Referral Document

Ridley Magnetite Project

ATLAS IRON PTY LTD

14-04-2023

Contents

1 The proposal

1.1 Proposal information

Proposal name: Ridley Magnetite Project

Type of proposal: Refer a proposal

Proposal description

The Ridley Magnetite Project is located approximately 57 km east of Port Hedland (refer Figure 1). The Proposed Action is for the mining and processing of iron ore to produce 3 Million tonnes per annum (Mtpa) of magnetite concentrate for export under Stage 1, with an increase to 16.5 Mtpa under Stage 2. The Proposed Action includes a single pit (below water table), run-of-mine pad, concentrate stockpiles, laydown areas, waste dumps, desalination plant and pipelines, processing plant, power infrastructure, tailings storage facility and supporting infrastructure including groundwater bores, process water storage ponds/tanks, roads, accommodation camp, administration buildings and communications infrastructure, borrow pits, explosives magazine, fuel storage and landfill. A services corridor will run to the site from Port Hedland. Under Stage 1 ore concentrate will be transported by truck to Utah Point in Port Hedland. Under Stage 2 a slurry pipeline will transport product to Port Hedland and a 28 gigalitre per annum desalination plant and solar field will be constructed.

1.2 Referrer information

Who referred the proposal: Proponent

Name of the referrer: ATLAS IRON PTY LTD

Contact details

1.3 Proponent information

Name of the proponent/s: ATLAS IRON PTY LTD

ABN/ACN No.: 63110396168
Contact details Level 17, Raine Square 300 Murray St Perth WA 6000 Australia

1.4 Proposal Elements

Element 1: crushing and screening plant

- **Maximum Extent:** Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Construction
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Earthworks
    - **Phase:** Decommissioning
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 5: Ore processing
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 6: Water discharge
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Water for dust suppression, within the 14,181 ha Development Envelope.

Element 2: desalination plant

- **Maximum Extent:** 28 GL per annum desalination plant within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation

- **Phase:** Construction
- **Maximum extent, range or capacity of this activity**

  Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.

- **Associated activity element:** 2: Construction
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 3: Earthworks
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 4: Earthworks
  - **Phase:** Decommissioning
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.

Element 3: hazardous storage (explosive mixing and storage, chemical storage)

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.

- **Associated activity element:** 2: Construction
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 3: Earthworks
  - **Phase:** Decommissioning
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 4: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 5: Hazardous storage
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.

Element 4: marine intake and outfall pipes

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Brine discharge (ocean outfall)
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Discharge of up to 42 GL per annum of brine from the desalination plant, with a salinity of up to 80,000 mg/L
- **Associated activity element:** 2: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 3: Construction
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Earthworks
    - **Phase:** Decommissioning
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 5: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

Minor earthworks to support construction of pipelines.

Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 6: Seawater intake
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.

Element 5: open pit below water table

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Blasting
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and within the Indicative Footprint.
- **Associated activity element:** 2: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 3: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Groundwater abstraction/dewatering
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Pit dewatering and groundwater abstraction of up to 6.0 GL per annum.
- **Associated activity element:** 5: Mining earthworks/excavation
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.

Element 6: pipeline above ground

- **Maximum Extent:** Ridley to Utah Point (~70 km), within Development Envelope.

- **Associated activity element:** 1: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Construction
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Construction of above-ground pipelines between the project and Utah Point (under Stage 2).
- **Associated activity element:** 3: Earthworks
    - **Phase:** Decommissioning
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 5: Process water supply
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 6: Transport of magnetite slurry
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.

Element 7: power generation facility (solar)

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.

- **Associated activity element:** 2: Construction
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Earthworks
    - **Phase:** Decommissioning
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 5: Power/energy production
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Solar field power generating facility within the Development Envelope and size captured within the Indicative Footprint.

Element 8: processing plant

- **Maximum Extent:** Processing of up to 16.5 Mtpa of magnetite concentrate, located within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Construction
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Earthworks
    - **Phase:** Decommissioning

- **Maximum extent, range or capacity of this activity**

  Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 4: Earthworks
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 5: Ore processing
  - **Phase:** Operational
  - **Maximum extent, range or capacity of this activity**

    Processing of up to 16.5 Mtpa of product.
- **Associated activity element:** 6: Waste discharge
  - **Phase:** Operational
  - **Maximum extent, range or capacity of this activity**

    Waste as 'tailings' to be stored within the Tailings Storage Facility.

Element 9: roads (sealed and unsealed)

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Construction
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Earthworks
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Earthworks
  - **Phase:** Decommissioning

- **Maximum extent, range or capacity of this activity**

  Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 5: Transport
  - **Phase:** Operational
  - **Maximum extent, range or capacity of this activity**

    Transport of ore, waste rock and magnetite concentrate around site, transport of magnetite concentrate to Port Hedland. Within the Development Envelope and size captured within the Indicative Footprint.

Element 10: stockpile ore

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Earthworks
  - **Phase:** Decommissioning
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Earthworks
  - **Phase:** Construction
  - **Maximum extent, range or capacity of this activity**

    Earthworks as required (cut/fill) to establish level stockpile area with appropriate drainage.

    Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Stockpile management
  - **Phase:** Operational
  - **Maximum extent, range or capacity of this activity**

    Within the Development Envelope and size captured within the Indicative Footprint.

Element 11: stockpile waste rock dump

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 1: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Earthworks
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Earthworks
    - **Phase:** Decommissioning
    - **Maximum extent, range or capacity of this activity**

      Re-shaping of waste rock dump to provide final closure landform.
- **Associated activity element:** 4: Stockpile management
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.

Element 12: supporting Infrastructure (e.g. offices, workshops, hardstands)

- **Maximum Extent:** Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Construction
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Discharge of treated wastewater
    - **Phase:** Operational
    - **Maximum extent, range or capacity of this activity**

Within the Development Envelope and size captured within the Indicative Footprint.

- **Associated activity element:** 4: Earthworks
    - **Phase:** Decommissioning
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 5: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.

Element 13: tailings storage facility

- **Maximum Extent:** Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 1: Clearing of native vegetation
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the 14,181 ha Development Envelope and size captured within the 7,406 ha Indicative Footprint.
- **Associated activity element:** 2: Construction
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 3: Earthworks
    - **Phase:** Construction
    - **Maximum extent, range or capacity of this activity**

      Within the Development Envelope and size captured within the Indicative Footprint.
- **Associated activity element:** 4: Earthworks
    - **Phase:** Decommissioning
    - **Maximum extent, range or capacity of this activity**

      Earthworks to be completed during decommissioning as required.
- **Associated activity element:** 5: Tailings storage
    - **Phase:** Operational

- **Maximum extent, range or capacity of this activity**

  Within the Development Envelope and size captured within the Indicative Footprint.

1.5 Proposal Stages

Maximum proposal life: 30 years

Proposed start date: 06-05-2025

Proposed end date: 05-05-2055

Construction phase length: 2 years

Commissioning schedule

WWTPs construction and commissioning

Crusher construction and commissioning

Processing plant construction and commissioning

Tailings Storage Facility construction

Desalination Plant and pipeline construction and commissioning

Slurry pipeline construction and commissioning

Operations phase length: 28 years

Decommissioning phase length: 3 years

Decommissioning schedule

Decommissioning of the infrastructure and operational elements will be undertaken as it becomes obsolete or at the end of the life of mine.

Rehabilitation schedule

Where practicable, progressive rehabilitation will be undertaken over the life of the mine.

Pits will be designed to be safe and non-polluting.

Waste landforms will be constructed to be safe and non-polluting, with the final shape and size to be comparable with the natural landforms in the region.

1.6 Greenhouse gas emissions

Construction

Total Scope 1 greenhouse gas emissions: 388206

Scope 1 emissions source and quantification method

Diesel consumption during clearing

Diesel consumption during earthworks and infrastructure construction (D9, excavator, trucks, LVs)

Loss of carbon due to vegetation clearing

Total Scope 2 greenhouse gas emissions: 0

Scope 2 emissions source and quantification method

NA

Total scope 3 greenhouse gas emissions: 0

Scope 3 emissions source and quantification method

NA

Operation

Total Scope 1 greenhouse gas emissions: 2373780

Scope 1 emissions source and quantification method

Split into 48,470 tCO2-e over stage 1 (3 Mtpa product output) over CY2027 to CY2029 and 2,325,000 tCO2-e over stage 2 (16.5 Mtpa product output) over CY2030 to CY2055.

Diesel consumption drives 99.99% of Scope 1 emissions. Emission factors from table 2.0 of the National Greenhouse Account Factors used for estimating combined diesel emissions from combustion.

The primary source of diesel consumption is on-site diesel consumption from mining activities. Consumption estimates are based on benchmarking mining operations to other Pilbara mining operations.

Total Scope 2 greenhouse gas emissions: 18825000

Scope 2 emissions source and quantification method Split into 460,000 tCO2-e over stage 1 (3MTPA product output) over CY2027 to CY2029 and 18,365,000 tCO2-e over stage 2 (16.5MTPA product output) over CY2030 to CY2055. Current power procurement method being progressed is a NWIS grid connection. Scope 2 emissions intensity factor tCO2-e/MWh for NWIS sourced from Australia's emissions projections 2022 – Published December 2022 by DCCEEW. Electricity consumption forecast based on preliminary electrical designs and benchmarking to other operations.
Total scope 3 greenhouse gas emissions:577028220

Scope 3 emissions source and quantification method

Split into 11,928,220 tCO2-e over stage 1 (3 Mtpa product output) over CY2027 to CY2029 and 565,100,000 tCO2-e over stage 2 (16.5 Mtpa product output) over CY2030 to CY2055.

Scope 3 sources include emissions from:

- Haulage of ore to port ≤ 0.005%
- Shipping of ore =2%
- Shipping additives = 1%
- Sinter plant = 16.5%
- Coke oven = 5.5%
- Blast furnace = 64.5%
- Steel making = 10.5%

It is noted that:

- Haulage of concentrate product from site to port is approximately 81 km each way. Haulage is classified as Scope 3 as it will be undertaken offsite by a contractor. Note this requirement is only for stage 1 (CY2027 to CY2029), and is removed as the project transitions into stage 2 from CY2030.

- The output of this project is a high grade 68% Fe Magnetite product which can be used for both Natural Gas/H2 based Direct Reduction Iron Ore (DRI) and Electric Arc Furnace (EAF) for steelmaking. The typical emissions factors for these processes are:
  - Natural gas based DRI EAF = ~0.99 tCO2-e/t-LS
  - Green Hydrogen based DRI EAF = ~0.2 tCO2-e/t-LS

- In comparison the majority of the Pilbara currently produces a lower grade 58-62% Fe hematite/goethite product that is best suited to coal-based Blast Furnace/Blast Oxygen Furnace processes for steelmaking.
  - Coal-based BF-BOF = ~2.19 tCO2-e/t-LS

- Therefore, while we take a conservative approach and model Scope 3 emissions on a Coal-Based BF-BOF, we note depending on the customer's steel production method, the Scope 3 emissions could be as little as 10 per cent of the value estimated.

2 Stakeholder information

2.1 Decision-making authorities

DMA: 1: Hon. Dr Tony Buti	
Organisation	Minister for Aboriginal Affairs
Legislation	Aboriginal Heritage Act 1972
Approval required	
Mitigation of Impacts	The assessment of impacts to heritage values will be completed under the AHA and/or through the approval of the ACHMP.

DMA: 2: Hon. Bill Johnston	
Organisation	Minister for Mines and Petroleum
Legislation	Mining Act 1978
Approval required	
Mitigation of Impacts	Assessment of Mining Proposal and Mine Closure Plan will cover in detail the impacts associated with the key mining activities (e.g. pits, waste rock dumps, stockpiles, TSF, processing plant).

DMA: 3: Hon. Amber-Jade Sanderson	
Organisation	Minister for Health
Legislation	Health Act 1911
Approval required	
Mitigation of Impacts	Applications must be submitted and approved for the on-site disposal of wastewater. Applications must first be lodged with the Local Government. If the predicted wastewater will be less than 540 L/day, the local government may process the application. Where wastewater is predicted to be above that daily limit, and the building serviced is not a single dwelling, the local government will prepare a report and forward the application to the Department of Health.

DMA: 4: Ms Michelle Andrews	
Organisation	Chief Executive Officer, Department of Water and Environmental Regulation
Legislation	Environmental Protection Act 1986
Approval required	
Mitigation of Impacts	The Works Approval and Licence enables the Department of Water and Environmental Regulation (DWER) to regulate emissions from a Project, providing prescriptive limits on emissions to air, water and land.

DMA: 5: Hon. Dave Kelly	
Organisation	Minister for Water
Legislation	Rights in Water and Irrigation Act 1914
Approval required	
Mitigation of Impacts	The Department of Water (DoW) will assess the environmental impacts associated with bore construction and groundwater abstraction (including mine dewatering) as part of the licencing process.

2.2 Tenure and Local Government approvals

Local Government Authority in which the proposal is located.

Town of Port Hedland

Rezoning details

Current land use

Pastoral lease (De Grey, Pippingarra & Strelley) (11,858 ha)

Mining tenements (17,066 ha - includes overlaps)

Unallocated Crown Land (97 ha)

State waters (135 ha)

Australian waters (105 ha)

Road reserves (94 ha)

Legal access requirements

Native Title agreements are in place with Kariyarra and Ngarla.

Pastoral agreements are required with De-Grey, Pippingarra and Strelley.

Access agreements with Main Roads Western Australia for any upgrade to intersection of mine access road with Great Northern Highway.

Tenure details

Activity: Services corridor	
Land tenure/access	Mining tenure
Type of approval & regulating legislation	Grant of tenure Mining Act 1978

Activity: Mine development	
Land tenure/access	Mining tenure
Type of approval & regulating legislation	Grant of tenure Mining Act 1978

2.3 Key stakeholders, consultation register, and consultation summary

Key stakeholders

Name: Kariyarra	
Organisation	Kariyarra Aboriginal Corporation
Role	Traditional Owners

Name: Roley Fletcher	
Organisation	DMIRS
Role	Regulator

Name: Paul Foley	
Organisation	DMIRS
Role	Regulator

Name: Ash Puri	
Organisation	Pilbara Ports Authority
Role	Director Business and Trade

Name: Chris Cottam	
Organisation	JTSI
Role	Executive Director, Strategic Projects

Name: Terry Butler-Blaxell	
Organisation	Strelley Pastoral Station
Role	Executive Director

Name: Nic Green	
Organisation	Kariyarra Aboriginal Corporation (Pippingarra Station)
Role	CEO

Name: Andrew Pyke

Organisation	Main Roads Western Australia
Role	Pilbara Region Manager

Name: Mark Bettini	
Organisation	De Grey Station
Role	Manager

Name: Ngarla	
Organisation	Wanparta Aboriginal Corporation
Role	Traditional Owners

Name: Troy Sinclair	
Organisation	Department of Water and Environmental Regulation
Role	EPA Services Representative

Describe Stakeholders

Stakeholders were identified by identifying groups/individuals potentially affected by the Proposal (i.e. underlying tenure holders, pastoral lease holders, Traditional Owners and road reserve manager).

Consultation register

Name: Main Roads Western Australia	
Date of consultation	05-04-2023
Interactions and outcomes	Telephone and email discussions regarding expected traffic from the Proposal and the suitability of the existing intersection of mine access road with Great Northern Highway. Identification of process for determining intersection configurations including need for potential upgrade to support the Proposal, particularly road haulage of product during Stage 1 operations.

Name: Department of Water and Environmental Regulation	
Date of consultation	08-09-2022
Interactions and outcomes	Pre-referral meeting for the Ridley Magnetite Project with Troy Sinclair (DWER). Discussed the Proposal, proposed field surveys and preliminary key environmental factors.

Name: De Grey Station	
Date of consultation	09-11-2022
Interactions and outcomes	Notification of surveys Flora, Vegetation, Fauna, May and June 2022, November 2022. Notification of Shorebird Surveys November 2022

Name: Ngarla - Wanparta Aboriginal Corporation	
Date of consultation	
Interactions and outcomes	Multiple interactions including meetings, phone calls, emails regarding appropriate engagement of Ngarla Traditional Owners in providing advice regarding heritage places, conducting Heritage Surveys, disturbance monitoring activities and fauna survey monitoring activities.

Name: Ngarla

Date of consultation	
Interactions and outcomes	Series of six heritage surveys completed over Ridley Project Indicative Footprint. Traditional Owners provided valuable input to identification and avoidance of heritage places in relation to the Project Indicative Footprint.

Consultation summary

Consultation with De Grey Station, Strelley Station and Pippingarra Station (latter operated by the Kariyarra Aboriginal Corporation) is ongoing regarding access and notifications regarding environmental and heritage surveys.

Consultation with DWER will be ongoing through the referral and assessment process.

Atlas and Ngarla Native Title Applicants entered into its first Native Title Agreement in June 2006, and has subsequently entered into a number of other agreements, which governs Atlas' operations within existing Atlas tenure within their Native Title Determination Area. Since 2006, Atlas has completed numerous surveys and consultations with the Ngarla Traditional Owners to identify indigenous heritage and cultural values in support of Atlas' historical Pardoo DSO Project, in the same locality as the Proposal. Atlas is currently in consultation with Ngarla through their Registered Native Title Body Corporate (RNTBC) - Wanparta Aboriginal Corporation (WAC), regarding the Project. Atlas has engaged WAC to complete ethnographic and archaeological surveys over the Development Envelope, which are currently in progress. Atlas has also facilitated the opportunity for TO monitors to be present during any ground disturbance associated with exploration activities/early studies and the opportunity to participate in ecological studies.

Atlas and Kariyarra Native Title Applicants first entered into a Native Title Agreement in September 2009. Atlas is currently in consultation with Kariyarra through their Prescribed Body Corporate (PBC) - Kariyarra Aboriginal Corporation (KAC), regarding the Proposal and heritage survey request over the area of the western end of the Development Envelope, which falls within their Native Title Determination Area.

Consultation with Main Roads Western Australia (MRWA) was initiated with respect to the existing intersection of the Makanykarra (Pardoo) access road with Great Northern Highway, which will form part of the route for road trains transporting product to Port Hedland during Stage 1 of operations. The intersection may require reconfiguration based on expected traffic type and volumes both on Great Northern Highway and associated with the Proposal. The Development Envelope includes this intersection in the event that an upgrade is deemed required and the upgrade is to be undertaken by Atlas. Consultation with MRWA is ongoing.

Lead agency status and relevant information
○ **Lead agency status (yes/no):** No

2.4 Commonwealth Government approvals

- **Actions that may be or are a controlled action under the EPBC Act (yes/no):** Yes
- **Referral to the Commonwealth (yes/no):** Yes
    - **Date of referral:** 24-02-2023
    - **EPBC Reference number:** 2023/09477
    - **Decision made (yes/no):** No
        - **Controlled or not a controlled action:** Not Controlled
        - **Bilateral/Accredited assessment details:**

- **Approvals required from other Commonwealth Government department's (yes/no):** No
    - **Details of approvals required**

3 Alternatives to the proposal

Description of alternative considerations:

Alternative 1	
Type	Location
Description	The northern portion of the proposed emergency access track (refer to the narrow corridor running south-east from the waste dump as shown in Figure 3) was previously aligned to pass to the west of a heritage site (unregistered). Following engagement and a site visit with the Ngarla, the Development Envelope associated with this track has been realigned to pass to the east of the site.
Description of the changes to impacts and mitigations	The alternative (original) alignment, to the west of the site, would have resulted in a greater impact to social surroundings.

Alternative 2	
Type	No Development
Description	This was not considered a viable alternative.
Description of the changes to impacts and mitigations	Not applicable.

Alternative 3	
Type	Timeline
Description	No alternative development timeline has been considered.
Description of the changes to impacts and mitigations	Not applicable.

Alternative 4	
Type	Other

Description	Not applicable.
Description of the changes to impacts and mitigations	Not applicable.

Alternative 5	
Type	Activity
Description	Not considered.
Description of the changes to impacts and mitigations	Not applicable.

Alternative 6	
Type	Location
Description	An alternative desalination plant intake pipeline and discharge pipeline alignment (to the east) was considered. An alternative desalination plant pipeline alignment (to the west) was also initially reviewed.
Description of the changes to impacts and mitigations	The eastern alignment was assessed and rejected due to it being more likely to intersect with known benthic communities and habitats (BCH) values and key turtle nesting habitat around North Turtle Island. The western alignment was discounted as this would intersect a Nationally Important Wetland (Leslie Saltfields System).

Alternative 7	
Type	Technology
Description	A magnetite concentrate trucking option was considered for Stage 2 (as is proposed for Stage 1).
Description of the changes to impacts and mitigations	Given the higher volumes of magnetite concentrate being shipped to Port Hedland for export, the trucking option for Stage 2 was discounted due to the high number of truck movements required (i.e. impact on other road users and Port Hedland residents) and associated greenhouse gas emissions.

Alternative 8	
Type	Element
Description	An assessment was initially undertaken that considered the use of groundwater for project water needs as an alternative to the proposed desalination plant for Stage 2.
Description of the changes to impacts and mitigations	It was considered that groundwater resources were not sufficient for project requirements, and the use of significant groundwater volumes would have posed a high risk to adjacent groundwater dependent vegetation and heritage values.

Alternative 9	
Type	Technology
Description	On site power generation was considered, using a conventional gas powered power station.
Description of the changes to impacts and mitigations	This option was discounted as it involves a high initial capital cost which would then virtually preclude the future adoption of a renewable energy solution. Use of grid power, supplemented by solar power under Stage 2, provides flexibility for Atlas to tap into third party renewable energy solutions as they become available in the region.

4 Environmental Review

4.1 Aspects

Aspect 1: Altered coastal processes	
Type	Altered coastal processes
Description	
Characterisation	Potential changes to nearshore sediment movement or wave regimes due to presence of desalination plant intake and discharge pipelines across the beach and intertidal zone
Elements and Activities Sources	• marine intake and outfall pipes(*Construction*)

Aspect 2: Altered surface water regimes	
Type	Altered surface water regimes
Description	
Characterisation	Potential changes to surface water flow patterns as a result of pits and infrastructure
Elements and Activities Sources	• stockpile waste rock dump(*Earthworks*) • open pit below water table(*Mining earthworks/excavation*) • roads (sealed and unsealed)(*Earthworks*) • tailings storage facility(*Earthworks*) • pipeline above ground(*Earthworks*) • stockpile ore(*Clearing of native vegetation*)

Aspect 3: Change in groundwater levels (abstraction / dewatering)	
Type	Change in groundwater levels (abstraction / dewatering)
Description	

Characterisation	Mine dewatering has the potential to lower groundwater levels and impact vegetation or subterranean fauna.
Elements and Activities Sources	• supporting Infrastructure (e.g. offices, workshops, hardstands)(*Construction*) • open pit below water table(*Groundwater abstraction/dewatering*)

Aspect 4: Clearing of vegetation	
Type	Clearing of vegetation
Description	
Characterisation	Direct loss of native vegetation, significant flora species, fauna species or fauna habitat during clearing for onshore and marine infrastructure, potential loss of benthic communities due to brine discharge.
Elements and Activities Sources	• crushing and screening plant(*Clearing of native vegetation*) • processing plant(*Clearing of native vegetation*) • power generation facility (solar)(*Clearing of native vegetation*) • marine intake and outfall pipes(*Clearing of native vegetation*) • marine intake and outfall pipes(*Brine discharge (ocean outfall)*) • hazardous storage (explosive mixing and storage, chemical storage)(*Clearing of native vegetation*) • open pit below water table(*Clearing of native vegetation*) • roads (sealed and unsealed)(*Clearing of native vegetation*) • stockpile ore(*Clearing of native vegetation*) • tailings storage facility(*Clearing of native vegetation*) • supporting Infrastructure (e.g. offices, workshops, hardstands)(*Clearing of native vegetation*)

	• stockpile waste rock dump(*Clearing of native vegetation*) • desalination plant(*Clearing of native vegetation*) • marine intake and outfall pipes(*Clearing of native vegetation*)

Aspect 5: Dust	
Type	Dust Deposition
Description	
Characterisation	Potential indirect loss or degradation of native vegetation and significant flora species due to dust emissions
Elements and Activities Sources	• stockpile ore(*Earthworks*) • tailings storage facility(*Earthworks*) • crushing and screening plant(*Ore processing*) • supporting Infrastructure (e.g. offices, workshops, hardstands)(*Earthworks*) • stockpile waste rock dump(*Earthworks*)

Aspect 6: Emissions to air	
Type	Emissions to air
Description	
Characterisation	Potential emissions from generators or WWTP.
Elements and Activities Sources	• supporting Infrastructure (e.g. offices, workshops, hardstands)(*Construction*)

Aspect 7: Introduction / spread of invasive species	
Type	Introduction / spread of invasive species
Description	

Characterisation	Potential indirect loss or degradation of native vegetation due to the introduction or spread of weeds during earthworks.
Elements and Activities Sources	• crushing and screening plant(*Construction*) • power generation facility (solar)(*Earthworks*) • open pit below water table(*Earthworks*) • roads (sealed and unsealed)(*Earthworks*) • stockpile ore(*Earthworks*) • tailings storage facility(*Earthworks*) • supporting Infrastructure (e.g. offices, workshops, hardstands)(*Earthworks*) • pipeline above ground(*Earthworks*) • stockpile waste rock dump(*Earthworks*) • desalination plant(*Earthworks*)

Aspect 8: Release / contamination to land	
Type	Release / contamination to land
Description	
Characterisation	Potential contamination of soils through leaks or spills.
Elements and Activities Sources	• hazardous storage (explosive mixing and storage, chemical storage)(*Construction*) • supporting Infrastructure (e.g. offices, workshops, hardstands)(*Construction*) • processing plant(*Ore processing*) • desalination plant(*Construction*) • tailings storage facility(*Tailings storage*)

Aspect 9: Release to marine or estuarine waters	
Type	Release to marine or estuarine waters
Description	

Characterisation	Potential impacts on marine environmental quality, benthic habitats and communities, or marine fauna, from the effects of brine discharge prior to mixing
Elements and Activities Sources	• marine intake and outfall pipes(*Brine discharge (ocean outfall)*)

4.2 Mitigations

Mitigation 1: Avoidance	
Description	Avoidance of key environmental and heritage values during the design of the Proposal. For example, avoidance of significant flora or communities. The location of onshore infrastructure within the Development Envelope will be amended following the completion of all surveys, as required, to avoid key environmental and heritage values wherever possible.
Related aspects:	• Clearing of vegetation

Mitigation 2: Minimisation	
Description	• Minimisation of clearing of undisturbed areas to minimise impacts on vegetation, fauna habitats and broader social surroundings values such as visual amenity • Appropriate infrastructure design to minimise changes to natural surface water flow paths • Groundwater monitoring and management of abstraction to minimise impacts to groundwater dependent vegetation • Minimise impacts to significant fauna habitat and features wherever possible • Diffuser location and design to ensure appropriate mixing of brine to minimise impacts to benthic communities and habitats (BCH) and marine environmental quality (MEQ).

	• Implement Atlas dust management procedures to minimise impacts to vegetation
Related aspects:	• Clearing of vegetation • Release to marine or estuarine waters • Altered surface water regimes • Change in groundwater levels (abstraction / dewatering) • Emissions to air

Mitigation 3: Rehabilitation	
Description	Rehabilitation of disturbed areas as soon as practicable. Recontouring and rehabilitation of waste rock dumps to provide a stable, non-polluting, landform.
Related aspects:	• Clearing of vegetation

4.3 Environmental factors

Legislative context

The Proposal is expected to be subject to assessment under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Western Australian Environmental Protection Act 1986 (EP Act). The Proposal will likely undergo an accredited assessment in which the Commonwealth will use the outcomes of the assessment conducted by the Western Australian EPA to inform its approval under the EPBC Act.

Part V of the Environmental Protection Act 1986, implemented through Works Approvals and licences, covers the construction and operation of premises with potential to cause emissions and discharges to air, land or water, including the processing plant, wastewater treatment plant and other potential emissions sources.

The Mining Act 1978 is administered through Mining Proposal and Mine Closure Plan assessments, covering all mining related activities on mining tenure.

Disturbance of Aboriginal heritage sites is managed through the Department of Planning, Lands and Heritage (DPLH) in accordance with the Aboriginal Heritage Act 1972 and the Aboriginal Cultural Heritage Act 2021.

The Biodiversity Conservation Act 2016 provides for the protection and preservation of Western Australian conservation significant fauna, flora and threatened ecological communities.

Abstraction of groundwater for use during construction and operation is implemented through licences (Section 5C licence to take water, Section 26D licence to construct or alter a well) under the Rights in Water and Irrigation Act 1914.

The Dangerous Goods Safety Act 2004, implemented through DMIRS dangerous goods licences, cover the storage and handling of hazardous materials.

Local and Regional context

The Ridley Magnetite Project mine area occurs approximately 57 km east of Port Hedland in the Pilbara, Western Australia. A services corridor joins the mine area back to Port Hedland.

A significant area of the Development Envelope occurs on Pastoral Lease (PL N050027) known as De Grey Station. The services corridor intersects the Strelley and Pippingarra pastoral stations. The areas on pastoral lease are subject to intensive cattle grazing.

Atlas Iron began mining and shipping iron ore from the Pardoo Makanykarra mine site, which occurs within the Development Envelope, in 2008. The Pardoo Makanykarra mine site takes up 278 hectares and is now closed. The majority of the disturbance under the Pardoo Makanykarra project has since been rehabilitated.

The Project occurs within the Pilbara IBRA region, within Roebourne sub-region (PIL04) and the Chichester sub-region (PIL1) in the northern section of the Pilbara Craton.

The coastline to the north of the mine area is within the Eighty Mile Priority Ecological Community (P3). The Eighty Mile land system is comprised of beach foredunes, longitudinal coastal dunes and sandy plains with tussock grasslands and spinifex grasslands. The Leslie Saltfields System, an internationally significant area for migratory shorebirds (Site #169), occurs to the west of the Development Envelope.

The Development Envelope overlaps the Ngarla and Ngarla #2 Native Title Determination Area A (WCD2007/003) and the Kariyarra Native Title Determination Area (WCD2018/015).

Potentially significant environmental factors for the proposal:

- **Air quality:** Yes
- **Benthic communities and habitats:** Yes
- **Coastal processes:** Yes
- **Flora and vegetation:** Yes
- **Greenhouse gas emissions:** Yes
- **Human health:** No
- **Inland waters:** Yes
- **Landforms:** No
- **Marine environmental quality:** Yes
- **Marine fauna:** Yes
- **Social surroundings:** Yes
- **Subterranean fauna:** Yes
- **Terrestrial environmental quality:** Yes
- **Terrestrial fauna:** Yes

4.3.1 Air quality

Environmental objective

To maintain air quality and minimise emissions so that environmental values are protected.

Potential key environmental factor (yes/no)

Yes

Description of receiving environment

To be completed at a later stage through the assessment process

EPA policy and guidance

Environmental Factor Guideline: Air Quality (EPA 2020)

Description of environmental impacts

Release of airborne fibrous materials during mining or processing.

Further information to be provided at a later stage through the assessment process.

Environmental Values Impact Assessments:
Offset explanation
Application of the mitigation hierarchy To be completed at a later stage through the assessment process.
Assessment and significance of residual impacts To be completed at a later stage through the assessment process.
Likely environmental outcomes To be completed at a later stage through the assessment process.

4.3.2 Benthic communities and habitats
Environmental objective To protect benthic communities and habitats so that biological diversity and ecological integrity are maintained.
Potential key environmental factor (yes/no) Yes
Description of receiving environment An initial BCH survey was completed in September 2022, to identify and map BCH within and adjacent to the desalination plant pipeline corridor and surrounds. Five broad BCH types were identified (Hydrobiology 2022, refer Figure 6): • Hard Coral • Seagrass • Macroalgae, Sponge and Soft Coral, • Mixed assemblage with hard coral; and • Bare Sand Bare sand, with infrequent occurrences of macroalgae and sponges, was dominant. Two seagrass species were identified; Halophila decipiens and Halophila spinulosa, with H. decipiens being considerably more abundant across all seagrass sites. Isolated patches of hard corals, and mixed macroalgae and filter feeders, were also identified.

Offshore, the mixed macroalgae and filter feeder assemblage was more widespread, with isolated patches of hard coral and some areas of seagrass.

EPA policy and guidance

Environmental Factor Guideline - Benthic Communities and Habitats (EPA 2016)

Technical Guidance - Protection of Benthic Communities and Habitats (EPA 2016)

Description of environmental impacts

- Direct loss of BCH during desalination pipeline construction
- Indirect loss or degradation of BCH due to turbidity created during desalination pipeline construction
- Indirect impacts on benthic habitats and communities from the effects of brine discharge prior to mixing
- Indirect loss of BCH due to altered water flows and sediment movement as a result of the presence of the desalination pipelines

Environmental Values Impact Assessments:

Offset explanation

Application of the mitigation hierarchy

To be completed at a later stage in the assessment

Assessment and significance of residual impacts

To be completed at a later stage in the assessment

Likely environmental outcomes

To be completed at a later stage in the assessment

4.3.3 Coastal processes

Environmental objective

To maintain the geophysical processes that shape coastal morphology so that the environmental values of the coast are protected.

Potential key environmental factor (yes/no)

Yes

Description of receiving environment

The shoreline to the north-west of the Development Envelope is fronted by 300 to 400 m wide sand flats, which parallel the beach. The beach is backed by a series of foredune ridges which are between 2 to 4 km wide and comprise of up to 30 ridges backing the central section of the beach. Inland of the foredune ridges there is approximately 15 km of floodplain (Short 2006).

Analysis of beach sediments showed a gradation in sediment sizes in a cross-shore direction, with a general decrease in sediment sizes on the sand flats that front the beach compared to the material on the beach face and berm. This pattern of grain sizes is reasonably commonplace across the Pilbara (M P Rogers & Associates 2023).

The shoreline within the broader embayment has experienced an overall accretionary trend since 1988. This accretionary trend matches the geomorphic observations made by Short (2005), which identified a series of progressive foredune ridges at the back of the beach. The formation of these foredune ridges is a result of progressive shoreline accretion. The general rate of accretion around the pipeline crossing has typically been in the order of 0.7 m/yr or above (M P Rogers & Associates 2023).

EPA policy and guidance

Environmental Factor Guideline - Coastal Processes (EPA 2016)

Description of environmental impacts

Changes to nearshore sediment movement or wave regimes due to presence of desalination plant intake and discharge pipelines across beach and intertidal zone

Changes to flood vulnerability or coastal stability due to or associated with coastal infrastructure

Environmental Values Impact Assessments:

Offset explanation

Application of the mitigation hierarchy

To be completed at a later stage in the assessment

Assessment and significance of residual impacts

To be completed at a later stage in the assessment

Likely environmental outcomes

To be completed at a later stage in the assessment

4.3.4 Flora and vegetation

Environmental objective

To protect flora and vegetation so that biological diversity and ecological integrity are maintained.

Potential key environmental factor (yes/no)

Yes

Description of receiving environment

A desktop assessment and detailed flora and vegetation survey (2 season) have been completed to date. A further flora and vegetation survey is planned for the pipeline corridors leading from the mine to the coast and to Port Hedland. The below survey information relates to the survey undertaken across the mine area only.

The Development Envelope is situated in the Pilbara interim biogeographic regionalisation of Australia (IBRA) region which is characterised as extensive coastal plains, mountain ranges, and active drainage in the Ashburton, Fortescue, and De Grey River systems. Vegetation is predominantly mulga low woodlands or snappy gum over tussock and hummock grasses.

The Development Envelope intersects the Roebourne sub-region (PIL04) which is described as 'Quaternary alluvial and older colluvial coastal and subcoastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera'* and the Chichester sub-region (PIL1) which is described as 'undulating Archaean granite and basalt plains include significant areas of basaltic ranges. The vegetation consists of shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* (formerly *Triodia pungens*) hummock grasslands, with *Eucalyptus leucophloia* tree steppes occur on ranges'.

No Threatened Ecological Communities were recorded within the Development Envelope, one State Priority Ecological Community (Priority 3) was found to occur within the Development Envelope; the Eighty Mile Land System Priority Ecological Community.

A total of 252 flora species, from 131 genera and 42 families were recorded during the 2022 field assessment (Focused Vision Consulting, 2022). The dominant families were found to be Fabaceae (54 taxa), Poaceae (42 taxa), Malvaceae (24 taxa) and Amaranthaceae (16 taxa). Two Priority flora species (WA) were recorded opportunistically during the field assessment, comprising of one P3 species, *Rothia indica* subsp. *Australis*, and one P4 species, *Goodenia nuda* (refer Figure 4). No EPBC listed flora are present within the referral area.

Eight vegetation units were defined and mapped within the Study Area (refer Figure 4):

- CfIoCf - Corymbia and Eucalyptus woodland with mixed shrubs and tussock and hummock grasses.

- EcAhEf - Eucalyptus and Melaleuca Woodland with tall shrubs over tussock grasses.
- EvIoCc - Eucalyptus and Lysiphyllum woodland with mixed shrubs and tussock grasses.
- AsTe - Low Acacia shrubs with hummock grasses.
- CfAcTe - Corymbia woodland with mixed Acacia shrubs, and tussock and hummock grasses.
- SgEeTs - Chenopods with tussock and hummock grasses.
- FaTeCc - Ficus and Acacia shrubland with hummock and tussock grasses and herbs.
- TcAiTe - Scattered Terminalia with mixed shrubs and hummock grasses.

The vegetation condition was found to range from 'Completely Degraded' to 'Excellent'. Almost 50% of the vegetation was observed to be in 'Excellent' condition, which occurs mostly on the hills or areas of elevation and sandy plains in the western part of the survey area.

The vegetation unit EcAhEf is considered to represent Groundwater Dependent Vegetation due to the presence of phreatophytic *Eucalyptus camaldulensi*s subsp. *refulgens* as the dominant tree species.

EPA policy and guidance

Environmental Factor Guideline: Flora and Vegetation (EPA 2016)
Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016)

Description of environmental impacts

- Direct loss of native vegetation and significant flora species during clearing for onshore infrastructure
- Indirect loss or degradation of native vegetation and significant flora species due to dust emissions
- Indirect loss or degradation of native vegetation due to the introduction or spread of weeds
- Indirect loss or degradation of native vegetation due to changes in surface water flows or quality
- Indirect loss or degradation of native vegetation due to changes in groundwater flows or quality as a result of drawdown from mine dewatering
- Loss or degradation of native vegetation due to leak or spill of chemicals (including hydrocarbons)

Environmental Values Impact Assessments:

Offset explanation

Application of the mitigation hierarchy To be completed at a later stage in the assessment process.
Assessment and significance of residual impacts To be completed at a later stage in the assessment process.
Likely environmental outcomes To be completed at a later stage in the assessment process.

4.3.5 Greenhouse gas emissions
Environmental objective To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change.
Potential key environmental factor (yes/no) Yes
Description of receiving environment Not relevant to this factor
EPA policy and guidance Environmental Factor Guideline: Greenhouse Gas Emissions (EPA 2020)
Total calculated scope 1 emissions: 0
Total calculated scope 2 emissions: 0
Are there additional sources of Greenhouse Gas Emissions (yes/no – *if yes, then a description and additional source GHG estimation is provided*) No **Description** **Additional GHG Source:**

Commencement emissions summary:

- **Scope 1 commencement emissions:** 77000
- **Scope 2 commencement emissions:** 460000
- **Scope 3 commencement emissions:** 11900000

Net Scope 1 emissions:

- **Commencement to 31 December 2024:**
- **1 January 2025 to 30 December 2029:**
- **1 January 2030 to 30 December 2034:**
- **1 January 2035 to 30 December 2039:**
- **1 January 2040 to 30 December 2044:**
- **1 January 2045 to 30 December 2050:**
- **30 December 2050 onwards:**

Net Scope 2 emissions:

- **Commencement to 31 December 2024:**
- **1 January 2025 to 30 December 2029:**
- **1 January 2030 to 30 December 2034:**
- **1 January 2035 to 30 December 2039:**
- **1 January 2040 to 30 December 2044:**
- **1 January 2045 to 30 December 2050:**
- **30 December 2050 onwards:**

Impact/emissions validation and verification

To be completed at a later stage through the assessment process

Application of the mitigation hierarchy (proposed mitigation)

To be completed at a later stage through the assessment process

Baseline monitoring and measurements for greenhouse gases

To be completed at a later stage through the assessment process

Monitoring and reporting program to measure atmospheric concentrations and process leakages To be completed at a later stage through the assessment process
Assessment and significance of residual impacts To be completed at a later stage through the assessment process
Likely environmental outcomes To be completed at a later stage through the assessment process

4.3.6 Human health
Environmental objective To protect human health from significant harm.
Potential key environmental factor (yes/no) No
Description of receiving environment No known risks to human health. Matter of naturally occurring fibrous materials, and potential human exposure, is addressed under the factor of Air Quality (as advised by EPA Services during pre-referral meeting).
Justification Naturally occurring fibrous material, and potential human exposure, is addressed under the factor of Air Quality (as advised by EPA Services during the pre-referral meeting).

4.3.7 Inland waters
Environmental objective To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
Potential key environmental factor (yes/no) Yes

Description of receiving environment

The De Grey River forms a natural boundary between the Pilbara Block and the sands of the Great Sandy Desert. The De Grey has a parallel drainage pattern, with the major tributaries being the Strelley, Shaw, Coongan, Oakover and Nullagine Rivers. The Shaw River joins with the De Grey River just upstream of the Great Northern Highway. The Coongan River joins with the De Grey River 41km upstream of the Shaw River. The DeGrey River is ephemeral and flows only occasionally – being dry for most of the year except for large pools that may last for long periods of time. The lower reaches of the De Grey River incorporate extensive floodplains which become inundated following heavy rains and flood flows. Most of the flow recorded in the De Grey River at the Coolenar Pool (Station No. 710003) gauging station (located at the upstream side of the Great Northern Highway river crossing) occurs annually between January and April (MWH 2008).

All the rivers within the basin are ephemeral. They are dry for most of the year, except for chains of large pools that may last for considerable periods. These pools are common for larger rivers and in some cases are due to discharging groundwater held in storage. River flows occur after major rainfall events, resulting from summer cyclones, and on some occasions the rivers may flood and overflow their banks and inundate the coastal plain. Most of the rivers within the basin have broad alluvial sands or zones of unconsolidated rock saturated with groundwater along their courses (MWH 2008).

The depth to groundwater within the main mine area ranges from 68 meters below ground level (mbgl) on the ridgetop to 10mbgl on the flanks of the ridge. Water table reference levels (RLs) vary from approximately 9mAHD (on the lower parts of the northern flanks of the Ridley ridge) to 42mAHD (along the higher parts of the ridge). The hydraulic gradient appears to mimic the topography, with groundwater flow moving away from the topographically high areas of the ridge toward the flanks. The regional groundwater flow direction is approximately north toward the Ridley and De Grey rivers. Given the steep nature of the groundwater gradient and the relatively low recharge rates it can be inferred that the permeability of the majority of the rock mass in these elevated areas is low, or the surrounding geological units are tight and prevent rapid groundwater flow rates. The rate of groundwater movement from these areas is considered to be very slow (MWH 2008). In general, the groundwater quality can be classified as a Na-Mg-Cl or Na-Mg-Cl-HCO3 water type with a pH between 7.2-8.2 (MWH 2008).

EPA policy and guidance

Environmental Factor Guideline - Inland Waters (EPA 2018)

Description of environmental impacts

Changes to groundwater levels as a result of pit dewatering

Potential impacts to groundwater quality as a result of leaks or spills (including tailings storage facility)

Changes to surface water flow patterns as a result of pits and infrastructure Potential impacts to surface water quality as a result of leaks or spills (including tailings storage facility)
Environmental Values Impact Assessments:
Offset explanation
Application of the mitigation hierarchy To be completed at a later stage in the assessment
Assessment and significance of residual impacts To be completed at a later stage in the assessment
Likely environmental outcomes To be completed at a later stage in the assessment

4.3.8 Landforms
Environmental objective To maintain the variety and integrity of distinctive physical landforms so that environmental values are protected.
Potential key environmental factor (yes/no) No
Description of receiving environment The Development Envelope occurs adjacent to the Ord Ranges. The adjacent coastline is within the Eighty Mile land system which is comprised of beach foredunes, longitudinal coastal dunes and sandy plains with tussock grasslands and spinifex grasslands.
Justification The landforms within the Development Envelope are not considered significant, as they are not distinctive or intact and in good condition (given previous mining and pastoral activity). The Proposal will not result in an impact to the variety or integrity of landforms in the area.

4.3.9 Marine environmental quality

Environmental objective

To maintain the quality of water, sediment and biota so that environmental values are protected.

Potential key environmental factor (yes/no)

Yes

Description of receiving environment

Marine water sampling in September 2022 reported generally low total suspended sediment (TSS) loads (>5mg/L) and a total dissolved solids (TDS) concentration of between 38,700 and 42,100mg/L (Hydrobiology 2022).

Concentrations of dissolved nutrients and metals were generally low, being below the 99% species protection level default guideline values (DGV) (ANZG 2018) and/or the limits of reporting. Concentrations of ammonium exceeded the DGV.

Generally, the concentration of metals in sediment samples did not exceed the ANZG (2018) DGVs, except for Arsenic and Manganese (Hydrobiology 2022). Arsenic concentrations are known to be elevated in many areas in Western Australia including the Pilbara region (DEC 2006, Pilbara Port Authority 2020), including in the area surrounding in the Port Hedland (Pilbara Port Authority, 2020). Concentrations of manganese (Mg) exceeded the low reliability guideline value (Persaud et al., 1990, in ANZECC & ARMCANZ 2000) at two sites. Elevated levels of manganese previously been recorded in the Port Hedland region, with sediment surveys completed as a part of the Port Hedland Port Authority Maintenance Dredging recording elevated levels of manganese (GHD 2016).

EPA policy and guidance

Environmental Factor Guideline - Marine Environmental Quality (EPA 2016)

Technical Guidance - Protecting the Quality of Western Australia's Marine Environment (EPA 2016)

Description of environmental impacts

Temporary impacts to water quality (turbidity) due to release of fines from construction of desalination pipeline

Changes to water and/or sediment quality due to brine discharge

Environmental Values Impact Assessments:

Offset explanation

Application of the mitigation hierarchy To be completed at a later stage in the assessment
Assessment and significance of residual impacts To be completed at a later stage in the assessment
Likely environmental outcomes To be completed at a later stage in the assessment

4.3.10 Marine fauna
Environmental objective To protect marine fauna so that biological diversity and ecological integrity are maintained.
Potential key environmental factor (yes/no) Yes
Description of receiving environment The Commonwealth's Protected Matters Search Tool (PMST) identified a number of listed marine species as potentially occurring within or adjacent to the Development Envelope. The Development Envelope intersects defined Biologically Important Areas (BIAs) for various marine turtles, including the Flatback Turtle (*Natator depressus*), Green Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*) and the Loggerhead Turtle (*Caretta caretta)*. This BIA is identified as a foraging area for these species. The National Conservation Atlas, identifies a broad area off the coast, which extends hundreds of kilometres to the north and south, for nesting of the Flatback Turtle (*Natator depressus*), between August and September. The mapped turtle nesting area is based on known turtle behaviour from Cemetery Beach, Port Hedland, with a 60 km internesting buffer. There is no known occurrence of turtle nesting within or adjacent to the Development Envelope, and no signs of nesting have been observed during site visits and shorebird surveys to date. The Leslie Saltfields System, located to the north-west of the Development Envelope, is an internationally significant area for migratory shorebirds (Site #169). The area around Port Hedland is a nationally important area for migratory shorebirds (Site #170). No Birdlife Australia Shorebird Count Areas were identified within the Development Envelope. An initial shorebird survey along the coast adjacent to the proposed desalination pipeline corridor (23-24 November 2022) recorded 2,242 shorebird

individuals from 15 species (including 1,826 individuals and 12 species of migratory shorebird, and 86 terns/gulls from 7 species). This included four critically endangered shorebird taxa; Curlew Sandpiper, Great Knot, Eastern Curlew and Northern Siberian Bar-tailed Godwit (refer Figure 10).
EPA policy and guidance Environmental Factor Guideline - Marine Fauna (EPA 2016)
Description of environmental impacts Potential impacts to marine fauna during desalination pipeline construction Direct loss of marine fauna habitat during desalination pipeline construction Direct impact to migratory shorebirds due to access to tailings storage facility Potential impacts to marine fauna due to the discharge of brine from the desalination plant discharge pipeline Indirect loss or degradation of marine fauna habitat from the effects of brine discharge prior to mixing Loss or alteration of coastal habitat as a result of changes to coastal processes or hydrodynamic/ hydrological regimes from presence of desalination pipeline
Environmental Values Impact Assessments:
Offset explanation
Application of the mitigation hierarchy To be completed at a later stage in the assessment
Assessment and significance of residual impacts To be completed at a later stage in the assessment
Likely environmental outcomes To be completed at a later stage in the assessment

4.3.11 Social surroundings
Environmental objective To protect social surroundings from significant harm.

Potential key environmental factor (yes/no)

Yes

Description of receiving environment

The Development Envelope is primarily located on Ngarla country, within the Ngarla and Ngarla #2 Native Title Determination Area A (WCD2007/003). However, the western end of the Development Envelope, in the vicinity of Port Hedland, falls within the Kariyarra Native Title Determination Area (WCD2018/015).

Archaeological and ethnographical surveys over the Development Envelope are currently underway and results of these investigations are pending. However, the Development Envelope is known to intersect the public boundaries for:

- One registered heritage site, Mikurrunya Hills (ID9904).
- Seven potential heritage sites (i.e., Other Heritage Places) lodged with Department of Planning, Land and Heritage (DPLH), including the Ord Range Ochre Quarry (ID 7406), Ridley River Pool (Place ID 7405), Fishermans Cave (Place ID 7404), Gully Pool (Place ID 7403), 12 Mile (Place ID 27412), BD 08-01 (Place ID 25620), BD 08-27 (Place ID 25645).

EPA policy and guidance

Environmental Factor Guideline: Social Surroundings (EPA 2016)

Description of environmental impacts

- Direct disturbance of heritage sites
- Impacts to cultural practices and activities
- Restriction of access to country
- Altered amenity as a result of changes to landforms or broad environmental changes to country
- Indirect disturbance to sites of cultural significance as a result of altered hydrological regimes, dust and vibration
- Ground disturbance and construction of infrastructure within Crown Reserve.

Environmental Values Impact Assessments:

Offset explanation

Application of the mitigation hierarchy

To be completed at a later stage in the assessment process.

Assessment and significance of residual impacts

To be completed at a later stage in the assessment process.

Likely environmental outcomes

To be completed at a later stage in the assessment process.

4.3.12 Subterranean fauna

Environmental objective

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

Potential key environmental factor (yes/no)

Yes

Description of receiving environment

During a preliminary survey in Q4 2022, a total of 36 sites were sampled for stygofauna and 45 sites were sampled for troglofauna. A total of 700 subterranean fauna specimens were collected, of which 693 were stygofauna. Groups represented in the stygofauna community included annelid worms, ostracods, copepods (both cyclopoid and harpacticoid), syncarids, amphipods and nematode worms. Three species are singletons (currently only known from a single record or single location) while a further three species, also have been collected on multiple occasions from multiple locations and have known linear distributions ranging between 0.6 km to 6.5 km. This is considered a moderate stygofauna community with multiple species restricted to the survey area (Bennelongia 2023).

A total of only seven troglofauna specimens were collected including isopods, millipedes, pauropods and beetles. Each of these animals was collected as a singleton known only from the Project area. Only one of these species is currently restricted to the impact area. This is considered to be a relatively depauperate troglofauna community although the number of known species may increase once the trapping data have been further analysed (Bennelongia 2023).

EPA policy and guidance

Environmental Factor Guideline: Subterranean Fauna (EPA 2016)
Technical Guidance: Subterranean Fauna Survey (EPA 2016)
Technical Guidance: Sampling Methods for Subterranean Fauna (EPA 2016)

Description of environmental impacts

Removal of subterranean fauna habitat Loss of subterranean fauna individuals Indirect loss of stygofauna habitat through groundwater abstraction Degradation of subterranean fauna habitat from clearing, development of infrastructure or contamination of groundwater
Environmental Values Impact Assessments:
Offset explanation
Application of the mitigation hierarchy This will be completed at a later stage in the assessment.
Assessment and significance of residual impacts This will be completed at a later stage in the assessment.
Likely environmental outcomes This will be completed at a later stage in the assessment.

4.3.13 Terrestrial environmental quality
Environmental objective To maintain the quality of land and soils so that environmental values are protected.
Potential key environmental factor (yes/no) Yes
Description of receiving environment The survey area is located within both the Nullagine Hills (280) and the De Grey - Roebourne Lowlands (281) zones (Tille 2006). The Nullagine Hills zone (280) is defined by hills and ranges on volcanic and sedimentary rocks and stony soils with red shallow loams and sands. The De Grey – Roebourne Lowlands zone (281) is characterised by alluvial sandplains and deep sandy duplexes with Red loamy earths and some Red/brown noncracking clays, Cracking clays, Red sandy earths, and Red deep loamy duplexes (Tille 2006). Land Systems in the Survey area include:

1. Boolgeeda Land System - Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands.

2. Capricorn Land System - Hills and ridges of sandstone and dolomite supporting low shrublands or shrubby spinifex grasslands.

3. Mallina Land System - Sandy surfaced alluvial plains supporting soft spinifex (and occasionally hard spinifex) grasslands.

4. Paradise Land System - Alluvial plains supporting soft spinifex grasslands and tussock grasslands.

5. River Land System - Active flood plains, major rivers and banks supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands.

6. Uaroo Land System - Broad sandy plains supporting shrubby hard and soft spinifex grasslands.

7. Yamerina Land System - Flood plains and deltaic deposits supporting tussock grasslands, grassy woodlands and minor halophytic low shrublands.

EPA policy and guidance

Environmental Factor Guideline - Terrestrial Environmental Quality (EPA 2016)

Description of environmental impacts

Potential contamination of soils through leaks or spills (including from tailings storage facility)

Environmental Values Impact Assessments:

Offset explanation

Application of the mitigation hierarchy

To be completed at a later stage in the assessment process.

Assessment and significance of residual impacts

To be completed at a later stage in the assessment process.

Likely environmental outcomes

To be completed at a later stage in the assessment process.

4.3.14 Terrestrial fauna

Environmental objective

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

Potential key environmental factor (yes/no)

Yes

Description of receiving environment

A desktop assessment, targeted fauna survey and initial migratory shorebird survey have been completed to date. A detailed fauna survey (2 season) is underway. A further targeted survey is planned for the pipeline corridors leading from the mine to the coast and to Port Hedland. The below survey information relates to the survey undertaken across the mine area only.

Four fauna landscapes (broad fauna habitats) have been identified intersecting the Development Envelope.

- Rocky Hills - Gully, breakaways, ridges
- Alluvial Floodplains - Alluvial plain, minor drainage line, stony plain
- Sandplains - Sandplain, small areas of stony plain
- Major Drainage Lines - Major river, floodplain.

A total of 29 significant species have been recorded from the Development Envelope, or are considered to have a moderate to high likelihood of occurrence.

Three EPBC listed species were recorded during the 2022 fauna surveys:

- Northern Quoll *Dasyurus hallucatus* (EPBC Act and BC Act Endangered);
- Pilbara Leaf-nosed Bat *Rhinonicteris aurantia* Pilbara form (EPBC Act and BC Act Vulnerable);
- Ghost Bat *Macroderma gigas* (EPBC Act and BC Act Vulnerable).

In addition, two further species have been recorded within the Development Envelope:

- Pilbara Olive Python *Liasis olivaceus barroni* (EPBC Act and BC Act Vulnerable);
- Oriental Plover *Charadrius veredus* (EPBC Act and BC Act Migratory).

Northern Quolls were recorded during the 2022 survey from three of the four targeted Elliott trapping sites, and from a further six locations on motion cameras. Secondary evidence of the species was also recorded from the study area in 2007 and 2008 (Bamford et al. 2010), and there are numerous records from the locality in the DBCA Threatened Fauna database (DBCA 2022). All records from the current and previous surveys within the study area came from the Rocky Hills habitat type.

Pilbara Leaf-nosed Bat calls were recorded on ultrasonic sound recorders from four locations within the study area during the 2022 targeted survey. No previous records for

the study area were identified during the desktop study, with the nearest records identified being 25 km to the southwest of the study area.

Ghost Bat calls were recorded on an ultrasonic sound recorder at one location in Rocky Hills habitat within the study area, in a rocky gully adjacent to a small pool. No previous records for the study area were identified during the desktop study, with the nearest record identified being approximately 18 km to the southwest of the study area.

The Pilbara Olive Python was not recorded from the study area during the recent targeted survey, but three individuals were recorded from the study area during 2007 and 2008 (Bamford et al. 2010). All records occur in association with Rocky Hill habitat.

The Oriental Plover *Charadrius veredus* was not recorded from the study area during the recent targeted survey, which is not unexpected given the timing of the survey. However, there is a historical record from 1978 of the species from plains in the northwest of the study area (DBCA 2022). There are also numerous records within 10-15 km of the study area to the west, and it is likely to be a regular visitor to sparsely vegetated plains and margins of major drainage lines in the study area from September to April.

EPA policy and guidance

Environmental Factor Guideline: Terrestrial Fauna (EPA 2016)
Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2020)
Technical Guidance: Sampling Methods for Terrestrial Vertebrate Fauna (EPA 2016)
Technical Guidance: Sampling of Short-Range Endemic Invertebrate Fauna (EPA 2016)

Description of environmental impacts

- Direct impact to fauna due to vehicle strike or access to tailings storage facility
- Loss of fauna habitat during clearing for onshore infrastructure
- Indirect impact to fauna due to noise or artificial lighting
- Impacts to fauna habitat from changes to surface water flow patterns or groundwater levels or quality
- Indirect impacts to native fauna as a result of introduction or increase of feral animals

Environmental Values Impact Assessments:

Offset explanation

Application of the mitigation hierarchy

To be completed at a later stage in the assessment process.

Assessment and significance of residual impacts

To be completed at a later stage in the assessment process.
Likely environmental outcomes To be completed at a later stage in the assessment process.

5 Offsets

5.1 Offset's objective

The EPA's environmental objective for proposals that may require Environmental Offsets is to counterbalance any significant residual environmental impacts and/or uncertainty through the application of the offsets.

5.2 Significant Residual Impacts

5.3 Offsets policy and guidance

To be completed at a later stage in the assessment

5.4 Consideration of the Environmental Offsets Principles

1. **Environmental offsets will only be considered after avoidance and mitigation options have been pursued.**

2. **Environmental offsets are not appropriate for all projects.**

3. **Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted.**

4. **Environmental offsets will be based on sound environmental information and knowledge.**

5. **Environmental offsets will be applied within a framework of adaptive management.**

6. **Environmental offsets will be focused on longer term strategic outcomes.**

5.5 Use of the Pilbara Environmental Offsets Fund (yes/no)

Yes

5.6 Offsets Summary

To be completed at a later stage in the assessment

6 Matters of National Environmental Significance

1. northern quoll - Dasyurus hallucatus

- **Species been recorded:** Yes
- **Receiving and existing environment**

  Recorded (refer Figure 5).

  Further information to be provided at a later stage in the assessment.

- **Range and habitat preference**

  Further information to be provided at a later stage in the assessment.

- **Likelihood of occurrence:** High Potential
- **Reason for likelihood of occurrence**

  Recorded (refer Figure 5).

- **Habitat suitability for MNES**

  Further information to be provided at a later stage in the assessment.

- **Relevant impacts**

  Further information to be provided at a later stage in the assessment.

- **Assessment of impacts against criteria**

  Further information to be provided at a later stage in the assessment.

- **Safeguards and mitigations**

  Further information to be provided at a later stage in the assessment.

- **Summary**

  Further information to be provided at a later stage in the assessment.

2. Pilbara leaf-nosed bat - Rhinonicteris aurantia (Pilbara)

- **Species been recorded:** Yes
- **Receiving and existing environment**

Recorded (refer Figure 5).

Further information to be provided at a later stage in the assessment.

- **Range and habitat preference**

  Further information to be provided at a later stage in the assessment.

- **Likelihood of occurrence:** High Potential
- **Reason for likelihood of occurrence**

  Recorded (refer Figure 5).

  Further information to be provided at a later stage in the assessment.

- **Habitat suitability for MNES**

  Further information to be provided at a later stage in the assessment.

- **Relevant impacts**

  Further information to be provided at a later stage in the assessment.

- **Assessment of impacts against criteria**

  Further information to be provided at a later stage in the assessment.

- **Safeguards and mitigations**

  Further information to be provided at a later stage in the assessment.

- **Summary**

  Further information to be provided at a later stage in the assessment.

3. Pilbara olive python - Liasis olivaceus barroni

- **Species been recorded:** Yes
- **Receiving and existing environment**

  Recorded (refer Figure 5).

  Further information to be provided at a later stage in the assessment.

- **Range and habitat preference**

Further information to be provided at a later stage in the assessment.

- **Likelihood of occurrence:** High Potential
- **Reason for likelihood of occurrence**

  Recorded (refer Figure 5).

  Further information to be provided at a later stage in the assessment.

- **Habitat suitability for MNES**

  Further information to be provided at a later stage in the assessment.

- **Relevant impacts**

  Further information to be provided at a later stage in the assessment.

- **Assessment of impacts against criteria**

  Further information to be provided at a later stage in the assessment.

- **Safeguards and mitigations**

  Further information to be provided at a later stage in the assessment.

- **Summary**

  Further information to be provided at a later stage in the assessment.

4. ghost bat - Macroderma gigas

- **Species been recorded:** Yes
- **Receiving and existing environment**

  Recorded (refer Figure 5).

  Further information to be provided at a later stage in the assessment.

- **Range and habitat preference**

  Further information to be provided at a later stage in the assessment.

- **Likelihood of occurrence:** High Potential
- **Reason for likelihood of occurrence**

Recorded (refer Figure 5).

Further information to be provided at a later stage in the assessment.

- **Habitat suitability for MNES**

  Further information to be provided at a later stage in the assessment.

- **Relevant impacts**

  Further information to be provided at a later stage in the assessment.

- **Assessment of impacts against criteria**

  Further information to be provided at a later stage in the assessment.

- **Safeguards and mitigations**

  Further information to be provided at a later stage in the assessment.

- **Summary**

  Further information to be provided at a later stage in the assessment.

Policy and Guidance

Significant Impact Guidelines 1.1, specifically the Significant Impact Criteria
Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets
Policy (2012)

National Recovery Plan for the Northern Quoll Dasyurus hallucatus (Hill and Ward 2010)
EPBC Act Referral guideline for the endangered Northern Quoll Dasyurus hallucatus (DoE
2016)
Conservation Advice Macroderma gigas Ghost Bat (TSSC 2016)
Conservation Advice Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat (TSSC
2016).
Conservation Advice for Liasis olivaceus barroni (Olive Python – Pilbara subspecies) (DEWHA
2008)
Threat abatement plan for predation by feral cats (DoE 2015)
Threat abatement plan for predation by the European red fox (DEWHA 2008b)
Threat abatement plan for the biological effects, including the toxic ingestion, caused by Cane Toads (DSEWPaC 2011)

Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses (DSEWPaC 2012).
Threat abatement plan for competition and land degradation by rabbits (DoEE 2016)
Matters of National Environmental Significance: Significant impact guidelines 1.1 Environment Protection and Biodiversity
Conservation Act 1999 (DoE 2013)
Marine bioregional plan for the North-west Marine Region (DSEWPAC 2012)
Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015)
Significant impact guidelines for 36 migratory shorebird species' (DEWHA 2009)
EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017)

7 Objectives and Principles of the EP Act

7.1 Legislation Objectives

To be completed at a later stage in the assessment

7.2 Consideration of the Principles of the EP Act

1. **The precautionary principle**

   To be completed at a later stage in the assessment

2. **The principle of intergenerational equity**

   To be completed at a later stage in the assessment

3. **Principles relating to improved valuation, pricing, and incentive mechanisms**

   To be completed at a later stage in the assessment

4. **The principle of the conservation of biological diversity and ecological integrity**

   To be completed at a later stage in the assessment

5. **The principle of waste minimisation**

   To be completed at a later stage in the assessment

8 Conclusions

8.1 Holistic impact assessment

To be completed at a later stage in the assessment

8.2 Cumulative environmental impact assessment

To be completed at a later stage in the assessment

8.3 Conclusion

To be completed at a later stage in the assessment

9 Supporting documents

Attachments

- Development Envelope.zip
- Disturbance Footprint.zip
- DataValidation_ErrorShapeFile.zip
- 20230412_RID_Rev_P_Development_Envelope.zip
- 20230412_RID_RevP_Indicative_Footprint.zip
- 20230412_RID_RevP_Development_Envelope.zip
- Pardoo Ridley Detailed Flora and Vegetation Survey Report.pdf
- Pardoo Ridley Targeted Fauna Survey Report.pdf
- Ridley BCH Report Final.pdf
- Figure 1.pdf
- Figure 2.pdf
- Figure 3.pdf
- Figure 4.pdf
- Figure 5.pdf
- Figure 6.pdf
- Figure 7.pdf
- Figure 8.pdf
- Figure 9.pdf
- Figure 10.pdf
- Ridley BCH Report Final.pdf
- Pardoo Ridley Targeted Fauna Report Rev 0.pdf
- Pardoo Ridley Detailed Flora and Vegetation Survey Report.pdf

Relevant maps