of the Project.

Table 5-2 Bird species identified within 10km buffer.

Species	Common Name	EPBC Status	Type of Presence	Type of Migratory Bird Species
Species or species habitat 'known' to occur within area				
Charadrius mongolus	Lesser Sand Plover, Mongolian Plover	E	Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris canutus	Red Knot, Knot	E	Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris ferruginea	Curlew Sandpiper	CR	Species or species habitat known to occur within area	Migratory Wetlands Species
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	CR	Species or species habitat known to occur within area	Migratory Wetlands Species
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	V	Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris tenuirostris	Great Knot	CR	Species or species habitat known to occur within area	Migratory Wetlands Species
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	CR	Species or species habitat known to occur within area	
Sternula nereis nereis	Australian Fairy Tern	V	Breeding known to occur within area	
Tringa stagnatilis	Marsh Sandpiper, Little Greenshank		Species or species habitat known to occur within area	Migratory Wetlands Species
Tringa nebularia	Common Greenshank, Greenshank		Species or species habitat known to occur within area	Migratory Wetlands Species
Xenus cinereus	Terek Sandpiper		Species or species habitat known to occur within area	Migratory Wetlands Species
Actitis hypoleucos	Common Sandpiper		Species or species habitat known to occur within area	Migratory Wetlands Species
Tringa totanus	Common Redshank, Redshank		Species or species habitat known to occur within area	Migratory Wetlands Species
Pluvialis fulva	Pacific Golden Plover		Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris alba	Sanderling		Species or species habitat known to occur within area	Migratory Wetlands Species
Calonectris leucomelas	Streaked Shearwater		Species or species habitat may occur within area	Migratory Marine Birds

Species	Common Name	EPBC Status	Type of Presence	Type of Migratory Bird Species
Sternula albifrons	Little Tern		Species or species habitat may occur within area	Migratory Marine Birds
Hydroprogne caspia	Caspian Tern		Breeding known to occur within area	Migratory Marine Birds
Tringa brevipes	Grey-tailed Tattler		Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris melanotos	Pectoral Sandpiper		Species or species habitat may occur within area	Migratory Wetlands Species
Motacilla cinerea	Grey Wagtail		Species or species habitat may occur within area	Migratory Terrestrial Species
Numenius phaeopus	Whimbrel		Species or species habitat known to occur within area	Migratory Wetlands Species
Motacilla flava	Yellow Wagtail		Species or species habitat may occur within area	Migratory Terrestrial Species
Phalaropus lobatus	Red-necked Phalarope		Species or species habitat known to occur within area	Migratory Wetlands Species
Ardenna pacifica	Wedge-tailed Shearwater		Breeding known to occur within area	Migratory Marine Birds
Fregata ariel	Lesser Frigatebird, Least Frigatebird		Species or species habitat known to occur within area	Migratory Marine Birds
Pandion haliaetus	Osprey		Breeding known to occur within area	Migratory Wetlands Species
Limosa lapponica	Bar-tailed Godwit		Species or species habitat known to occur within area	Migratory Wetlands Species
Limicola falcinellus	Broad-billed Sandpiper		Species or species habitat known to occur within area	Migratory Wetlands Species
Glareola maldivarum	Oriental Pratincole		Species or species habitat known to occur within area	Migratory Wetlands Species
Limosa limosa	Black-tailed Godwit		Species or species habitat known to occur within area	Migratory Wetlands Species
Arenaria interpres	Ruddy Turnstone		Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris acuminata	Sharp-tailed Sandpiper		Species or species habitat known to occur within area	Migratory Wetlands Species
Charadrius veredus	Oriental Plover, Oriental Dotterel		Species or species habitat known to occur within area	Migratory Wetlands Species

Species	Common Name	EPBC Status	Type of Presence	Type of Migratory Bird Species
Pluvialis squatarola	Grey Plover		Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris ruficollis	Red-necked Stint		Species or species habitat known to occur within area	Migratory Wetlands Species
Calidris subminuta	Long-toed Stint		Species or species habitat known to occur within area	Migratory Wetlands Species
Species or species habitat likely to occur within area				
Falco hypoleucos	Grey Falcon	E	Species or species habitat likely to occur within area	
Apus pacificus	Fork-tailed Swift		Species or species habitat likely to occur within area	Migratory Marine Birds
Sterna dougallii	Roseate Tern		Breeding likely to occur within area	Migratory Marine Birds
Species or species habitat may occur within area				
Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel	E	Species or species habitat may occur within area	Migratory Marine Birds
Pezoporus occidentalis	Night Parrot	E	Species or species habitat may occur within area	
Rostratula australis	Australian Painted Snipe	E	Species or species habitat may occur within area	
Anous stolidus	Common Noddy		Species or species habitat may occur within area	Migratory Marine Birds
Hirundo rustica	Barn Swallow		Species or species habitat may occur within area	Migratory Terrestrial Species
Limnodromus semipalmatus	Asian Dowitcher		Species or species habitat may occur within area	Migratory Wetlands Species

Where E = Endangered, V = Vulnerable and CR = Critically Endangered

Two other species, the Bar-tailed Godwit (Baueri) (*Limosa lapponica bauera*) and Northern Siberian Bar-tailed Godwit (*Limosa lapponica menzbieri*) are also listed threatened species, however are not considered to be migratory.

The waters of the Dampier Archipelago may provide foraging habitat during nonbreeding periods or for juvenile birds yet to reach sexual maturation. The proximity of the sites to beaches and mangroves suggests that migratory sea birds and shorebirds may also be seasonally present within the Project area, or in the adjacent areas. The Burrup Road, a busy road providing access to the many processing facilities and Port, is situated immediately to the west of the supra-tidal flats. As a result, this area is already subject to noise disturbance from traffic, and the avifauna species observed during the fauna surveys, are present despite this disturbance. While further disturbance to this area, including lighting and marine debris, should be minimised, it is unlikely to present a significant increase to that already created by the Burrup Road.

Many, but not all of the migratory bird species are expected to utilise the Project area at some time during their

periodic visits. However, based on survey work to date the Project area is not likely to be used by large numbersof any of these species. This is primarily to do with the small size of the habitats and the level of local disturbance. Moreover, there are other larger and less disturbed areas of habitat available nearby, such as the Murujuga National Park protected area.

6 Fauna Habitat

6.1 Rocky Outcrops

Characteristic of the Burrup Peninsula, the formation of Proterozoic igneous rock outcrops (Gidley Granophyre) found within the Project Area, as depicted in Figure 5-2, weathered over time and resistant to extensive erosion, produce aggregates of split boulder screes. These formations create good cover for reptiles in the pockets for adequate shade and protection, and also caves for bats and other small terrestrial mammals. This habitat type is also suitable to the Pilbara Olive Python (*Liasis olivaceus barroni*), and though not recorded during the APM survey, it is highly likely this species may occur in the area due to the availability of suitable habitat.

Weathering has also created exposed granophyre bedrock, providing extensive plains of small-sized rocks, dominating the topsoil layer. While this may represent appropriate habitat for the Western pebble-mound mouse (*Pseudomys chapmani*), the species was not recorded in the Project Area and is likely now locally extinct, as it is currently only patchily distributed in the central and southern Pilbara. The outcrops within the Project Area are small and isolated, and likely to be less important than the larger outcrops to the south, which provide greater connectivity and opportunity for secure and productive habitat.

The Project Area may be occupied by the Rothschild's rock wallaby (*Petrogale rothschildi*), though records suggest the species exists on the islands of the Dampier Archipelago at low densities, and any populations south of Withnell Bay are now rare or completely absent. At sites in the northern parts of the Burrup Peninsula, rock wallaby recovered in response to fox baiting operations. The sub-species could use the rocky outcrops and creek lines nearby that contain diverse grasses and shrubs for foraging, though the species is not likely to be present as it requires deep caves for shelter during the heat of the day, and most of the rock piles are not significant enough to provide this. It is more likely the species would utilise rock piles on islands interspersed by areas of spinifex and soft grasses around beaches which are undisturbed by humans and enables them to venture short distances from their shelter sites to forage.

Evidence of Echidnas (*Tachyglossus aculeatus*) (scats found atop rockpiles) were located at the Project Areain reasonable quantities suggesting a persisting population on the Burrup Peninsula. The Finlayson's Cave Bat (*Vespadelus finlaysoni*) was recorded within this habitat type north west of the Project Area, close to the boundary. It was also recorded at the south eastern boundary of the Project Area, suggesting it was likely roosting somewhere in the extensive rocky outcrops adjacent the site, that spread east to south east and using the hummock grasslands for foraging. Similarly, the Little Broad-nosed Bat (*Scotorepens greyii*) was recordedin the same sites, which is unusual for this species, as it is not a cave-dweller. It is likely a reflection of the survey season, as the creek beds are dry and during this time, the species would switch to foraging within the grasslands, instead of the tree-lined and water-filled drainage lines you would expect during the wet.

6.2 Hummock Grasslands on Mid-Slopes

The Project Area and wider Burrup Peninsula contain coastal and subcoastal plains with mixed savannah hummock and tussock grasslands, as depicted in Figure 5-2, and scattered shrubs of *Acacia pyrifolia* and *Acacia inaequilatera*. Upland areas are dominated by Triodia hummock-forming grasses which are present in the Project Area. A range of bird species are likely to use this grassy habitat for both foraging and nesting, especially given the proximity of the grassland to the ephemeral drainage lines. These include the Star Finch *(Neochmia subclarascens)*, Swamp Quail (*Coturnix ypsilophora*), Painted Finch (*Emblema pictum*), and Crimson Chat (*Epthianura tricolor*).

This habitat type will also provide foraging habitat for grazers; primarily Euros (*Osphranter robustus*), but also potentially Rothschild's rock wallaby, especially given that the species feeds on both native and non-native grasses (e.g. Buffel), which are present in this habitat type.

Small rodents such as the Delicate Mouse (*Pseudomys delicatulus*) which has not suffered dramatic range declines like most of Australia's native rodents, may occur in the Project Area as the expanse of this habitat type would provide grass seeds that make up majority of the species diet. The Sandy Inland Mouse (*Pseudomys hermannsburgensis*) may also occur, as the species resides within hummock and tussock grasslands creating shallow burrows or using pre-existing burrows and foraging close to cover. The species population fluctuates greatly in response to rainfall. Similarly, varanids (e.g. Short-tailed Monitor, *Varanus brevicauda*), elapids (e.g. Western Brown Snake, *Pseudonaja mengdeni*) and dragons (e.g. Military Dragon, *Ctenophorus isolepis*) are likely to use this habitat, as it provides both cover from predators and suitable substrate for excavating their burrows.

Evidence of Echidna (*T. aculeatus*) was recorded in this habitat type, as well as wild dog/dingo (*Canis* sp.) and

feral cat (*Felis catus*) scats. The Northern freetail bat (*Chaerephon jobensis*) was recorded in this habitat type on only one of the trap nights and on one recorder only.

6.3 Samphire Shrublands and Salt Plains

The Burrup Peninsula contains marine alluvial flats and river deltas that support Samphire and mangal ecosystems (mangroves). Although not extensive in a regional context, the intertidal flats around the Burrup contain a variety of marine waders, and these flats are locally significant. The mangrove community is not forecast for disturbance based on the current site layout.

Such areas are important for migratory shorebirds and those that rely on seasonal water availability or opportunistic foraging, such as predatory birds like the Peregrine Falcon, (*Falco peregrinus)*, Eastern Osprey, (*Pandion cristatus)*, and Wedge-tailed Eagle (*Aquila audax)*.

Fauna diversity and density is likely to be low during the dry and pre-wet seasons as there is a lack of canopy cover of this habitat type in the Project Area, as depicted in Figure 5-2. This habitat will become increasingly important at times of inundation during high tide when waders and shorebirds use the area for feeding, roosting and potentially nesting (e.g. Red-capped Plover, (*Charadrius ruficapillus*)).

The supra-tidal flats between King Bay and Hearson's Cove, including those within the Project area, contain mangal systems that could support a diverse range of fauna. This includes birds that may use the rich organic marine sediment to forage and potentially nest including Brahminy Kite, (*Haliastur indus))* and Mangrove Golden Whistler, (*Pachycephala melanura*).

Mammals such as the Water-Rat *(Hydromys chrysogaster)* could also reside and forage at low tide among the extensive mangal system. This includes the mouth of King Bay which flows into the tidal flats and smaller mangrove habitat just outside the Project area.

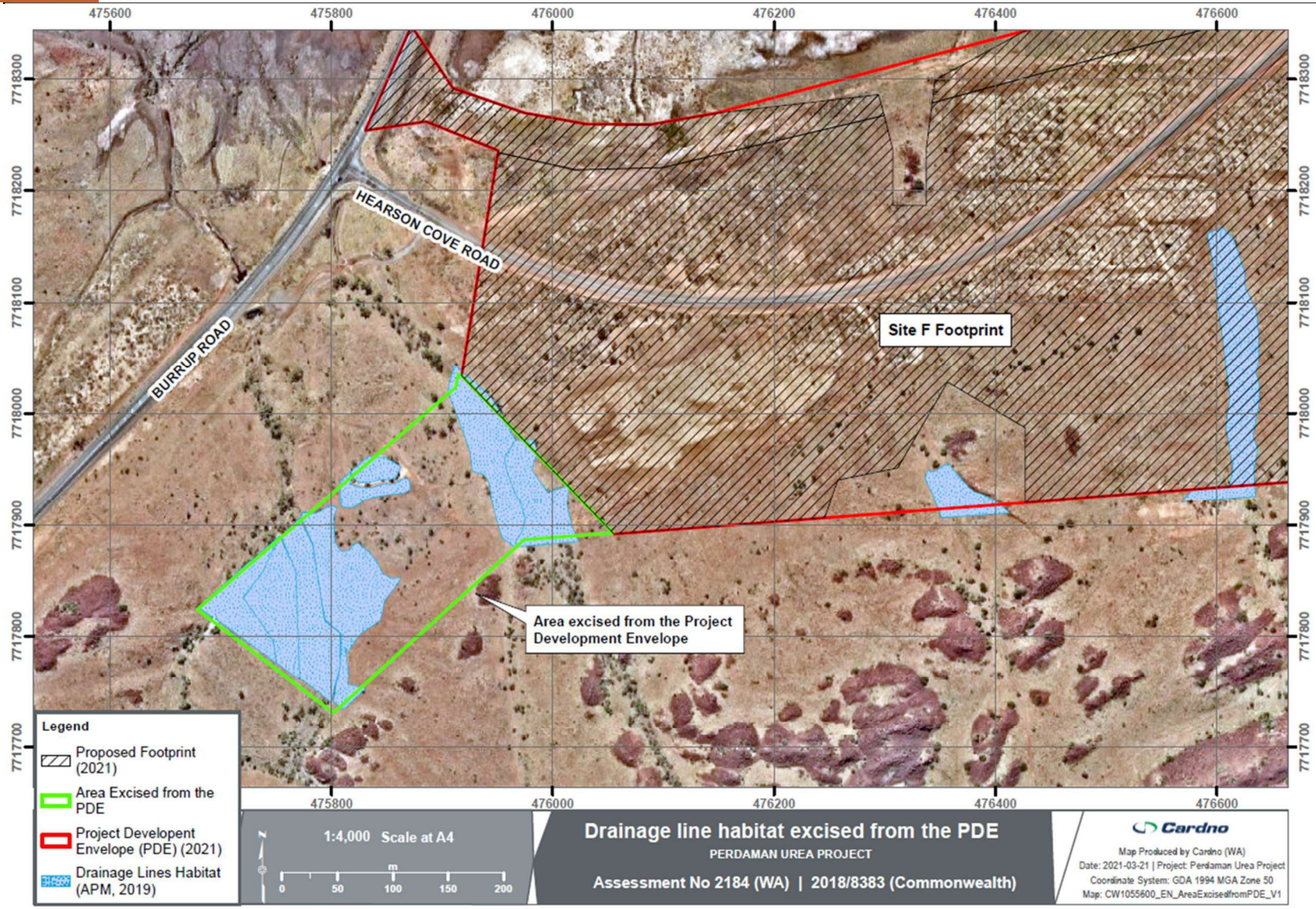
The Northern Coastal Free-tailed Bat (*Ozimops cobourgianus*) is a user of mangroves for roosting, particularly those in adjacent forest and along large waterways. This species was recorded six times on three separate nights according to the bat analysis. It was recorded on 3 of the 4 bat detectors placed around site.

When the area is not inundated, the most common fauna to use the area is the Euro (*O. robustus*). Frequent evidence of this species was found across the flats (tracks and scats).

6.4 Drainage Lines

Rapid weathering of the geology of the area has formed deeply incised narrow valleys amongst the exposed bedrock. These channels trend southwest to northeast and east to west throughout the Burrup Peninsula. The drainage channel present in the southwest of the Project is quite significant. This area has been excised from the Project Development Envelope due to its significance, as depicted in Figure 6-1.

The Eucalyptus communities within and beside the watercourses contain large, tall trees that may provide hollows suitable for birds such as the Galah (*Cacatua roseicapilla*) and Little Corella (*Cacatua sanguinea*). Similarly, this habitat provides general roosting, nesting, perching and foraging habitat for the Red-browed Pardalote (*Pardalotus rubricatus*), Red-backed Kingfisher (*Todiramphus pyrrhopygius*) and Black-faced Woodswallow (*Artamus cinereus*). If trees are large enough and have many hollows, some bats such as the Northern freetail bat (*Chaerephon jobensis*), Beccari's freetail bat (*Mormopterus beccarii*), Yellow-bellied sheathtail bat (*Saccolaimus flaviventris*) and Common sheathtail (*Taphozous georgianus*) may seek refuge within this habitat. C*. jobensis* and *T. georgianus* were both recorded during the pre-wet season survey. *T. georgianus* was recorded on all 4 of the bat detectors, on each trap night (Figure 5-1).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HEARSON COVE ROAD
BURRUP ROAD
Site F Footprint
Area excised from the Project Development Envelope
Legend
Proposed Footprint (2021)
Area Excised from the PDE
Project Developent Envelope (PDE) (2021)
Drainage Lines Habitat (APM, 2019)
1:4,000 Scale at A4
m
0
50
100
150
200
Drainage line habitat excised from the PDE
PERDAMAN UREA PROJECT
Assessment No 2184 (WA) | 2018/8383 (Commonwealth)
Cardno
Map Produced by Cardno (WA)
Date: 2021-03-21 | Project: Perdaman Urea Project
Coordinate System: GDA 1994 MGA Zone 50
Map: CW1055600_EN_AreaExcisedfromPDE_V1

6.5 Rocky Outcrops and Dunes

Additional to the main Project areas at Site C and Site F, a parcel of land, adjacent to the coast and within the PPA area is planned to be developed. The development area will include a shiploader which will be established on a wharf jetty which will be built by PPA. A conveyor will connect this area to a port storage shed which willbe located on an existing hardstand area.

The coastal area meets scattered rocky outcrops which adjoin a large outcrop extending to about 100 m northto south (most of this landmass residing outside the development area). The outcropping shifts into red sandy loam dunes with scattered hummock grasses. Further inland, the proposed Urea shed will be placed upon pre-existing hardstand area. The existing Burrup East West Services Corridor (EWSC) will contain another conveyor which will transfer urea from Perdaman's plant (Site C) to the Port storage shed.

This habitat type is likely to support a diversity of reptiles. According to NatureMap, there are several recordsof the spotted dtella *(Gehyra punctata)* and Tree dtella (*Gehyra variegata*) geckoes from the rocky outcrop just adjacent the coast. The area could support the Pilbara Olive Python, which has been sighted numerous times near the Pluto LNG Park and Karratha Gas Plant. The area to be developed is extremely small in comparisonto the wider developed area of the Burrup Industrial Estate that still contains a significant amount of undisturbed habitat similar to that forecast for impact. Some of the species expected to utilise the Rocky Outcrops habitat type in the major development area are likely to occur in this area too.

The main species that could utilise the coastal rocky shore is the Water Rat (*Hydromys Chrysogaster*) which feed on marine invertebrates, crustaceans and turtle eggs. However, they tend to occupy sheltered areas of estuaries containing mangroves and may forage further into coastal/intertidal areas and would not utilise coastal rocky shores solely as a protective habitat. It is unlikely the Water Rat would be utilising the area for feeding due to surrounding development and limited shelter from predators.

Though unlikely, it is plausible that Northern Quoll could be found in this area. There are records of this speciesin the King Bay Supply Base just south of the Project area and about 2 km northeast in the rocky outcrops south of the Woodside Southern Expansion Lease Yard. This suggests the species may be inhabiting around and within these developed areas for foraging.

Suitable habitat may be directly impacted; however, the impact on fauna would be minimal given the expansive suitable habitat still available in the undeveloped areas.

7 Potential Environmental Impacts and Risks

7.1 Reduction and / or fragmentation of fauna habitat

To enable the construction and operation of the Project's permanent infrastructure, approximately 73.05 ha of native vegetation within the Project footprint will need to be cleared. Table 7-1provides the habitat type, potential species it supports, and the total area being cleared during the Proposal's construction program.

Table 7-1 Fauna habitat types within the Project Footprint clearance area

Fauna Habitat	Potential Species	Likelihood of Occurrence	Site C foot-print	SiteF foot-print	Cause-way	Conve-yor Corridor	Hearson Cove Road Re-alignment	Access Road to Site C	Total (ha)
Rocky Outcrops	Pilbara Olive Python	High	0.05	0.05	-	0.06	-	-	**0.16**
	NorthernQuolls	Moderate							
Hummock Grasslands on Mid Slopes	Pilbara Olive Python	High	19.05	28.39	0.56	1.85	2.3	0.04	**52.19**
	NorthernQuolls	Moderate							
Samphire Shrubland/ Supratidal Flats	Curlew Sandpiper	Moderate	10.2	0.2	0.7	-	0.9	0.91	**12.91**
	Red Knot	Moderate							
	Lesser Sand Plover	Low							
	Bar-tailed Godwit	Moderate							
	Australian Fairy Tern	Low							
	Great Knot	Low							
	EasternCurlew	Moderate							
Drainage Lines	Ghost Bat	Recorded	0.8	1.7	-	0.2	-	-	**2.7**
Disturbed			1.0	2.2	0.1	0.49	0.8	0.5	**5.09**
Total (ha)			**31.1**	**32.54**	**1.36**	**2.6**	**4.0**	**1.45**	**73.05**

Of the proposed 73.05 ha to be cleared for the construction and operation of the Project's permanent infrastructure, 64 ha of fauna foraging/ roosting habitat in 'good' to 'excellent' condition, and potentiallyutilised by EPBC listed species, will be cleared, as outlined as below:

- 0.16 ha of Rocky Outcrops habitat
- 49.17 ha of Hummock Grasslands habitat
- 2.7 ha of Drainage Line habitat
- 11.97 ha of Samphire Shrubland/ Supratidal Flats habitat

7.2 Vehicle Strike

Impacts with moving vehicles can cause injury or death of native fauna. The establishment of new roads and introduction of additional vehicles, particularly during the construction phase, have the potential to adversely impact on fauna. Dusk and dawn periods when some fauna is more active are times when these interactions could be more prevalent.

7.3 Increase in introduced fauna

The introduction of pest species has the potential to increase competition for limited food resources or impact neighbouring roosting sites from endemic species. The importation of modular units has the potential to carry pest species from outside the region.

Similarly, some feral species such as mice, rats, dogs, cats, pigs and foxes could be attracted to the facility if food scraps are not managed or disposed of appropriately. The attraction of feral predators such as foxes (*Vulpesvulpes*) and cats (*Felis catus*) could result in predation of native species.

While the population of Cane Toads (*Rhinella marina*) is continuing to spread, to date, they have not yet been recorded on the Burrup Peninsula. The potential for lethal toxic ingestion of Cane Toad toxin, though not likely at this time, needs to be considered for the life of Project.

7.4 Light Pollution

Artificial light is known to adversely affect many species and ecological communities, It can change the behaviour and/or physiology, reducing survivorship or reproductive output. It can also have the indirect effect of changing the availability of habitat or food resources. It can attract predators and invasive pests, both of which may pose a threat to listed species (DOEE, 2020).

Although they spend most of their lives in the ocean, female turtles nest on sandy tropical and subtropical beaches, predominantly at night. They rely on visual cues to select nesting beaches and orient on land. Artificial night lighting on or near beaches has been shown to disrupt nesting behaviour. Beaches with artificial light have lower densities of nesting turtles than dark beaches. Hatchling sea finding behaviour may be disrupted by artificial lights, which interfere with natural lighting and silhouettes (DOEE, 2020).

All species of seabirds are vulnerable to the effects of lighting. Seabirds active at night while migrating, foraging or returning to colonies are most at risk. Fledglings are more affected by artificial lighting than adults due to the synchronised mass exodus of fledglings from their nesting sites. They can be affected by lights up to 15 km away. Similarly, migratory shorebirds can be impacted by artificial light. Artificial light can disorient flying birds, affect stopover selection, and cause their death through collision with infrastructure. Birds may starve as a result of disruption to foraging, hampering their ability to prepare for breeding or migration (DOEE, 2020).

Artificial light emanating from the site could attract fauna and alter foraging patterns, increase predation risks, disrupt biological clocks and disrupt dispersal movements impacting breeding and roosting regimes. The Project may impact on nesting turtles and turtle hatchlings through disorientation and misorientation. Artificial light from the Project can disorient seabirds causing collision, entrapment, stranding, grounding, and interference with navigation (being drawn off course from usual migration route), and migratory seabirds may also be impacted through disorientation.

Potential sources of light pollution associated with the Project would be the afterhours security lighting and night-time lighting needed in key operational areas.

7.5 Noise and vibration

Noise and vibration acts as a general stressor, masks acoustic signals, and can disturb ecosystem balance.

Noise emissions during the construction phase such as large mobile plant movements and blasting associated with earthworks could have a potential impact on fauna. Similarly, during the Project's operational phase, noise emissions from plant, conveyor and loading facilities could impact terrestrial and marine fauna.

7.6 Fauna entrapment and poisoning

During the construction phase open pits and trenches will be established and kept open temporarily. During this time, fauna can become trapped and if not removed quickly have the potential to die due to exposure during hot daytime temperatures.

The collision of ghost bats into wire fences is a key threat for this species.

Stormwater and brine storage ponds could attract fauna, particularly birds. The use of chemical larvicides or adulticides to control mosquitoes has the potential to adversely impact these species.

7.7 Changes to water quality at MUBRL outfall

Exceedances of the Water Corporation's water quality licence limits could result in wastewater discharge tothe MUBRL impacting marine environmental quality at the outfall point.

7.8 Water quality

Marine water quality may be impacted from air emissions that deposit in the marine environment, as well as additional stormwater runoff from hardstand areas causing erosion and deposition of sediments reaching King Bay via the supra-tidal flats.

Inland waters may be impacted by the Project through the alteration of surface drainage and water flow pathways, including surface ground and tidal water flow to supra-tidal vegetation. A decrease in infiltration from rainfall and surface to groundwater within the Project site. Surface and groundwater quality may be impacted as a result of construction activities. Erosion of surface features and formation of features such as rills and gullies may occur. The Project will cause an increase of surface water runoff volumes from hardstand surfaces, and potential degradation of water quality from elevated levels of suspended solids or contaminants in surface water runoff. Impacts on inland waters can cause indirect impacts on the mangrove communities of King Bay as a result of water quality changes.

7.9 Risk Assessment

Perdaman applied a standard risk assessment matrix to its operations, whereby the 'likelihood' and 'consequence' of events is considered, with management and mitigation actions identified to control the level of risk. Perdaman completed a risk assessment for each of the relevant conservation significant fauna in preparation of this TSMP. The risk assessment, with the resulting 'risk outcome', has been based upon the residual risk levels after management and mitigation activities are implemented. The assessments have applied the definitions for both likelihood and consequence as prescribed within DOE (2014), and are presented in Table 7-2. Detailed management and mitigation actions and performance targets can be found in the Environmental Management Strategy in Section 7.10.

Table 7-2 Threatened and migratory species risk assessment

Threatened and migratory species: Northern Quoll and Pilbara Olive Python	
Risks	Lethal poisoning as a result of ingestion of Cane Toad toxin (While the population is continuing to spread, to-date Cane Toads are yet to be recorded in the Burrup Peninsula). Feral predators have impacts on Northern Quoll and Pilbara Olive Python populations through competition for food or direct predation. Inappropriate fire regimes change habitat structure and floristics; and removal of vegetation cover. Habitat disturbance and fragmentation of Northern Quoll and Pilbara Olive Python habitats as a result of construction of the Project. Habitat disturbance and fragmentation resulting from fire. Habitat disturbance resulting from the deposition of dust. Habitat disturbance / fragmentation resulting from the ingress of weeds. Construction activities occurring during sensitive periods (breeding seasons or during the night) of the Northern Quoll and Pilbara Olive Python. Changes to inland surface and groundwater quality and quantity. Ecological stress from noise and vibration during construction works. Fauna entrapment, injury or death during construction and operations. Inadvertent injury and/or mortality as a result of vehicle strikes from increased traffic during construction and operations. Injury and/or mortality as a result of increased waste material during construction and operations. Chemical (including Urea) or oil spill resulting in chronic pollution. Indirect and cumulative impact through removal of breeding, nesting and foraging habitats and theintroduction of predators.

Management and Mitigation Measures	Refer to **Attachment C**
Outcomes	Residual Risk: It is expected that the Proposal will have a low to negligible impact on the abundance, species diversity, geographic distribution and productivity of Northern Quoll and Pilbara Olive Python species. Offset: Offset of 64 ha in terms of monetary contribution to the Pilbara Environmental Offsets Fund. The Fund delivers environmental offsets in the Pilbara through a strategic landscape-scale approach, building on regional programs including ranger groups, so that environmental offset outcomes aregreater than the sum of individual offset contributions.
Residual Risk Level	**Low to Negligible Risk**
Threatened and migratory species: Ghost Bat	
Risks	Disturbance and/or modification to Ghost Bat foraging habitat resulting from: a). fire. b). dust. c). ingress of weeds. d). changes to inland surface and groundwater quality and quantity. Collision with fences, especially those with barbed wire. Fauna entrapment, injury or death during construction and operations. Lethal poisoning as a result of ingestion of Cane Toad toxin (While the population is continuing to spread, to-date Cane Toads are yet to be recorded in the Burrup Peninsula). Competition for prey with foxes and feral cats. Indirect and cumulative impact through disturbance/ removal of foraging habitats and the introduction of predators. Direct disturbance from noise, vibration, light and other anthropogenic activities.
Management and Mitigation Measures	Refer to **Attachment C.**
Outcomes	Residual Risk: It is expected that the Proposal will have a low to negligible impact on the abundance, species diversity, geographic distribution and productivity of Ghost Bat species. Offset: Offset of 64 ha in terms of monetary contribution to the Pilbara Environmental Offsets Fund. The Fund delivers environmental offsets in the Pilbara through a strategic landscape-scale approach,
Residual Risk Level	**Low to Negligible Risk**
Threatened and migratory species: Migratory avifauna species	
Risks	Habitat loss and habitat degradation of migratory bird habitats as a result of construction. Chemical (including Urea) or oil spill resulting in chronic pollution. Habitat directly affected by acute pollution caused by chemical (including Urea) or oil spill. Degradation of habitats by Invasive weed and pest species. Altered hydrological regimes. Direct disturbance from noise, vibration, light and other anthropogenic activities. Indirect and cumulative impact through removal of foraging habitats and the introduction of predators. Fauna entrapment, injury or death during construction and operations. Inadvertent injury and/or mortality as a result of vehicle strikes from increased traffic during construction and operations. Injury and/or mortality as a result of increased waste material during construction and operations.
Management and	Refer to **Attachment C.**

Mitigation Measures	
Outcomes	Residual Risk: It is expected that the Proposal will have a low to negligible impact on the abundance, species diversity, geographic distribution and productivity of migratory birds. Offset: Offset of 64 ha in terms of monetary contribution to the Pilbara Environmental Offsets Fund. The Fund delivers environmental offsets in the Pilbara through a strategic landscape-scale approach, building on regional programs including ranger groups, so that environmental offset outcomes aregreater than the sum of individual offset contributions.
Residual Risk Level	**Low to Negligible Risk**
Threatened and migratory species: Turtle species	
A Turtle management plan will be developed prior to civil construction activities. This plan will discuss the risks, management and mitigation measures applied to Turtle Species.	

7.10 Environmental Management Strategy for Threatened and Migratory Species

Perdaman has developed an Environmental Management Strategy, which includes identification of potential impacts, objectives, targets, and management actions aimed to protect threatened terrestrial fauna. The Environmental Management Strategy for terrestrial fauna is provided as **Attachment C** of this document.

Perdaman has taken a 'hierarchical approach' to the mitigation of potential impacts associated with the Project, and in the first instance, has sought to avoid areas of conservation significant fauna habitat through design refinement. Where impacts cannot be avoided, Perdaman has designed the Project to reduce the intensity and / or extent of impacts on conservation significant fauna individuals and habitat.

The management actions focus the greatest management effort on reducing habitat loss and impact to individual conservation significant fauna. These management actions were specifically developed to ensurethat impacts are minimised as far as practicable during the final design, construction and operation of the Project. They have been informed by the results of field studies, best practice and recent experience on similar projects in Western Australia.

8 Risk of potential impacts

Potential impacts to the Olive Python and the Ghost Bat were assessed against the significant impact criteriafor vulnerable species and potential impacts to the Northern Quoll were assessed against the significant impact criteria for endangered species of the *Significant impact guideline* (DoE, 2013).

Spotlight surveys were conducted during both APM surveys in rocky outcrop areas in an effort to record the Pilbara Olive Python (*L. olivaceus barroni*) however this species was not recorded by APM. The lack of detection and proximity with well-developed and extensive rocky outcrops suggest this species is infrequent if present.

The main potential threatened species and migratory species impacts from the Project include the loss of fauna habitat as a result of reduction and/or fragmentation of fauna habitat, injury or death caused by vehicle strike, increase in introduced feral animals and weeds, artificial light pollution, noise, vibration, dust, fire, fauna entrapment, poisoning, debris, spill events, changes to marine and inland water quality, and changes to inland water flows at the project site

Despite the survey efforts, Northern Quolls (*D. hallucatus*) were not recorded during APM surveys. This species was previously recorded in close proximity to the Project area. Given the low density of mainland populations of this species, and its cryptic nature, the lack of detections during APM surveys may not indicatethe absence of this species from the area. However, the lack of detections does indicate that this species is rare in Project area habitats.

The Project layout is forecast to impact 0.16 ha of rocky outcrop habitat which has the potential to be used by the Northern Quoll and the Pilbara Olive Python. The rocky outcrop habitat represents only 0.15% of the total Project Development area. There is 2811 ha of this same habitat vested for conservation in the Murujuga National Park (57% of the total area of the national park). Therefore, the disturbance to rocky outcrop habitat within the Project area is minimal. compared to what is available to fauna in the Conservation Zone.

Although the Ghost Bat (*Macroderma gigas*) was recorded twice during APM Level 2 survey, no suitable roosting caves were located within the biological survey area during APM surveys. The rocky outcrops and creeklines along the southern boundary of the Project area should be considered suitable Ghost Bat foraging habitat. However, construction of the processing plant should not preclude foraging and may actually increase foraging opportunities, with night time lighting certain to draw a high number of invertebrates to the site. Ghost Bats typically fly low to the ground, around fence height, and are prone to collisions with wire fences. Important drainage line habitat located in the south-west corner of the project area has been subsequently avoided by excising this area from the project development envelope (Figure 5-4). Further avoidance of this habitat has been provided by selecting the northern Hearson Cove Road re-alignment.

Commonwealth Marine Areas (CMA) may be impacted by the Project through actions such as spills and debris deposition in marine waters. However the WA EPA considered that the marine fauna are not considered a key environmental factor for the Project.

The assessment of potential impacts on Matters of National Environmental Significance (MNES), including threatened and migratory species, demonstrates that the Project will not represent a significant risk to these MNES. The surveys and studies undertaken provide sufficient information to form the basis of the impact assessment. The implementation of the mitigation measures described above will ensure any identified environmental impact is avoided or appropriately mitigated such that they are not significant.

The mitigation measures discussed within this TSMP will be implemented to manage the residual impacts associated with the Project.

9 Training and Awareness

All Project personnel shall be aware of and competent to implement the environmental requirements of the TSMP when performing their individual tasks. A competent person is a person who is qualified, because of knowledge, training and experience, to organise the work and its performance.

9.1 Project Inductions

Prior to commencing any work on site, all personnel working on the Project will undertake an environmental induction which will include the Project's aspects, impacts and mitigations for the protection of threatened species. The environmental induction developed by Perdaman, will be delivered to personnel by the Environmental Representative, or delegated person, and shall include, but not be limited to the following:

- Project approvals and associated conditions;
- Key legal obligations;
- Regulatory penalties and impacts of non-compliance;
- Process for authorising ground disturbance via the GDP process;
- Land access restrictions;
- Aboriginal heritage sites and cultural awareness;
- Dust management;
- Identification of weeds, management measures and reporting requirements;
- Protection of fauna, identification of threatened fauna species and reporting requirements (sightings and injuries);
- Identification of feral fauna species and reporting requirements;
- Water management and water use efficiency;
- Fire risk management and response;
- Erosion systems and management;
- Hazardous materials storage and use;
- Spill management including use of spill kits;
- Waste management;
- Asbestos materials management;
- Emissions management;
- Incident and hazard reporting;
- Any special requirements relevant to specific work locations eg: Port related aspects and impacts.

9.2 Training Records

Training records shall be maintained on site and include the following as a minimum:

- Records of training attendance eg: induction training, toolbox meetings;
- Copies of training materials;
- Competency assessments (where relevant);
- Training matrix.

10 Communication

10.1 Internal and External Communication

Regular updates of environmental issues and related matters will be communicated to all Project personnel. This communication will include the induction process, through regular team meetings and tool box talks, and via written communications including emails and newsletters disseminated electronically or in hard copy.

All external communications will be managed by the Project Director. No other Project personnel or Contractors are to provide comment or information to external organisations or individuals without the consent of the Project Director.

10.2 External Incident Notification

Only the Environment and Heritage Manager, in consultation with the Project Director, is authorised to notify external regulatory agencies of any Project related environmental incidents.

This communication will be in accordance with individual agencies' reporting and notification requirements.

11 Non-Conformance and Incident Management

11.1 Environmental Incident Response

An environmental incident on the Project that could impact threatened species, is any situation where a gas, liquid or solid emission release occurs that does, or could, pose a threat to environmental values, or be a breach of a Project approval or regulatory requirement. As a guide, this could include:

- Spill to open ground, waterway or marine system of a known or potentially contaminating liquid or solid material.
- Clearing or grubbing vegetation outside an approved area.
- Release of gas or vapours to atmosphere.
- Injury or death of fauna.
- Introducing weed contaminated soil or vegetation into uninfected areas.
- Erosion or deposition of sediment outside the Project's battery limits.
- Any uncontrolled fire.
- Uncovering naturally occurring hazardous or contaminating materials such as acid sulphate soils.
- Excessive dust generation.
- Excessive noise emissions.
- Wastes not being stored, managed or disposed of appropriately.

The immediate response to all incidents is to make the area safe and undertake measures to prevent further environmental harm.

The process outlined in Figure 11-1 below will be followed by all Project personnel if an environmental incident occurs.

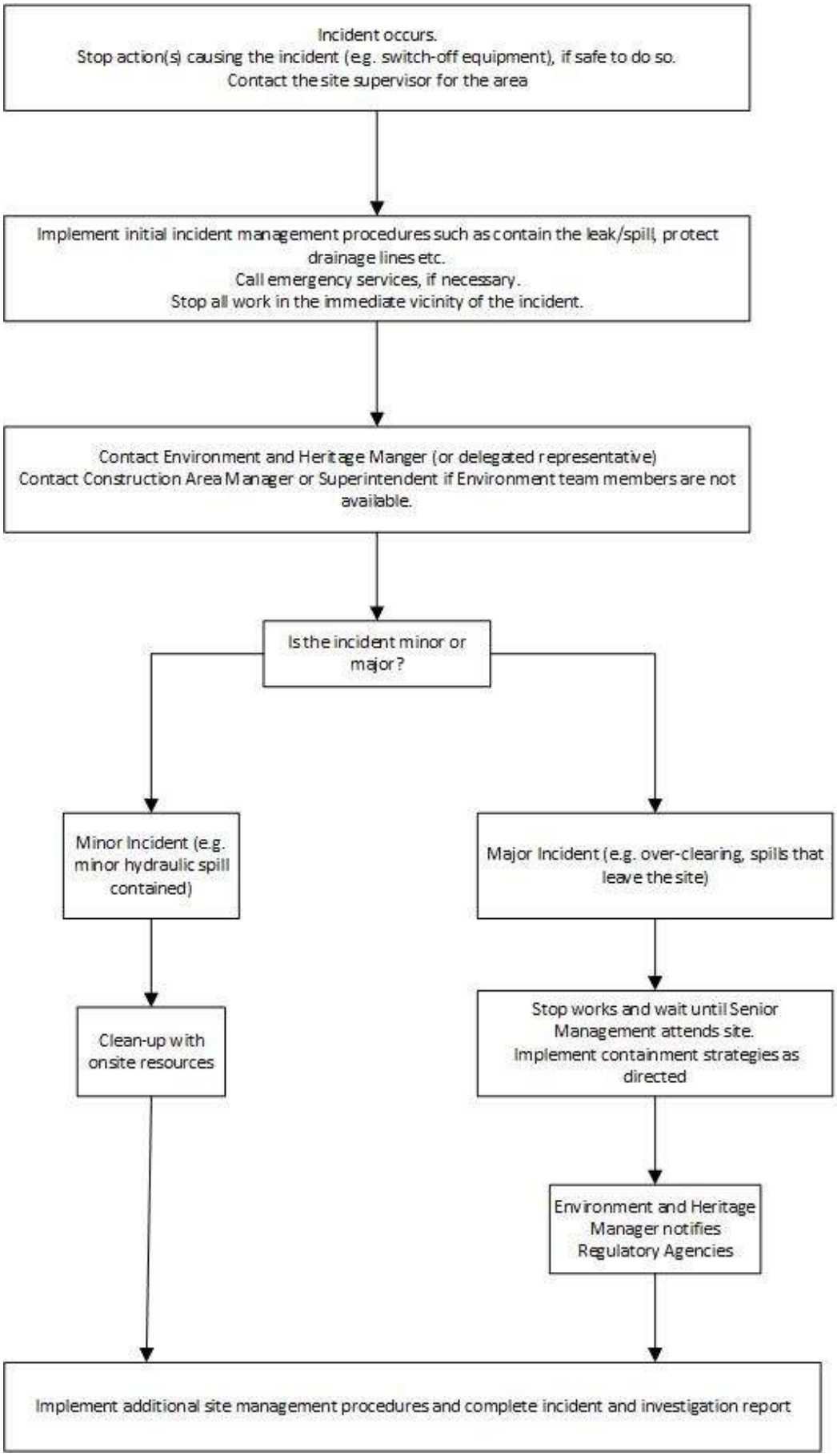

Figure 11-1 Flow Chart for Environmental Incident Response

11.2 Incident Reporting and Investigation

When an environmental incident occurs, regardless of its scale or nature, the Environment and Heritage Manager (or their representative) is to be notified of the incident as soon as possible.

The Environment and Heritage Manager will inform the Project Director of the incident, and actions taken to mitigate impact to the environment. Reporting to the Project Director must occur within 24 hours. The incident and response will be recorded in Perdaman's incident reporting system, within 24 hours of occurrence.

For externally reportable and / or high potential incidents, root cause(s) must be established using the Incident Cause Analysis Methodology (ICAM). The final incident investigation report must be submitted within 14 days,or as stipulated by the Project Director, depending on the level of investigation required.

In the event that an environmental incident results in the offsite discharge of contaminants to the environment, the Environment and Heritage Manager, in consultation with the Project Director, will contact the appropriate regulatory agencies.

All high-potential environmental releases must be reported to the Perdaman Chairman within 24 hours of occurrence, or sooner if practicable.

The site supervisor responsible for the area in which the incident occurred is to complete an incident report form and provide it to the Environment and Heritage Manager as soon as practicable after the incident.

Depending on the nature of the incident, reporting and notification of incidents may need to be provided to external agencies or Regulators.

All incidents will be investigated at a level commensurate with the actual or potential consequence. Incidents with an actual consequence of high and above, including those that breach regulations, licence or approval conditions will include the relevant Construction or Operations Manager in the incident's investigation.

11.3 Non-Conformance Management

In the event that the environmental outcomes in condition the Environmental Strategy Table of **Attachment C** are exceeded, or monitoring or investigations at any time indicate an exceedance of threshold criteria specified in this plan, the following actions will be taken in accordance with MS 1180:

1. Exceedance to be reported in writing to the CEO of the EPA and the DAWE within 7 days of the exceedance being identified;
2. Implement the management and/or contingency actions specified in **Attachment C** within 7 days of the exceedances being reported in accordance with Item 1, and continue implementation of those actions unto the CEO of the EPA has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and implementation of the management and/or contingency actions are no longer required;
3. Investigate to determine the cause of the threshold criteria being exceeded;
4. Investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded;
5. Provide a further report to the CEO of EPA and the DAWE within 21 days of the exceedance being reported as required by Item 1 which report shall include:
    a. details of management and/or contingency actions implemented;
    b. the effectiveness of the management and/or contingency actions implemented against the threshold criteria;
    c. the findings of the investigations required by Item 3 and Item 4;
    d. measures to prevent the threshold criteria being exceeded in the future;
    e. measures to prevent, control or abate the environmental harm which may have occurred; and
    f. justification of the threshold criteria remaining, or being adjusted based on better understanding, demonstrating that outcomes will continue to be met.

In addition to the non-conformance management provisions of MS 1180, in the event that Perdaman becomes aware of any exceedance of a threshold criterion specified in the Threatened Species Management Plan, Perdaman must implement the following as required by the EPBC approval:

1. undertake the actions required under condition 5-6 of the Western Australian Approval (MS 1180) and

include an assessment of any impact(s) to protected matters arising from the exceedance;

2. within 6 months of any exceedance of a threshold criterion, submit to the Department for the Minister's approval a Remediation Plan for any impact(s) to protected matters arising from the exceedance as detailed in the report required under condition 5-6(5) of the Western Australian Approval, that has been reviewed by an independent suitably qualified expert.
3. If the Minister determines that it is not possible to remediate the impact(s) of one or more exceedance, then the approval holder must submit an Offset Strategy for the Minister's approval, within 10 months of exceedance of the threshold criterion. The offset strategy must specify how the impact(s) will be offset in accordance with the requirements of the Environmental Offsets Policy.
4. If the Offset Strategy has not been approved by the Minister in writing within 11 months of any exceedance of a threshold criterion, and the Minister notifies the approval holder that the Offset Strategy is not suitable for approval, the Minister may approve a version of the Offset Strategy revised by the Department. The approval holder must implement the approved Offset Strategy for the life of the project

Non-conformances may be identified from a number of sources, including but not limited to incident investigations, audits, inspections, monitoring programs and management reviews. Corrective actions will be systematically implemented and reviewed to ensure they adequately resolve the issue and minimise the risk of reoccurrence of the incident.

A corrective action register shall be maintained on site by Perdaman and shall record all corrective actions identified and implemented, including review of corrective actions and close out details. The close out details shall include the date closed and the name of the person verifying completion of the required action.

Corrective actions where the initial risk level is high or extreme must be prioritised and closed in a timely manner.

Where relevant, corrective actions identified may be included in periodic revision of the PEMP.

In addition, if an Environmental Performance Report identifies any changes to the state of any matters listed in condition 12-3 of the MS 1180, which affect one or more EPBC Act protected matter(s), treat the relevant findings of the Environmental Performance Report as an exceedance of a threshold criterion(s) specified in the Threatened Species Management Plan, as per condition 7b of the EPBC approval.

11.4 Emergency Management

The Project's PCF-PD-PN-ERMP Emergency Response Management Plan shall be implemented, addressing health, safety and environmental issues. The plan will include methods for managing major environmental incidents, including but not limited to, large scale release of hazardous materials or gases, fire, cyclone and flood events.

12 Environmental Monitoring and Reporting

Perdaman shall conduct regular inspections and audits of the Project's work sites and undertake monitoringof specific environmental aspects and impacts.

All non-conformances identified will be managed through the Project's non-conformance managementprocess outlined in Section 11.3.

Regularly monitoring of the effectiveness of the mitigation measures over time allows the TSMP to beadapted if performance criteria are not met. The following sections detail the monitoring activities and reporting requirements for the Project.

The required monitoring of risks associated with potential impacts to conservation significant species are included in the Environmental Management Strategy provided as **Attachment C.**

12.1 Pre-clearance survey

The objective of the pre-clearance survey is to establish baseline data demonstrating the condition or status of environmental values prior to disturbance. Key monitoring and reporting requirements prior to construction relate to the identification and avoidance of impacts to habitat, habitat features, threatened species and weed species. The pre-clearance survey will be undertaken within the Project Footprint. The pre-clearance survey will be undertaken 0 to 6 months prior to clearing activities and will be undertaken by a qualified ecologist. The pre-clearance report will include as a minimum:

- the location and extent of threatened flora individuals and/or habitat
- the location and extent of threatened fauna habitats and individuals sighted
- the location, extent and abundance of invasive weeds
- the total area of disturbance required for the Project works
- the location and type of habitat features within the Project Footprint
- the location of designated stockpile areas for soil and vegetation management

12.2 Environment Monitoring program

A monitoring program has been developed to evaluate performance against targets and completion criteria identified in Error! Reference source not found.. The monitoring program has been developed to achieve the following objectives:

- to mitigate impacts to threatened species and their habitat
- to ensure that impacts to amenity are reduced as low as reasonably practicable.

The following monitoring schedule (Table 12-1) has been developed to enable an assessment of the effectiveness of the management measures outlined in Section 7.10.

Table 12-1 Monitoring schedule

Monitoring activity	Performance Targets	Parameter/s measured	Frequency	Responsibility
Impacts to threatened species and their habitat	Protection of fauna and its habitat by ensuring no unauthorised clearing or earthworks	Inspection of clearing extents during clearing activities to confirm no unauthorised clearing or earthworks	Daily during construction period	Environment and Heritage Manager
		Pre-clearance surveys and pre- clearing trapping and relocationprogram,	0-6 months prior to clearing	Environment and Heritage Manager to engage a qualified fauna specialist and if required flora specialist
		Visual inspections for native fauna (fauna spotters) during vegetation clearing.	Daily during clearing period	Environment and Heritage Manager to engage a

				qualified fauna specialist
	No death or injury to threatened species caused by Project vehicle collisions	Reports of fauna collisions and actions taken	As soon as possible following the incident	All Project personnel
	No unauthorised loss or degradation of vegetation in adjacent areas	Inspection of clearing extents during clearing activities	Daily during construction period	Environment and Heritage Manager
	No evidence of fire in theProject area	Reports of fire in the Project area and condition of the vegetation	As soon as possible following the incident	Environment and Heritage Manager
	No death or injury to Ghost Bat caused by fencing	Site inspection to assess the condition of fencing used to delineate areas	Daily within the first 3 months of fence erected and then weekly	Environment and Heritage Manager
	No evidence of native fauna poisoned as a result of the Project	Reports of fauna deaths	As soon as possible following the incident	All Project personnel
Weed and Pest Impacts	No new introduced/ pest species within the Project footprint and in adjacent area as a result of the Project	Site walkover to assess distribution, and abundance of weed species	Annually in spring following commencement of construction	Environment and Heritage Manager
		Reports from the pest management program	Pest management program conducted annually	Environment and Heritage Manager
Amenity	No Project associated food waste observed within or adjacent to Project area	Site inspection to assess project associated food waste or other waste within or adjacent to Project area not disposed in the demarcated areas	Fortnightly during clearing and construction and then monthly	Environment and Heritage Manager
	No erosion or deposition of sediment within the surface water courses beyond natural fluctuations	Site walkover to assess the extent of erosion and dust visual inspection of earthwork slopes to monitor erosion	Opportunistically during clearing and construction and/or following heavy rain and strong wind conditions	Environment and Heritage Manager

12.3 Environmental Inspections

Perdaman shall undertake weekly environmental inspections of all Project work areas and activities of their Project Personnel.

These inspections will be specific to the work area and include relevant environmental aspects such as, butnot limited to:

- Hazardous materials storage and handling;
- Dust and other emissions management;
- Refueling activities;
- Land clearing and rehabilitation;
- Groundwater usage;
- Trench management;

Noise management;

- Stormwater management including sediment basins and ponds;
- Spills, leaks and contaminated ground;
- Topsoil management;
- Waste management (liquid and solid); and
- Environmental incidents and corrective action close out;

12.4 Contingency Actions

Contingency Actions will be initiated where defined triggers and thresholds are exceeded, as provided in the Environmental Management Strategy at **Attachment C**.

The Contingency Actions provided in the Environmental Management Strategy are considered a minimum standard and compliance is mandatory. An audit, inspection and monitoring regime conducted by Perdaman will monitor compliance with these requirements. Non-compliance with these Contingency Actions conditions could result in fines and penalties being levied against individuals and companies. Perdaman shall maintain a legal obligation register and implement systems to monitor and ensure compliance with these requirements.

12.5 Environmental Audits

Perdaman shall conduct annual environmental audits of individual construction work packages and operational areas via an integrated audit schedule. This will be undertaken to ensure all Project activities and environmental management processes conform with the planned arrangements and whether the PEMP and supporting sub-plans have been properly implemented. The key requirements to be reviewed may include:

- Performance against licensing and approvals conditions, project targets, objectives and policy statements;
- Adequacy of resources and training; and
- Complaints and non-conformance management.

The audit schedule will be developed in consultation with relevant internal stakeholders and Contractors. Results of all audits will be communicated and discussed at management review meetings.

12.6 Environmental Reporting

Perdaman is responsible for the preparation of overall Project related environmental reports including compiling data from monitoring programs.

Perdaman will compile monitoring data and relevant environmental information on a monthly basis.

Perdaman will report to DAWE and DWER on the implementation of this TSMP as part of annual compliance reporting and must be in strict accordance with the Project's approval conditions.

Where compliance audits undertaken by Perdaman identify that the environmental management actions and

/ or the environmental objectives are not being achieved (i.e. non-compliance or an environmental incident), Perdaman must notify DAWE and DWER as soon as reasonably practicable within seven days.

Consistent with standard document control procedures, Perdaman will maintain copies of all reports submittedto DAWE and DWER.

The reporting to be conducted for this TSMP are identified in Table 13-3.

Table 13-3 Reporting requirements

Aspect	Responsibility	Authority	Frequency
Implementation of TSMP	Environment and Heritage Manager	DAWE / DWER	Annually (as part of annual compliance reporting)
Non-compliance with TSMP	Environment and Heritage Manager	DAWE / DWER	As soon as reasonably practicablebut not more than seven days

Any activity resulting in the unlawful/ unauthorised removal of native vegetation	Environment and Heritage Manager	DAWE / DWER	As soon as reasonably practicable
Injuries or mortality of threatened fauna	Environment and Heritage Manager	DAWE / DWER	As soon as reasonably practicable
Pre-clearance animal trapping and/or relocation program reports	Environment and Heritage Manager	DAWE / DWER	Annually (as part of annual compliance reporting)
Fauna interaction register	Environment and Heritage Manager	DAWE / DWER	Annually (as part of annual compliance reporting)
Environmental incident register	Environment and Heritage Manager	DAWE / DWER	Annually (as part of annual compliance reporting)
Training and induction records	Environment and Heritage Manager	DAWE / DWER	Annually (as part of annual compliance reporting)

A series of registers relevant to vegetation and fauna management practices will be maintained throughout the life of the Project. These are listed below:

- Fauna Interaction Register – this includes: all fauna sightings records, record injuries and mortality assoon as possible as the injury or death is identified, Environment and Heritage Manager need to be notified within 24 hours of occurrence of any impacts to native fauna
- Training records
- Environmental incident register - record and monitor all environmental incidents within the Project
- Pest animal register – record all feral animal sightings, capture and/or euthanasia records
- Conservation significant fauna and habitat register - a centralised database to record conservation significant fauna and habitat identified during pre-construction site surveys in order to ensure that habitat areas can be identified during construction.

The annual compliance report required under the EPBC Act 1999 approval should include:

- List of all conditions of the EPBC approval, including any variations to those conditions, noting ifcompliance or non-compliance with each condition has been achieved.
- Findings of non-compliance should be accompanied by a summary detailing any corrective measurestaken
- The compliance report should discuss any new environmental risks that have become apparent duringthe reporting period.
- If a management plan is required under an approval condition:
    - the specifics in a management plan that support an approval condition should be detailed in thecompliance report
    - material should be provided demonstrating that the requirements of that plan have been implemented.

13 Review and Continual Improvement

Ongoing monitoring of this TSMP and its commitments will ensure environmental risks associated with threatened species are identified, monitored and addressed in a timely manner. This includes monitoring the key characteristics of all Project activities that may have significant environmental impacts, such as operational controls, conformance with objectives and periodic evaluation of compliance with legislation and regulations.

Findings of monitoring and measurement processes will be reviewed periodically and reported through monthly reports and a management review twice a year. The monthly reports will provide information to satisfy approval conditions while the management review will be a self-evaluation audit of conformity to Perdaman's corporate environmental management system requirements.

Regular environmental inspections conducted by Perdaman's Environmental Representatives will provide assurance that all personnel and operating processes are continually addressing environmental issues through a process of continual improvement.

Additional monitoring may be required to understand potential exceedances or non-conformances, such as, but not limited to, excessive noise levels at sensitive receivers, weed establishment on site and discharge water quality.

This plan will be reviewed and revised, as necessary:

- At least annually throughout the life of the Project.
- As a result of significant incidents that have directly impacted threatened species.
- When performance improvements are identified for the protection of threatened species.
- When changes to operational processes pose a risk to threatened species.

14 Definitions

Contractor

The Contractor on the Project is any individual or party engaged directly or indirectly by Perdaman, that is notan employee of Perdaman, to carry out the Project.

Environmental Representative

The Environmental Representative includes Perdaman's Environment and Heritage Manager, the Environmental Coordinator or their delegated representative.

May

Indicates that the Subcontractor is permitted to do something or the Contractor reserves the right to do something according to the text.

Operational Environmental Management Plan

An Operational Environmental Management Plan (OEMP) is a plan specifically developed for port related activities and is developed specifically for Pilbara Port Authority requirements. This plan will be developed, reviewed and approved prior to the commencement of Port construction activities.

Perdaman

Perdaman Chemicals and Fertilisers Pty Ltd is the proponent of the Project.

Project Personnel

Project Personnel includes all persons working on the Project directly employed by Perdaman, or its Contractors.

Project Work Sites

The Project work sites include Area C, Area F, the causeway linking these two areas, the conveyor corridor to the Port and the Port storage and loading infrastructure. It can also include any other Project relevant location under operational control of Perdaman.

Should

Indicates a recommendation.

Will

Indicates that a statement is mandatory.

Works

Works includes all work which Perdaman and or its Contractors are required to perform to comply with its obligations under their relevant scope of works pertaining to the Project.

15 Abbreviations

Abbreviation	Description
AHD	Australian Height Datum
APM	Animal Plant Mineral Pty Ltd.
BSIA	Burrup Strategic Industrial Area
CWEC	Critical Weather Event Committee
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DOEE	Department of Environment and Energy
EIRP	Emergency Incident Response Plan
EPA	Environmental Protection Authority
EPBC	Environment Protection and Biodiversity Conservation Act
ERMP	Emergency Response Management Plan
EWSC	East West Service Corridor
GDP	Ground Disturbance Permit
ICAM	Incident Cause Analysis Method
LNG	Liquified Natural Gas
MAC	Murujuga Aboriginal Corporation
MNES	Matters of National Environmental Significance
Mtpa	Million tonnes per annum
OEMP	Operational Environmental Management Plan (PPA specific)
PEMP	Project Environmental Management Plan
PPA	Pilbara Ports Authority
PPE	Personal protective equipment

16 References

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17 Project Delivery Applicability

☐	Proposals	☒	EPC	☒	Construction
☐	Studies	☒	Project Management	☒	Commissioning
☒	Preliminary Engineering	☒	Technical Services	☐	Site Services
☒	FEED	☒	Procurement	☒	Ops and Maintenance
☒	Detailed Design	☒	Construction Management		

Attachment A. Marine Fauna Desktop Assessment

Refer to Environmental Review Document Appendix C

Attachment B. Pre and Post-Wet Season Biological Survey

Refer to Environmental Review DocumentAppendix B

Attachment C. Environmental Strategy Table

Environmental Management Strategy for Threatened and Migratory Species

Potential Impact	Reduction and /or fragmentation of fauna habitat					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna resulting from the reduction and / or fragmentation of habitat during construction phase of the Project.					
Target	No impacts to native fauna from the construction phase of the Project.					
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**
The Project will clear a maximum of 73.05 ha of native vegetation, including 64 ha of listed threatened and migratory habitats: • 0.16 ha of Rocky Outcrops habitat • 49.17 ha of Hummock Grasslands habitat • 2.7 ha of Drainage Line habitat • 11.97 ha of Samphire Shrubland/Supratidal Flats habitat.	**Monitoring:** • Ground Disturbance Permits (GDP's) to be issued for all clearing and disturbance activities. • Actual clearing carried out monitored by relevant personnel. • Ongoing monitoring of clearing authorised by GDP's but not yet conducted, and clearing carried out. **Reporting:** • Monthly clearing report compiled which compares the progress against the clearing limits both visually (using GIS data) and numerically. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.	GDPs issued prior to clearing activities. Surveys to be carried out when a GDP is applied for, and when GDP is closed out to ensure compliance with GDP. Monthly surveys of cleared areas to determine actual clearing and disturbance footprint. Monthly Project Environmental Reporting with clearing reports. IRRs will be prepared biennially. The first reporting period will commence on the day clearing commences, ending on the second 30 June following. Each successive reporting period runs from 1 July until the second 30 June following. CARs will be submitted annually or at another time agreed in writing by the CEO. ACRs will be submitted annually or as agreed by the Minister. EPRs will be prepared every 5 years. The first EPR shall be submitted within 3 months of the expiry of the 5-year period commencing from the first date of ground disturbing activities.	Environment and Heritage Manager	Ground Disturbance Permits Impacts Reconciliation Procedure (PCF-PD-EN-IRP) Clough GIS System and Plans Ministerial Statement Number 1180 Flora Management Plan (PCF-PD-EN-FMP)	**Trigger Criterion:** Actual and planned clearing within the development envelope exceeds 90% (65.75 ha) of the approved clearing limit. **Threshold Criterion:** • Actual clearing within the development envelope exceeds the approved clearing limit (73.05ha) • The extent of clearing within the Rocky Outcrops habitat exceeds 0.16 ha.	**Trigger Contingency Actions:** Check flagging, boundary fencing and signage of areas to be cleared/ not cleared has been undertaken and is obvious to those on the ground. **Threshold Contingency Actions:** • Cease all clearing activities. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions specified in the Flora Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Submit an Offset Strategy to the DAWE, as required. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Undertake further education and awareness training to personnel. • Consult with MAC.

	• Compliance Assessment Report (CAR) to the EPA in accordance with Condition 15-6 of MS1180. • Annual Compliance Report (ACR) submitted to the DAWE in accordance with Condition 17 of the EPBC Act Approval. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting • One or more Impact Reconciliation Reports (IRR) to document the clearing undertaken. IRRs will be submitted to DWER for contributions payable to be determined. • Environmental Performance Report (EPR) submitted to the Minister and the Murujuga Aboriginal Corporation in accordance with Condition 12 of MS1180.					

Avoid construction activities during Pilbara Olive Python inactive and breeding periods to limit impacts on this species.	**Monitoring:**
	• Clearing schedule to align with Olive Python protection measures.
	• Visual Inspection of Pilbara Olive Python habitat (Rocky outcrops).
	Reporting:
	• Any Olive Python/conservation significant vertebrate fauna deaths and injuries will be reported to the Department of Biodiversity, Conservation and Attractions (DBCA) within one week of being recorded.
	• Injuries and deaths of Olive Python/conservation significant vertebrate fauna reported as an incident.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE
		Inactive period from early November to late April, and breeding season May to July.
		Monthly Project Environmental Reporting.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			Environment and Heritage Manager	Threatened Species Management Plan (PCF-PD-EN-TSMP)
				Fauna Management Plan (PCF-PD-EN-FaMP)
					Trigger Criterion:
					Clearing activities occurring close to or during breeding season or inactive period resulting in sightings.
					Increase in sightings of Pilbara Olive Python during pre-clearance surveys or sightings by fauna spotters during clearing activities.
					Threshold Criterion:
					Injury or death of Olive Python/conservation significant vertebrate fauna.
						Trigger Contingency Actions:
						• Fauna spotters to maintain awareness of species location after sighting until relocation can occur.
						• Notify the Environment and Heritage Manager immediately upon identification.
						• Undertake further education and awareness training to personnel.
						• Engage a qualified fauna handler to remove and safely relocate the species to a suitable area.
						Threshold Contingency Actions:
						• Cease all clearing activities.
						• Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842).
						• Any Olive Python deaths and injuries will be reported to the Department of Biodiversity, Conservation and Attractions (DBCA) within one week of being recorded.
						• Report to relevant government authorities (DBCA, DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.

	for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					• Submit a Remediation Plan to the DAWE for the Minister's approval. • Submit an Offset Strategy to the DAWE, as required. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Undertake further education and awareness training to personnel. • Seek consultation with MAC.
Prior to clearing, engage a qualified fauna specialist to conduct pre-clearance surveys, a trapping and relocation program in accordance with DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act.	**Monitoring:** • Pre-clearance survey conducted by qualified ecologist in accordance with Department of Biodiversity, Conservation and Attraction's SOP's. **Reporting:** • The Pre-clearance Report will include as a minimum: ○ the location and extent of threatened flora individuals and/or habitat. ○ the location and extent of threatened fauna habitats and individuals sighted. ○ the location, extent and abundance of invasive weeds. ○ the total area of disturbance required for the Project works. ○ the location and type of habitat features within the Project Footprint. ○ the location of designated stockpile areas for soil and vegetation management. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR and EPR.	Pre-clearance surveys and reporting 0-6 months prior to clearing. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Fauna Management Plan (PCF-PD-EN-FaMP) DBCA's Standard Operating Procedures: • Aluminium Box Traps for Capture of Terrestrial Vertebrates • Cage Traps for Live Capture of Terrestrial Vertebrates • Dry Pitfall Trapping for Invertebrates • Funnel Trapping for Terrestrial Fauna	**Trigger Criterion:** • Some procedures for clearing, trapping and relocation programs are not in alignment with DBCA SOP's. • DBCA SOP's not reviewed prior to program implementation. • Pre-clearance report not complete or missing information. **Threshold Criterion:** • Clearance surveys, trapping and relocation program procedures not implemented in accordance with DBCA SOP's. • Fauna handled by unlicensed person/persons.	**Trigger Contingency Actions:** Do not commence clearing until such time as the pre-clearance survey and report are in accordance with the DBCA SOP. **Threshold Contingency Actions:** • Cease implementation of pre-clearance procedures. • Review DBCA SOP's and revise and amend pre-clearance programs accordingly. • Injured native fauna are to be taken to Pilbara Wildlife Carers Association (0438 924 842). • Seek to employ a suitably qualified fauna specialist. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Fauna Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Submit an Offset Strategy to the DAWE, as required. • Undertake further education and awareness training to personnel.
Suitability qualified fauna spotters will be present during all vegetation clearing activities.	**Monitoring:** • Visual observation of clearing activities by suitably qualified fauna spotters of fauna during clearing activities.	Spotters present at all times during clearing activities. Fauna Interaction Register updated within 24 hours of interaction.	Environment and Heritage Manager Fauna Spotter	Fauna Management Plan (PCF-PD-EN-FaMP) DBCA's Standard Operating Procedures:	**Trigger Criterion:** • Fauna spotters not suitably qualified. • Procedures for the relocation programs are not in accordance with DBCA SOP's	**Trigger Contingency Actions:** • Do not commence clearing until such time as a spotter is available that holds the appropriate qualifications.

	• Spotters will have the authority to stop clearing activities until the identified fauna is safely removed from the area. • Fauna identified within the demarcated clearing areas, will be relocated using a suitably qualified expert using DBCA's Standard Operating Procedures (SOPs) and permit/license conditions as required under the BC Act. **Reporting:** • Recording of all interactions with fauna in the Fauna Interaction Register (for fauna removed or handled during spotting event). • All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting. • Reporting in accordance with DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act. • Where threshold criteria is exceeded: o Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. o Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. o Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. o Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.	Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.		• *Animal Handling and Restraint using Soft Containment* • *Hand Capture of Wildlife* • *Hand Restraint of Wildlife* Fauna Interaction Register	prior to implementation. • DBCA SOP's not reviewed prior to program implementation. **Threshold Criterion:** • Fauna handling and relocation program not implemented in accordance with DBCA SOP's. • Fauna handled by unlicensed person/persons.	• Review and implement DBCA SOP's. **Threshold Contingency Actions:** • Cease implementation of relocation procedures. • Do not commence clearing until an appropriately licenced fauna removal handler is available. • Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842). • Review DBCA SOP's and revise and amend relocation programs accordingly. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Fauna Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Submit an Offset Strategy to the DAWE, as required. • Undertake further education and awareness training to personnel.
Vegetation clearing to be undertaken progressively and incrementally during construction to allow fauna within the development envelope to leave the area and to minimise the pressure on the carrying capacity of native vegetation surrounding the site.	**Monitoring:** • Pre-clearing meeting carried out for relevant personnel to review the GDP including clearing extents, clearing timing and any additional requirements prior to the commencement of clearing activities. • Visual observation of clearing activities by suitably qualified fauna spotters of fauna during clearing activities. **Reporting:** • Recording of all interactions with fauna in the Fauna Interaction Register. • All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting.	Spotters present at all times during clearing activities. Fauna Interaction Register updated within 24 hours of interaction. Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Perdaman Environmental Representative (PER) Equipment operator Supervisor Fauna Spotter Environment and Heritage Manager	Ground Disturbance Permits Fauna Interaction Register Fauna Management Plan (PCF-PD-EN-FaMP)	**Trigger Criterion:** • Clearing progress nearing incremental limits authorised by the GDP. • Pre-clearing meeting not carried out with GDP requirements not reviewed prior to clearing activities. • Fauna spotters not suitably qualified. **Threshold Criterion:** • Clearing progress exceeds incremental limits authorised by the GDP. • GDP requirements not addressed. • Fauna handled by unlicensed person/persons.	**Trigger Contingency Actions:** • Review GDP to ensure incremental clearing is maintained. • Do not commence clearing until such time as the pre-clearing meeting is carried out. • Do not commence clearing until such time as a spotter is available that holds the appropriate qualifications. **Threshold Contingency Actions:** • Cease all clearing activities. • Do not commence clearing until an appropriately licenced fauna removal handler is available. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days.

	• Reporting in accordance with DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
						• Implement the management and/or contingency actions in accordance with the Fauna Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Submit an Offset Strategy to the DAWE, as required.
						• Initiate further education and awareness training to personnel, including iteration of GDP procedures in daily pre-starts.
						• Seek consultation with MAC.
						• Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842).

Vegetation clearing will be undertaken using GPS location devices that will be clearly flagged with areas beyond the authorised limit flagged as 'No-Go Zones'.	**Monitoring:** • No-Go Zone demarcations are installed and maintained to ensure that no clearing outside of the 73.05 ha of listed threatened and migratory habitats is cleared. • The extent of clearing in PEC P1 communities where unavoidable will be recorded and maintained to ensure cumulative clearing extents of this community does not exceed 0.16ha • Review GPS Mapping against clearing progress daily to ensure adherence with authorised clearing extents. • Relevant traditional owners are to be invited or appropriately facilitated to observe any ground disturbing activities during construction. • Survey markers and temporary non-barbed fencing to be inspected daily by site supervisors and weekly by PER. • All fencing, including temporary fencing, will exclude the use of barbed wire to minimise risks to the Ghost bat. • Ensure vehicles associated with all ground disturbance activities are to be equipped with live GPS systems that will notify the driver of the clearing boundary (virtual geofencing) where disturbance is not to exceed. • Assessment of survey and geospatial data against GDP's comprising the clearing footprint. • Review of reports from on-ground inspections. • Survey data converted to Geospatial files will be made available to the PER for desktop review and progress of clearing activities.	GDP issued as required. Surveys to be carried out when a GDP is applied for, and when GDP is closed out to ensure compliance with GDP. Daily inspection of GPS equipment. Monthly surveys of cleared areas to determine actual clearing and disturbance footprint. Monthly Project Environmental Reporting. Clearing reports prepared monthly. Weekly assessment of geospatial data. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager PER Operators	Ground Disturbance Permits Ministerial Statement Number 1180 Flora Management Plan (PCF-PD-EN-FMP)	**Trigger Criterion:** • Early works encroaching the approved extent of authorised clearing. • Surveying and pegging of P1 PEC not conducted or missing. • No-Go Zone around PEC P1 and heritage areas missing 5m buffer and 3m warning zone. • GPS alarm tripped on virtual geofencing device. • Operator reports to supervisor any alarm events and is to reassess the location of the clearing boundary and ensure that direction is taken from a suitably qualified environmental representative before resuming GDA. **Threshold Criterion:** • Actual clearing within the development envelope exceeds the approved clearing limit (73.05ha). • Actual clearing within PEC P1 communities exceeds 0.16ha.	**Trigger Contingency Actions:** • Check flagging, boundary fencing and signage of areas to be cleared/ not cleared has been undertaken and is obvious to those on the ground. • Survey team to investigate area and re-establish survey markers to peg out and indicate authorised extent of clearing. **Threshold Contingency Actions:** • Cease all clearing activities • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Flora Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Submit an Offset Strategy to the DAWE, as required. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.

	Reporting:
	• Monthly clearing report compiled which compares the progress against the clearing limits both visually (using GIS data) and numerically.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
						• Undertake further education and awareness training to personnel.
						• Consult with MAC.

Vegetation clearing conducted in accordance with an internal permitting procedure to facilitate progressive development.	**Monitoring:** • GDP process is implemented. • All clearing or ground disturbing activities are conducted with a GDP in place. • Clearing carried out in accordance with the conditions specified in the GDP. • Operators, PER and Supervisors review clearing requirements in GDP prior to commencement of clearing or ground disturbance activities. • Audit issued GDPs against clearing and disturbance carried out. • Ongoing monitoring of GDPs in place and those pending. • Periodical review of GDP procedure and training around GDP process. **Reporting:** • Monthly clearing report compiled which compares the progress against the clearing limits both visually (using GIS data) and numerically. • Clearing carried out without a GDP reported as an incident. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.	GDPs issued as required Clearing reports prepared monthly. Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	PER Equipment operator Supervisor Environment and Heritage Manager	Ground Disturbance Permits Impacts Reconciliation Procedure (PCF-PD-EN-IRP) Ministerial Statement Number 1180 Flora Management Plan (PCF-PD-EN-FMP)	**Trigger Criterion:** • GDP not in place prior to clearing or ground disturbance occurring. • Actual and planned clearing within the development envelope exceeds 90% (65.75 ha) of the approved clearing limit. • Pre-clearing meeting not carried out with GDP requirements not reviewed prior to clearing activities. • GDP procedures not reviewed prior to clearing activities. • Clearing progress exceeds incremental limits authorised by the GDP. • GDP procedures implemented incorrectly. **Threshold Criterion:** • Actual clearing within the development envelope exceeds the approved clearing limit (73.05ha).	**Trigger Contingency Actions:** • Do not commence clearing until such time as the GDP has been prepared. • Do not commence clearing until such time as the pre-clearing meeting is carried out. • Check flagging, boundary fencing and signage of areas to be cleared/ not cleared has been undertaken and is obvious to those on the ground. • Ensure all personnel have reviewed the requirements of the GDP. • Review GDP to ensure incremental clearing is maintained. **Threshold Contingency Actions:** • Cease all clearing activities • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Flora Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.

	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Submit an Offset Strategy to the DAWE, as required.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
						• Undertake further education and awareness training to personnel.
						• Consult with MAC.

Bury concrete or steel structures of a suitable size to a suitable depth where practicable in the rock batters used to elevate and stabilize the plant to create potential day time or maternity roosts.	**Monitoring:**
	Where structures are used to stabilise rock batters, implement design features where possible to provide roosting sites potentially used by avifauna around the project site.
	Reporting:
	• Recording avifauna sightings using the artificial roosts in the Fauna Interaction Register.
	• All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Roosts established during construction phase.
		Fauna Interaction Register updated within 24 hours of interaction.
		Monthly Project Environmental Reporting.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			Environment and Heritage Manager
			SCJV construction team.
				Project design specifications
				Threatened Species Management Plan (PCF-PD-EN-TSMP)
					Trigger Criterion:
					• Roosts within rock batters not included in the design phase of the Project.
					Threshold Criterion:
					• Roosts within rock batters not installed during construction phase of the Project.
						Trigger Contingency Actions:
						• Review design of rock batters to include the installation of sufficient roosting habitat.
						Threshold Contingency Actions:
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions in accordance with the Threatened Species Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Submit an Offset Strategy to the DAWE, as required.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.

Construction and/or clearing within the development envelope will only occur in daylight hours to minimise noise, vibration and artificial lighting impacts on terrestrial fauna.	**Monitoring:**
	• All construction and clearing is to be carried out during daylight hours.
	• Ensure the GDP procedures include the details of authorised times to commence clearing.
	• Review GDP procedures during clearing activities.
	• Construction team to be inducted with the relevant details of allowable operation times.
	Reporting:
	• Construction and/or clearing occurring after sundown reported as an incident.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Daily until completion of clearing and construction.
		Monthly Project Environmental Reporting.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			Environment and Heritage Manager	Ground Disturbance Permits
				Construction Environmental Management Plan (45826-HSE-PL-G-1005)
				Lighting Management Plan (PCF-PD-EN-LMP)
					Trigger Criterion:
					• Clearing works conducted 1 hour prior to dusk (sundown).
					Threshold Criterion:
					• Clearing works conducted after sundown.
						Trigger Contingency Actions:
						• All personnel are to be advised that work is to cease prior to sundown.
						Threshold Contingency Actions:
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions in accordance with the relevant plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Submit an Offset Strategy to the DAWE, as required.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
						• Undertake further education and awareness training to personnel.
						• Consult with MAC.

A fauna spotter will check all open trenches less than two hours after sunrise and before commencing any construction to detect and safely remove any trapped terrestrial fauna.	**Monitoring:** • Fauna egress infrastructure to be installed within water holding points, trenches and excavations to ensure fauna can escape. • Visual inspections of water holding ponds, trenches, fauna egress, and excavations. • Visual inspections for Pilbara Olive Python and Northern Quoll within plant, equipment and machinery prior to activities being carried out onsite each morning, following rain events and during hot weather. • Visual inspections are to be included in pre-starts.	Daily checks less than 2 hours after sunrise and before commencing construction. Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager PER	Threatened Species Management Plan (PCF-PD-EN-TSMP)	**Trigger Criterion:** • Conservation significant fauna found in water holding ponds, trenches and excavations. **Threshold Criterion:** • Fauna death associated with entrapment.	**Trigger Contingency Actions:** • Ensure fauna egress infrastructure is in place within water holding points, trenches and excavations to ensure fauna can escape. **Threshold Contingency Actions:** • Report to relevant government authorities (DBCA, DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Threatened Species Management Plan within seven days of the exceedances being reported and continue implementation until the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.

	• Fauna identified as trapped within the Project area, will be relocated using a suitably qualified expert using DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act. **Reporting:** • Recording of all interactions with fauna in the Fauna Interaction Register (for fauna removed or handled). • All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting. • Reporting in accordance with DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act. • Any conservation significant vertebrate fauna deaths and injuries will be reported to DBCA within one week of being recorded. • Injuries and deaths of conservation significant vertebrate fauna reported as an incident. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting. • Where threshold criteria is exceeded: o Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. o Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. o Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. o Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Submit an Offset Strategy to the DAWE, as required. • Review procedures in place for trenching and excavations and implement further controls in relation to the likely cause of incident. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Undertake further education and awareness training to personnel. • Consult with MAC. • Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842).
Topsoil will be stockpiled for later use during the rehabilitation of the Project Area.	**Monitoring:** • The first 50mm of topsoil from cleared areas will be retained in permanent or temporary stockpiles for later use during rehabilitation of the Project area.	Identification of locations for stockpiles of topsoil and vegetation to occur prior to commencement of ground disturbing activities. Monthly Project Environmental	Environment and Heritage Manager PER	Ground Disturbance Permits Material Tracking System	**Trigger Criterion:** • Vegetation and topsoil stockpiles are not located in areas identified in the GDP. • Vegetation and topsoil requires double-handling to relocate to approved area.	**Trigger Contingency Actions:** • Do not commence construction until such time as the PER confirms appropriate topsoil and vegetation management. • Undertake further education and awareness training to personnel.

Vegetation that will be cleared will be stockpiled for later use during rehabilitation of the Project area.	• Topsoil will not be stockpiled in excess of 2m in height.
	• Topsoil will be adequately signed to ensure ease of identification.
	• Topsoil will be located a sufficient buffer distance from drainage lines and future works to prevent erosion and unnecessary handling.
	• Cleared vegetation will be stockpiled for later use during rehabilitation of the Project area.
	• Appropriate topsoil and vegetation stockpile locations will be identified prior to commencement of construction and clearly identified on GDPs (in map form).
	• Stockpiled vegetation will be stored downslope of the topsoil to increase the erosion protection and sediment control of the topsoil.
	• Stockpiled vegetation will not impede drainage or present a fire hazard.
	• All topsoil and vegetation stockpiles will be surveyed to ensure accurate records of locations and volumes are retained.
	• PER to approve commencement of construction confirming adequate topsoil and vegetation management.
	Reporting:
	• Monthly clearing report will include topsoil and vegetation stockpile locations and volumes (using survey data).
	• Failure to stockpile topsoil or vegetation recorded as an incident.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
		Reporting.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
					• Adequate topsoil is not removed (less than 50mm depth).
					• Vegetation and micro-habitat elements are poorly salvaged.
					• Construction activities are commenced prior to PER approval.
					Threshold Criterion:
					• No vegetation is retained from clearing activities.
					• No topsoil is recovered during clearing activities.
					• Topsoil stockpiles are located within drainage lines.
						Threshold Contingency Actions:
						• Cease all clearing and ground disturbing works.
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Submit an Offset Strategy to the DAWE, as required.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
						• Undertake further education and awareness training to personnel.
						• Consult with MAC.

	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					

Potential Impact	Vehicle strike					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through inadvertent injury and/or mortality as a result of vehicle strikes from increased traffic during construction and operations.					
Target	No impacts to native fauna from Project-related vehicle and equipment movements.					
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**

Site personnel will be inducted to ensure environmental obligations are communicated.
Environmental-specific posters displayed in crib rooms and notice boards.
Pre-starts to include an environmental focus.
	Monitoring:
	• Monitoring of induction records and training materials to ensure obligations are correctly communicated.
	• Inspections to ensure environmental-specific posters are on display.
	• Review of pre-start meeting criteria to include a relevant environmental focus.
	• Inspections of induction and competency registers to monitor for personnel at risk of non-competency of their obligations.
	• Environmental Induction includes:
	  ○ Conservation significant species that may occur in the Project area.
	  ○ Key risk times for fauna strikes to occur during dawn and dusk.
	  ○ Speed limit of 20k/h within disturbance footprint.
	  ○ Native fauna has right-of-way.
	  ○ Conservation Significant Fauna identification, habitat, management and reporting requirements for fauna sightings. In particular, the differences between identifying the Pilbara Olive Python and other potentially dangerous snake species.
	  ○ All snake species to be avoided and sightings notified to the environmental representative and recorded on the fauna interaction register.
	  ○ Consequences and penalties that will apply for non-compliance with legislative provisions.
	• Posters to be posted in crib rooms and notice boards to raise awareness of environmental obligations.
	• Pre-starts to include an environmental focus including the risk of vehicle strike and the restrictions on personnel to prevent incidents with native fauna.
	Reporting:
		Inductions to be carried out for all new employees prior to commencement on site.
		Environmental focus presented at pre-start at the beginning of every shift.
		CAR submitted annually.
			All project personnel
			PER
				Environmental Induction Register.
				Toolbox talks.
				Competency register.
				Incident reports.
					Trigger Criterion:
					• Inductions are missing information pertaining to conservation significant species of the project area or other relevant information that could reduce the risk of vehicle strike.
					• Personnel fail competency assessment.
					• Personnel non-attendance at inductions.
					Threshold Criterion:
					• 10% of relevant project personnel missing induction training.
					• Personnel show non-competency in the field, resulting in an incident.
						Trigger Contingency Actions:
						• Environment and Heritage Manager and PER to review the Environmental Induction content to ensure all information regarding conservation significant species management is provided.
						• Reattendance of personnel at induction to ensure competency is attained.
						• Report non-attendance to Supervisor.
						Threshold Contingency Actions:
						• Liaise with Supervisors to ensure all new starters complete induction training upon commencement.
						• Implement follow up training to personnel who fail to demonstrate competency of fauna conservation requirements and responsibilities.
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions in accordance with the Traffic Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.

	• Inductions to be recorded in the Environmental Induction Register. • PER to cross reference new starters with attendance at Environmental Induction. • Records of pre-start meetings with an environmental focus to be retained. • Lack of competency resulting in fauna impacts will be reported as an incident. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					• Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake further education and awareness training to personnel. • Undertake an assessment of further reducing speed limits in areas that are repeatedly affected by vehicle incidents or other speed attenuation measures (e.g. speed humps)

Enforced speed limit for construction and operational vehicles travelling within the development envelope	**Monitoring:**
	• During construction, random speed observations and checks will be carried out to ensure all vehicles do not exceed the 20 km/h speed limit.
	• During operations, Site C and Site F speed limits will be set at 10 km/h and 30 km/h respectively.
	• Speed observations will be carried out using hand-held speed detectors and solar powered radar speed signs will be used across the site to enforce speed limits and provide awareness to personnel on current speeds.
	• All personnel operating vehicles are to have a current valid driver's licence prior to deployment to site.
	• Inductions to be carried out for all new employees prior to commencement on site.
	Reporting:
	• Exceedance of speed limits must be reported as an incident.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Ongoing monitoring throughout construction and operational phases of the Project.
		Inductions to be carried out for all new employees prior to commencement on site.
		Monthly Project Environmental Reporting.
		CAR submitted annually.
			Environment and Heritage Manager.	Traffic Management Plan (*to be prepared*)	**Trigger Criterion:**
					• Close calls / near misses with fauna on road networks.
					Threshold Criterion:
					• Construction vehicles exceeding speed limits.
						Trigger Contingency Actions:
						• Undertake further education and awareness training to personnel.
						Threshold Contingency Actions:
						• Temporary ban of offending personnel from operation of vehicles.
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions in accordance with the Traffic Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Personnel in breach of speed limits to undergo secondary induction and competency assessment.

Machinery will idle for at least 30 mins, prior to the commencement of	**Monitoring:** • Implement machinery checks and idling of machinery at pre-start meeting.	Prior to disturbance activities taking place.	Operations Manager	Traffic Management Plan (*to be prepared*)	**Trigger Criterion:** • Machinery not inspected or started during pre-start.	**Trigger Criterion:** • Undertake further education and awareness training to personnel.

vegetation clearing activities.	• Fauna spotters to monitor for fauna during machinery start up and idle times, recording any species identified. • Operations manager to ensure machinery are idling for no less than 30 mins prior to mobilization of plant. • Operations manager to supervise pre-starts. **Reporting:** • Vehicles mobilized prior to completing 30-minute idle times reported as an incident. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.	Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.			**Threshold Criterion:** • Machinery not left in idle for 30 minutes before mobilization.	• Start machinery immediately upon realisation of the trigger criterion and allow to idle for 30 minutes. **Threshold Contingency Actions:** • Cease clearing activities immediately upon realization of non-compliance with required idle times. • De-mobilize plant and keep in idle for the remainder of the required idle period. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Traffic Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake further education and awareness training to personnel.
Roads and tracks to be speed limited. Information signage to be installed.	**Monitoring:** • All Project roads and tracks to be speed limited using signposts during construction and operations. • During construction, random speed observations and checks will be carried out to ensure all vehicles do not exceed the 20 km/h speed limit. • During operations, Site C and Site F speed limits will be set at 10 km/h and 30 km/h respectively. • Additional signposts containing information relating to the risk of fauna interactions (vehicle strike) in areas where conservation significant fauna may be present. Locations for additional signposts will be identified during construction and where applicable included in the final road marking design. • Signposts to be regularly checked to ensure they are upright and remain visible. • Personnel inducted to correctly interpret fauna signage. **Reporting:** • Exceedance of speed limits reported as an incident. • Incidents reported through Monthly Project Environmental Reporting. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with	Ongoing monitoring. Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Traffic Management Plan (*to be prepared*)	**Trigger Criterion:** • Signage damaged, missing, incorrectly installed or difficult to interpret. **Threshold Criterion:** • Construction vehicles exceeding speed limits.	**Trigger Contingency Actions:** • Review signage requirements and ensure signage is installed correctly in accordance with requirements of the Traffic Management Plan. **Threshold Contingency Actions:** • Temporary ban of offending personnel from operation of vehicles. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Traffic Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval.

	Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
						• Personnel in breach of speed limits to undergo secondary induction and competency assessment.

All non-essential vehicle movements will be scheduled to take place during the day to reduce likelihood of vehicle strikes.	**Monitoring:**
	• Vehicle movements to be limited to daylight hours unless considered essential to reduce the likelihood of a fauna interaction.
	• Environmental Induction will include definition of *essential vehicle movements*.
	• Environmental focus presented at pre-start at the beginning of every shift.
	Reporting:
	• Non-essential vehicle movements will be recorded as incidents.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• All strikes will be recorded in the fauna interactions register and reported to the DAWE.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR
		Ongoing monitoring.
		Inductions to be carried out for all new employees prior to commencement on site.
		Environmental focus presented at pre-start at the beginning of every shift.
		Monthly Project Environmental Reporting.
		CAR and ACR submitted annually.
		EPR submitted every 5 years
			Environment and Heritage Manager.	Traffic Management Plan (*to be prepared*)	**Trigger Criterion:**
					• Non-essential vehicle movement taking place after sundown resulting in interaction with native fauna (vehicle strike).
						Trigger Contingency Actions:
						• Review procedures in place for non-essential vehicle movements in relation to the likely cause of incident.
						• Undertake further education and awareness training to personnel.
						• Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842).

All vehicles must remain on designated roads and tracks within the Project area.	**Monitoring:**
	• All habitat exclusion zones, including the Samphire Shrubland, Supratidal Flats and Drainage habitats to be demarcated using fencing and signage to ensure protection of the exclusion zone.
	• Only vehicles approved through the GDP process are to venture off designated roads and tracks within the Project area.
	• Environmental Induction to include information on exclusion zones and access limitations to personnel.
	• Environmental focus presented at pre-start at the beginning of every shift.
	Reporting:
	• Driving off designated roads and tracks without prior approval recorded as an incident.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Ongoing monitoring.
		Inductions to be carried out for all new employees prior to commencement on site.
		Environmental focus presented at pre-start at the beginning of every shift.
		Monthly Project Environmental Reporting.
		CAR submitted annually.
			Environment and Heritage Manager.	Construction Environmental Management Plan (45826-HSE-PL-G-1005)
				Traffic Management Plan (*to be prepared*)
				Threatened Species Management Plan (PCF-PD-EN-TSMP)
				Ground Disturbance Permit
					Trigger Criterion:
					• Fencing and signage of exclusion zones damaged, missing or incorrectly installed.
					Threshold Criterion:
					• Unauthorised access to exclusion zones and access tracks.
						Trigger Contingency Actions:
						Review fencing and signage requirements and ensure fencing and signage is installed correctly in accordance with requirements.
						Threshold Contingency Actions:
						• Temporary ban of offending personnel from operation of vehicles.
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions in accordance with the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Submit an Offset Strategy to the DAWE, as required.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
						• Personnel in breach of exclusion zones to undergo secondary induction and competency assessment.

All fauna injuries or death attributed to vehicle strike will be managed humanely.	**Monitoring:** • Injured animal shall be taken to an authorised veterinarian or trained wildlife carer, or if not possible, humanely euthanized in accordance with DBCA SOPs. • Roadkill will be moved at least 10 m into surrounding vegetation, when safe to do so to avoid further strikes of fauna feeding on carcass. • Photographic records of roadkill will be retained in the Fauna Interaction Register. • Pre-starts to include an environmental focus including the appropriate management of injured or killed fauna caused by vehicle strike.	Inductions to be carried out for all new employees prior to commencement on site. Environmental focus presented at pre-start at the beginning of every shift. Fauna Interaction Register updated	Environment and Heritage Manager. PER	Fauna Management Plan (PCF-PD-EN-FaMP) DBCA SOPs: • Humane Killing of Animals under Field Conditions • Transport and Temporary Holding of Wildlife • Hand Capture of Wildlife • Hand Restraint of Wildlife	**Threshold Criterion:** • Injury or death of conservation significant fauna.	**Threshold Contingency Actions:** • Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842). • Review procedures and DBCA SOP's in place for management of injured or deceased fauna caused by vehicle strike. • Report to relevant government authorities (DBCA, DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Fauna Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that

	• Inductions to be carried out for all new employees prior to commencement on site. **Reporting:** • Recording of all interactions with fauna in the Fauna Interaction Register (for fauna killed or injured by vehicle strike). • All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting. • Fauna injured or killed by vehicle strike will be reported as an incident. • Reporting in accordance with DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act. • Any conservation significant vertebrate fauna deaths and injuries will be reported to DBCA within one week of being recorded. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.	within 24 hours of interaction. Monthly Project Environmental Reporting CAR and ACR submitted annually. EPR submitted every 5 years.		• Care of Evicted Pouch Young Fauna Interaction Register		the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake further education and awareness training to personnel.

Potential Impact	Increase in introduced feral animals and weeds					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through inadvertent attraction or introduction of feral animals and/or weeds.					
Target	No impacts to native fauna from Project-related feral animal introductions or increase attraction					
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**

Domestic animals and/or pets will not be permitted within the Project area.	**Monitoring:**
	• Personnel will not be permitted to allow domestic animals within the Project area.
	• Feral cats and dogs observed in the Project area are not to be fed by personnel.
	• Inductions to be carried out for all new employees prior to commencement on site to advise on the requirement.
	Reporting:
	• Recording of domestic animals present in the Project area in the Fauna Interaction Register.
	• All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting.
	• Presence of domestic animals in the Project area will be reported as an incident.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation
		Inductions to be carried out for all new employees prior to commencement on site.
		Monthly Project Environmental Reporting.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			All personnel.
			Environment and Heritage Manager.
				Fauna Management Plan (PCF-PD-EN-FaMP)	**Trigger Criterion:**
					• Domestic animal present outside the Project area or at nearby personnel camps / living compounds.
					Threshold Criterion:
					• Domestic animal present on site.
						Trigger Contingency Actions:
						• Notify Environment and Heritage Manager of domestic animal presence and whereabouts.
						• Identify owner.
						• Do not allow personnel to approach animal unless the owner is present.
						• If owner is not identified, relocate animal to an offsite licensed facility.
						• Undertake further education and awareness training to personnel.
						Threshold Contingency Actions:
						• Notify Environment and Heritage manager of domestic animal presence and whereabouts.
						• Identify owner.
						• Do not allow personnel to approach animal unless the owner is present.
						• If owner is not identified, relocate animal to an offsite licensed facility.
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions in accordance with the Fauna Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.

	Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake further education and awareness training to personnel. •
Introduce and implement hygiene procedures which result in the reduction of food waste around the Project area to reduce the likelihood of introduced/pest species attracted to the facility. All wastes (putrescible, recyclable, non-reusable) will be sent offsite for recycling or disposal.	**Monitoring:** • Implementation of the Solid and Liquid Wastes Management Protocol and Solid and Liquid Wastes Management Plan to reduce the likelihood of attraction of introduced/pest species to the Project area. • Monitoring and management of introduced/pest species will be in accordance with the Pest Management Plan. • Weekly environmental inspections to be carried out to ensure compliance with the requirements. • Pre-starts to include an environmental focus including the appropriate management of waste. • Inductions to be carried out for all new employees prior to commencement on site. **Reporting:** • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR. Waste management reported through Monthly Project Environmental Reporting.	Inductions to be carried out for all new employees prior to commencement on site. Environmental focus presented at pre-start at the beginning of every shift. Ongoing management of waste. Weekly environmental inspections. Monthly Project Environmental Reporting CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager. PER All personnel.	Solid and Liquid Waste Management Plan (PCF-PD-EN-SLWMP) Solid and Liquid Waste Management Protocol Pest Management Plan (PCF-PD-EN-PMP)	**Trigger Criterion:** • Increase in introduced/pest species on site attracted by solid and liquid wastes. • Solid and liquid wastes not managed in accordance with requirements. **Threshold Criterion:** • Increase in introduced/pest species at the Project area compared with baseline survey recordings.	**Trigger Contingency Actions** • Notify Environment and Heritage Manager of introduced/pest species presence and whereabouts. • Notify personnel of introduced/pest species presence in the Project area through pre-start and notice boards. • Undertake further education and awareness training to personnel. **Threshold Contingency Actions:** • Review controls pertaining to solid and liquid waste management and resubmit plan / protocol with amendments to the EPA and the MAC for approval. • Review controls pertaining to pest management (Pest Management Plan) and resubmit plan with amendments (if made) to the EPA and the MAC for approval. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation.
All general-purpose bins	**Monitoring:**	Ongoing management of waste.	Licenced Waste Handler	Solid and Liquid Waste	**Trigger Criterion:**	**Trigger Contingency Actions:**

will be lidded and emptied regularly to ensure the lids remain completely shut.	• Implementation of the Solid and Liquid Wastes Management Protocol and Solid and Liquid Wastes Management Plan to reduce the likelihood of attraction of introduced/pest species to the Project area.
	• All waste containers are to have lids which are to always remain closed. No overfilling of bins will be permitted.
	• Monitoring for fauna (ie. mice, birds, cockroaches etc.) feeding from the waste receptacles.
	• Inductions to be carried out for all new employees prior to commencement on site to advise on the requirement.
	Reporting:
	• Bins not emptied or overfilled (not able to be shut) will be reported as incidents.
	• Fauna interactions will be recorded in the fauna interaction register.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Weekly environmental inspections.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			All personnel.	Management Plan (PCF-PD-EN-SLWMP)
				Solid and Liquid Waste Management Protocol
				Pest Management Plan (PCF-PD-EN-PMP)
					• Waste receptacles nearing or breaching capacity weekly.
					• Spills from bins due to improper concealment.
					• Fauna opportunistically feeding from waste receptables.
					• Waste receptacles attracting nuisance species.
						• Listed Waste Handler to attend site to remove wastes.
						• Provide further waste concealment measures appropriate to the exceeded waste location and waste type.
						• Review controls pertaining to solid and liquid waste management and resubmit plan / protocol with amendments to the EPA and the MAC for approval.

Develop a Cane Toad Monitoring and Management Plan, including controls for potential future implementation.	**Monitoring:** • Monitoring and management of cane toads will be in accordance with the Pest Management Plan. • Cane Toad Monitoring and Management Plan to include: • Monitoring of cane toad front. • Changes in populations of threatened species (listed at the start of this table) at risk will be monitored before and after the arrival of cane toads. • Undertake mitigation activities to protect identified species. • Work collaboratively to eradicate any individual or small groups of cane toads discovered more than 50km ahead of the main cane toad front, where feasible.	Management plan to be developed within 12 months of Project construction commencement. Fauna Interaction Register updated within 24 hours of interaction. Monthly Project Environmental Reporting CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Pest Management Plan (PCF-PD-EN-PMP) DBCA *Cane Toad Strategy for Western Australia 2021-2026*	**Trigger Criterion:** • Cane toad front is likely to advance to the Project area within 12 months. **Threshold Criterion:** • Cane toad occurrence on site.	**Trigger Contingency Actions:** • Ensure management plan has been prepared and commence implementation. **Threshold Contingency Actions:** • Notify Environment and Heritage manager of cane toad presence and whereabouts. • Capture and euthanize can toad. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Pest Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation

	• Develop and implement quarantine procedures for vehicles and equipment to detect hitchhiker cane toads.
	• Regularly review public information aimed at minimising the accidental movement of cane toads.
	• Facilitate toad musters when feasible and/or promote community cane toad collection to contribute to conditioned taste aversion projects.
	• Partner with Aboriginal Ranger groups to manage cane toads.
	• Investigate the application of new control methods for cane toads in the field.
	• Evaluate methods to protect biodiversity assets from cane toads through exclusion.
	• Promote humane methods of cane toad euthanasia and disposal.
	• Deliver education and information on cane toads and their management.
	Reporting:
	• Recording of all interactions with fauna in the Fauna Interaction Register (for cane toad sightings/capture).
	• All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting.
	• Presence of cane toads in the Project area will be reported as an incident.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of
						and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Undertake corrective rehabilitation.
						• Consult with MAC.
						• Review management plan control measures and amend as necessary.

	threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					
Conduct baseline and annual feral fauna surveys and implement control measures for feral dogs, cats, foxes, pigs and cane toads within the Project area.	**Monitoring:** • During operations, site perimeter fencing to limit/hinder feral fauna from accessing the project site and will need to be inspected for integrity. • During construction, good housekeeping, site hygiene and reporting will be required to manage and control feral fauna. • Feral fauna surveys will be carried out in accordance with the Pest Management Plan. • Baseline pest animal surveys will be undertaken for two years to understand the extent and nature of pest animals inhabiting or utilising the Project site by a suitably experienced ecologist. • Surveys will occur annually until the desired level of control is reached. • Ongoing monitoring will be carried out by all personnel through records of sightings in the fauna register. **Reporting:** • Any conservation significant vertebrate fauna deaths and injuries caused by feral animals will be reported to DBCA within one week of being recorded. • Injuries and deaths of conservation significant vertebrate fauna by feral animals reported as an incident. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation	Monthly Project Environmental Reporting. Pest Management Plan reviewed annually. Surveys carried out annually. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Pest Management Plan (PCF-PD-EN-PMP)	**Trigger Criterion:** • Feral animals observed within the Project area. **Threshold Criterion:** • Threatened species are injured or killed as a direct result of feral animals within the Project area.	**Trigger Contingency Actions:** • Feral cats: ○ A trapping program is implemented. ○ Avoid trapping in September to March. ○ A minimum of 25 large cage traps would be set for several nights. ○ Baits may be used by a Licensed Pest Management Technician if trapping ineffective • Wild dogs: ○ A trapping or baiting program is implemented using a Strychnine Alkaloid bait or trapped using soft jawed traps. • European Red Fox: ○ A trapping or baiting program is implemented using an ACTA 1080 Concentrate or FOXOFF® Fox baits or trapped using soft- jawed traps. • Feral rabbits: ○ A baiting program is implemented using ACTA 1080 concentrate. • House mice and black rat: ○ Ensure all available food sources are eliminated. ○ Trapping can be carried out. • Feral pigs: ○ A trapping or baiting program is implemented using PIGOUT®. • Feral horses: ○ Contact local pastoralist for removal. ○ Horses can be shot if not removed. • Cane toads: ○ Capture and place in a vented container. ○ Cool to 4C to render unconscious prior to placing in freezer for 2 days to be euthanized. • The Pest Management Plan will be reviewed periodically throughout the life of the Project (at least every 12 months) to assess effectiveness of its measures and maintain relevance to current works or operations. • Should performance of controls be inadequate then the measures will be updated to achieve performance objectives. Additional review will be required in the event of an environmental incident or change in activities. • Additional monitoring will be undertaken and will occur in conjunction with

	Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					appropriate management measures until pest animal presence reduces to baseline levels or below. **Threshold Contingency Actions:** • Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842). • Notify Environment and Heritage manager of native fauna death and verify death caused by feral animal. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Pest Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Consult with MAC.
Conduct baseline and annual weed surveys and implement control measures comprising manual removal, herbicide treatment and stockpile containment for weeds within the Project area.	**Monitoring:** • Weed monitoring and management will be carried out in accordance with the Weed Management Plan. • A baseline weed mapping survey within the Project footprint and adjacent areas will be undertaken before civil works to establish a baseline of the habitat condition, type of weeds found and the extent of their population. • Biennial weed survey and mapping will be undertaken within the Project footprint to record the type and distribution of the weed species. • Surveys to be carried out biennially. **Reporting:** • A weed register will include the following records: ○ all records of weeds observed within the Project boundary. ○ records of weeds disposed offsite and at licensed disposal facilities. ○ monitoring of material used for onsite mulching for weed and/or weed propagules.	Monthly Project Environmental Reporting. Weed Management Plan reviewed annually. Surveys carried out biennially. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Weed Management Plan (PCF-PD-EN-WMP). Weed Management Protocol. Weed Register.	**Trigger Criterion:** • Introduction and/ or increase in abundance of significant weed species in Project area.	**Trigger Contingency Actions:** • Identify the weed species present within the Project area. • Map the distribution of the newly introduced significant weed species. • Plan and implement a significant weed control program (may involve seeking advice from relevant authorities). • Identify activities that may have potentially introduced significant weed species. • Apply hygiene control and staff training (e.g. inductions, toolbox/site meetingsand communications). • Review and update Weed Management Plan as required to include further hygiene controls.

	○ records of herbicide applications and other weed control measures applied within the Project boundary. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					
Prevent weeds on topsoil and vegetation stockpiles.	**Monitoring:** • Weed monitoring and management will be carried out in accordance with the Weed Management Plan. • Monitoring of contaminated topsoil via the MTS. • Inspections to ensure stockpiles are correctly signed, bunded and stored. • Inductions will train personnel to identify weed species who will have responsibility of notifying the Environment and Heritage Manager of sighted weeds. **Reporting:** • Maintenance of the Weed Register. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.	Weekly inspections of stockpiles. Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Weed Management Plan (PCF-PD-EN-WMP). Weed Management Protocol. Material Tracking System. Weed register.	**Trigger Criterion:** • Weeds occurring in stockpiles and disturbed areas. **Threshold Criterion:** • Weeds in proliferation and impacting success of native vegetation.	**Trigger Contingency Actions:** • Identify the weed species present within the Project area. • Map the distribution of the newly introduced significant weed species. • Plan and implement a significant weed control program (may involve seeking advice from relevant authorities). • Identify activities that may have potentially introduced significant weed species. • Apply hygiene control and staff training (e.g. inductions, toolbox/site meetingsand communications). • Review and update Weed Management Plan as required to include further hygiene controls. **Threshold Contingency Actions:** • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the Weed Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Submit an Offset Strategy to the DAWE, as required. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Consult with MAC.
Prevent introduction of weeds into the Project area through implementation of weed hygiene measures.	**Monitoring:**	Vehicle and equipment inspections to be carried out at the time of vehicle entry to site. Vehicle and equipment wash down	Environment and Heritage Manager	Weed Management Plan (PCF-PD-EN-WMP). Weed Management Protocol.	**Trigger Criterion:** • Weed hygiene measures are not followed for all vehicles and equipment.	**Trigger Contingency Actions:** • Identify the weed species present within the Project area.

	• Weed hygiene measures will be implemented in accordance with the Weed Management Protocol and the Weed Management Plan.
	• Good weed hygiene practices will be followed throughout the Project, including:
	  ○ vehicle/plant inspection
	  ○ wash down procedures for all construction plant,
	  ○ light vehicles, scraper bowls and truck trays carrying soil, which are entering and leaving the Project areas
	  ○ dedicated vehicle inspection and wash down areas are to be positioned at site entry / exit points
	• All heavy vehicles and plant involved in earthworks and civil works will be washed down, inspected and accompanied by an independent certificate of verification of weed hygiene prior to site entry. Upon arrival on site, they will be inspected at the site gate by the PER, or delegate, and documented using the Contractor's Vehicle and Mobile Equipment Weed Inspection Form.
	• Prior to the movement or reuse of any soil, borrow, fill or other weed risk material within the Project site, the material is to be certified as free from weeds by conducting and documenting a weed inspection prior to the first movement of material from the source location. The Weed Risk Materials Hygiene Form will be used for this purpose
	Reporting:
	• Failure to implement required hygiene practices reported as an incident.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		at the time of demobilization from site.
		Monthly Project Environmental Reporting.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			Operators
			Supervisors
				Weed Risk Materials Hygiene Form.	• Introduction and/ or increase in abundance of significant weed species in Project area.	• Map the distribution of the newly introduced significant weed species.
						• Plan and implement a significant weed control program (may involve seeking advice from relevant authorities and Murujuga Aboriginal Corporation).
						• Identify activities that may have potentially introduced significant weed species.
						• Apply hygiene control and staff training (e.g. inductions, toolbox/site meetings and communications).
						• Review and update Weed Management Plan as required to include further hygiene controls.

Weed Risk Areas/Zones are established.	**Monitoring:** • Weed Risk Areas/Zones will be managed in accordance with the Weed Management Plan to ensure there is no spread of weeds from these areas into the Project area. • Weed Risk Areas/Zones will be demarcated by survey markers and temporary fencing, to be inspected daily by site supervisors and weekly by PER. • Weed Risk Areas/Zones will be identified on weed maps and through the Ground Disturbance Permit (GDP) process and shall be treated as avoidance sites wherever possible. • Weed risk areas will inform weed control and weed hygiene requirements. **Reporting:** • Unauthorised entry into weed risk areas will be reported as incidents.	Ongoing monitoring. Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager PER	Ground Disturbance Permits. Weed Management Plan (PCF-PD-EN-WMP). Weed Management Protocol.	**Trigger Criterion:** • Unauthorised access into Weed Risk Areas/Zones. • Surveying and pegging of Weed Risk Areas/Zones are missing.	**Trigger Contingency Actions:** • Investigate cause with the Project team and update procedures to ensure the breach does not reoccur. • Redefine boundaries/ signs if due to inadequate boundary marking or unclear signs. • Communicate incident investigation outcomes to Project personnel. • Apply hygiene control and staff training (e.g. inductions, toolbox/site meetings and communications). • Review and update Weed Management Plan as required to include further hygiene controls.

	• All Vehicle Weed Inspection Forms to be completed and maintained. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					

Potential Impact	**Artificial light pollution**					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through artificial lighting impacts					
Target	No impacts to native fauna from Project-related artificial lighting					
Species	Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank Green Turtle Hawksbill Turtle Flatback Turtle Leatherback Turtle Loggerhead Turtle					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**
The Project will avoid, where possible, and otherwise use best practice technology and risk-based management actions to minimise nightglow and light overspill from the Project so that biological diversity and ecological integrity are maintained.	Monitoring: • To minimise impacts on marine turtles, seabirds and migratory shorebirds, lighting will be monitored and managed in accordance with the Light Management Plan (LMP). • A benchmark Artificial Light at Night (ALAN) survey will be carried out at selected locations including (but not limited to): ▪ The Project area ▪ Hearson's Cove ▪ Deep Gorge, and ▪ Locations selected after consultation with MAC. • Monitoring will capture benchmark regional artificial light data during new moon conditions. • An impact assessment will be carried out using the information from the proposed lighting design, benchmark light monitoring program and the modelling. • The impact assessment will review the project against the Commonwealth guideline best practice light principles, qualitative assessment of the horizon visibility of sky glow/ direct light sources and the Bortle Class sky quality guide. • Details regarding the minimum suitable mitigation measures and best practice lighting design will be included in the impact assessment and will apply to both construction and operational lighting.	Lighting Design to be prepared prior to Construction and LMP to be prepared prior to construction and implemented throughout construction and operations (as it applies to each phase). Commissioning light monitoring carried out post construction, during plant commissioning. Environmental focus presented at pre-start at the beginning of every shift. Weekly environmental inspections. Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Design Manager Construction Manager Project Director Environment and Heritage Manager	Light Management Plan (PCF-PD-EN-LMP) Light Management Protocol (*to be developed*) Construction Environmental Management Plan (45826-HSE-PL-G-1005)	**Threshold Criterion:** • Failure to implement best practice technology or management actions specified in the Confirmed Light Management Plan. • Non-compliance with the requirements of the Confirmed Light Management Plan and/or Light Management Protocol. • Marine turtle hatchlings orientation is affected by increased lighting from the Project.	**Threshold Contingency Actions:** • In the event a management action for lighting aspects are not implemented or met, the Environment and Heritage Manager will be notified immediately with all relevant information. • All reasonable actions to implement the management action will be undertaken to rectify the non-compliance. • If a management action requires adjustment following evaluation of monitoring data, review of assumptions and uncertainties, re-evaluation of risk assessment, increased understanding of the environmental setting, or changes to the proposal scope or technology, Perdaman will seek formal approval from the Office of the EPA and may require consultation with MAC if the plan is reviewed and updated on account of these changes. • Report to relevant government authorities (DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions in accordance with the relevant plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are

	• An ongoing ALAN monitoring program to inform an adaptive management framework to support continuous improvement in light management will be developed and will include one round of post construction monitoring and reporting. • Light Management Protocol will be developed as part of the Construction Environmental Management Plan Framework. • All Project Personnel working on the Project site will be made aware of the Light Management Plan through the site induction. All Contractors undertaking construction works will be provided with a copy of the Light Management Plan. • Pre-starts to include an environmental focus including the key elements of the Light Management Plan to reinforce its requirements and maintain compliance throughout the Project. • Environmental inspections to assess: ▪ Attraction of feral species ▪ Incidents and interactions with Threatened and / or native species ▪ MAC consultation or concerns in relation to heritage places ▪ Environmental incidents and corrective action close out. Reporting: • Reporting lighting requirements to the Project Director in design reports. • Results of benchmark light monitoring to be reported in Confirmed Light Management Plan. • Records of pre-start meetings with an environmental focus to be retained. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Undertake further education and awareness training to personnel.

Development and implementation of monitoring program for the cumulative lighting impacts on marine turtle hatchlings, migratory seabirds and shorebirds.	**Monitoring:**
	A benchmark ALAN survey will be carried out over 5 nights during new moon conditions between the 28 Feb 2022 and 4 March 2022 using Sky42 light monitoring equipment that will be deployed at selected locations including (but not limited to):
	• The Project site;
	• Hearson's Cove;
	• Deep Gorge; and
	• Locations selected after consultation with MAC.
	
	An ongoing ALAN monitoring program to inform an adaptive management framework to support continuous improvement in light management will be developed and shall include one round of post construction monitoring and reporting
	Reporting:
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Within 1 year of the commencement of operations of the Project.	Environment and Heritage Manager	Light Management Plan (PCF-PD-EN-LMP)	**Threshold Criteria:**
					• Failure to implement monitoring program.
					• Light Management Plan requires review and amendment as a result of the findings of the monitoring program.
						Threshold Contingency Actions:
						• If a management action requires adjustment following evaluation of monitoring data, review of assumptions and uncertainties, re-evaluation of risk assessment, increased understanding of the environmental setting, or changes to the proposal scope or technology, Perdaman will seek formal approval from relevant authorities and consult with MAC if the plan is reviewed and updated on account of these changes.
						• Provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the lighting impacts from the Project.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER, DAWE and MAC.

Potential Impact	Noise, vibration, dust and fire					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through noise, vibration, dust and fire					
Target	No impacts to native fauna from Project-related to noise and vibration emissions					
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank Green Turtle Hawksbill Turtle Flatback Turtle Leatherback Turtle Loggerhead Turtle Humpback Whale Dwarf Sawfish					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**
The Project will avoid, where possible, and otherwise use best practice technology and risk-based management actions to minimise the impact of noise and vibration from the Project so that biological diversity and ecological integrity are maintained.	**Monitoring:** • Noise complaints will be monitored to ensure compliance with the noise regulations and investigated to determine any adverse impacts, including towards fauna occurring near or adjacent the complaint source location. • Monitoring of the fauna interactions register to determine avoidance patterns in species. • Fauna monitoring in the Environmental Performance Report will determine the location of sightings from baseline surveys and compare in each report to determine any site avoidance behaviours potentially arising from noise and vibration. • Monitor reports or incident of noise and/or vibration emissions and orientation from the project. • Reports or incident of noise and/or vibration emissions and the noise orientation. • Intrusive noise (including vibration) issues associated with the Project will be managed in compliance with relevant statutory standards and to ensure they do not negatively impact	*Timing of preparation of Noise and Vibration Management Sub-plan to be confirmed.* Daily monitoring of noise. CAR and ACR submitted annually. EPR submitted every 5 years.	Design Manager Construction Manager Project Director Environment and Heritage Manager	Construction Environmental Management Plan (45826-HSE-PL-G-1005) Noise Management Protocol Noise and Vibration Management Sub-Plan (*to be developed*) Fauna Management Plan (PCF-PD-EN- FaMP)	**Trigger Criteria:** • Noise or vibration complaints received. • Identification of site avoidance behaviours. • Noise exceeds a value which is 5 dB below the assigned level for the area impacted by noise. **Threshold Criteria:** • Noise exceeds the assigned level allowable in an area. • Noise and/or vibration emissions and orientation identified to negatively or adversely impact conservation significant fauna roosting or nesting. • Noise and/or vibration emissions and orientation identified as a cause of disorientation or displacement of native fauna in the area.	**Threshold Contingency Actions:** • In the event a management action for noise and vibration aspects are not implemented and or met, the Environment and Heritage Manager will be notified immediately with all relevant information. • All reasonable actions to implement the management action will be undertaken to rectify the non-compliance. • If a management action requires adjustment following evaluation of monitoring data, review of assumptions and uncertainties, re-evaluation of risk assessment, increased understanding of the environmental setting, or changes to the proposal scope or technology, Perdaman will seek formal approval from the Office of the EPA and may require consultation with MAC if the plan is reviewed and updated on account of these changes. • Provide information to the CEO to determine potential environmental harm

	noise sensitive receptors, including native bats, turtles and other threatened fauna species. • The Noise Management Protocol included in the Construction Environmental Management Plan provides guidance on how noise emissions from a range of sources including construction equipment, drilling, blasting, piling and commissioning of plant, the conveyor and ship loader, will be minimised. • A Noise and Vibration Management Sub-Plan will be prepared which will include the details provided in the protocol and any specific requirements of the Part V approvals in relation to noise emissions. The sub-plan will also consider the requirements to protect heritage values and fauna during construction activities. **Reporting:** • Reporting noise and vibration mitigation requirements to the Project Director in design reports. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					or alteration of the environment that occurred due to the lighting impacts from the Project. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER, DAWE and MAC.
Maintain equipment such that all noise emitting equipment is fully serviceable and working to the correct specifications. High noise and vibratory works will be scheduled for hours least likely to affect conservation significant fauna species	**Monitoring** • Mobile plant and equipment will be routinely inspected to ensure noise does not exceed the assigned levels. • Equipment to be inspected by a suitable qualified trade (e.g, mechanic) prior to operating on Site. **Reporting:** • Plant failure / shutdowns will be reported as incidents. • Report inspection details and vehicle reference in the Mechanical Inspection Form and Mechanical Inspection Register. • Monitored through weekly environmental inspections and incident records. • Daily pre-starts of equipment.	Weekly environmental site inspections Monthly Project Environmental Reporting. Daily pre-start reports CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager Operators/ Supervisor	Construction Environmental Management Plan (45826-HSE-PL-G-1005) Noise Management Protocol Noise and Vibration Management Sub-Plan (*to be developed*) Mechanical Inspection Form Mechanical Inspection Register	**Trigger Criterion:** • Engine / mechanical issues lead to increased noise during operations. • Inspections identifying mechanical issues. Engine / mechanical failure of plant. • Mechanical issues lead to exceedance of noise and vibration regulations. **Threshold Criterion:** • > 65 dB(A) at plant boundary (Operations only)	**Trigger Contingency Actions:** • Inform the Site Supervisor of any potential mechanical issues during works. • Report exceedance to the Environment and Heritage Manager. • Safely transport mobile plant (if applicable) to laydown area. • If in operation during mechanical issues, shutdown plant upon identification. • Mechanical works and inspections to take place on hardstand areas in case of leaks or spills of oils, fuels or lubricants. **Threshold Contingency Actions:** • Report to relevant government authorities (DWER, EPA and DAWE) within seven days.

	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
						• Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
						• Consult with MAC.

A review of noise impacts from the Project on terrestrial and marine fauna species will be carried out.	**Monitoring:**
	• Noise monitoring at sensitive receptors.
	• Monitoring of fauna noise avoidance behaviors.
	• Monitoring of fauna occurrences and proximity to site during operations at varied noise levels.
	Reporting:
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Initial monitoring to occur within 1 year of the commencement of operations of the Project. Additional noise monitoring will be addressed in the EPA Part V works approval and licencing applications.	Environment and Heritage Manager	Noise monitoring reports and modelling
				Environmental Noise Assessment (Lloyd George Acoustics, 29 May 2019).
				Noise Management Protocol
				Noise and Vibration Management Sub-Plan (*to be developed*)
					Trigger Criterion:
					• Noise exceeds a value which is 5 dB below the assigned level for the area impacted by noise.
					Threshold Criterion:
					• > 65 dB(A) at plant boundary (Operations only)
					• Identification of site avoidance behaviour from terrestrial fauna and/or marine fauna due to project related noise, including reduced turtle and bird nesting and reduction of roosting migratory bird species.
						Trigger Contingency Actions:
						• Excessive noise is reported to the Environment and Heritage Manager.
						• Investigate to determine the cause of the trigger criteria being exceeded and potential environmental impact that may occur due to the trigger criteria being exceeded.
						• Undertake corrective actions to reduce noise emissions as identified through the investigation.
						• Undertake further education and awareness training to personnel.
						Threshold Contingency Actions:
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.

						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER, DAWE and MAC. • Undertake further education and awareness training to personnel.

The Project will avoid, where possible, and otherwise use best practice technology and risk-based management actions to minimise the impact of dust from the Project so that biological diversity and ecological integrity are maintained.	**Monitoring:**
	• Management of dust at the Project area will be in accordance with the Air Quality Management Plan, Air Quality and Dust Management Protocol, Construction Environmental Management Plan, Traffic Management Plan and relevant Australian Standards to ensure dust emissions do not negatively impact sensitive receptors.
	• The Air Quality Management Plan will be reviewed and revised to include any specific requirements of the Part V approvals in relation to dust emissions. The plan will also consider the requirements to protect heritage values and fauna during construction activities.
	• Air emissions during operation of UPP and equipment will be within the Project's approved thresholds. Where monitoring results indicate higher emissions than those stated in the Project's approval conditions, corrective actions must be implemented as soon as practicable to reduce emissions below the permitted level.
	Reporting:
	• Reporting dust mitigation requirements to the Project Director.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
		Daily inspections during clearing and construction activities.
		Inspections following rain events
		Weekly environmental inspections of native flora health.
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			Environment and Heritage Manager	Air Quality Management Plan (PCF-PD-EN-AQMP)
				Air Quality and Dust Management Protocol.
				Construction Environmental Management Plan (45826-HSE-PL-G-1005)
				Traffic Management Plan.
				Construction work complies with AS 2436-2010 *Guide to noise and vibration control on construction, demolition and maintenance sites*.
					Trigger Criterion:
					• Dust deposition on threatened species habitat.
					Threshold Criterion:
					• Population decline, noticeable deaths during monitoring.
					• Dust deposit impacts the health / condition of threatened species habitat.
						Trigger Contingency Actions:
						• Excessive dust on threatened species habitat is reported to the Environment and Heritage Manager.
						• Investigate to determine the cause of the trigger criteria being exceeded and potential environmental impact that may occur due to the trigger criteria being exceeded.
						• Undertake corrective actions to reduce dust emissions as identified through the investigation.
						• Increase dust suppression activities.
						• Undertake further education and awareness training to personnel.
						Threshold Contingency Actions:
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation until the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER, DAWE and MAC.
						• Undertake further education and awareness training to personnel.

The Project will minimise the risk of fire events related to Project activities so that biological diversity and ecological integrity are maintained.	A Bushfire Management Plan has been commissioned as part of the Development Approval from the City of Karratha.
	Monitoring:
	• The management of fire at the Project area will be in accordance with the Bushfire Management Plan, Fauna Management Plan, Flora Management Plan, Emergency Response Management Plan, and Fire Management Protocol, which include provisions to avoid where practicable and otherwise minimise impacts from fire on significant terrestrial fauna species, including short-range endemic fauna and migratory birds.
	• The Project development site will be cleared of vegetation during the construction phase. The western portion of Site F will be cleared to accommodate laydown and storage areas during the construction phase. Once construction is complete, these areas are expected to return to their natural vegetative state.
	• A hot work permit procedure will be developed and implemented by Project Personnel.
	• Smoking confined to designated smoking areas only.
	• All vehicles, buildings, machinery and drill rigs will be fitted with fire extinguishers.
	• Fire control equipment will be available in fire-risk areas including but not limited to hazardous material storage areas, hot works areas and service trucks.
	• An adequate number of personnel will be trained in basic fire awareness, fire response and use of fire suppression equipment and on site at all times during Project Works.
	• No open fires will be permitted on site at any time.
	• Liaise regularly with the local government authorities regarding fire danger status.
	• Maintenance on hot machinery will be undertaken in designated cleared areas whenever possible.
	• Fire breaks will be established and maintained around key infrastructure and active construction sites.
	• A dust suppression vehicle will be equipped such that it is capable of also being used as a fire response vehicle.
	• Flammable and combustible materials are to be appropriately stored and isolated at all times in accordance with relevant Australian Standards.
	• Compliance audits and inspections of work areas to ensure potential fuel loads are minimised.
	• Regular inspections and testing of firefighting equipment will be conducted to ensure it is maintained in working order and in test.
	• Vehicle undersides are to be regularly (e.g. at daily pre-starts, during and after use in spinifex
			Construction Manager
			HSSE Manager
				Bushfire Management Plan
				Emergency Response Management Plan (CW1055600-EN-PL-004)
				Fire Management Protocol
				Fauna Management Plan (PCF-PD-EN- FaMP)
				Flora Management Plan (PCF-PD-EN-FMP)
				Construction Environmental Management Plan (45826-HSE-PL-G-1005)
					Threshold Criterion:
					• Fire spreading outside the boundaries of the Project development envelope, affecting the native vegetation values in the Conservation zone in the Murujuga National Park.
					• Impacts to relationship with MAC and local community.
					• Loss of Fauna Habitat.
					• Altered fire regimes result in increased loss or degradation of native vegetation and/ or flora due to fire impacts.
						Threshold Contingency Actions:
						In the event of fire, or in the presence of smoke, personnel must implement the Emergency Response Management Plan to ensure:
						• All personnel are alerted to the fire.
						• Trained personnel use fire-fighting equipment to attempt to extinguish the fire.
						• Emergency services are contacted.
						• Report to relevant government authorities (DWER, EPA and DAWE) within seven days.
						• Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Remediation to include:
						  ○ Investigation to determine the condition and vegetation type impacted by fire, including the area impacted.
						  ○ Determine the species likely to utilise the impacted habitats.
						  ○ Seek to provide habitat structures able to be utilised by impacted species or allow species to repopulate the impacted habitat.
						  ○ Monitor the effectiveness of the provided habitat structures through the presence / use by native fauna.
						  ○ Monitor regrowth and fauna presence until it is determined that the remediation activity has been successful and may cease.
						• Undertake further education and awareness training to personnel.
						• Consult with MAC.
						• Any sick or injured native fauna found to be taken to Pilbara Wildlife Carers Association (0438 924 842).
						• Conservation significant fauna deaths to be reported to the DAWE.

	areas etc.) checked for any material stuck around the exhaust system, and any identified material removed.
	• Compliance audits and inspections.
	Reporting:
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					

Potential Impact	Fauna entrapment, poisoning and debris					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through entrapment, poisoning and debris					
Target	No impacts to native fauna from Project-related to through entrapment, poisoning and debris					
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank Green Turtle Hawksbill Turtle Flatback Turtle Leatherback Turtle Loggerhead Turtle Humpback Whale Dwarf Sawfish					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**
The Project will avoid, where possible, and otherwise use best practice technology and risk-based management actions to minimise fauna entrapment.	**Monitoring:** • Fauna egress infrastructure to be installed within water holding points, trenches and excavations to ensure fauna can escape. • Visual inspections of water holding ponds, trenches, fauna egress, and excavations. • Visual inspections for Pilbara Olive Python and Northern Quoll within plant, equipment and machinery prior to activities being carried out onsite each morning, following rain events and during hot weather. • Visual inspections are to be included in pre-starts. • Fauna identified as trapped within the Project area, will be relocated using a suitably qualified expert using DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act. **Reporting:** • Recording of all interactions with fauna in the Fauna Interaction Register (for fauna removed or handled).	Daily checks less than 2 hours after sunrise and before commencing construction. Monthly Project Environmental Reporting. CAR submitted annually.	Environment and Heritage Manager PER	Fauna Management Plan (PCF-PD-EN- FaMP) Construction Environmental Management Plan (45826-HSE-PL-G-1005)	**Trigger Criterion:** • Conservation significant fauna found in water holding ponds, trenches and excavations. **Threshold Criterion:** • Fauna death associated with entrapment.	**Trigger Contingency Actions:** • Ensure fauna egress infrastructure is in place within water holding points, trenches and excavations to ensure fauna can escape. **Threshold Contingency Actions:** • Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842). • Report to relevant government authorities (DBCA, DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to

	• All fauna interactions recorded in the Fauna Interaction Register are reported in the Monthly Project Environmental Reporting.
	• Reporting in accordance with DBCA's Standard Operating Procedures (SOPs) and permit/licence conditions as required under the BC Act.
	• Any conservation significant vertebrate fauna deaths and injuries will be reported to DBCA within one week of being recorded.
	• Injuries and deaths of conservation significant vertebrate fauna reported as an incident.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
	  ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval.
	  ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required.
	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.
						provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Submit an Offset Strategy to the DAWE, as required.
						• Review procedures in place for trenching and excavations and implement further controls in relation to the likely cause of incident.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
						• Undertake further education and awareness training to personnel.
						• Consult with MAC.

All fauna entrapped in egress will be removed and relocated by qualified personnel and handled in accordance with DBCA SOP's.	**Monitoring:** • All excavations and fauna egress to be checked within 2 hours of sunrise if left open overnight. • Fauna identified as being entrapped will be relocated by trained personnel in accordance with DBCA's SOPs and permit/licence conditions as required under the BC Act. **Reporting:** • Reporting in accordance with DBCA's Standard Operating Procedures (SOPs) and Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.	Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager Qualified person	DBCA's Standard Operating Procedures*:* • Aluminum Box Traps for Capture of Terrestrial Vertebrates • Cage Traps for Live Capture of Terrestrial Vertebrates • Dry Pitfall Trapping for Invertebrates Fauna Interaction Register	**Trigger Criterion:** • Fauna handler not suitably qualified. • Procedures for the relocation programs are not in accordance with DBCA SOP's prior to implementation. • DBCA SOP's not reviewed prior to program implementation.	**Trigger Contingency Actions:** • Do not commence relocation of entrapped fauna until such time as a handler is available that holds the appropriate qualifications. • Review and implement DBCA SOP's.

The Project will avoid, where possible, and otherwise use best practice technology and risk-based management actions to minimise threatened fauna poisoning caused by entrapment within contaminated holding ponds or exposure to chemicals used in the control of mosquitoes.	**Monitoring:** • Where practicable avoid the use of larvicides and adulticides for chemical control of mosquitoes and other pest species. • Should larvicide or adulticide be applied, Perdaman will develop a management plan to ensure the protection of native fauna. This plan will include the chemical make-up to be applied, the impacted areas, the seasons and timeframes for application, the potential impact of the chemicals on listed threatened and migratory species and mitigation measures for species' protection. **Reporting:** • The management plan will include record retention and reporting requirements, including a log of larvicide and adulticide used in the Project area. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR and EPR.	Chemical Register and MSDS to be reviewed annually. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Project Environmental Management Plan (CW1055600-EN-PL-001) Fauna Management Plan (PCF-PD-EN- FaMP) Construction Environmental Management Plan (45826-HSE-PL-G-1005) Safety Management Plan (*to be prepared*). Pest Management Plan (PCF-PD-EN-PMP).	**Threshold Criterion:** • Fauna death associated with poisoning.	**Threshold Contingency Actions:** • Sick or injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842). • Report deaths of any conservation significant fauna to the DAWE. • Report to relevant government authorities (DBCA, DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Review procedures in place for trenching and excavations and implement further controls in relation to the likely cause of incident. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Consult with MAC.
The Project will avoid, where possible, use best practice technology and risk-based management actions to minimise debris deposition (including litter and Urea dust) within the marine environment.	**Monitoring:** • The prevention of debris impacting the marine environment will be achieved through implementation of the Solid and Liquid Waste Management Plan, Air Quality Management Plan and the Construction Environmental Management Plan. • Weekly inspections of waste receptacles, stockpiles and chemical storage areas to ensure no contaminated substances or wastes are deposited in the marine environment. • Inspection of bunding around stockpiles and chemical storage units to prevent discharges. • Weekly inspections of urea dust deposition around the conveyor and urea transport routes. • Personnel training and competency records monitored to ensure capabilities present for spill response actions or identification of hazards / incidents relating to solid and liquid wastes. **Reporting:**	Weekly inspections. Ongoing throughout the life of the project. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Solid and Liquid Waste Management Plan (PCF-PD-EN-SLWMP). Construction Environmental Management Plan (45826-HSE-PL-G-1005). Air Quality Management Plan (PCF-PD-EN-AQMP-PCF3). Surface Water Management Plan (PCF-PD-EN-SWMP).	**Trigger Criterion:** • Debris is not contained within the Project area and is deposited in the marine environment. **Threshold Criterion:** • Fauna death associated with debris deposition in the marine environment.	**Trigger Contingency Actions:** • Review the requirements of the relevant management plans to ensure all mitigation strategies are implemented. • Review procedures in place for the prevention of deposition of debris in the marine environment and develop and implement further controls where required. **Threshold Contingency Actions:** • Injured native fauna to be taken to Pilbara Wildlife Carers Association (0438 924 842). • Report native fauna injury or death to DBCA, DWER and DAWE, where relevant. • Report to relevant government authorities (DBCA, DWER, EPA and DAWE) within seven days. • Implement the management and/or contingency actions specified in the relevant management plans within seven

	• Incident reporting if spills, or contaminated run-off identified, or fauna deaths associated with poisoning occurs. • Any conservation significant vertebrate fauna deaths and injuries caused by debris deposition will be reported to DBCA within one week of being recorded. • Injuries and deaths of conservation significant vertebrate fauna reported as an incident. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Review procedures in place for trenching and excavations and implement further controls in relation to the likely cause of incident. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Consult with MAC.

Potential Impact	Spill event
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through a spill event.
Target	No impacts to marine and/or terrestrial fauna and habitats from Project-related spill events
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank Green Turtle Hawksbill Turtle Flatback Turtle Leatherback Turtle Loggerhead Turtle Humpback Whale Dwarf Sawfish

Management Action	Monitoring / Reporting Actions	Timing	Responsibility	Supporting Documents	Threshold criterion	Management action to deal with exceedance event
Spills of chemicals, hazardous materials and wastewater will be prevented from impacting the marine and terrestrial environments.	**Monitoring:** • Spill prevention and management will be in accordance with the Construction Environmental Management Plan, Erosion, Sediment and Surface Water Quality Management Protocol, Spill Response Procedure, Surface Water Management Plan and Hydrocarbons and Hazardous Substances Management Protocol. • The Surface Water Quality Management Protocol will be updated to include any Part V conditions around discharges, storage of chemicals and fuels, refuelling and spill management upon approvals and licenses being issued by DWER. • Environmental inspections to ensure the integrity of storage facilities and the proper storage requirements are being adhered to in accordance with the relevant Australian Standards. • Storage of chemicals and hazardous materials shall not be permitted in the supratidal areas or other areas prone to flooding or	Monthly Project Environmental Reporting. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager All personnel	Air Quality Management Plan (PCF-PD-EN-AQMP). Surface Water Management Plan (PCF-PD-EN-SWMP) Project Environmental Management Plan (PCF-PD-EN-PEMP) Surface Water Quality Management Protocol Hazardous Substances Management Protocol Spill Response Procedures	**Trigger criteria:** • Spills or seepage of urea, ammonia, acid gas products in air emissions or liquid forms that are contained within the Project area and do not impact marine and terrestrial environments. **Threshold Criteria:** • A spill or seepage of chemicals, hazardous materials and wastewater, including urea, ammonia, acid gas products to air or terrestrial or marine environments that exceed threshold criteria in the Air Quality Management Plan or the Surface Water Management Plan.	**Trigger contingency actions:** • Notify the Environment and Heritage Manager of the leak or spill immediately upon identification and clean up in a safe manner in line with spill response procedures. • Review competency and training registers and provide further training regarding waste management, leaks and spills to relevant personnel. • Monitor the implementation of the required monitoring programs relevant to liquid waste and air pollutant deposition. **Threshold contingency actions:** • Report to relevant government authorities (DWER, EPA and DAWE) within two days. • Implement the management and/or contingency actions specified in the relevant management plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation

	drainage/runoff. A hazardous material no-go laydown zone map will be developed during the preparation of the emergency response plan. • All surface water discharges on site will be diverted to a purpose-built stormwater facility for containment, treatment and reuse on site. • Permanent infrastructure and laydown areas will avoid the higher, steeper areas along the southern boundary of the development envelope and will benefit from perimeter drainage. • Run-off will be diverted into appropriate clean water and contaminated water catchment ponds for treatment and subsequent discharge or disposal. Surface water ponds will all benefit from oil interceptors. • Compliance audits and inspections in accordance with the Surface Water Management Plan. • Monitoring effectiveness of management measures via Incident report forms. **Reporting:** • A spill or seepage of chemicals, hazardous materials and wastewater, including urea, ammonia, acid gas products to air or terrestrial or marine environments that exceed threshold criteria in the Air Quality Management Plan or the Surface Water Management Plan reported as an incident. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting. • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against					and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Undertake further education and awareness training to personnel. • Consult with MAC. • Review the management measures against fulfilment of the outcome / objectives for surface water and air quality, demonstrating compliance after a threshold exceedance.

	management target carried out in the CAR, ACR, and EPR.					
Spills (overflow) and seepage from brine storage pond and evaporative storage pond will be prevented from impacting the marine and terrestrial environments.	**Monitoring:** • Management and prevention of spills via overflow from the brine storage pond or evaporative storage pond will be in accordance with the Surface Water Management Plan, Spill Response Procedure, Erosion, Sediment and Surface Water Quality Management Protocol and Hydrocarbons and Hazardous Substances Management Protocol. • The management protocol's will be updated to include any Part V conditions upon approvals and licenses being issued by DWER. • Inspections of the capacity and operational integrity of the brine and evaporative storage pond. • Inspections of storage, transfer and loading areas for urea spills and water leaks that may impact urea condition. • Monitoring effectiveness of management measures via Incident report forms. **Reporting:** • Spills via overflow from the brine storage pond or evaporative storage pond as an incident. • Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval. • Incidents reported through Monthly Project Environmental Reporting. • Where threshold criteria is exceeded: o Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. o Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. o Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. o Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.	Weekly inspections brine and evaporative storage pond (increase to daily during heavy and prolonged rainfall). Daily inspections of urea handling areas. CAR and ACR submitted annually. EPR submitted every 5 years.	All	Incident Report Procedure Surface Water Management Plan (PCF-PD-EN-SWMP). Spill Response Procedure Erosion, Sediment and Surface Water Quality Management Protocol Hydrocarbons and Hazardous Substances Management Protocol	**Trigger Criterion:** • Water leaks threatening contamination of urea product. • Hold ponds nearing capacity limits. • Daily inspection checklist not completed. • Monitoring not conducted / missing. **Threshold Criterion**: • Spills and / or seepage from brine and / or evaporative storage pond.	**Trigger contingency actions:** • Notify Environment and Heritage Manager of the leaks threatening urea product and implement controls to stop the current leak and possible future leaks. • Discharging of waters in an appropriate manner to increase hold pond capacity, especially during the wet season and in light of future heavy rain events. • Complete the missing inspection checklist as soon as practicable and to the furthest extent possible. • Monitor the implementation of the required monitoring until personnel have provided confidence to the supervising bodies in completing monitoring correctly without supervision. **Threshold contingency actions:** • Report to relevant government authorities (DWER, EPA and DAWE) within two days. • Implement the management and/or contingency actions specified in the relevant management plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE. • Undertake further education and awareness training to personnel. • Consult with MAC. • Review the management measures against fulfilment of the outcome / objectives for surface water and air quality, demonstrating compliance after a threshold exceedance.
Spills of hydrocarbons will	**Monitoring:**	Spill kits inspected	Environment and	Incident Report Procedure	**Trigger Criterion:**	**Trigger contingency actions:**

be prevented from impacting the marine and terrestrial environments.	• Hydrocarbon spill prevention and management will be in accordance with the Construction Environmental Management Plan, Erosion, Sediment and Surface Water Quality Management Protocol, Spill Response Procedure, Surface Water Management Plan and Hydrocarbons and Hazardous Substances Management Protocol.
	• The Surface Water Quality Management Protocol will be updated to include any Part V conditions around discharges, storage of chemicals and fuels, refuelling and spill management upon approvals and licenses being issued by DWER.
	• Environmental inspections to ensure the integrity of storage facilities and the proper storage requirements are being adhered to in accordance with the relevant Australian Standards.
	• Storage of hydrocarbons shall not be permitted in the supratidal areas or other areas prone to flooding or drainage/runoff.
	• All surface water discharges on site will be diverted to a purpose-built stormwater facility for containment, treatment and reuse on site.
	• Where possible, permanent infrastructure and laydown areas will avoid the higher, steeper areas along the southern boundary of the development envelope.
	• Run-off will be diverted into appropriate storage units
	• Compliance audits and inspections in accordance with the Surface Water Management Plan.
	• Monitoring effectiveness of management measures via Incident report forms.
	Reporting:
	• A spill of hydrocarbons that impacts the terrestrial or marine environment reported as an incident.
	• Incidents reported in writing to the DAWE as soon as practicable and no later than two business days after becoming aware of the incident, in accordance with Condition 18 of the EPBC Act Approval. Further details of the incident to be provided within 10 days of the incident, in accordance with Condition 19 of the EPBC Act Approval.
	• Incidents reported through Monthly Project Environmental Reporting.
	• Where threshold criteria is exceeded:
	  ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.
	  ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.
		weekly.
		Monthly inspections
		CAR and ACR submitted annually.
		EPR submitted every 5 years.
			Heritage Manager	Surface Water Management Plan (PCF-PD-EN-SWMP).
				Spill Response Procedure
				Erosion, Sediment and Surface Water Quality Management Protocol
				Hydrocarbons and Hazardous Substances Management Protocol
					• Spill of hydrocarbons that is contained within the Project area and does not impact marine and terrestrial environments.
					Threshold Criterion:
					• Spills of hydrocarbons that impacts the marine or terrestrial environments.
						• Notify Environment and Heritage Manager of hydrocarbon spill and implement controls to control the spill, contain the hazard, and clean up the spill and any damage.
						• Review competency and training registers and provide further training regarding waste management, leaks and spills to relevant personnel.
						• Monitor the implementation of the required monitoring programs relevant to hydrocarbon management.
						Threshold contingency actions:
						• Report to relevant government authorities (DWER, EPA and DAWE) within two days.
						• Implement the management and/or contingency actions specified in the relevant management plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required.
						• Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded.
						• Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180.
						• Submit a Remediation Plan to the DAWE for the Minister's approval.
						• Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
						• Undertake further education and awareness training to personnel.
						• Consult with MAC.
						• Review the management measures against fulfilment of the outcome / objectives for terrestrial and marine water quality, demonstrating compliance after a threshold exceedance

	○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR.					

Potential Impact	Changes to marine water quality					
Objective	Ensure that the seawater discharge to Water Corporation's seawater supply pipeline (MUBRL) will not impact marine fauna species and habitats, 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.					
Target	No impacts to marine fauna and habitats from Project-related changes to water quality					
Species	Green Turtle Hawksbill Turtle Flatback Turtle Leatherback Turtle Loggerhead Turtle Humpback Whale Dwarf Sawfish					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**
Prevent the degradation of marine water quality due to construction activities (i.e. soil movements, construction of causeway, increased traffic movements while constructing Port facilities).	*Subject to Pilbara Ports Authority Approval requirements (to be issued) – this section will be updated upon issuing of the approval.* **Monitoring:** • The maintenance of marine water quality will be in accordance with the approval granted by the Pilbara Ports Authority. • Impacts on marine water quality will be monitored and managed in accordance with the Construction Environmental Management Plan, Erosion, Sediment and Surface Water Quality Management Protocol, and the Surface Water Management Plan.	*Subject to Pilbara Ports Authority Approval requirements*	Environment and Heritage Manager	Construction Environmental Management Plan (45826-HSE-PL-G-1005) Erosion, Sediment and Surface Water Quality Management Protocol Surface Water Management Plan (PCF-PD-EN-SWMP) *Pilbara Ports Authority Approval*	*Subject to Pilbara Ports Authority Approval Requirements– this section will be updated upon issuing of the approval.*	*Subject to Pilbara Ports Authority Approval Requirements – this section will be updated upon issuing of the approval.*
Monitoring of Multi User Brine Return Line water quality.	**Monitoring:** • Undertake periodic water quality monitoring of plant process water and treated wastewater prior to discharge to the Multi User Brine Release Line (MUBRL) in accordance with the Project Environmental Management Plan Ministerial Statements 567 and 594 . • Undertake water quality monitoring of the MUBRL at the saline water pond and at the pipeline monitoring location prior to MUBRL receival in accordance with the Surface Water Monitoring Plan. • Continuous, in-stream water quality monitoring for process control of relevant parameters. • Campaign monitoring in advance of planned discharge to the MUBRL. Prior to discharge of wastewater to the MUBRL, wastewater is held in a holding basin with discharges planned in advance. These discharges will be undertaken in accordance with a wastewater discharge procedure to be developed under this Solid and Liquid Waste Management Plan. The procedure will ensure that sampling is undertaken sufficiently in advance of planned discharge and to relevant Australian Standards, to enable analysis at a NATA accredited facility and using relevant USEPA (or suitable alternative) analytical techniques. **Reporting:** • Where threshold criteria is exceeded:	Monitoring of the water discharge of the MUBRL – *frequency to be agreed with Water Corporation* Continuous, in-stream, water quality monitoring (non-NATA)	Environment and Heritage Manager Process Engineer	Surface Water Monitoring Plan Solid and Liquid Waste Management Plan (PCF-PD-EN-SLWMP) Surface Water Management Plan (PCF-PD-EN-SWMP)	**Trigger Criterion:** • Saline water (Brine) does not meet the MUBRL discharge specification. • Liquid waste not treated or reused on site requiring disposal. **Threshold Criterion:** Exceedance of Indicative Wastewater Acceptance Criteria to MUBRL for the Project: *Parameter* — *Target* pH — 6.9 – <8.3 pH units Conductivity (TDS) — <75 mS/cm Oxidation-reduction potential — <228 mV Ammonia — <1,700 µg/L Turbidity — <63 NTU Arsenic III — <140 µg/L Arsenic V — <275 µg/L Cadmium — <36 µg/L Chromium III — <459 µg/L Chromium IV — <8.5 µg/L Cobalt — <61 µg/L Copper — <11 µg/L Lead — <134 µg/L Mercury — <1.4 µg/L Nickel — <427 µg/L Selenium — <183 µg/L Silver — <49 µg/L Vanadium — <3,050 µg/L Zinc — <419 µg/L E. Coli — <13,000 MPN/100ml Thermotolerant coliforms — <910 CFU/100 ml	**Trigger Contingency Actions:** • Saline water (Brine) which does not meet the MUBRL discharge specification will be sent to the brine evaporation pond. Solid waste from this area will be removed off site by an appropriately licensed waste contractor and disposed of at a licensed waste facility, suitable for this waste's classification. • Seawater to be continuously recirculated, with a small component (approximately 3.5%) blown down to be discharged off site via the MUBRL. • Process condensate to be polished before adding back into the demineralised water and reused within the process system. • All requirements of Surface Water Management Plan (contaminated surface water) are to be implemented. • Liquid waste not treated on site, such as black and grey water generated during the construction phase, will be removed off site by a licensed controlled waste contractor and disposed of at a licensed waste facility. **Threshold Contingency Actions:** • Cease all discharges to the MUBRL. • Report to relevant government authorities (Water Corporation, DWER, EPA and DAWE) within two days.

	○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR					• Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with Water Corporation, EPA, DWER and DAWE.

Potential Impact	Inland water quality					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through changes to surface and groundwater quality					
Target	No impacts to marine fauna and habitats from Project-related changes to hydrology					
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**
The Project will be designed, constructed and operated to maintain the quality of groundwater and surface water so that environmental values are protected.	**Monitoring:** • Changes in surface water quality will be monitored and managed in accordance with the Surface Water Management Plan. • Potential impacts on groundwater levels and quality and subsequent management requirements due to the disturbance of acid sulphate soils are managed through the Project Environmental Management Plan and the Acid Sulphate Soils Management Protocol. • Erosion and sediment control measures are provided in the Surface Water Management Plan and the Erosion and Surface Water Management Protocol. • The Surface Water Management Plan provides a framework which describes how the Project will address, manage, monitor and mitigate impacts to surface water and receiving waterways during construction, operation and decommissioning phases of the Project in accordance with the applicable regulatory requirements, permit obligations and industry best practice. **Reporting:** • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180.	**Surface Water Monitoring:** • Monthly in construction zones • Biannually post construction **Groundwater Monitoring:** • Fortnightly in active dewatering zones. • Monthly in construction zones. • Quarterly in all other areas (March, June, September and December). **Surface water flows to Supratidal flats** • Immediately after significant rainfall events (over 15 mm rainfall), and then daily for three days while standing water is present. • Once annually in February, immediately after a significant rainfall event (over 15 mm rainfall), and then daily for three days while standing water is present. **Vegetation on supratidal flats and King Bay Mangrove Communities reliant on hydrological regimes.** • Annually in Spring	Environment and Heritage Manager	Surface Water Management Plan (PCF-PD-EN-SWMP) Project Environmental Management Plan (PCF-PD-EN-PEMP) Acid Sulphate Soils Management Protocol Erosion and Surface Water Management Protocol	**Trigger Criterion:** • Exceedance of water quality trigger levels as provided in the Surface Water Management Plan. • Exceedance of supratidal flat (Samphire Shrublands) and King Bay Mangrove Community Vegetation assemblages Stress Level 2. **Threshold Criterion:** • Exceedance of water quality threshold levels as provided in the Surface Water Management Plan. • Exceedance of supratidal flat and King Bay Mangrove Community Vegetation assemblages Stress Level 3.	**Trigger Contingency Actions:** • Investigate the cause of exceedance. • Identify additional measures to prevent trigger levels being exceeded in the future and to prevent reaching threshold. • Conduct detailed survey of the assemblage monitoring location as soon as practicable and review the result no later than one week following the detailed survey. **Threshold Contingency Actions:** • Report to relevant government authorities (DWER, EPA and DAWE) within two days. • Implement the management and/or contingency actions specified in the Surface Water Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Conduct detailed survey of the assemblage monitoring location as soon as practicable

	○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR					and review the result no later than one week following the detailed survey. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.
Brine which does not meet the MUBRL discharge specification will be sent to the brine evaporation pond.	**Monitoring:** • The brine evaporation pond will be utilised: ○ Where brine return is exceeds the Indicative Wastewater Acceptance Criteria as required by Ministerial Statements 567 and 594. ○ To store saline streams in excess of 55,300 mg/l TDS. ○ To store excess stormwater. ○ To collect contaminated chemical sewer streams (other than Amine (an organic compound derived from ammonia by replacement of one or more hydrogen atoms by organic groups)). • The brine evaporation pond will not receive grey water, MDEA or wastewater containing oil. • Where brine is not suitable for disposal via the MUBRL it will be evaporated, and the residual salt will be collected and removed from site using a licenced waste handler. • The brine evaporation pond has transfer pumps and reticulation to receive and pump out water to the MUBRL in large storm events. • Monitoring of water quality will be in accordance with the Surface Water Management Plan . • Weekly inspections of surface water diversions to be carried out, ensuring all run-off sources are diverted to appropriate hold ponds and treated as required. • Visual monitoring of brine evaporation pond capacity. **Reporting:** • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180.	Monitoring of the water discharge of the MUBRL – *frequency to be agreed with Water Corporation* Continuous, in-stream, water quality monitoring (non-NATA)	Environment and Heritage Manager Process Engineer	Solid and Liquid Waste Management Plan (PCF-PD-EN-SLWMP) Surface Water Management Plan (PCF-PD-EN-SWMP)	**Trigger Criterion:** • Saline water (Brine) does not meet the MUBRL discharge specification. **Threshold Criterion:** Exceedance of Indicative Wastewater Acceptance Criteria to MUBRL for the Project: *Parameter* — *Target* pH — 6.9 – <8.3 pH units Conductivity (TDS) — <75 mS/cm Oxidation-reduction potential — <228 mV Ammonia — <1,700 µg/L Turbidity — <63 NTU Arsenic III — <140 µg/L Arsenic V — <275 µg/L Cadmium — <36 µg/L Chromium III — <459 µg/L Chromium IV — <8.5 µg/L Cobalt — <61 µg/L Copper — <11 µg/L Lead — <134 µg/L Mercury — <1.4 µg/L Nickel — <427 µg/L Selenium — <183 µg/L Silver — <49 µg/L Vanadium — <3,050 µg/L Zinc — <419 µg/L E. Coli — <13,000 MPN/100ml Thermotolerant coliforms — <910 CFU/100 ml	**Trigger Contingency Actions:** • Saline water (Brine) which does not meet the MUBRL discharge specification will be sent to the brine evaporation pond. Solid waste from this area will be removed off site by an appropriately licensed waste contractor and disposed of at a licensed waste facility, suitable for this waste's classification. • All requirements of Surface Water Management Plan (contaminated surface water) are to be implemented. **Threshold Contingency Actions:** • Cease all discharges to the MUBRL. • Report to relevant government authorities (Water Corporation, DWER, EPA and DAWE) within two days. • Implement the management and/or contingency actions specified in the relevant management plans within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with Water Corporation, EPA, DWER and DAWE.

	○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. • Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR					
The Project will avoid, where possible, and otherwise use best practice technology and risk-based management actions to prevent contaminated stormwater discharging off site. Where practicable, the site's clean stormwater will be reused within the process plant. Stormwater potentially contaminated by spills or leaks from process activities (first flush) will be directed to a dedicated sump and then pumped to the saline water pond for pre-treatment, prior to being discharged to the MUBRL or evaporated in an evaporation pond.	**Monitoring:** • Regular inspections and audits of stormwater management including sediment basins and ponds. • Where possible stormwater will be captured and used for construction activities • Potentially contaminated stormwater will not be discharged into the environment. • Monitoring of water quality in accordance with the Surface Water Management Plan . • Weekly inspections of the surface water diversions, ensuring all run-off sources are diverted to appropriate hold ponds treated according to the potential contaminants therein. **Reporting:** • Where threshold criteria is exceeded: ○ Report the exceedance in writing to the CEO and the DAWE within seven days of the exceedance being identified in accordance with Condition 5-6 (1) of MS1180. ○ Prepare an additional report to the CEO and the DAWE within twenty-one (21) days of the exceedance being reported as required by Condition 5-6 (5) of MS1180. ○ Within 6 months of any exceedance of a threshold criterion, submit to the DAWE for the Minister's approval a Remediation Plan in accordance with Condition 3(b) of the EPBC Act Approval. ○ Submit an Offset Strategy within 10 months of the exceedance of threshold criterion in accordance with Condition 3(c) of the EPBC Act Approval, as required. •	Weekly monitoring of stormwater collection ponds during rainy season Inspection of stormwater ponds during a rain event	Environment and Heritage Manager Process Engineer	Surface Water Management Plan (PCF-PD-EN-SWMP) Solid and Liquid Waste Management Plan (PCF-PD-EN-SLWMP)	**Trigger Criterion:** • Notable hydrocarbon iridescent sheen within stormwater collection ponds and ponds reaching 75% capacity. **Threshold Criterion:** • Exceedance of water quality trigger levels as provided in the Surface Water Management Plan, stormwater ponds reached 100% capacity and discharging via the emergency spillway / perimeter drains.	**Trigger Contingency Actions:** • Investigate the source of hydrocarbon contamination. • Inspect operation of the oil skimmer in stormwater pond to ensure effectiveness. • Commence transfer of contaminated water to brine ponds and/or evaporation ponds. • All requirements of Surface Water Management Plan (contaminated surface water) are to be implemented. **Threshold Contingency Actions:** • Report to relevant government authorities (DWER, EPA and DAWE) within two days. • Commence transfer of contaminated water to brine ponds and/or evaporation ponds. • Implement the management and/or contingency actions in accordance with the Surface Water Management Plan within seven days of the exceedances being reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Conduct detailed survey of the assemblage monitoring location as soon as practicable and review the result no later than one week following the detailed survey. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.

Potential Impact	Inland water flows					
Objective	Minimisation of actual or potential impacts to conservation-significant fauna through changes to surface flows					
Target	No impacts to marine fauna and habitats from Project-related changes to hydrology					
Species	Northern Quoll Pilbara Olive Python Ghost Bat Red Knot Curlew Sandpiper Great Knot Greater Sand Plover Lesser Sand Plover Bar-tailed Godwit (baueri) Eastern Curlew Australian Fairy Tern Caspian Tern Whimbrel Grey-tailed Tattler Red-necked Stint Eastern Osprey Pacific Golden Plover Common Greenshank					
Management Action	**Monitoring / Reporting Actions**	**Timing**	**Responsibility**	**Supporting Documents**	**Threshold criterion**	**Management action to deal with exceedance event**
The Project will be designed, constructed, and operated to maintain the hydrological regimes of groundwater and surface water so that environmental values are protected.	**Monitoring:** • Visual inspection and measurement of backwater or ponding of water. • Hydrological monitoring at sites SW1 through to SW6 in accordance with the Surface Water Management Plan. • Monitoring of surface outflow velocities at the culverts of the causeway. • The causeway will be built up above the supra-tidal flat area to a road height of approximately 6m AHD with regular culverts to ensure the structure does not impede natural surface water or tidal flows. • Monitoring of the construction schedule for the causeway to ensure schedule of works will be completed in the shortest time practicable to minimise impacts to the supratidal flats, King Bay and the King Bay Mangrove Community from obstructed surface water flows. • Supplementary hydrogeological studies are to be conducted prior to commencement of construction, to confirm details of groundwater quality, groundwater flow directions, and the depth to groundwater beneath Sites C and F and in the surrounding areas and install groundwater monitoring bores to ensure groundwater contamination can be readily detected and appropriate management measures be implemented. **Reporting:**	Monitoring of surface water flows to supratidal flats to occur immediately after significant rainfall events (over 15 mm rainfall), and daily for three days while standing water is present. CAR and ACR submitted annually. EPR submitted every 5 years.	Environment and Heritage Manager	Surface Water Management Plan (PCF-PD-EN-SWMP) Project Environmental Management Plan (PCF-PD-EN-PEMP) Erosion and Surface Water Management Protocol	**Trigger Criterion:** • Presence of backwater or ponding of water from the edge of the development envelope over a period of two (2) consecutive days from the date ponding was identified at distances further than 6 m. **Threshold Criterion** • Presence of backwater or ponding of water from the edge of the development envelope over a period of two (2) consecutive days from the date ponding was identified at distances further than 10 m. • Culvert outflow velocities exceeding 1m/s.	**Trigger Contingency Actions:** • Investigate if cause of the change is due to the construction or operation of the Project. • Identify additional measures to prevent the trigger level being exceeded in the future and to prevent reaching threshold. • Review of the drainage design including flow paths that run across the development envelope into adjacent supratidal flats located downstream from the development envelope **Threshold Contingency Actions:** • Investigate if cause of the change is due to the construction or operation of the Project. • Identify additional measures to prevent the trigger level being exceeded in the future and to prevent reaching threshold. • Review of the drainage design including flow paths that run across the development envelope into adjacent supratidal flats located downstream from the development envelope • Report to relevant government authorities (DWER, EPA and DAWE) within two days. • Implement the management and/or contingency actions in accordance with the relevant management plans within seven days of the exceedances being

	• Reporting on the review and revision of management actions, and performance against management target carried out in the CAR, ACR, and EPR					reported and continue implementation unto the CEO has confirmed that the threshold criteria are being met and implementation and/or contingency actions are no longer required. • Investigate to determine the cause of the threshold criteria being exceeded, and to provide information to the CEO to determine potential environmental harm or alteration of the environment that occurred due to the threshold criteria being exceeded. • Conduct detailed survey of the assemblage monitoring location as soon as practicable and review the result no later than one week following the detailed survey. • Provide a further report to the CEO and DAWE within 21 days of the exceedance being reported in accordance with Condition 5-6(5) of MS1180. • Submit a Remediation Plan to the DAWE for the Minister's approval. • Undertake corrective rehabilitation, and/or seek amendment to approvals, in consultation with EPA, DWER and DAWE.