

Andover Lithium Mine Project

Part IV EP Act Referral Supporting Document

June 2026



Version	Description	Date	Author	Reviewer	Approver

Executive Summary

Azure Minerals Pty Ltd (Azure; the Proponent) proposes to develop and operate a pegmatite-hosted lithium deposit, the Andover Lithium Mine Project (the Proposal, the Andover Project), in the Pilbara region of Western Australia. The Project is located approximately 35 km southeast of Karratha, immediately south of the town of Roebourne (Ieramugadu) and is wholly located within the Native Title Determination Area and country of the Ngarluma People, who are the Traditional Owners and native title holders for the area.

The Proposal is expected to produce up to 1.1 million tonnes per annum (Mtpa) of lithium oxide (Li_2O) concentrate and up to 5 kilo tonnes per annum (Ktpa) of tantalum pentoxide (Ta_2O_5) concentrate. The proposed Life of Mine (LOM) is approximately 34 years, including a two-year construction phase and a two-year closure-phase. Li_2O and Ta_2O_5 concentrate will be transported by road train along the North West Coastal Highway to port facilities at Port Hedland.

The Proposal is contained within a Development Envelope (DE) of a 4,489.2 hectares (ha), with an Indicative Disturbance Footprint (IDF) of 3,045.79 ha. The Proposal includes mining of an open cut pit and an underground mine (with associated access via box cut and in pit portals), construction of waste rock landforms (WRLs) and dewatering of the orebody to the degree required for safe mining, on site processing at a processing plant, with associated Tailings Storage Facility (TSF), paste plant and stockpiles. Supporting infrastructure includes an accommodation camp and offices, power generation, ventilation infrastructure, roads, powerlines and water management infrastructure. Consideration of topsoil storage and habitat has also been included to allow progressive rehabilitation and planning for closure activities.

Azure has completed a review against the Environmental Factors to identify those that are relevant to the Proposal. The following factors are considered to be Key Preliminary Environmental Factors for the Proposal:

- Inland Waters.
- Flora and Vegetation.
- Terrestrial Fauna.
- Subterranean Fauna.
- Air Quality.
- Greenhouse Gas Emissions.
- Social Surroundings.

Those considered to be relevant as 'Other Factors' were considered to be:

- Landforms.
- Terrestrial Environmental Quality.

The purpose of this document is to support the referral of the Proposal under Section 38 of the *Environmental Protection Act 1986* (EP Act), by providing information to support the Referral Form and Proposal Content Document (PCD).

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Glossary

Abbreviation	Detail
ACCU	Australian Carbon Credit Units
ACH	Aboriginal Cultural Heritage
ACHIS	Aboriginal Cultural Heritage Enquiry System
AEP	Annual Exceedance Probability
AGM	Annual General Meeting
AHD	Australian Height Datum
ANA	Azure-NAC Agreement
ANZECC	Australia and New Zealand Environment and Conservation Council
ANZG	Australia New Zealand Government
AS	Australia Standards
ASS	Acid Sulfate Soils
BAM	Biosecurity and Agriculture Act 9
BC Act	Biodiversity Conservation Act
BESS	Battery Energy Storage System
BoM	Bureau of Meteorology
CEO	Chief Executive Officer
CHMP	Cultural Heritage Management Plan
CEC	Cation Exchange Capacities
CoA	Commonwealth of Australia
CO ₂ -e	Carbon Dioxide Equivalent
COI	Cytochrome C Oxidase
COO	Chief Operating Officer
CSSMP	Conservation Significant Species Management Plan
Cth	Commonwealth
dB	Decibels
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DE	Development Envelope
DEED	Department of Energy and Economic Diversification
DFS	Definitive Feasibility Study
DMA	Decision Making Authority
DMPE	Department of Mining, Petroleum and Exploration
DPLH	Department of Planning, Lands and Heritage

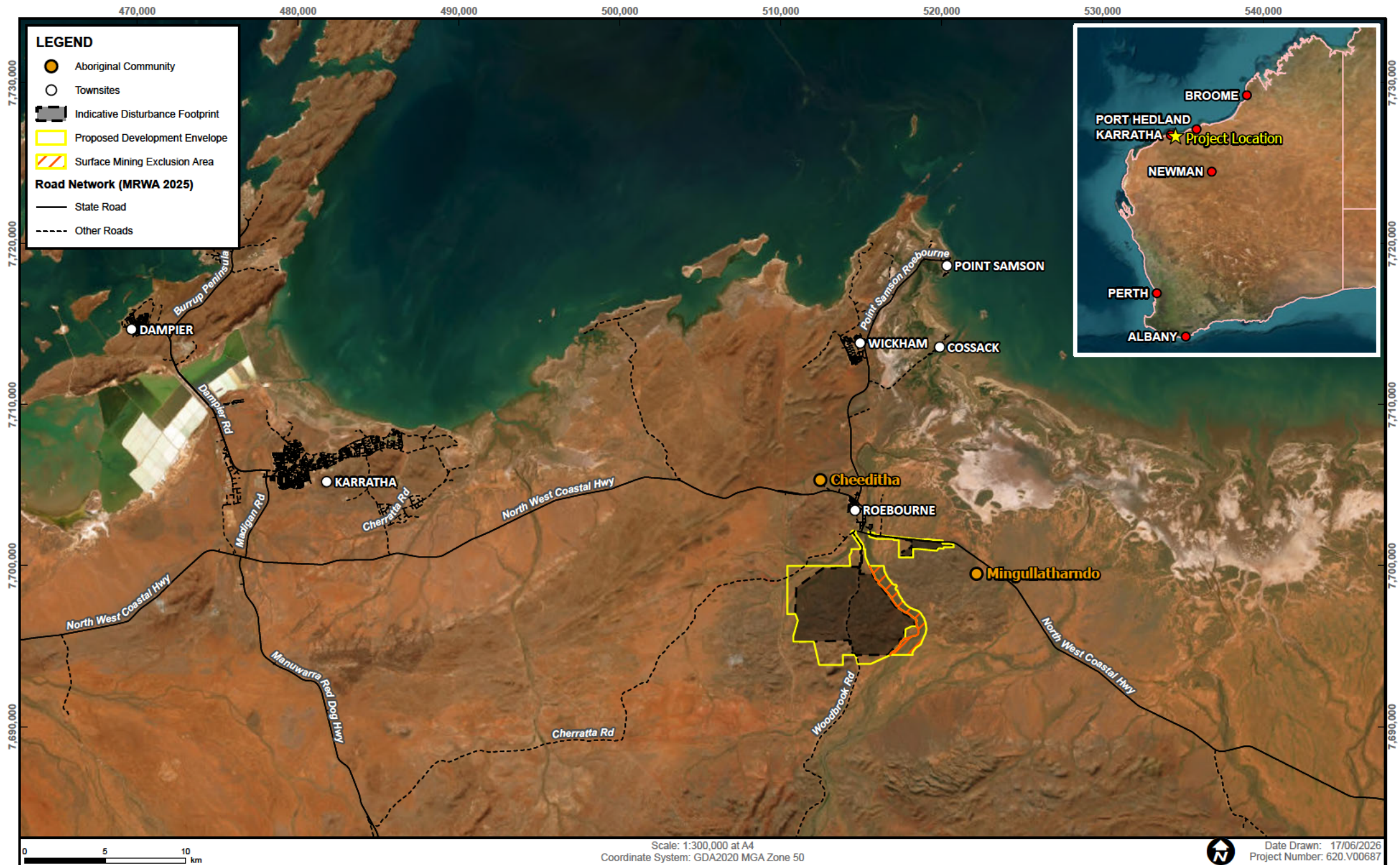
DPIRD	Department of Primary Industries and Regional Development
DGV	Default Guideline Values
DWER	Department of Water and Environmental Regulation
eDNA	Environmental deoxyribonucleic acid
EMP	Environmental Management Plan
ERD	Environmental Review Document
EPA	Environmental Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EP Act	Environmental Protection Act 1986
ERD	Environmental Review Document
ESG	Environmental, Social, Governance
GDE	Groundwater Dependent Ecosystem
GDV	Groundwater Dependent Vegetation
GHG	Greenhouse Gas Emissions
GL	Gigalitres
Ha	Hectare
HEVAE	High Ecological value Aquatic Ecosystems
HHRA	Human Health Risk Assessment
HMGVs	Hardness-Modified Guideline Values
FTE	Full-time equivalent
IBRA	Interim Biogeographic Regionalisation for Australia
IDF	Indicative Disturbance Footprint
IUCN	International Union for Conservation of Nature
IWL	Integrated Waste Landform
Km	Kilometre
Km/h	Kilometre per hour
Ktpa	Kilo tonnes per annum
Li ₂ O	Lithium Oxide
LOM	Life-of-Mine
L/s	Litres per second
m	Metre
µS/cm	Microsecond per centimetre
MDCP	Mining Development and Closure Procedure
MNES	Matters of National Environmental Significance
MRF	Mining Rehabilitation Fund
Mg/L	Milligrams per Litre

Mtpa	Million tonnes per annum
NAC	Ngarluma Aboriginal Corporation
NAF	Non-Acid Forming
NBAC	Ngarliyarndu Bindirri Aboriginal Corporation
NEPM	National Environment Protection Measure
NGO	Non-government organisation
Ngurin	Harding River (traditional name)
NTA	Native Title Act 1993
NWIS	North West Interconnected System
TA3	Target Area 3
tCO ₂ -e	Tonnes of carbon dioxide equivalent
OEMP	Operational Environmental Management Plan
OTU	Operational Taxonomic Unit
PCD	Proposal Content Document
PCYC	Police and Community Youth Centres
PEC	Priority Ecological Communities
PEOF	Pilbara Environmental Offsets Fund
PFS	Pre-Feasibility Study
PM	Particulate Matter
PMST	Protected Matters Search Tool
RIWI Act	Rights in Water and Irrigation Act
ROM	Run-of-Mine
RTIO	Rio Tinto Iron Ore
SPRAT	Species Profile and Threats Database
SRE Species	Short Range Endemic Species
t	Tonnes
Ta ₂ O ₅	Tantalum Pentoxide
TA3	Target Area 3
TEC	Threatened Ecological Communities
TSF	Tailings Storage Facility
TSSC	Threatened Species Scientific Committee
VIA	Visual Impact Assessment
WoNS	Weeds of National Significance
WRL	Waste Rock Landform
WRM	Wetland Research Management

1 Introduction

Azure Minerals Pty Ltd (Azure) (the Proponent) proposes to develop and operate a pegmatite-hosted lithium deposit, the Andover Project (the Proposal), in the Pilbara region of Western Australia (Figure 1-1). The Proposal is located wholly within the Ngarluma/Yindjibarndi native title determination area (WCD2005/001), where the Ngarluma people are recognised as the native title holders and are represented by the Ngarluma Aboriginal Corporation (NAC) Registered Native Title Body Corporate (RNTBC) (Figure 2-2).

The Proposal is expected to produce up to 1.1 million tonnes per annum (Mtpa) of lithium oxide (Li_2O) concentrate and up to 5 ktpa of tantalum pentoxide (Ta_2O_5) concentrate. The proposed Life of Mine (LOM) is approximately 34 years, including a two-year construction phase and a two-year closure phase. Li_2O and Ta_2O_5 concentrate will be transported by road train along the North West Coastal Highway to port facilities at Port Hedland.



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ANDOVER PROJECT EPA REFERRAL DOCUMENT

REGIONAL LOCATION MAP

FIGURE 1-1

1.1 Purpose and Scope

This Referral Supporting Document (RSD) has been prepared to support referral of the Proposal to the Environmental Protection Authority (EPA) pursuant to Section 38 of the *Environmental Protection Act 1986* (EP Act). This RSD has been prepared in alignment with the *Instructions: Environmental Impact Assessment Practice Guide Assessment of Proposals in Western Australia under Part IV of the Environmental Protection Act 1986* (EPA, 2025) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2024).

This document outlines the spatial extent and operational elements of the Proposal. It describes the local and regional setting in which the Proposal would be undertaken, informed by biological surveys and other relevant technical investigations completed by the Proponent to date. The document also identifies and assesses potential impacts that may result from implementing the Proposal and applies the mitigation hierarchy to avoid, minimise, and manage potential adverse effects in order of priority. The purpose of this referral is to provide sufficient information on the Proposal and the potential impacts of the Proposal on the environment to permit the EPA to establish a level of assessment for the Proposal under Part IV of the EP Act. This RSD should be read in conjunction with the Referral Form and Proposal Content Document (PCD).

The Proposal includes the following components within the Proposal's DE (Figure 2-1):

- Open cut and underground mining of a spodumene deposit known as Target Area 3 (TA3).
- Construction and operation of a processing plant with a throughput of up to 6 Mtpa.
- Storage of tailings in an Integrated Waste Landform (IWL) and TSF.
- Supporting mining elements including surface haul roads, underground declines, topsoil stockpiles and low-grade ore stockpiles.
- Dewatering of an open cut void and underground workings to enable safe-mining via in-pit and underground sumps and dewatering bores with preferential use within the processing plant and onsite e.g. dust suppression.
- Mine dewatering infrastructure including dewatering bores and pump stations, in-pit and underground sumps and pipelines.
- Implementation of engineering controls to minimise the potential for groundwater impacts during dewatering.
- Construction of Waste Rock Landforms (WRLs) to be progressively rehabilitated to form safe, stable and non-polluting landforms. WRLs will be rehabilitated to enable a self-sustaining ecosystem to develop and be capable of delivering post-mining land use.
- Surface water management infrastructure including but not limited to stormwater management ponds, process water ponds, water drainage and diversion channels, etc.
- Processing infrastructure including Run-of-Mine (ROM) pad and ore stockpiles, secondary crushing stations, conveyors and screening infrastructure, processing plant, concentrate stockpiles, paste plant, tailings and return water pipelines and process water ponds.

- Power supply:
 - Construction-phase power will be supplied via diesel generation.
 - Operational Years 1-10: Construction of an onsite 80 MW natural gas-fired power station, operated by a third party, supported by a solar generation and a Battery Energy Storage System (BESS).
 - Operational Year 11 to closure: Connection to the North West Interconnected System (NWIS), with diesel generators retained as backup for critical loads only (e.g. essential services).
- Construction of supporting infrastructure including, but not limited to, offices, gatehouse, workshops, park-ups/go-lines, laydown areas, explosive magazine and compound, underground ventilation services and power, accommodation village, wastewater treatment plant/s, landfill/s, surface and underground water management infrastructure, pipelines, powerlines and substations, borrow pits, communication infrastructure and roads (including haulage).
- An anticipated 34-year life-of-mine (LOM) (including 2-year construction phase, 30-year operational phase, followed by 2-year closure phase).

1.2 Proponent Details

The Proposal is a joint venture between Azure Minerals Pty Ltd (60%) and Croydon Gold Pty Ltd (40%). Azure, the Proponent of the Andover Project, is a wholly owned subsidiary of SH Mining Pty Ltd (SH Mining), a company jointly owned (50:50) by Sociedad Química y Minera de Chile S.A. (through its subsidiary SQM Australia Pty Ltd) and Hancock Prospecting Pty Ltd (through its subsidiary Hanrine Future Metals Pty Ltd).

Details for the Proponent and the nominated contact for this Proposal are provided in Table 1-1.

Table 1-1: Proponent Details

Proponent	Azure Minerals Pty Ltd
Street Address	Level 2, 16 Ventnor Ave, West Perth WA 6005
Key Contact	Mel Britton – Principal Environment Advisor
Phone	(08) 6187 7500
Email	mel.britton@azureminerals.com.au
Postal Address	PO Box 493, West Perth, WA, 6872

2 The Proposal

2.1 Proposal Content

A summary of the Proposal is provided in Table 2-1 and key Proposal characteristics in Table 2-2.

Table 2-1: Summary of Proposal

Proposal Title	Andover Lithium Project
Proponent Name	Azure Minerals Pty Ltd
Short Description	The Proposal is to construct and operate the Andover Lithium Project, located approximately 35 km southeast of Karratha, immediately south of the township of Roebourne (Ieramugadu). The Proposal includes excavation of an open mine void (through a traditional drill and blast/load and haul mining method), underground mining (with associated access via box cut and in pit portals), construction of WRLs and low-grade ore stockpiles; haul roads and topsoil stockpiles. Processing elements include ROM pad and ore stockpiles; construction and operation of a processing plant; concentrate stockpiling; associated TSF and tailings return water pipelines; a paste plant; process water ponds; and crushing and screening infrastructure. Dewatering infrastructure will consist of in-pit sumps; dewatering bores and pump stations; pipelines and water management ponds. Supporting infrastructure will include construction of an accommodation village; access and haul roads; pipelines and associated corridors to enable the delivery of alternative water supply for construction and operational use; powerline corridors and associated infrastructure; administration office; gatehouse; workshops; laydown areas; explosive magazine (and bulk explosives compound); wastewater treatment plant/s; surface water management infrastructure; landfill/s; 80 MW natural gas-fired power station, solar photovoltaic (PV) system, BESS and other ancillary infrastructure. The Proposal tenement intersects with Mt Welcome Station pastoral lease on Ngarluma Country.

Table 2-2: Key Proposal Characteristics

Proposal element	Location / description	Maximum extent, capacity or range
Physical elements		
Mine elements including: • Open mine pits. • Underground mine and associated access via box cut and in pit portals. • Waste rock landforms. • Low-grade stockpiles. • Topsoil stockpiles. • Haul roads.	Figure 2-1	Up to 3,045.79 ha of disturbance within the 4,489.2 ha DE.
Mine dewatering infrastructure including: • Dewatering bores and pump stations. • In-pit and underground sumps. • Pipelines. • Water management ponds. • Engineering controls as to mitigate groundwater impacts during dewatering.		
Processing elements including: • ROM pad and ore stockpiles. • Secondary crushing station and conveyors and screening infrastructure. • Processing plant. • Concentrate stockpiles. • Paste plant. • Tailings storage facility. • Tailings and return water pipelines. • Process water ponds.		

Proposal element	Location / description	Maximum extent, capacity or range
Support infrastructure including: • Offices. • Ventilation infrastructure • Underground power infrastructure • Gatehouse. • Workshops. • Park-ups/go-lines. • Laydowns. • Explosive magazines and bulk explosives compound. • Wastewater treatment plant/s. • Surface water management infrastructure including but not limited to stormwater management ponds, process water ponds, water drainage and diversion channels. • Underground water management infrastructure. • Landfill/s. • Borrow pits. • Accommodation village. • Communication infrastructure. • Access and haul roads. • Power generation (natural-gas fired power station and solar PV system) and distribution infrastructure, including battery storage. • Pipelines and associated corridors to enable the delivery of alternative water supply (non-dewatering water). • Other ancillary infrastructure.		
Surface Mining Exclusion Area (SMEA): • Improvement and maintenance of existing access tracks.	Figure 2-1	Up to 3 ha included within the IDF for the Proposal (3,045.79 ha).

Proposal element	Location / description	Maximum extent, capacity or range
- Environmental monitoring and mitigation infrastructure. - Engineering controls as to mitigate groundwater impacts during dewatering.		
Construction elements		
Key construction elements include, but not limited to the following physical and operational elements: - Accommodation village. - Surface water management infrastructure. - Dewatering bores or sumps and pump stations. - Engineering controls as to mitigate groundwater impacts during dewatering. - Construction of access and haulage roads. - Borrow pits and laydowns. - Pipelines and associated corridors to enable the delivery of alternative water supply (non-dewatering water). - Bulk earthworks and development of topsoil stockpiles. - Office and administration buildings. - Processing plant and associated tailings storage facility. - Paste Plant. - Concrete batching plant. - Crushing and screening. - Temporary construction power generation (diesel). - Landfill and waste management facilities.	Figure 2-1	Disturbance required for the construction elements is included within the IDF for the Proposal (3,045.79 ha).
Surface Mining Exclusion Area (SMEA):	Figure 2-1	Up to 3 ha included within the IDF for the Proposal (3,045.79 ha).

Proposal element	Location / description	Maximum extent, capacity or range
- Improvement and maintenance of existing access tracks. - Environmental monitoring and mitigation infrastructure. - Engineering controls as to mitigate groundwater impacts during dewatering.		
Mine Dewatering	Figure 2-1	Up to 0.9 gegalitres/annum.
Operational elements		
Mining	Figure 2-1	Up to 7 Million tonnes/annum of mined ore.
Mineral Processing		Up to 1.1 Million tonnes/annum of Li ₂ O concentrate. Up to 5 Kilo tonnes/annum of Ta ₂ O ₅ concentrate.
Tailings Deposition		Up to 4.9 Million tonnes/annum.
Mine Dewatering		Up to 0.9 gegalitres/annum
Proposal elements with greenhouse gas emissions		
Peak annual average		
Scope 1 (Fuel use and land use change)	Approximately 247,353 tCO ₂ -e	
Scope 2 (electricity consumption)	Approximately 240,800 tCO ₂ -e	
Scope 3 (primarily processing of sold products)	Approximately 201,895 tCO ₂ -e	
Annual average life of mine:		
Scope 1	120,878 tCO ₂ -e	
Scope 2	236,787 tCO ₂ -e	
Scope 3	189,776 tCO ₂ -e	
Total (based on annual average Scope 1, 2 and 3)		
17,044,528 tCO ₂ -e		
Rehabilitation		
The Proposal has considered mine closure throughout the design phase and will be completed in accordance with an approved Mining Development and Closure Proposal (MDCP) and Mine Closure Plan (MCP), regulated under the provisions of the <i>Mining Act 1978</i> (Mining Act) by the Department of Mines, Petroleum and Exploration (DMPE). Progressive rehabilitation will be undertaken over the LOM with the objective of developing landforms that are safe, stable and non-polluting. This will allow self-sustaining ecosystems to develop and be capable of delivering post-mining land use. At the cessation of operations, infrastructure will be decommissioned and removed (unless otherwise agreed with relevant stakeholders), earthworks and rehabilitation of disturbed areas will be completed. Abandonment bunds will be constructed to restrict access to the post-closure pit lake. Mine closure and final post mining land use will be subject to ongoing stakeholder consultation and closure cost liability estimates will be included in financial planning during the life of the Proposal.		

Proposal element	Location / description	Maximum extent, capacity or range
Commissioning		
Commissioning of the processing facility and associated infrastructure to be undertaken subject to operational limits (above) and in accordance with approval(s) issued under Part V the EP Act.		
Decommissioning		
The MDCP and subsequent MCPs will provide a plan for decommissioning of the mine and post-closure land use. All infrastructure will be removed unless ownership is transferred to a third party.		
Other elements which affect extent of effects on the environment		
Proposal time: Proposed commencement in 2029.	Maximum project life	Approximately 34 years
	Construction phase	Approximately 2 years
	Operations phase	Approximately 30 years
	Decommissioning phase	Approximately 2 years

2.1.1 Surface Mining Exclusion Area

The Proponent will establish a Surface Mining Exclusion Area (SMEA) within the DE along the Ngurin (Harding River), encompassing an area of 441.85 ha as illustrated in Figure 2-1. The purpose of the SMEA is to reduce direct impacts and facilitate the protection of environmental and cultural heritage values, including the critical breeding, foraging, and dispersal habitat of species that utilise the Major Drainage Line habitat.

The following activities may be undertaken within the SMEA, subject to prior approval from the Proponent's Heritage Team and, where specified, in consultation with Traditional Owners:

- Improvement and maintenance of existing access tracks:

Activities related to the maintenance and enhancement of existing tracks to facilitate safe and practical access to, and movement along, the Ngurin including access for Traditional Owners.

- Establishment of cultural areas:

Installation or development of designated cultural areas utilising relocated culturally significant items and/or interpretive or protective signage to support cultural heritage protection and promote engagement with Country.

- Environmental monitoring activities:

Implementation of environmental monitoring activities undertaken for the purpose of assessing and managing environmental conditions within the SMEA.

- Installation of environmental monitoring equipment:

Installation and operation of environmental monitoring equipment (as required), to enable environmental compliance monitoring, in consultation with Traditional Owners. This may include, but is not limited to, groundwater monitoring bores and air quality monitoring equipment.

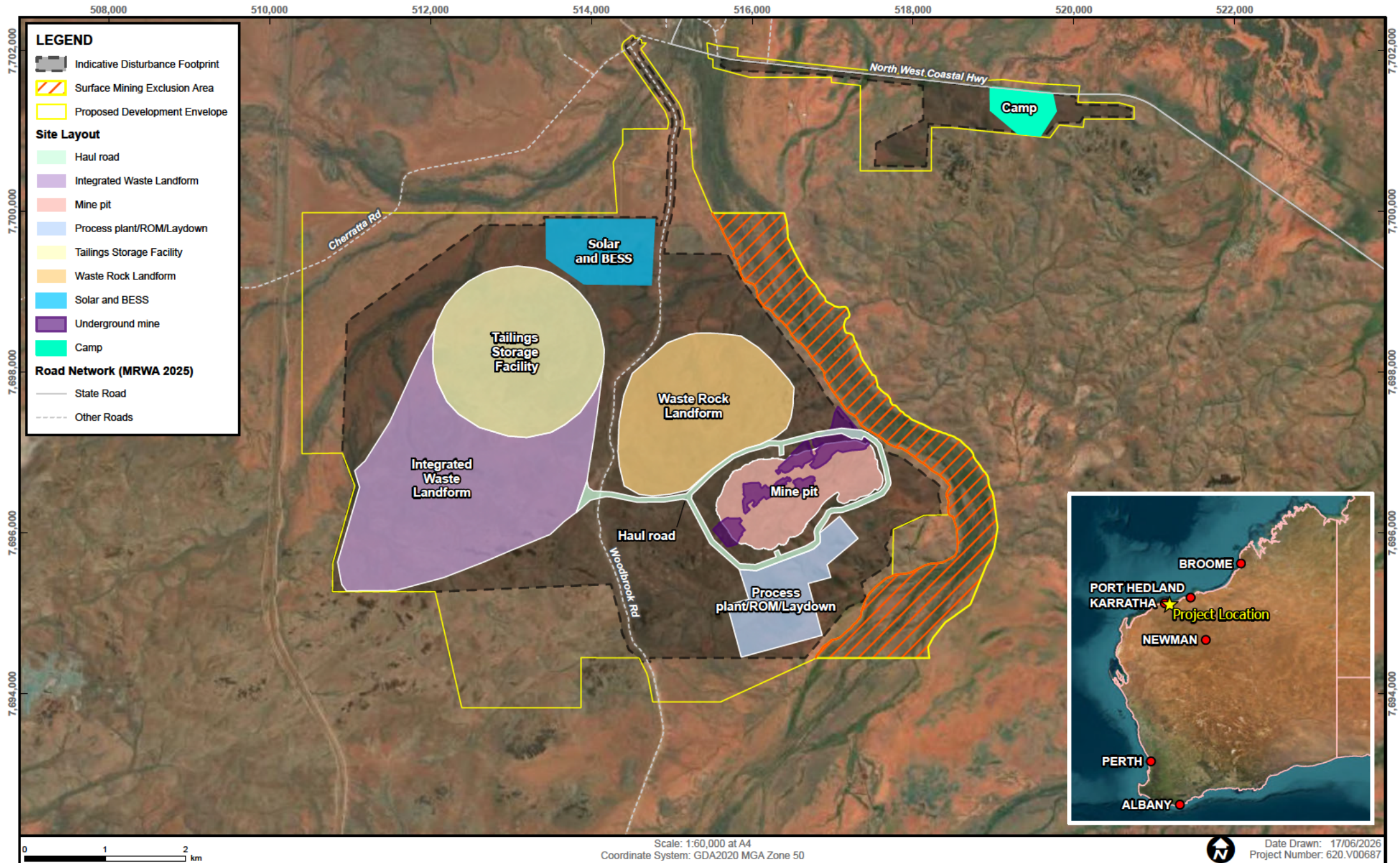
- Environmental mitigation measures:

Implementation of environmental mitigation measures necessary to protect environmental and cultural values, subject to consultation with Traditional Owners. These measures may include, but are not limited to:

- Flood bunding and/or diversion works.
- Groundwater impact mitigation measures.
- Remediation efforts (if required).

The implementation of permissible activities within the SMEA will be subject to an upper threshold of 3 ha for the direct disturbance of Major Drainage Line habitat over the LOM. Compliance with this threshold will be verified through Azure's Ground Disturbance Permit (GDP) process, which applies to all ground disturbing activities undertaken onsite and includes the review of relevant geospatial information system (GIS) exclusion layers.

The Proponent will manage all permitted activities to prevent interference with the movement or dispersal of any Threatened species within or adjacent to the SMEA, including within critical habitat contained within this exclusion area. Access to this area will be restricted, and project personnel and/or contractors will be prohibited from entering without prior approval from the Azure's heritage team.



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Path: H:\Local Resources\Mining Advisory\ADVIS\03-Projects\Australia-WA\AndoverProject\ADVAU00687\01-ESRI\ADVAU00687_EPBC_EPA.aprx\EPA Referral Fig 2-1_Proposal Footprint

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PROPOSAL FOOTPRINT

FIGURE 2-1

2.1.2 Existing On-site Activities

The Andover Project is a green fields proposal, with no existing mining or processing operations within the proposed DE. Existing land uses include pastoralism, mineral exploration and traditional land uses. There are existing mining operations and associated infrastructure within the Proposal's vicinity including the WA limestone quarry located approximately 3.65 km to the west and the Rio Tinto railway line located approximately 240 m (at its closest point) to the west. Existing activities onsite to date have included exploration drilling, supported by core logging, geotechnical investigations, environmental assessments and heritage surveys.

2.1.3 Exclusions

The following activities do not form part of the scope of the Proposal being referred to the EPA:

- Low impact, existing, ongoing and future exploration activities and support infrastructure.
- Resource definition drilling.
- Feasibility related studies including but not limited to ongoing test work, geotechnical and geophysical assessments, environmental monitoring and management trials/activities.
- Heritage, environmental and geotechnical surveys; and
- Rehabilitation for exploration activities.

2.2 Proposal Justification

The development of the Proposal will support the growing global demand for lithium, a critical mineral primarily used in battery manufacturing and essential for renewable energy storage systems and the electric vehicle industry. These technologies are central to the global transition toward lower-carbon energy systems and the reduction of greenhouse gas emissions.

The Proposal will generate both direct and indirect employment opportunities during the construction and operational phases. During the construction phase, an estimated peak onsite workforce of approximately 2,000 personnel will be required over a two-year period. During mining and processing operations, it is anticipated that approximately 400–500 full-time equivalent personnel will be employed directly. The Proposal is also expected to provide opportunities for local employment and support local industries through the procurement of goods and services, including manufacturing, fabrication, and contracting services. This is anticipated to benefit local economies in regional towns such as Roebourne. Azure intends to prioritise local employment and upskilling where possible, including through dedicated training and employment pathways. The Proponent has also committed to local procurement initiatives, working with regional suppliers to strengthen their capacity to participate in tendering processes and improve competitiveness. In addition, the Proposal will contribute revenue to government through the payment of royalties to the Western Australian Government and

taxation to both the Australian and Western Australian Governments throughout the operational life of the Project.

More broadly, the Proposal will support Australia's critical minerals sector and the development of green energy infrastructure and supply chains, while contributing to the nation's long-term economic diversification objectives.

2.3 Proposal Alternatives

Trade-off studies have been completed to determine best case outcomes for the Proposal. Alternative options to benefit both environmental and Proposal outcomes include the following:

- Ore Storage Options (bin versus stockpile) – Stockpile arrangement allows for sufficient capacity for crusher relines. Crushed ore bin option would necessitate an external additional stockpile with stacker that would require additional clearing of critical habitat impacting conservation significant fauna.
- Dry stack tailings versus wet TSF – Dry stack tailings enable greater water recovery compared to wet tailings storage facilities, however, requires higher capital expenditure and presents additional health, safety and environmental risks, particularly related to increased dust generation and material handling.
- Mine pit backfill versus no backfilling:
 - Two different mining approaches have been considered:
 - Open pit mining with some progressive in-pit backfilling of the mine void to the extent practicable, in combination with disposal to the WRL and IWL, or
 - Open pit mining with no progressive backfilling and all waste rock disposed to the WRL and IWL.
 - Some in pit backfilling of the mine void with waste rock has been incorporated into the Proposal to minimise the overall footprint of the WRL and IWL. This approach will also allow landform heights to be managed, reducing potential visual impacts. Inpit backfilling provides an additional economic benefit through shorter haulage distances, resulting in reduced fuel consumption and lower greenhouse gas emissions. Where practicable, sections of the backfilled mine pit may be rehabilitated, thereby reducing the final area of unrehabilitated pit void remaining at mine closure. In accordance with DMPE requirements, a Sterilisation Report will be prepared and submitted for assessment and approval prior to the commencement of in pit backfilling.
- Alternative areas for Proposal infrastructure siting were considered during the planning phases of the Proposal. A comprehensive mine site layout study was conducted, taking into account environmental and cultural values, visual amenity and proximity to the township, and in consultation with key stakeholders. These however were not progressed due to avoidance of critical habitat which may further impact conservation significant fauna, difficulty of terrain and avoidance of Aboriginal Cultural Heritage values.

- Groundwater abstraction for supply as a source of process water was set aside in favour of exploring alternative supply options. This was decided in recognition of the value of local aquifers to the Ngarluma people and their concerns about additional impacts from groundwater abstraction.

2.4 Location and Tenure

The Proponent's tenements are located approximately 35 km southeast of Karratha, immediately south of the township of Roebourne (Ieramugadu), within the City of Karratha local government area in the Pilbara region of Western Australia (Figure 1-1). Access to the site is via the Northwest Coastal Highway and Woodbrook Road. The Proposal's DE and IDF are shown in Figure 2-1.

Tenure for the Proposal will be obtained in accordance with the *Mining Act*, in consultation with key stakeholders, and Ngarluma as the native title holders for the area. The tenements held by Azure are detailed in Table 2-3.

Table 2-3: Tenement Location and Detail

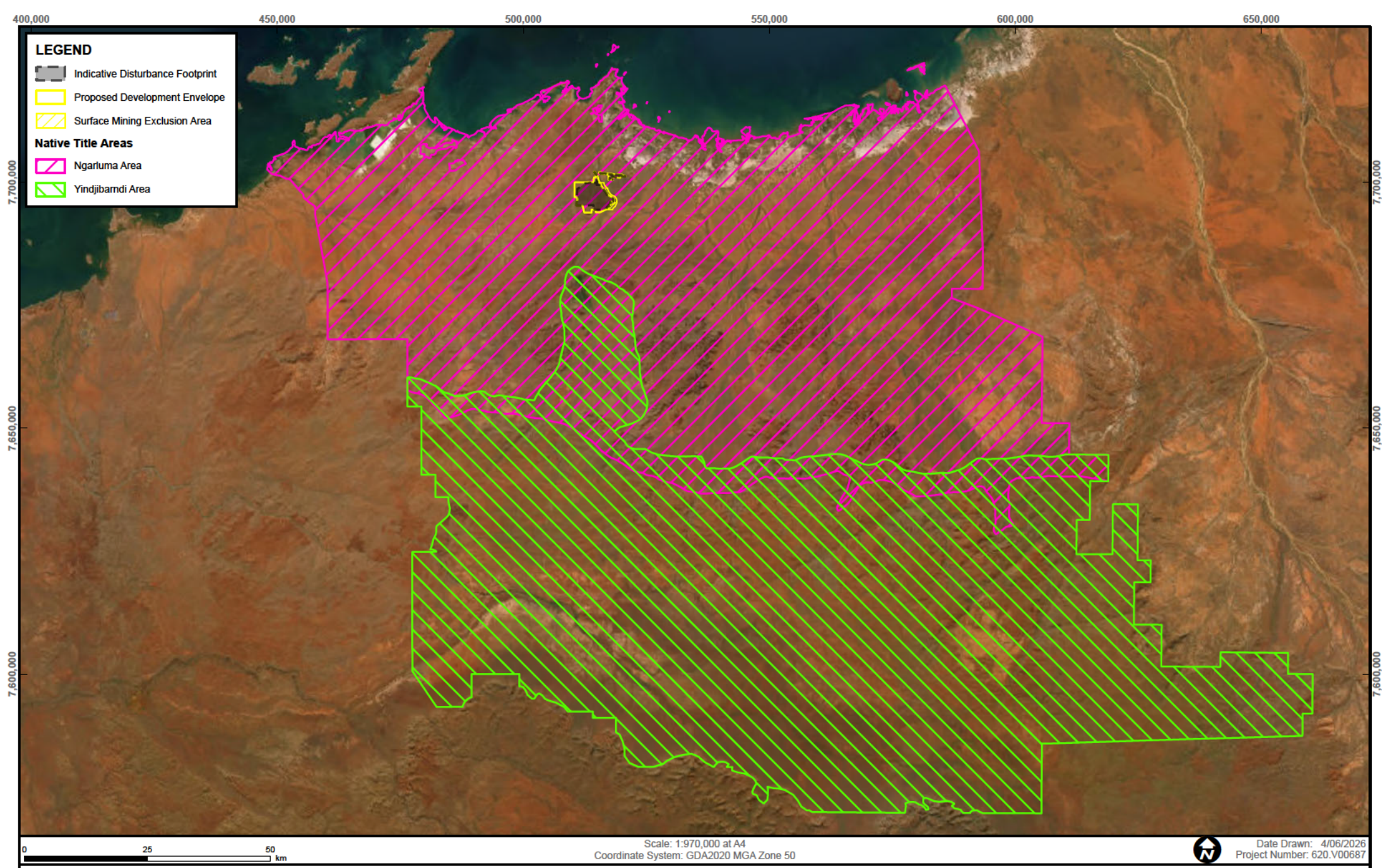
Tenement	Status	Holder(s)	Main Purpose	Current Area
M47/1672	Pending	Azure Minerals Pty Ltd Croydon Gold Pty Ltd	Mining Lease	6126.650
Woodbrook Road L 47/1307	Pending	Azure Minerals Pty Ltd Croydon Gold Pty Ltd	Bore, bridge, drainage channel, pipeline, power line, pump station, road, tunnel and water management facility.	50.96
Southern Extension L47/1310	Pending	Azure Minerals Pty Ltd Croydon Gold Pty Ltd	Bore, Communications facility, Drainage channel, Meteorological station, Pipeline, Power generation & transmission facility, Powerline, Pump Station, Road, Storage / transportation of minerals or concentrate, Water Management facility and Workshop and storage facility.	83.95
Andover Camp East L 47/1308	Pending	Azure Minerals Pty Ltd Croydon Gold Pty Ltd	Bore, Bridge, Communications facility, Drainage channel, Meteorological station, Mine site accommodation, Pipeline, Power generation & transmission facility, Powerline, Pump Station, Road, Water	234.38

Tenement	Status	Holder(s)	Main Purpose	Current Area
			Management facility and Workshop & storage facility.	
Andover Camp West L47/ 1309	Pending	Azure Minerals Pty Ltd Croydon Gold Pty Ltd	Bore, Bridge, Communications facility, Drainage channel, Mine site accommodation, Pipeline, Powerline, Pump Station, Road and Water Management facility.	41.375

2.4.1 Native Title Determination

The Ngarluma and Yindjibarndi people hold native title rights and interests over approximately 11,000 km² of land and waters in the Pilbara region. The Proposal is located wholly within the Ngarluma/Yindjibarndi native title determination area(WCD2005/001). Two RNTBCs manage the Native Title for this determination: the Yindjibarndi Aboriginal Corporation RNTBC (for the 'Yindjibarndi Native Title Area') and the Ngarluma Aboriginal Corporation RNTBC (for the 'Ngarluma Native Title Area').

The Proposal is located entirely within the Ngarluma Native Title Area (as shown in Figure 2-2), where the Ngarluma People have been determined under the *Native Title Act 1993* (Cth) to hold various non-exclusive native title rights and interests.



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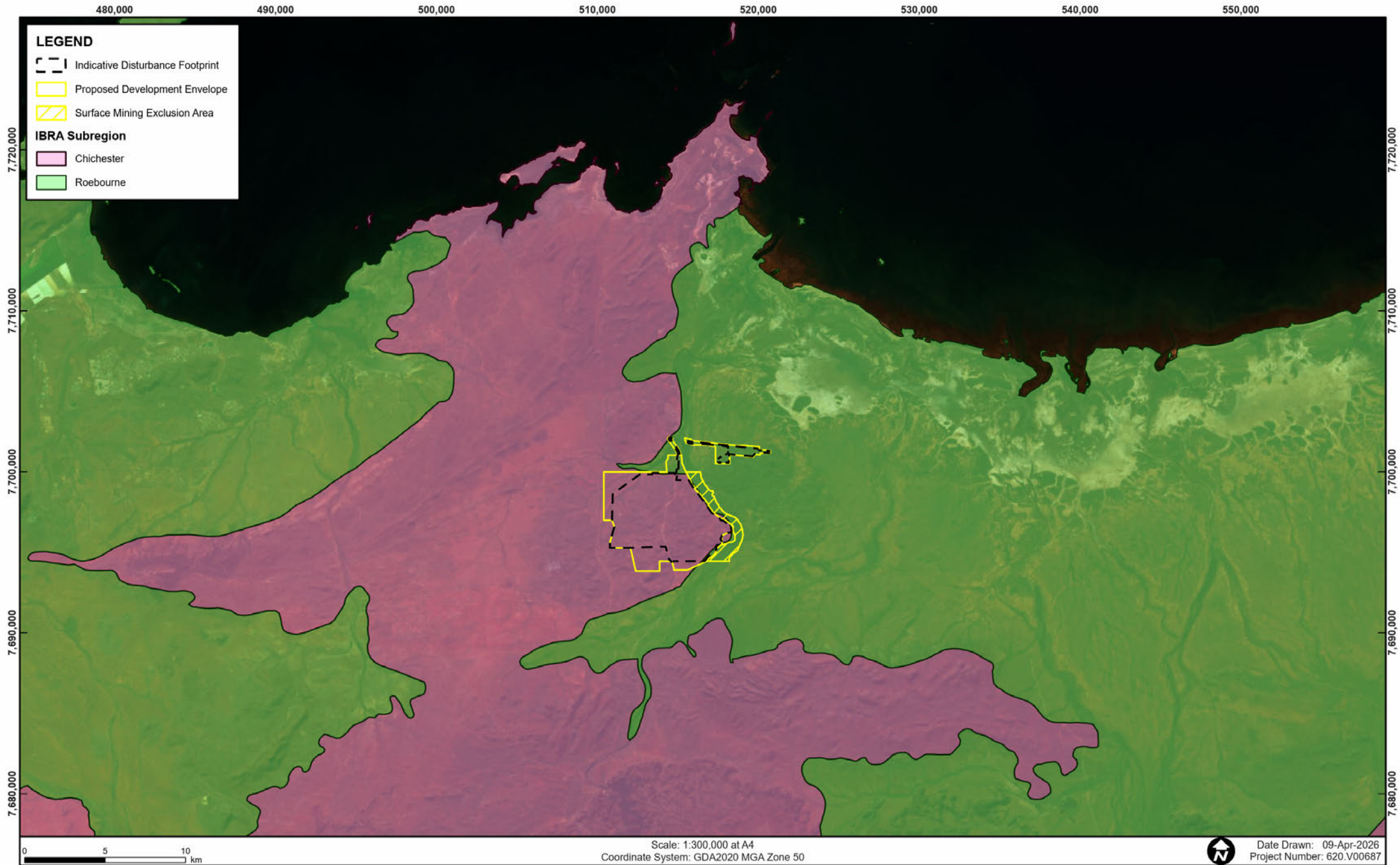
NATIVE TITLE DETERMINATION

FIGURE 2-2

2.4.2 Regional Setting

The Proposal is in the Chichester (PIL01) and Roebourne (PIL03) subregions of the Pilbara region, as described by the Interim Biogeographic Regionalisation for Australia (IBRA) Version 7 (DoEE, 2012). The Chichester subregion is approximately 9,044,560 hectares (ha) and has significant areas of basaltic ranges amongst undulating Archean granite and basalt plains. These plains support a shrub-steppe characterised by *Acacia inaequilatera* over hummock grasslands with *Eucalyptus leucophloia* tree steppes occurring on the ranges. Drainage of the subregion occurs through many rivers running north, including the De Grey, Oakover, Nullagine, Shaw, Yule and Sherlock Rivers (Kendrick & McKenzie, 2001).

The Roebourne subregion is approximately 2,008,983 ha and is characterised by quaternary alluvial and older colluvial coastal and sub-coastal plains with a grass savannah of mixed bunch and hummock grasses and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera*. *Triodia* hummock grasslands dominate uplands. Ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands (Kendrick & Stanley, 2001). The regional setting of the Proposal is shown in Figure 2-3.



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REGIONAL SETTING

FIGURE 2-3

2.4.3 Regional and Local Geology

The granite-greenstone terrane in the west Pilbara is characterised by east-northeasterly striking greenstone sequences that envelope elongate to ovoid granitoid complexes. Both the greenstones and the granitoid complexes were intruded by Archaean mafic – ultramafic layered intrusions. The dominant structure affecting the terrane is the Sholl Shear Zone, which appears as a sinuous feature trending easterly to east-northeasterly across the northern part of the area. The greenstones include metamorphosed mafic to ultramafic volcanic rocks, felsic to intermediate intrusive rocks, clastic sedimentary rocks, chert, banded iron formation, and sills of mafic to ultramafic intrusive rocks. The granitoid complexes consist of syntectonic granitoid intrusions, gneissic granitoid, and migmatite, and some contain enclaves of metamorphosed greenstones or layered mafic-ultramafic bodies (MBS, 2025a).

Within the Proposal area, with an aerial extent of about 140 km², the Andover complex is the second biggest intrusion of the mafic-ultramafic complexes in the West Pilbara (Hoatson & Sun, 2002). It comprises a lower layered ultramafic zone 1.3 km thick and an overlying 0.8 km gabbroic layer intruded by dolerites (MBS, 2025a).

The lithological units composing the Andover complex are briefly described in Hoatson and Sun (2002) as:

- The ultramafic zone containing a rhythmically layered series of clinopyroxenite, orthopyroxenite and mixtures of this (e.g. websterite) with minor interlayered anorthosite, anorthositic gabbro and gabbro; and
- The gabbroic zone consisting of massive and layered gabbro, anorthositic gabbro and anorthosite.

2.4.4 Reserves and Land Use

The dominant land uses in the wider region include grazing of native pastures, indigenous land management, conservation, residential townships and mineral exploration and production. The Proposal is located on Mt Welcome Station (registered lessee Mt. Welcome Pastoral Co. Pty Ltd) and is proximal to the Aboriginal communities of Mingullatharndo and Cheeditha, that are 2.5 km and 3.7 km from the proposed DE, respectively (Figure 1-1).

The Proposal is located across a mix of land tenures, including Unallocated Crown Land, free land parcels, exploration licences, and land subject to pastoral tenure, including the Mt Welcome Pastoral Lease.

Azure will engage with relevant stakeholders and renegotiate existing access arrangements or establish new agreements or establish new agreements where required for areas potentially impacted by the Project or needed for supporting infrastructure.

The closest national park is the Millstream Chichester National Park located 27 km south of Proposal.

3 Stakeholder Engagement

3.1 Key Stakeholders

Table 3-1 lists the key stakeholders for the Proposal, in addition to the Ngarluma People who are the determined native title holders for the Proposal area.

The Proponent will continue to prioritise engagement with the Ngarluma people throughout the planning, assessment, development, and operational phases of the Proposal. This engagement will inform the identification and management of potential impacts to social surroundings, Aboriginal heritage, and cultural values, in accordance with relevant EPA guidelines.

Additional stakeholders may be identified as the Proposal progresses. However, engagement with these parties will remain distinct from, and supplementary to, the ongoing and prioritised engagement with Traditional Owners.

Table 3-1: Key Stakeholders

Sectors	Stakeholder
Indigenous Groups	Ngarluma Aboriginal Corporation (Registered Native Title Body Corporate)
	Ngarluma/Yindjibarndi Native Title Holders
Landholders	Mt Welcome Station Mingullatharndo (Five Mile) Community Cheeditha Community
State Government	Environmental Protection Authority
	Department Planning, Lands and Heritage (DPLH)
	Department of Mining, Petroleum and Exploration (DMPE)
	Department of Water and Environmental Regulation (DWER)
	Department of Primary Industries and Regional Development (DPIRD)
	Department of Communities (DC)
	Department of Biodiversity, Conservation and Attractions (DBCA)
	Department of Fire and Emergency Services (DFES)
	Department of Health (DoH)
	Department of Energy and Economic Diversification (DEED)
Local Government	City of Karratha Town of Port Hedland
Community Groups	Roebourne (Ieramugadu) - township
Commonwealth Government Departments	Department of Climate Change, Energy, the Environment and Water (DCCEEW)
	National Indigenous Australian Agency

Sectors	Stakeholder
Tenement Holders	Third party tenure holders in the vicinity of the Proposal (including but not limited to Rio Tinto Iron Ore (RTIO))
Other	Main Roads Water Corporation Power suppliers Natural gas suppliers Non-Government Organisations (NGOs)

3.2 Stakeholder Engagement Process

Azure has developed a stakeholder engagement strategy for the Andover Project to enable effective consultation with government agencies key stakeholders. The strategy aims to support transparent communication throughout the development of the Proposal and enable stakeholders to have opportunities to understand the Proposal, provide input and raise concerns. Stakeholder inputs will be and continue to be considered and where possible, shape project decisions and design.

The overarching objectives of the stakeholder engagement strategy include the following:

- Familiarise stakeholders with the nature and purpose of the Andover Project, including potential environmental and social impacts, proposed mitigation measures and the benefits that are planned to arise from the Andover Project development.
- Provide clear, timely and transparent information regarding planning, development activities, potential impacts and proposed management approaches.
- Establish opportunities for two-way engagement so that stakeholders can provide feedback, share local knowledge and contribute to improving the outcomes of the Proposal.
- Provide mechanisms through which stakeholders can raise questions or concerns regarding the Proposal so that Azure can respond appropriately and in a timely manner.
- Consider stakeholder feedback in planning to ensure potential impacts are avoided, minimised or managed wherever practicable.

Azure's stakeholder engagement strategy includes targeted engagement with key stakeholder groups listed in Table 3-1. Specific engagement approaches have been developed for each group to ensure consultation activities are appropriate and effective. The engagement strategy will be regularly reviewed and updated to reflect changes in project timelines, regulatory requirements, and stakeholder feedback, ensuring that the approach remains adaptive and responsive.

Azure maintains records of stakeholder engagement activities and feedback received during consultation. Engagement will continue throughout the environmental impact assessment process and across the life of the Andover Project to ensure stakeholder views are considered in Project planning and management.

3.3 Stakeholder Consultation

Azure has undertaken ongoing consultation with key stakeholders including relevant regulatory authorities, Ngarluma people, NAC and the local community. A summary of the stakeholder consultation undertaken has been provided in Table 3-2. As consultation is ongoing the outcomes of consultation initiatives will be presented in the ERD.

Table 3-2: Stakeholder Consultation Register

Stakeholder	Engagement Forum	Themes	Dates
Ngarluma Aboriginal Corporation (NAC) and Indigenous Community Groups			
NAC and Ngarluma people.	Information sessions and public meetings held across Perth and the Southwest, Karratha, Port Hedland, and Roebourne with NAC personnel and Ngarluma people to ensure equitable participation in project discussions.	- Project introductory meetings to introduce the NAC leadership and negotiating team and establish new connections. - Regular status updates continue to be provided to maintain transparency across all project phases, including project design, the environmental referral, native title agreement processes. - Presentations from Azure during the NAC AGM and board meetings. - Ongoing discussions regarding economic opportunities the Project presents for Indigenous owned businesses and candidates. - Ongoing regular meetings held to discuss project progress, opportunities for enhanced engagement with Traditional Owner groups, and to collaboratively address issues. These include general catch-ups, monthly meetings, and informal discussions. - Common themes of discussion have previously focused on project location, spodumene processing, water, heritage sites, dust management and socioeconomic benefits of the project. - Reference site visits with personnel to other lithium mining operations, to provide NAC members contextual	27 March 2025 – Ongoing.
	Ongoing meetings held to support open dialogue between NAC members and Azure's executive leadership team, including community sessions, project meetings, board briefings, presentation at annual general meetings (AGMs), and informal relationship-building activities.		
	On Country discussions – Project site visits with NAC/Ngarluma Elders and various members of Azure's leadership team/owner group.		

Stakeholder	Engagement Forum	Themes	Dates
	Reference site visits - Greenbushes Lithium Mine; attended by NAC leaders and Azure’s leadership team.	information on the Project, including local perspectives and community impact considerations. Ongoing site visits to the Andover Project, facilitating open-ended, on-country discussions regarding potential implementation issues identified by NAC.	
Ngarluma Yindjibarndi Foundation (NYFL)	Project meetings with executives from both Azure’s leadership team and NYFL.	- Introduction and briefing on the background and future objectives of the Project. - Understanding issues within the community and priorities for Traditional Owner groups including economic, social and housing priorities.	4 April 2025 – Ongoing.
Mingullatharndo Community	Project meetings within the community attended by Azure’s leadership team and Mingullatharndo community members.	Ongoing discussions regarding community, project detail and location.	4 April 2025 – Ongoing.
Murujuga Aboriginal Corporation Rangers	Project meeting with the Murujuga Rangers coordinator, coordinators from the Pilbara Rangers Network and Azure’s leadership team.	Ongoing discussions regarding the potential establishment of a ranger program with NAC.	17 March 2026 – Ongoing.
Pilbara Rangers Network			
Community			

Stakeholder	Engagement Forum	Themes	Dates
Town of Roebourne	Ongoing meetings involving members of the Roebourne community and Azure's leadership team. These include roundtable discussions, community sessions, project meetings, community drop-in sessions, and informal relationship-building activities.	- Establish forums for open discussions between members of the Roebourne community, including selected members considered to represent the wider Roebourne community (Roebourne Round Table) in order to facilitate community consultation during project development to identify opportunities to deliver benefits to the town of Roebourne. - Engagement involves parties with diverse interests within the Roebourne community, including NAC members, broader community representatives, Yaandina Community Services, Ngarliyarndu Bindirri Aboriginal Corporation (NBAC), and Police and Community Youth Centres (PCYC). - Common themes of discussion at community meetings have previously focused on dust management and suppression measures, impacts on the Ngurin, workforce considerations, community impacts, site-specific mine design and operations, and opportunities for engagement with Aboriginal businesses.	19 March 2025 – Ongoing.
Mawarnkarra Health Services	Project meetings held between the Chief Medical Officer and senior board members, and the Azure leadership team.	Addressing concerns the Project may present to the health of the community.	21 January 2026.
City of Karratha	Public Information session held with members of the Karratha community.	Introduction to the Project with members of the Karratha community to allow for open discussion of concerns and benefits of the project.	12 March 2026 – Ongoing.

Stakeholder	Engagement Forum	Themes	Dates
	Public information stand in Wickham.	Azure established a temporary information stand to provide the general public of Wickham a forum for discussion around the Project.	20 February 2026
Ngaarda Media (Pilbara)	Radio interviews featuring Azure's leadership team, including chief executive officer (CEO) and chief operating officer (COO).	- Radio interviews undertaken providing opportunities for Azure to introduce the Project to a wider audience and provide information/updates on project development, engagement with traditional owners and efforts to minimise impacts. - Opportunities to promote upcoming community events held or sponsored by Azure.	4 April 2025 – Ongoing.
Regulators and Governing Bodies			
EPA Services	Project introduction and overview to the Chair of the EPA, attended by Azure executives & leadership team.	- Introduction to the Project, focusing on key risks, impacts and the application of the mitigation hierarchy. - Pre-referral meeting with the EPA's approvals manager and manager for Green Energy (DWER) to discuss upcoming referral plans and timelines. - Themes of discussions include aspects such as social and environmental risks, survey effort (planned and to-date), heritage, community and traditional owner engagement approach. - Feedback sought regarding approval pathways including early works activities. - Engagement with the PEOF branch of DWER regarding offsetting potential residual impacts of the project.	18 July 2025 – Ongoing.
	Pre-referral meeting attended by Azure's principal and senior environmental advisor and assessing officer from the EPA.		
DCCEEW	Overview of the Andover Project, attended by DCCEEW's assistant		

Stakeholder	Engagement Forum	Themes	Dates
	director, members of Azure's leadership team and Corporate Affairs Australia (CAA). Pre referral meeting attended by Azure's COO and the Principal Environmental Advisor.	Introduction to the Project, key risks and impacts to Matters of National Environmental Significance (MNES), anticipated timing for referral and ongoing consultation between DCCEEW and Azure.	18 July 2025 – Ongoing.
DMPE	Project meetings and regular catch ups attended by members of Azure's leadership team and members of the office for DMPE, including policy advisors.	Introduction to the Project and discuss key project aspects and milestones.	9 June 2025 – Ongoing.
DoH	Pre referral meeting attended by Principal Environmental Advisor.	Introduction to the Project and discuss key project aspects relevant to the DoH.	26 May 2026.
Department of Premier and Cabinet	Project introduction with members of the Department of Premier and Cabinet, attended Azure's leadership team.	- Establishment of relationships and introductions to the Proposal and discuss key project aspects and milestones. - Common themes of discussion have included project aspects and milestones, long-term economic development opportunities for Roebourne and surrounding region, power and water infrastructure requirements of the project.	26 August 2025 – Ongoing.
	Pilbara Energy Round Table attended by Azure, involving a number of mining proponents, as well as members from the ministers cabinet.	Workshop attended by multiple mining proponents, introducing upcoming projects and discussing current barriers being faced.	

Stakeholder	Engagement Forum	Themes	Dates
	Formal meetings undertaken with the Clean Energy Finance Corporation, attended by Azure's leadership team.	Follow up meetings held with the Clean Energy Finance Corporation to discuss challenges of accessing grid-sourced power from NWIS for the Project.	
Clean Energy Finance Corporation	Formal meetings undertaken with the Clean Energy Finance Corporation, attended by Azure's leadership team.	Discussions held with the Clean Energy Finance Corporation to discuss challenges of accessing grid-sourced power from NWIS for the Project.	21 January 2026.
DPLH	Project meetings attended by members of the DPLH and Azure's leadership team.	Introduction to the Project and facilitate discussions regarding heritage considerations and relevant approval and permit requirements.	22 January 2026 – Ongoing.

4 Environmental Principles

In preparing this document, Azure has considered the 'Statement of Environmental Principles, Factors, Objectives and Aims of EIA' (EPA, 2023a). The Principles of the EP Act and how they apply to the Proposal are outlined in Table 4-1.

Table 4-1: EP Act Principles

Principle	Detail	Proposal Consideration
The precautionary principle	<i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</i> <i>In the application of the Precautionary Principle, decisions should be guided by:</i> <i>Careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i> <i>An assessment of the risk-weighted consequences of various options.</i>	- Technical studies associated with the Proposal have been undertaken by subject matter experts to assess the social and environmental values within the DE and identify potential risks posed by the Proposal. - Studies have been conducted in accordance with EPA and other relevant guidelines where applicable. - Additional surveys will be conducted throughout the approval process to deepen the understanding of these values. Third-party peer reviews of some matters to be undertaken to enhance confidence in the assessment of impacts. - Azure has carefully considered the impacts of the Proposal and taken all practicable steps to follow the mitigation hierarchy (avoid, minimise, and mitigate in order of priority) to reduce environmental, social, and cultural heritage impacts to as low as reasonably practicable.
The principle of intergenerational equity	<i>The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.</i>	The Proposal provides a significant social and economic opportunity through: - Substantial employment opportunities during construction (~2,000 jobs) and operations (400–500 jobs), supporting long-term workforce opportunities. - Prioritises local employment and training pathways, building skills and capacity for future generations. - Generates increased economic activity in local communities (i.e., Roebourne) Generates sustained government revenue via royalties and taxation over the life of the

Principle	Detail	Proposal Consideration
		Project. Azure has worked and will continue to work closely with NAC and the Ngarluma People to safeguard Indigenous social and cultural heritage values, and ensure the future use of the land and continued exercise of determined native title rights and interests. A Cultural Heritage Management Plan is in development in association with the Native Title Mining Agreement process. Azure seeks to use alternative water supply options in preference to groundwater abstraction, reducing pressure on groundwater resources. This approach supports the sustainable management of environmental and cultural values, ensuring they are maintained for future generations. Azure has developed a decarbonisation plan to reduce its contribution to greenhouse gas emissions (GHG). Mine closure planning is a fundamental aspect of intergenerational equity. At the cessation of mining, Azure will rehabilitate the Proposal to a state suitable for existing pastoral, traditional or other land uses that may be identified by stakeholders. Closure requirements will be captured in a Mining Development and Closure Proposal (MDCP), approved by DMPE prior to the commencement of operations and a Mine Closure Plan (MCP) to be reviewed and approved by DMPE every three years. To the extent practicable Azure will rehabilitate the Proposal in a progressive manner during the life of operations.
The principle of conservation of biological diversity and ecological integrity.	<i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i>	Conservation of local biological diversity was a primary consideration in the design of the Proposal. The layout design has reduced direct impacts to the main hydrological feature of the Ngurin and minimised impacts to the Chenopod Vegetation Associations of the Roebourne Plains (P1) and the Horseflat Land System of the Roebourne Plains (P3). Direct impacts to critical habitat for the Northern Quoll, Pilbara Olive Python and Grey Falcon has been minimised as far as practicably possible. The DE has been designed to exclude and therefore avoid direct impacts to single

Principle	Detail	Proposal Consideration
		known location of <i>Australobrachopus</i> sp. 'Biologic-ANOS003 (fairy shrimp). The SMEA has been implemented to protect culturally and environmentally significant values immediately adjacent to the project, and also habitat for a number of other conservation significant species. The impact to conservation significant flora and fauna populations has been minimised through the application of the mitigation hierarchy and is unlikely to have a significant impact to the ecological integrity of the receiving environment.
Principles relating to improved valuation, pricing and incentive mechanisms.	a) <i>Environmental factors should be included in the valuation of assets and services.</i> b) <i>The polluter pays principle – those who generate pollution and waste should bear the cost of containment, avoidance or abatement.</i> c) <i>The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes.</i> d) <i>Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.</i>	Azure is responsible for the costs associated with the development and closure of the Proposal, inclusive of all environmental management measures, additional environmental studies, ongoing monitoring requirements, offsets and design features to reduce environmental impacts. Azure will also continue to investigate opportunities to reduce clearing (inclusive of preferential use of previously cleared areas), promote habitat of conservation significant species and implement a progressive rehabilitation program. Closure cost liability estimates shall be regularly reviewed and incorporated in finance statements. Azure will contribute to the Mining Rehabilitation Fund (MRF) as required, and pay fees associated with emissions authorised under Part V of the EP Act. Azure will also contribute to carbon offsets in accordance with the requirements of the Safeguard Mechanism, and in the event it is unable to reduce its carbon emissions within assigned timeframes.
The principle of waste minimisation	<i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i>	Waste will be minimised by adopting the hierarchy of waste controls: avoid, minimise, reuse, recycle and safe disposal in order of priority. Azure is committed to prioritising offsite waste disposal by seeking opportunities to

Principle	Detail	Proposal Consideration
		use existing local landfill facilities for both construction and operational wastes. During the Definitive Feasibility Study (DFS) phase of the Project, Azure will undertake a waste management study to evaluate alternative waste management options to on onsite landfill. Mine waste volumes will be minimised through optimisation of the resource, and some backfilling of mine voids (where practicable) is proposed to minimise surface stockpiling. Circularity will be built into the process plant design to recover and reuse waste products (i.e., TSF decant recovery). Azure is also investigating other recovery and reuse options to improve the efficiency and economics of the process plant, which will minimise the generation of waste and its discharge to the environment.

5 Environmental Factors

An environmental impact assessment has been undertaken for the Proposal and is described in the following sections for relevant environmental factors. The assessment considers the objectives for each factor, as defined in the EPA *'Statement of Environmental Principles, Factors, Objectives and Aims of EIA'* (EPA, 2023a). The assessment also considers the EPA guidance around assessment of significance, where it is applicable to the factor.

Azure has completed a review against the Environmental Factors to identify those that are relevant to the Proposal. The following factors are considered to be Preliminary Key Environmental Factors for the Proposal:

Key Environmental Factors:

- Inland Waters (Section 6)
- Flora and Vegetation (Section 7)
- Terrestrial Fauna (Section 8)
- Subterranean Fauna (Section 9)
- Air Quality (Section 10)
- Greenhouse Gas Emissions (Section 11)
- Social Surroundings (Section 12)

Other Environmental Factors:

- Landforms (Section 13)
- Terrestrial Environmental Quality (Section 14)

The following factors are excluded from the assessment as they are absent from the DE and are not applicable to the Proposal:

- Benthic Communities and Habitats.
- Coastal Processes.
- Marine Environmental Quality.
- Marine Fauna.
- Human Health (excluded from the assessment as waste associated with the Proposal is not radioactive, as described in Section 14).

The identification of preliminary key environmental factors is presented in Table 5-1, other environmental factors have been presented in

Table 5-2. Further details about each environmental factor identified as relevant to the Proposal are provided in Sections 6 to 14.

Table 5-1: Identification of Preliminary Key Environmental Factors

Theme	Preliminary Key Environmental Factor	Basis of Classification
Water	Inland Waters	The Harding River and associated shallow water system is comprised of fractured rock aquifers. The hydrology of the Harding River has previously been significantly altered by the Harding River Dam. The section of the Harding River immediately adjacent to the mine has been avoided and protected as a SMEA. While pit dewatering will occur, it is limited to fractured rock aquifers associated with the bedrock. Due to the uncertainty associated with the location of these fractures, there is a risk that pit dewatering may impact the environmental values of the river system (regardless of the comprehensiveness of hydrogeological studies). Using the precautionary principle and due to the proximity of the river to the mine and its associated cultural heritage and environmental values, in the absence of contingency planning, there is potential for pit dewatering to impact the environmental values associated with the river.
Land	Flora and Vegetation	Native vegetation that is in excellent, very good and good condition will be cleared as a result of the Proposal. No Threatened flora species have been recorded during surveys; however, seven Priority species have been recorded within the DE including - • <i>Trianthema</i> sp. Python Pool (G.R Guerin & M.E. Trudgen GG 1023)(P2) • <i>Dolichocarpa</i> sp. Hamersley Station (A.A Mitchell PRP 1479) (P3) • <i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i> (P3) • <i>Euphorbia inappendiculata</i> var. <i>queenslandica</i> (P3) • <i>Neptunia longipila</i> (P3) • <i>Vigna triodiophila</i> (P3) • <i>Rhynchosia bungarensis</i> (P4) No Threatened Ecological Communities (TECs) have been recorded during surveys; however, two Priority ecological communities (PECs) have been recorded within the DE including - • Chenopod Vegetation Association of the Roebourne Plains (P1) • Horseflat Land System of the Roebourne Plains (P3)

Theme	Preliminary Key Environmental Factor	Basis of Classification
	Terrestrial Fauna	Four threatened species, two priority species and one specially protected species were recorded in the DE during field surveys. The Proposal will directly impact critical breeding, foraging and/or dispersal habitat of three Threatened species including – • <i>Dasyurus hallucatus</i> (Northern Quoll) (Vulnerable) – breeding, foraging and dispersal habitat. • <i>Liasis olivaceus barroni</i> (Pilbara Olive Python) (Vulnerable) – breeding, foraging and dispersal habitat. • <i>Falco hypoleucos</i> (Grey Falcon) (Vulnerable) – breeding, foraging and dispersal habitat. • <i>Macroderma gigas</i> (Ghost Bat) (Vulnerable) – foraging and dispersal habitat. The Proposal will directly impact supporting and important habitat of three Priority species and one specially protected species – • <i>Pseudomys chapmani</i> (Western Pebble-mound Mouse) (P4) • <i>Notoscincus butleri</i> (Lined Soil-crevice Skink) (P4) • <i>Leggadina lakedownensis</i> (Northern Short-tailed Mouse) (P4) • <i>Falco peregrinus</i> (Peregrine falcon) (OS)
	Subterranean Fauna	Surveys have identified the presence of subterranean fauna; • Stygofauna – a community with new species has been recorded in the DE as well as in regional areas. • Troglifaunal – a depauperate community. The Proposal has the potential to locally impact some habitat of subterranean fauna due to mining activities and pit dewatering.
Air	Air Quality	The Proposal has the potential to alter the quality of the local airshed as a result of materials handling and stockpiling from mining activities, handling of product concentrates and emissions from onsite power generation. In addition, materials characterisation studies have indicated some lithologies to be mined contain potential fibrous materials.
	Greenhouse Gas Emissions	Greenhouse gas emissions are estimated to exceed 100,000 tCO₂-e per annum for Scope 1 and 2 emissions for the life of the mine, in the absence of mitigation.
People	Social Surroundings	The Proposal is located within the Ngarluma Native Title Determination Area and is close to Roebourne and the Mingullatharndo and Cheeditha Aboriginal Communities. The Proposal has the potential to impact cultural, aesthetic, amenity and other Social Surroundings values.

Table 5-2: Identification of Other Environmental Factors

Theme	Other Environmental Factor	Basis of Classification
Land	Landforms	The Proposal does not occur within or impact upon unique or uncommon landforms. All local landforms are widespread across the broader region.
	Terrestrial Environmental Quality	Materials characterisation studies, inclusive of all waste rock lithologies and low-grade ore have indicated that material are non-acid forming (NAF) and presents a low risk of metalliferous or saline drainage. Application of the mitigation hierarchy can protect the integrity of the Terrestrial Environmental Quality conditions, including the implementation of the MCP therefore limiting the potential for impacts.

6 Preliminary Key Environmental Factor – Inland Waters

6.1 EPA Objective

The EPA objective for Inland Waters is “to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected” (EPA, 2018a).

6.2 Policy and Guidance

The following guidance is applicable to this factor:

- *Environmental Factor Guideline: Inland Waters* (EPA, 2018a).
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018)
- *Western Australian water in mining guideline* (DoW, 2013).
- *Use of mine dewatering surplus* (DWER, 2020a).
- *Water Quality Protection Notes* (DoW, Various).
- *Cumulative Impact Assessment* (EPA, 2026).

6.3 Receiving Environment

6.3.1 Summary of Studies

Assessments completed to evaluate the values associated with Inland Waters, including hydrology, hydrogeology and aquatic ecology are summarised in Table 6-1. The Proponent has commissioned EMM Consulting to undertake hydrogeological modelling of mine dewatering and groundwater drawdown prediction to further assess the potential impacts to hydrogeological values across the Proposal. This is currently in progress, scheduled for completion in quarter two of 2026. The results of which will be presented in the ERD.

Table 6-1: Summary of Environmental Investigations Relevant to Inland Waters

Survey Description	Survey date	Reference	Details
Andover Project Aquatic Fauna Desktop Assessment and Field Survey in 2022	4 – 6 May 2022	WRM, 2022	Post wet season reconnaissance survey (wet 2022), with 11 sites chosen for sampling, including six along the Ngurin, three sites on minor creek lines within the DE and surrounds, one upland rockpool and one claypan wetland.
Andover Project Aquatic Ecology Assessment 2023	21 – 27 April 2023 13 – 15 September 2023	Biologic, 2023a	Post wet season survey (wet 2023) with a total of 17 sites visited, 11 of which contained water. Targeted environmental deoxyribonucleic acid (eDNA) sampling undertaken for Pilbara Olive Python. Dry season survey, sampling only one site containing surface water on the Ngurin main channel due to all other areas being dry at the time of survey.

Survey Description	Survey date	Reference	Details
Andover Lithium Baseline Hydrology Study Final Report	14 February 2024	Worley, 2024a	Baseline hydrological assessment of the Andover Proposal required to develop an understanding of surface water behaviour within and surrounding the DE.
Andover Project Aquatic Ecology Survey 2024	1 – 8 May 2024 9 – 13 August 2024	Biologic, 2025a	Post wet (wet 2024) survey comprising 24 sites, with eight sites containing water. Dry season survey (dry 2024), 12 sites containing water.
Andover Project Aquatic Ecology Survey 2025	19 – 26 March 2025 7 – 12 August 2025	Biologic, 2026	Post wet season survey (wet 2025) comprising 22 sample sites, with 16 sites holding water. Dry season survey (dry 2025) undertaken at a time when the area was largely dry, comprising of eight sites containing water
Andover Lithium – Hydrogeological Assessment	9 December 2025	EMM Consulting, 2025	Development of a conceptual hydrogeological model to evaluate potential impacts on inland waters values associated with mine dewatering.

6.3.2 Hydrogeology

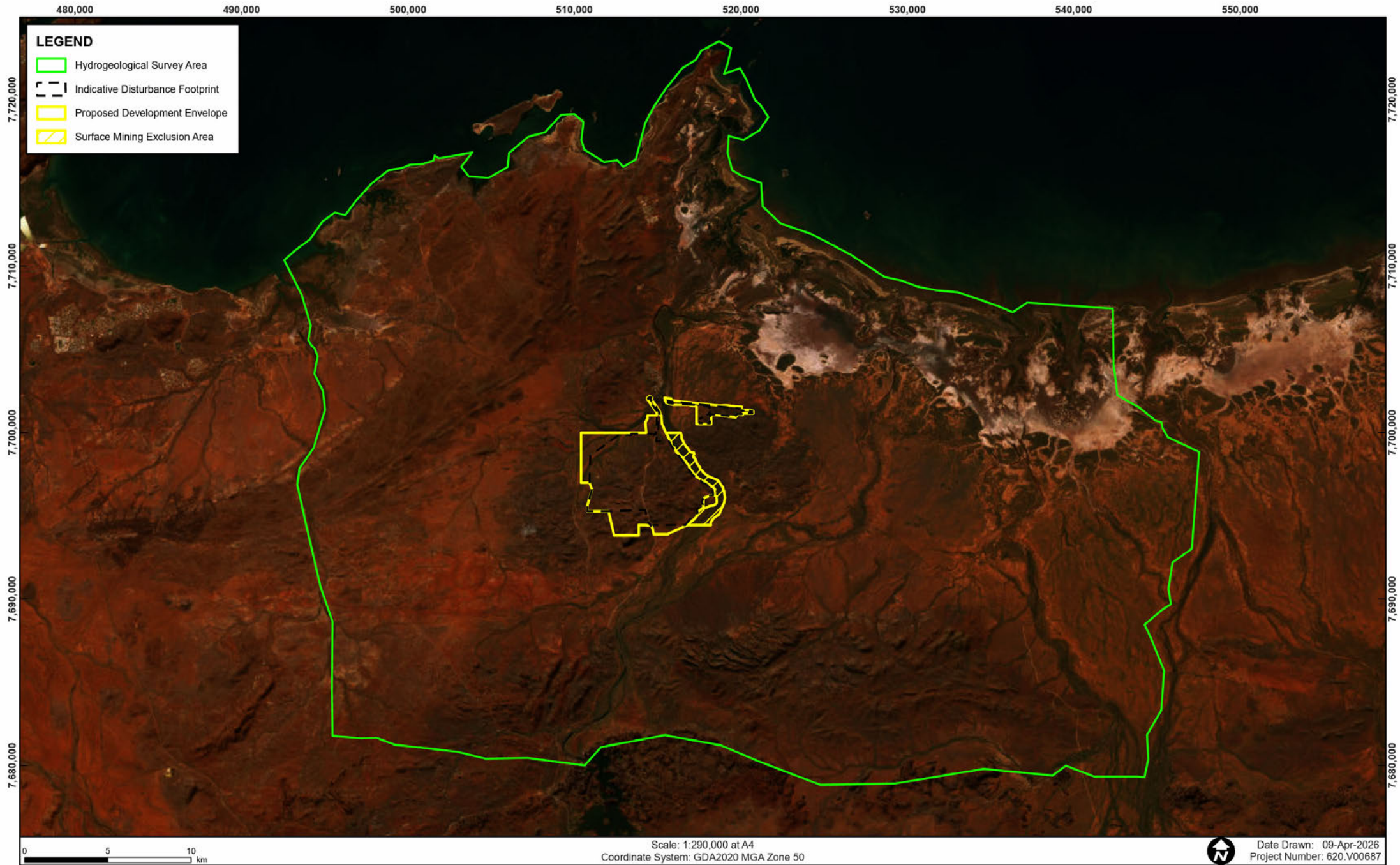
6.3.2.1 Overview

The hydrogeology of the Proposal is expected to comprise of fractured rock aquifers, with overlying alluvial aquifers towards the coast and adjacent to the Ngurin. A preliminary hydrogeological assessment was completed by EMM Consulting (2025), which developed a conceptual model to evaluate the hydrogeological setting at the Andover Project.

The Study Area lies within the north-western portion of the Pilbara Craton (EMM Consulting, 2025) as shown in Figure 6-1. Regionally, it is situated in the West Pilbara Granite-Greenstone Terrane. Six principal hydrostratigraphic units have been identified within the Study Area for the Proposal. These units collectively define the hydrogeological framework of the area and reflect generally low permeability conditions, with groundwater occurrence largely controlled by localised features such as fractures, weathering, and surface drainage systems. The dominant geological feature within the Study Area (EMM Consulting, 2025) is the Andover Intrusion, one of the largest mafic-ultramafic bodies in the north-west Pilbara.

The Andover Intrusion consists of mafic-ultramafic lithologies including gabbro, serpentinised peridotite, dunite, pyroxenite, and minor anorthosite, with pegmatite sills. Groundwater within the intrusion is largely confined to shallow fracture networks and fault zones, typically encountered at depths of approximately 15 to 25 m, while deeper sections are predominantly dry. Localised groundwater occurrence has been observed in shallow fractured zones, particularly where structural features intersect the surface, with recorded bore yields of approximately 1.0 to 1.5 L/s. Away from these structural features, the intrusion behaves as a low-transmissivity aquitard.

Groundwater elevation contours developed for conceptual model indicated a general groundwater gradient from the elevated south-western terrain south of the Harding Dam (EMM Consulting, 2025), towards the low-lying areas of the north and north-east. The groundwater gradient follows the regional topographic gradient and the natural drainage toward the Ngurin and its tributaries. The fractured rock aquifer system of the Andover Intrusion exhibits very low transmissivity and storage, with groundwater largely restricted to shallow fracture zones and structurally controlled corridors (EMM Consulting, 2025).



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HYDROGEOLOGICAL ASSESSMENT AREA

FIGURE 6-1

6.3.2.2 Groundwater Quality

Groundwater quality within the Study Area is variable and ranges from fresh to hypersaline, with total dissolved solids (TDS) concentrations reported between approximately 580 and 35,000 mg/L. Salinity is influenced by geological setting and proximity to coastal environments, with more saline conditions associated with coastal and tidally influenced aquifers located to the north of the Proposal. Alluvial aquifers host shallow groundwater that is locally recharged by rainfall and streamflow, while tidal aquifers in coastal flats contain saline to hypersaline groundwater influenced by tidal processes. Groundwater within fractured rock units, including the Andover Intrusion and basement formations, is variable across the hydrostratigraphic units.

Across the Study area, groundwater abstraction potential is limited, with monitoring bores typically yielding approximately 1.0 to 1.5 L/s. Recharge is described as highly event-driven and constrained by both the geological setting and the arid climate.

Surface water quality shows a similar spatial trend, with the Ngurin generally fresh near the Harding Dam and becoming increasingly saline downstream during dry periods as evaporation concentrates salts in residual pools.

6.3.3 Hydrology

6.3.3.1 Ngurin (Harding River)

The Harding River, or Ngurin to the Ngarluma Traditional Owners, flows north from the Chichester Ranges through Roebourne to the coast through the artificial Lake Poongkaliyarra (also known as Harding Dam) located upstream of the proposal. The Harding Dam has significantly altered the hydrology of the Harding River system, reducing peak flows into the lower river system compared to the pre-dam system, with significant flows only occurring after cyclonic events. The river bifurcates 8 km upstream of the Proposal, into the Ngurin and Ngurin East (Worley 2024a). The Ngurin is ephemeral, with several permanent pools existing its length, although none in the DE (Biologic 2025a).

The Ngurin is considered sacred and is significant to the Ngarluma people.

6.3.3.2 Catchments

The Proposal is located within the Ngurin catchment, which forms part of the Port Hedland coast drainage basin. The headwaters of the Ngurin are situated in the Chichester Ranges, with elevations of approximately 350 to 400 m above sea level. Flow within the catchment is generally directed northward toward the Harding Dam and ultimately the Roebourne township and the flat intertidal zone which dominates the coastal fringe. Approximately 1,068 km², (two-thirds of the Ngurin catchment), drains to the Harding Dam, which is the main hydrological control within the system, located upstream of the Proposal. The catchment setting is presented in Figure 6-2.

The Harding Dam was constructed between 1982 and 1985 and has a total storage capacity of 63.8 GL at Full Supply Level (FSL), with an additional flood routing capacity of 874.2 GL. Depending on rainfall conditions and available storage, the dam influences downstream hydrology, and therefore the hydrological setting at Andover has been significantly altered by the dam. Minor flow events may be fully contained within the dam, while larger events may be attenuated through flood storage and routing processes. Therefore, the dam reduces peak flow rates entering the lower Ngurin system compared to pre-dam conditions. Hydrological modelling indicates that tropical or ex-tropical cyclones are likely to be the main driver of significant flooding events, as they have the capacity to fill the dam and the catchment above and below the dam (Worley, 2024a).

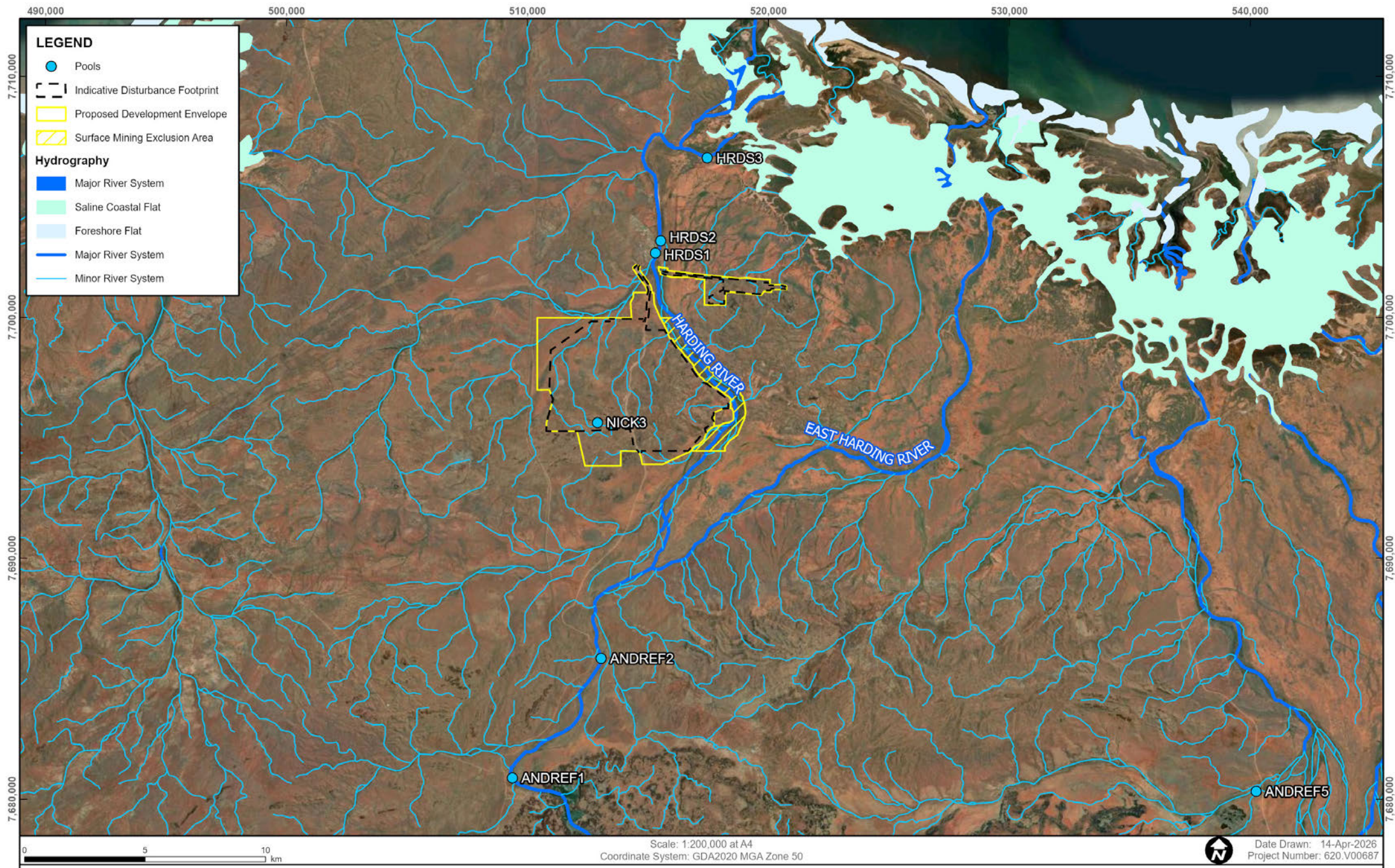
The lower catchment, where the Andover intrusion is situated, therefore receives only episodic recharge, primarily during infrequent high-flow events that overtop or bypass storage at the dam and during localised storm runoff. This results in a hydrological setting characterised by intermittent surface water flow, limited aquifer recharge, and a groundwater system largely controlled by fractures, faults and localised alluvial deposits (EMM Consulting, 2025).

6.3.3.3 Regional Water Courses

Downstream of the Harding Dam, additional tributaries contribute runoff to the Ngurin. A key hydrological feature of the lower Ngurin system, and relevant to the Proposal site, is the bifurcation of Ngurin located approximately 8 km upstream of the DE. At this location, flows divide between the Ngurin, which continues north toward Andover and the Roebourne township, and the East Ngurin, which flows northeast to the uninhabited coastal fringe and intertidal zone.

6.3.3.4 Local Water Courses

Within the DE, local watercourses are defined by the underlying geology, namely steep and well-incised hillslopes. The size of these local catchments is typically small, often less than 1 km². As such runoff response to rainfall in these local catchments is rapid, with peak flows associated with short duration and high intensity rainfall events. Large areas of flat alluvial plains may also become inundated for short periods after heavy rainfalls causing short-term deluging of the floodplain (Ruprecht & Ivanescu, 2000).



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HYDROLOGICAL SETTING

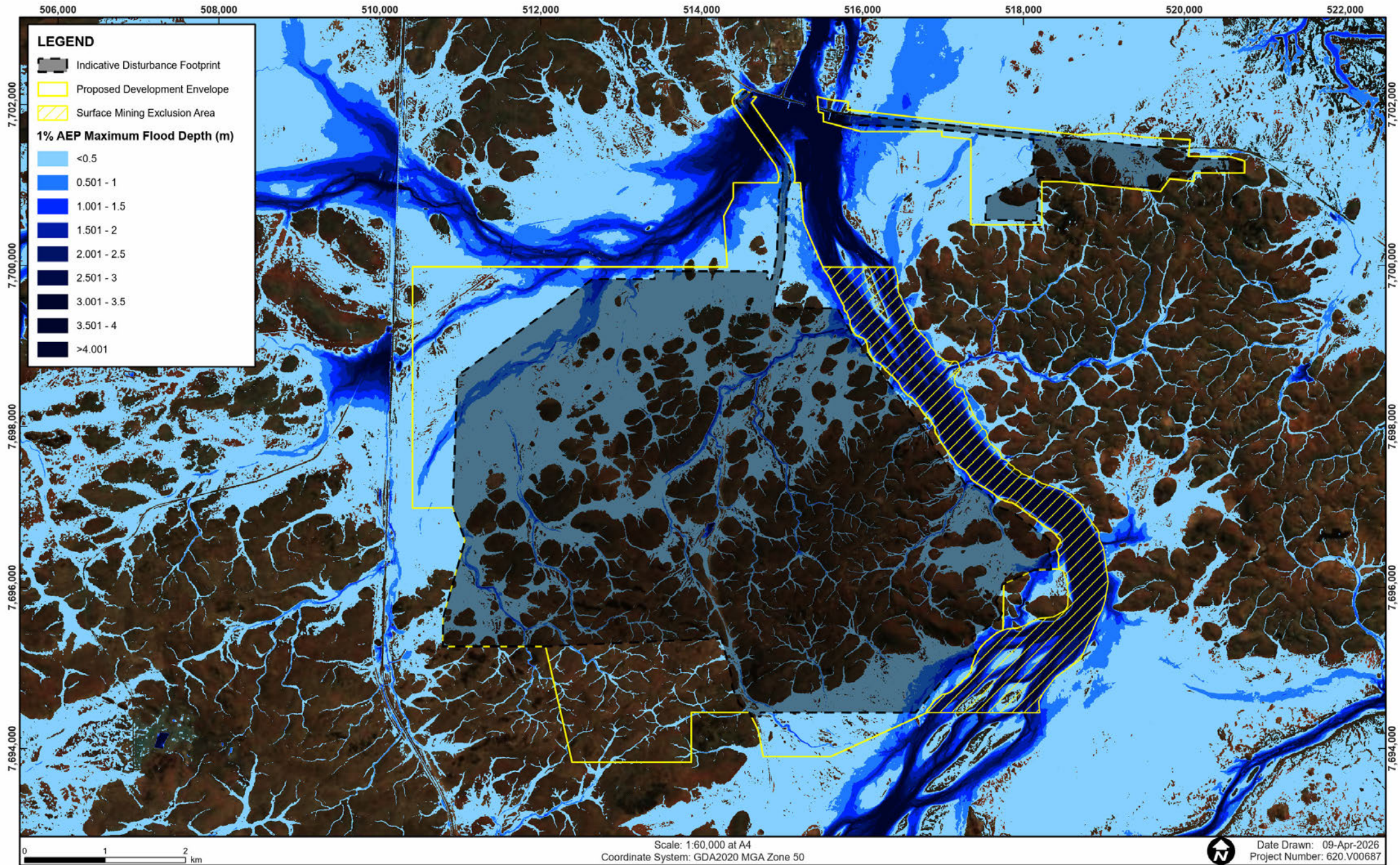
FIGURE 6-2

6.3.3.5 Baseline Flood Assessment

Baseline flood mapping was completed as part of the Baseline Hydrology Study (Worley, 2024a). The Proposal is located in a hydrologic setting that is subject to inundation from a number of sources. High-intensity cyclonic rainfall events primarily influence flooding in the DE. Storm tides up to the 1% annual exceedance probability (AEP) event have been predicted to not impact on design flood levels within the Ngurin mainstream at the Proposal (Figure 6-3).

Regional catchment flooding associated with the Ngurin is seen to result in significant flow rates within the Ngurin mainstream and has prolonged durations of flow. As mentioned above, this flooding source would typically require a tropical or ex-tropical cyclone to achieve the required quantum and duration of rainfall required to maximise catchment response and hence discharges (Worley, 2024a).

Local catchment flooding is associated with the various headwater areas that typify the Proposal. These catchments and associated minor creek systems show a quicker response time frame and hence are dominated by shorter duration, high intensity events (like those typically associated with convective thunderstorm activity).



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FLOOD ASSESSMENT

FIGURE 6-3

6.3.3.6 Surface Water Quality

Surface water quality assessments were conducted during Biologic's aquatic ecology surveys (2026), across sites shown in Figure 6-4. Electrical conductivity exhibited substantial variability, ranging from 44 $\mu\text{S}/\text{cm}$ to 170,600 $\mu\text{S}/\text{cm}$ (Biologic, 2026).

A hydrogeological investigation by EMM (2025) evaluated the relationship between groundwater and surface water chemistry across the DE and surrounds. Surface water in the Ngurin near the dam remained consistently fresh (~600–800 mg/L), whereas upstream and downstream reaches demonstrated pronounced seasonal and hydrological variation. Conditions ranged from very fresh (<400 mg/L) in February–April to highly saline during the dry season, with total dissolved solids (TDS) levels exceeding 120,000 mg/L. The investigation confirmed significant variances in surface water and groundwater salinity.

Baseline pH measurements for the Ngurin River within Biologic's Survey Area were circum-neutral to slightly basic, ranging from 6.58 to 8.80, with a median value of 7.58 (Biologic, 2026). Waters were generally fresh, characterised by low dissolved oxygen (DO) levels and high turbidity associated with clay-rich substrates. Several exceedances of the ANZG (2018) default guideline values (DGVs) were recorded for nutrients, likely attributable to unrestricted access by cattle and wild horses, in addition to some exceedances for dissolved metals.

Dissolved metals measured during the Biologic Aquatic Ecology Baseline Survey (2026) frequently exceeded relevant DGVs. Elevated concentrations were observed for aluminium, copper, cobalt, iron, chromium and nickel, with sites Lith5, AZT4 and Nick3 exhibiting the most consistent or pronounced exceedances (Figure 6-2). Some exceedances persisted after hardness-modified guideline values (HMGVs) were calculated, particularly at low-hardness sites. Estuarine sites downstream of the DE consistently exceeded the 99% marine DGV for cobalt; however, none exceeded the 95% DGV. Overall, multiple metals were elevated across both the 2025 Wet and Dry sampling periods.

6.3.4 Aquatic Ecology

Aquatic ecology values of the Proposal have been assessed through multiple surveys undertaken both within the DE and surrounds from 2022 to 2025 (as summarised in Table 6-1). The aquatic ecology surveys included aspects relevant to terrestrial fauna, and flora and vegetation environmental factors, as well as to inland waters. To present the findings of the aquatic ecology assessment holistically, all aspects are summarised in this section (Inland Waters).

6.3.4.1 Aquatic Values

Aquatic habitats were surveyed between 2022 and 2025, as summarised in the *Biologic Andover Aquatic Survey* (2026). The Survey Area covered values associated with the Ngurin, East Ngurin, their tributaries, minor drainage lines, rockpools, claypans and downstream reaches of the Ngurin (shown in Figure 6-4).

There are several permanent and semi-permanent pools on the Ngurin, located outside of the DE, upstream of the Proposal in proximity to Harding Dam, and downstream of the Proposal near Roebourne (Biologic, 2025a). Those which have been sampled periodically during aquatic ecology sampling events are shown in Figure 6-2. Within the Ngurin, there are no permanent pools in the DE, most are ephemeral, persisting for a period following rainfall. The in-stream habitat in these locations was more complex, characterised by higher amounts of large woody debris, detritus and root material.

All tributary and minor drainage sites were identified as highly ephemeral. Except for two locations, none retained water during any sampling events (Biologic, 2026). These habitats are well represented at a local and regional scale. One small rock pool, which has held water during all aquatic ecology sampling events, is not considered connected to groundwater (Biologic, 2025a). This is shown on Figure 6-2 as Nick3. This pool is semi-permanent to permanent, maintained by rainwater, surface flows, the bedrock base, aspect and shading (reducing evaporation). It also serves as an important water source for local bird species, several of which were observed drinking from the pool (Biologic, 2026).

Claypans within the Survey Area are classified as ephemeral. One site was found to support a unique assemblage of claypan specialist fauna, including *Australobrachipus* 'sp. Biologic-ANOS003', recorded during 2024. This taxon represents a new species to science, and the genus has not previously been recorded in Western Australia. This site has been excluded from the DE.



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AQUATIC ECOLOGY
SURVEY AREA

FIGURE 6-4

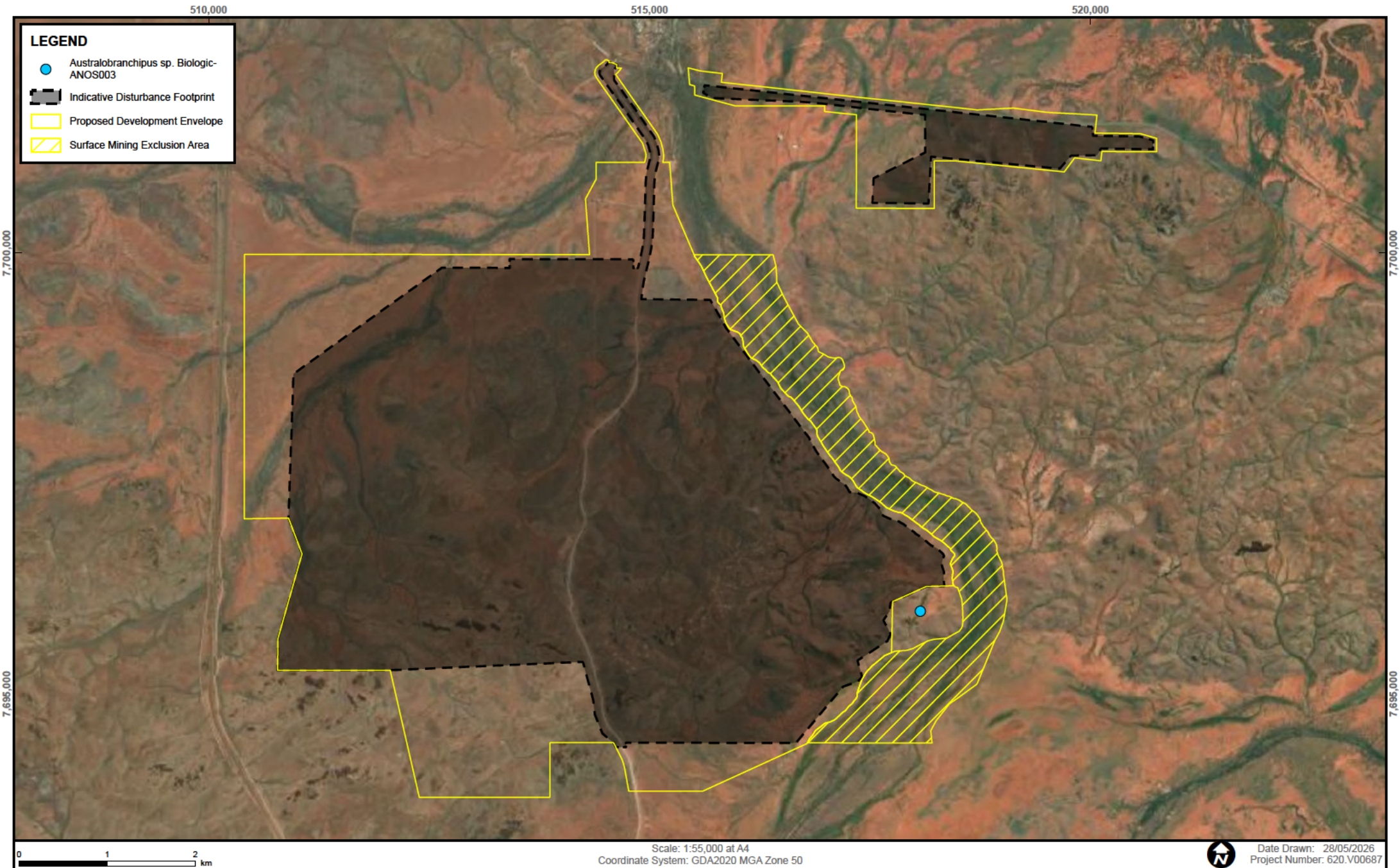
6.3.4.2 Conservation Significant Aquatic Species

Across the 2022–2025 sampling period, the baseline Survey Area supported a diverse assemblage of aquatic and riparian fauna and flora, including 61 phytoplankton taxa, 183 riparian vegetation taxa (9 macrophytes and 20 groundwater dependent vegetation (GDV) taxa), 296 invertebrate taxa, 10 fish species and two water-associated bird species (Biologic, 2026).

A number of significant or potentially significant taxa were recorded, particularly among the aquatic invertebrates. These included rare, range-restricted, and potentially undescribed species. Notable examples of fairy shrimp include *Australobrachypus* sp. Biologic ANOS003—representing a genus previously unrecorded in Western Australia and a species new to science (noting the location associated with this record has since been excluded from the DE, as shown in Figure 6-5)—and *Branchinella* sp. Biologic ANOS002, a rare operational taxonomic unit (OTU) known from only one additional location in the Upper Fortescue River catchment with a known linear range of 285 km (Biologic, 2026). Outside of the DE, *Lynceus* sp. Biologic BRAN004 (a species of clam shrimp) was recorded for the first time and did not match any publicly available genetic sequences. As well as multiple copepod and seed-shrimp representing new OTUs. Of which, two new seed shrimp OTUs (Cyprididae ‘sp. Biologic-OSTR160’ and Cyprididae ‘sp. Biologic-OSTR161’ were found within the DE, however, both of which may be found to be more widespread in future (Biologic, 2026).

Multiple Pilbara-endemic or infrequently recorded taxa were documented across fairy shrimp, clam shrimp, shield shrimp and seed shrimp groups. These included *Branchinella mcraeae* (recorded within the DE), *Limnadopsis pilbarensis*, *Triops* sp. Biologic TRI0002—characterised by a broad but highly disjunct Pilbara distribution—and *Bennelongia* nr. *Coondinerensis*. Conservation-listed species under the International Union for Conservation of Nature (IUCN) framework were also detected, such as the Vulnerable *Eodiaptomus lumholtzi* and *Hemicordulia koomina*, which were both recorded within and outside the DE, and the Near Threatened *Ictinogomphus dobsoni*.

Overall, the findings indicate that the Survey Area supports an aquatic fauna assemblage of high ecological value, characterised by uncommon, geographically restricted, and potentially undescribed species.



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**RECORD OF AUSTRALOBANCHIPUS
'SP. BIOLOGIC-ANOS003'**

FIGURE 6-5

6.4 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to avoid impacts to environmental values.

6.4.1 Potential Direct Impacts

The identified direct impacts from the Proposal on identified inland water aspects across the development include:

- Groundwater drawdown associated with dewatering of open pit and underground workings.
- Alteration of natural surface water flow paths due to mine infrastructure and flood protection features.
- Direct disturbance or loss of drainage lines and other surface water features.
- Seepage from constructed landforms (e.g. TSF, WRLs) causing impacts to groundwater quality.
- Formation of a pit lake at closure, resulting in changes to groundwater levels and groundwater quality.
- Overtopping of the TSF releasing decant water and/or tailings into the environment.

6.4.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact identified inland water aspects through:

- Potential impacts on surface and groundwater quality due to:
 - Chemical and hydrocarbon leaks and spills.
 - Potential elevation of nitrate from blasting activities.
 - Increased sedimentation and erosion affecting surface water systems.
- Reduction in water quantity and/or water quality at sensitive receptors.
- Modification of hydrological regimes due to catchment reduction and placement of infrastructure.
- Loss or change to hydrology features (pools, claypans) due to changes in ground and surface water regimes.
- Groundwater mounding in the vicinity of the TSF impacting vegetation through seepage and hydrostatic pressure.
- Potential cumulative impacts on regional groundwater due to interactions with nearby mining operations.

6.5 Proposed Mitigation Measures

Upon completion of all relevant studies, the Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to inland waters from the Proposal:

- Avoid:
 - Limiting clearing of Major Drainage Line to as low as reasonably practicable during mine design phases to prevent direct impacts to the Ngurin. Permitted activities within the SMEA will be limited to those listed in Section 2.1.1.
 - The DE was designed to exclude the clay pan hosting the single known location of *Australobranchipus* sp. 'Biologic-ANOS003.
 - No discharge of surplus dewatering or process water to the environment is anticipated.
- Minimise:
 - Implement effective water management practices and engineering controls as required, to minimise impacts on groundwater levels and quality, including managing surface water infiltration, reducing dewatering activities (where possible) and controlling seepage from the TSF that could alter groundwater.
 - Groundwater abstraction for supply to support processing activities avoided by seeking alternative water supply options.
 - Dewatering to be undertaken in accordance with the *Rights in Water and Irrigation Act 1914* (RIWI) Act Licence to take groundwater.
 - Dewatering will be minimised to the extent required to access below water table material.
 - Implementation of engineering controls as to minimise the potential for groundwater impacts during dewatering.
 - Storage of contaminating material in accordance with Australia Standards (AS), including compliant locations with bunding, spill controls and leak prevention.
 - Contingency and emergency management plans will be developed and implemented to address any accidental discharge events that may occur on-site.
- Rehabilitate:
 - Progressive rehabilitation of disturbed areas to reduce runoff.
 - Development and implementation of a MDCP, in accordance with statutory *Guidelines for preparing Mining Development and Closure Proposals* (DMPE, 2025b) for the Proposal.
 - At closure, rehabilitate all existing and newly constructed landforms in accordance with the Proposal's MDCP under the guidance of the DMPE.

6.6 Assessment of Significance of Residual Impacts

An assessment of significance of residual impacts of the Proposal on inland water values will be considered and presented in an Environmental Review Document (ERD) as part of the environmental assessment.

6.6.1 Proposal

An assessment of the significance of the residual impacts of the Proposal on inland waters will be summarised and presented in the ERD.

6.6.2 Cumulative Impacts

The cumulative impacts of the Proposal on inland waters will be undertaken with the development of the ERD.

6.7 Environmental Outcomes

The ERD will outline the environmental outcomes for inland waters from implementation of the Proposal in the ERD.

7 Preliminary Key Environmental Factor – Flora and Vegetation

7.1 EPA Objective

The EPA objective for flora and vegetation is “to protect flora and vegetation so that biological diversity and ecological integrity are maintained” (EPA, 2016a).

7.2 Policy and Guidance

The following guidance is applicable to this factor:

- *Environmental Factor Guideline: Flora and Vegetation* (EPA, 2016a).
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b).
- *Cumulative Impact Assessment* (EPA, 2026).

7.3 Receiving Environment

7.3.1 Studies and Surveys

The Proponent has undertaken multiple flora and vegetation surveys across the DE and surrounds, to support environmental impact assessment for the Proposal, comprised of reconnaissance, targeted and detailed surveys, with the majority of the area surveyed at a detailed level.

The flora Survey Area of 20,407.91 ha is larger than the DE and approximately 17,362.12 ha larger than the IDF (Figure 7-1). A summary of the flora and vegetation surveys is provided in Table 7-1.

Surveys have been completed across multiple seasons, with most surveys completed in the post-wet season, considered optimal for Pilbara flora.

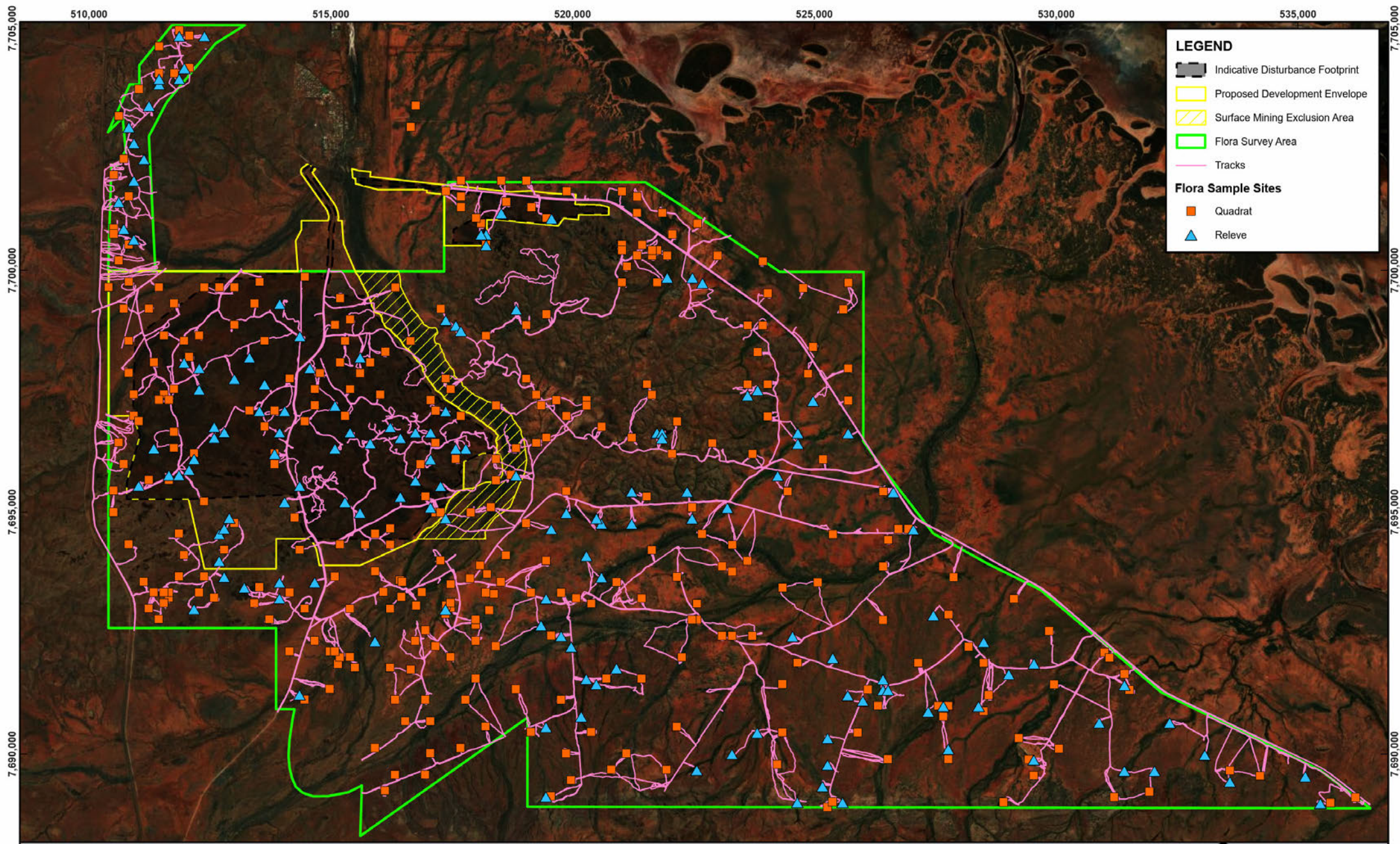
Reconnaissance surveys sampled 196 relevés and 307 vegetation mapping notes, while the Detailed survey was inclusive of 320 50 m x 50 m quadrats, 150 relevés, 51 km of traverses as well as opportunistic and targeted sampling for Priority species and communities.

The surveys were estimated to have recorded up to 96% of all species expected, and as such were deemed adequate. No significant limitations were experienced.

Table 7-1: Summary of Environmental Investigations Relevant to Flora and Vegetation

Survey Description	Survey date	Reference	Details
Andover Nickel-Copper Project: Reconnaissance Flora and Vegetation Survey	27 June – 1 July 2022	Biologic, 2022a	Single season reconnaissance flora and vegetation survey of a 1,570 ha area, to inform the need for further detailed and/or targeted surveys.
Andover Flora and Vegetation Survey – Lithium Project Area	11 – 18 July 2023	Biologic, 2023b	Single season reconnaissance flora and vegetation survey of the Lithium

Survey Description	Survey date	Reference	Details
Reconnaissance Flora and Vegetation Survey			Survey Area of approximately 1,810 ha, comprising the DE and the east side of the Ngurin.
Andover Flora and Vegetation Survey – Groundwater Project Area Reconnaissance Flora and Vegetation Survey	11 – 18 July 2023	Biologic, 2024a	Single season reconnaissance flora and vegetation survey of 1,553 ha area both north and south of the DE.
Andover Flora and Vegetation Survey – Nickel Project Area Reconnaissance, targeted flora and Vegetation Survey	19 – 23 June 2023.	Biologic, 2024b	Reconnaissance, Targeted flora and Vegetation Survey of the previous Nickel Survey area, covering approximately 1,570 ha within the southwest portion of the DE.
Andover Project Detailed Flora and Vegetation Survey	20 – 27 May 2024	Biologic, 2025b	Detailed flora and vegetation survey and assessment across the DE and surrounds including an area of 20,407.5, including post wet and dry seasons.
	16 – 20 September 2024		A targeted flora survey of selected areas.
	20 – 27 March 2025		Second phase of a selection of sites within the 2024 Survey Area.
	28 March – 1 April 2025		First phase detailed flora and detailed flora and vegetation survey of the 2025 Survey Area.
	14 – 22 May 2025		Continuation of the single-phase detailed flora and vegetation survey of the 2025 Survey Area.



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FLORA AND VEGETATION SURVEY EFFORT

FIGURE 7-1

7.3.2 Existing Environment

7.3.2.1 Vegetation

Three broad landforms supporting 35 vegetation types were identified and mapped within the Survey Area including –

- Plains – stony, sandy and clay plains (21 vegetation types).
- Drainage Lines – Minor and major drainage lines, and sheet flow (ten vegetation types)
- Hills – Granitic/dolerite and gabbro rock piles (four vegetation types).

The dominant broad landform based on coverage across the Survey Area was Plains (61.0%, 12,438.7 ha), followed by Hills (26.4%, 5,381.4 ha) and Drainage Lines (11.2%, 2,282.1 ha). The remaining areas were made up of cleared and rehabilitated areas (Biologic, 2025b).

The most widespread vegetation type was P04 (*Eragrostis* low isolated to closed tussock grassland) comprising 31.1% (6,353.3 ha) of the Survey Area. This vegetation type correlates with the Horseflat Land System of the Roebourne Plains Priority Ecological Community (PEC) (P3) (Biologic, 2025b).

Within the Survey Area, four vegetation types were considered restricted, based on <1% mapped extent and occurrence on restricted landforms/geology. Several vegetation types occur on restricted landforms or have limited ecological distribution within the Survey Area (Biologic, 2025b).

The hill vegetation types Q01 and H03 are both associated with isolated rocky outcrops and rockpiles (a restricted landform within the Survey Area) consisting of uncommon geological types (granite and quartz) within the Survey Area. The P05 vegetation type is analogous to the PEC Chenopod Vegetation Association of the Roebourne Plains (P1) restricted to the saline clayflats of the Cheerawarra Land System along the Great Northern Highway in norther extent of the Survey Area. The D04 vegetation type is associated with major drainage lines within the Ngurin (described in Section 7.3.2.6).

Vegetation types mapped in the Survey Area are described in Table 7-2 and shown in Figure 7-2. These vegetation types include the following:

- Quartz hill vegetation type Q01 (27.1 ha 0.1 %).
- Granite/basalt hill vegetation type H03 (35.5 ha 0.2 %).
- Plains vegetation type P05 (99.6 ha 0.5 %).
- Major drainage line vegetation type D04 (167.2 ha 0.8 %)

Table 7-2: Vegetation Types

Code	Description	Area Mapped (ha)	Representative Photo
D01	<i>Eucalyptus victrix</i> low isolated trees to low open woodland over <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Acacia bivenosa</i> , <i>Melaleuca linophylla</i> or <i>Melaleuca glomerata</i> mid to tall sparse shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> low to mid isolated clumps of hummock grasses to hummock grassland.	279.8 ha 1.4%	
D02	<i>Corymbia hamersleyana</i> low isolated clumps of trees over <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Grevillea wickhamii</i> var. <i>hispidula</i> , <i>Acacia bivenosa</i> mid to tall, isolated clumps of shrubs to tall shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> low to tall-isolated clumps of hummock grasses to closed hummock grassland.	559.9 ha 2.7%	
D03	<i>Triodia angusta</i> mid open hummock grassland over <i>Eragrostis xerophila</i> low isolated clumps of tussock grasses over <i>Sclerolaena costata</i> low isolated chenopod shrubs over <i>Trianthema triquetrum</i> low isolated forbs over <i>Dactyloctenium radulans</i> , <i>Sporobolus australasicus</i> low isolated other grasses.	55.6 ha 0.3%	

Code	Description	Area Mapped (ha)	Representative Photo
D04	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> mid isolated clumps of trees over <i>Melaleuca argentea</i> , <i>Eucalyptus victrix</i> , <i>Sesbania formosa</i> low isolated clumps of trees to low woodland over <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Acacia trachycarpa</i> , <i>Melaleuca glomerata</i> (<i>Acacia amplex</i>) tall isolated shrubs to tall open shrubland over <i>Cyperus vaginatus</i> mid to tall isolated sedges to clumps of sedges over <i>*Cenchrus setiger</i> (Birdwood grass), <i>*Cenchrus ciliaris</i> (Buffel grass) mid isolated clumps of tussock grasses to mid closed tussock grassland.	167.2 ha 0.8 ha	
D05	<i>Eucalyptus victrix</i> low isolated clumps of trees to low open woodland over <i>Acacia trachycarpa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> (<i>Acacia coriacea</i> subsp. <i>pendens</i>) mid to tall-isolated shrubs to open shrubland over <i>Triodia epactia</i> low to mid isolated clumps of hummock grasses over <i>Eulalia aurea</i> , <i>Eriachne benthamii</i> , <i>*Cenchrus</i> spp. (Buffel/Birdwood grasses) low to mid sparse tussock to closed tussock grassland.	752.3 ha 3.7%	
D06	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia synchronicia</i> tall isolated clumps of shrubs to open shrubland over <i>Triodia epactia</i> , <i>Triodia angusta</i> low to mid isolated clumps of hummock grasses to sparse hummock grassland with <i>*Cenchrus</i> spp. (Buffel/Birdwood grasses), <i>Eragrostis xerophila</i> , <i>Chrysopogon fallax</i> low to mid open to closed tussock grassland over <i>Sclerolaena costata</i> , <i>Sclerolaena cuneata</i> , <i>Atriplex codonocarpa</i> low isolated clumps of chenopod shrubs to sparse chenopod shrubland on red-brown clay loam on minor drainage lines and drainage areas/ floodplains.	126.3 ha 0.6%	

Code	Description	Area Mapped (ha)	Representative Photo
D09	<i>Corymbia hamersleyana</i> low isolated trees over <i>Acacia tumida</i> var <i>pilbarensis</i> tall open shrubland over <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia ancistrocarpa</i> mid open shrubland over <i>Acacia stellaticeps</i> , <i>Indigo monophylla</i> low isolated clumps of shrubs to sparse shrubland over <i>Triodia epactia</i> low to mid isolated clumps of hummock grasses to hummock grassland with <i>*Cenchrus ciliaris</i> (Buffel grass), <i>Chrysopogon fallax</i> mid sparse tussock grassland on brown clayey sand on minor drainage lines.	15.5 ha 0.08%	
D10	<i>Corymbia hamersleyana</i> low isolated clumps of trees over <i>Acacia tumida</i> var. <i>pilbarensis</i> tall-isolated clumps of shrubs over <i>Indigofera monophylla</i> low isolated clumps of shrubs over <i>Chrysopogon fallax</i> mid sparse tussock grassland.	19.0 ha 0.09%	
D11	<i>Acacia inaequilatera</i> , <i>Dichrostachys spicata</i> , <i>Acacia trachycarpa</i> tall open shrubland over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia ancistrocarpa</i> , <i>Acacia arida</i> (<i>Acacia bivenosa</i>) mid to tall sparse shrubland over <i>Indigofera monophylla</i> , <i>Ptilotus astrolasius</i> , <i>Corchorus parviflorus</i> low isolated shrubs over <i>Triodia epactia</i> low sparse hummock grassland with <i>Chrysopogon fallax</i> , <i>Themeda triandra</i> , <i>*Cenchrus ciliaris</i> (Buffel grass) low sparse tussock grassland on brown sandy clay loam on minor drainage lines.	297.3 ha 1.5%	

Code	Description	Area Mapped (ha)	Representative Photo
D12	<i>Corymbia hamersleyana</i> , <i>Eucalyptus victrix</i> low woodland over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Acacia trachycarpa</i> tall sparse shrubland over <i>Aeschynomene indica</i> mid open shrubland over <i>Eulalia aurea</i> , <i>Eriachne flaccida</i> , <i>Chrysopogon fallax</i> , <i>Themeda triandra</i> mid to tall tussock grassland with <i>Cyperus vaginatus</i> low isolated clumps of sedges over <i>Goodenia lamprosperma</i> , <i>Alternanthera nodiflora</i> , <i>Marsilea drummondii</i> low open forbland with <i>Operculina aequisejala</i> low sparse vineland on red-brown clay loam on medium drainage lines.	9.4 ha 0.05%	
P01	<i>Acacia xiphophylla</i> mid to tall, isolated clumps of shrubs to open shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> low to mid isolated clumps of hummock grasses to hummock grassland over <i>Eragrostis xerophila</i> low isolated clumps of tussock grasses over <i>Sclerolaena costata</i> , <i>Sclerolaena densiflora</i> , <i>Sclerolaena cuneata</i> low chenopod shrubs.	1040.1 ha 5.1%	
P02	<i>Acacia inaequilatera</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , (<i>Dichrostachys spicata</i>) tall, isolated shrubs to sparse shrubland over <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> mid isolated clumps of shrubs to sparse shrubland over <i>Indigofera monophylla</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> low isolated shrubs over <i>Triodia epactia</i> , <i>Triodia wiseana</i> low to mid open hummock to hummock grassland on red-brown sandy clay loam on sandy/ stony plains.	1565.1 ha 7.7%	

Code	Description	Area Mapped (ha)	Representative Photo
P03	<i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia synchronici</i> amid isolated clumps of shrubs to open shrubland over <i>Acacia stellaticeps</i> , <i>Acacia sphaerostachya</i> low to mid sparse shrubland to shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> low to mid open hummock to hummock grassland on red-brown silty clay loam on drainage areas/ floodplains and sandy/ stony plains.	284.5 ha 1.4%	
P04	<i>Eragrostis xerophila</i> , <i>Eriachne flaccida</i> , <i>Xerochloa barbata</i> (<i>Aristida contorta</i>) low isolated to closed tussock grassland with <i>Acacia xiphophylla</i> mid to tall isolated clumps of shrubs to open shrubland over <i>Atriplex bunburyana</i> , <i>Sclerolaena</i> spp., <i>Salsola australis</i> low isolated chenopod shrubs to sparse chenopod shrubland with <i>Sida fibulifera</i> , <i>Neptunia xanthanema</i> , <i>Corchorus tridens</i> low isolated clumps of shrubs to sparse shrubland over <i>Portulaca oleracea</i> , <i>Trianthema triquetrum</i> , <i>Portulaca conspicua</i> (<i>Ptilotus murrayi</i>) low isolated forbs to sparse forbland with <i>Operculina aequisejala</i> , <i>Rhynchosia minima</i> , <i>Ipomoea coptica</i> low isolated clumps of vines to sparse vineland on red-brown clay loam on gilgaied plains and alluvial drainage areas/ floodplains.	6,353.3 ha 31.1%	
P05	<i>Sclerolaena hostilis</i> , <i>Sclerolaena glabra</i> , <i>Atriplex bunburyana</i> low open chenopod shrubland with <i>Corchorus tridens</i> , <i>Sida fibulifera</i> , <i>Neptunia xanthanema</i> low sparse shrubland over <i>Eragrostis xerophila</i> low sparse to tussock grassland with <i>Triodia epactia</i> low sparse hummock grassland over <i>Dichanthium sericeum</i> subsp. <i>humilius</i> , <i>Iseilema</i> spp., <i>Dactyloctenium radulans</i> , <i>Xerochloa barbata</i> low isolated other tussock grasses over <i>Portulaca oleracea</i> , <i>Gomphrena affinis</i> subsp. <i>pilbarensis</i> , <i>Ptilotus gomphrenoides</i> low sparse forbland with <i>Ipomoea coptica</i> , <i>Operculina aequisejala</i> , <i>Rhynchosia minima</i> low isolated clumps of vines to sparse vineland on red-brown clay loam on gilgai plains and alluvial drainage areas/ floodplains.	99.6 ha 0.5 %	

Code	Description	Area Mapped (ha)	Representative Photo
P06	<i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> (<i>Acacia arida</i>) mid to tall, isolated clumps of shrubs to sparse shrubland over <i>Indigofera monophylla</i> , <i>Ptilotus astrolasius</i> , <i>Corchorus walcottii</i> low isolated clumps of shrubs over <i>Triodia wiseana</i> , <i>Triodia epactia</i> low open to hummock grassland on brown sandy clay loam on calcrete stony plains and platforms.	141.6 ha 0.7%	
P07	<i>Triodia angusta</i> mid open to closed hummock grassland over <i>Sclerolaena hostilis</i> , <i>Salsola australis</i> , <i>Atriplex codonocarpa</i> low isolated clumps of chenopod shrubs to sparse chenopod shrubland on orange sandy clay loam on stony/ sandy plains and drainage areas/ floodplains.	162.5 ha 0.8%	
P08	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia inaequilatera</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> tall to mid isolated shrubs to open shrubland over * <i>Cenchrus setiger</i> (Birdwood grass), * <i>Cenchrus ciliaris</i> (Buffel grass), <i>Chrysopogon fallax</i> low to mid tussock grassland with <i>Triodia epactia</i> , <i>Triodia angusta</i> low to mid sparse to hummock grassland over <i>Trianthema pilosum</i> , <i>Portulaca oleracea</i> low isolated forbs to sparse forbland on orange/ brown sandy loam on drainage areas/ floodplains and sand plains.	884.0 ha 4.3%	

Code	Description	Area Mapped (ha)	Representative Photo
P09	<i>Acacia inaequilatera</i> , <i>Dichrostachys spicata</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> , (<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>) mid to tall isolated clumps of shrubs to open shrubland over <i>Corchorus walcottii</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> low isolated shrubs over <i>Triodia epactia</i> , <i>Triodia wiseana</i> mid isolated clumps of hummock grasses to hummock grassland over <i>Eragrostis xerophila</i> , <i>*Cenchrus ciliaris</i> (Buffel grass), <i>Chrysopogon fallax</i> low isolated tussock grasses to tussock grassland on red-brown clay loam on sandy/ stony plains and drainage areas/ floodplains.	798.2 ha 3.9%	
P10	<i>Sclerolaena hostilis</i> , <i>Sclerolaena bicornis</i> var. <i>bicornis</i> , <i>Sclerolaena glabra</i> (<i>Sclerolaena costata</i>) low sparse to open chenopod shrubland with <i>Triodia epactia</i> low to mid open hummock to hummock grassland over <i>*Cenchrus setiger</i> (Birdwood grass), <i>*Cenchrus ciliaris</i> (Buffel grass), <i>Eragrostis xerophila</i> low sparse tussock grassland on orange clay loam sand on sand plains and dunes.	86.1 ha 0.4%	
P11	<i>Acacia ancistrocarpa</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i> tall open shrubland over <i>Dolichandrone occidentalis</i> , <i>Acacia bivenosa</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> mid sparse shrubland over <i>Indigofera monophylla</i> , <i>Corchorus parviflorus</i> , <i>Ptilotus astrolasius</i> low sparse shrubland over <i>Triodia epactia</i> , <i>Triodia schinzii</i> mid to low hummock grassland with <i>*Cenchrus ciliaris</i> (Buffel grass), <i>Chrysopogon fallax</i> mid sparse tussock grassland over <i>Pterocaulon sphacelatum</i> , <i>Euploca pachyphylla</i> low sparse forbland on red-brown sandy clay loam on drainage areas/ floodplains and sandy/ stony plains.	55.2 ha 0.3%	

Code	Description	Area Mapped (ha)	Representative Photo
P12	<i>Corymbia hamersleyana</i> low isolated clumps of trees over <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> tall open over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> mid isolated shrubs to isolated clumps of shrubs over <i>Triodia epactia</i> mid isolated clumps of hummock grasses over <i>*Cenchrus setiger</i> (Birdwood grass), <i>*Cenchrus ciliaris</i> (Buffel grass) low isolated clumps of tussock grasses.	71.8 ha 0.4%	
P13	<i>Triodia epactia</i> mid hummock grassland over <i>Chrysopogon fallax</i> , <i>Eragrostis xerophila</i> low to mid open tussock grassland over <i>Fimbristylis dichotoma</i> low isolated clumps of sedges on brown sandy loam on sand plains.	11.2 ha 0.05%	
P14	<i>Acacia stellaticeps</i> low sparse shrubland over <i>Triodia schinzii</i> low hummock grassland on red sand on sand plains.	50.2 ha 0.2%	

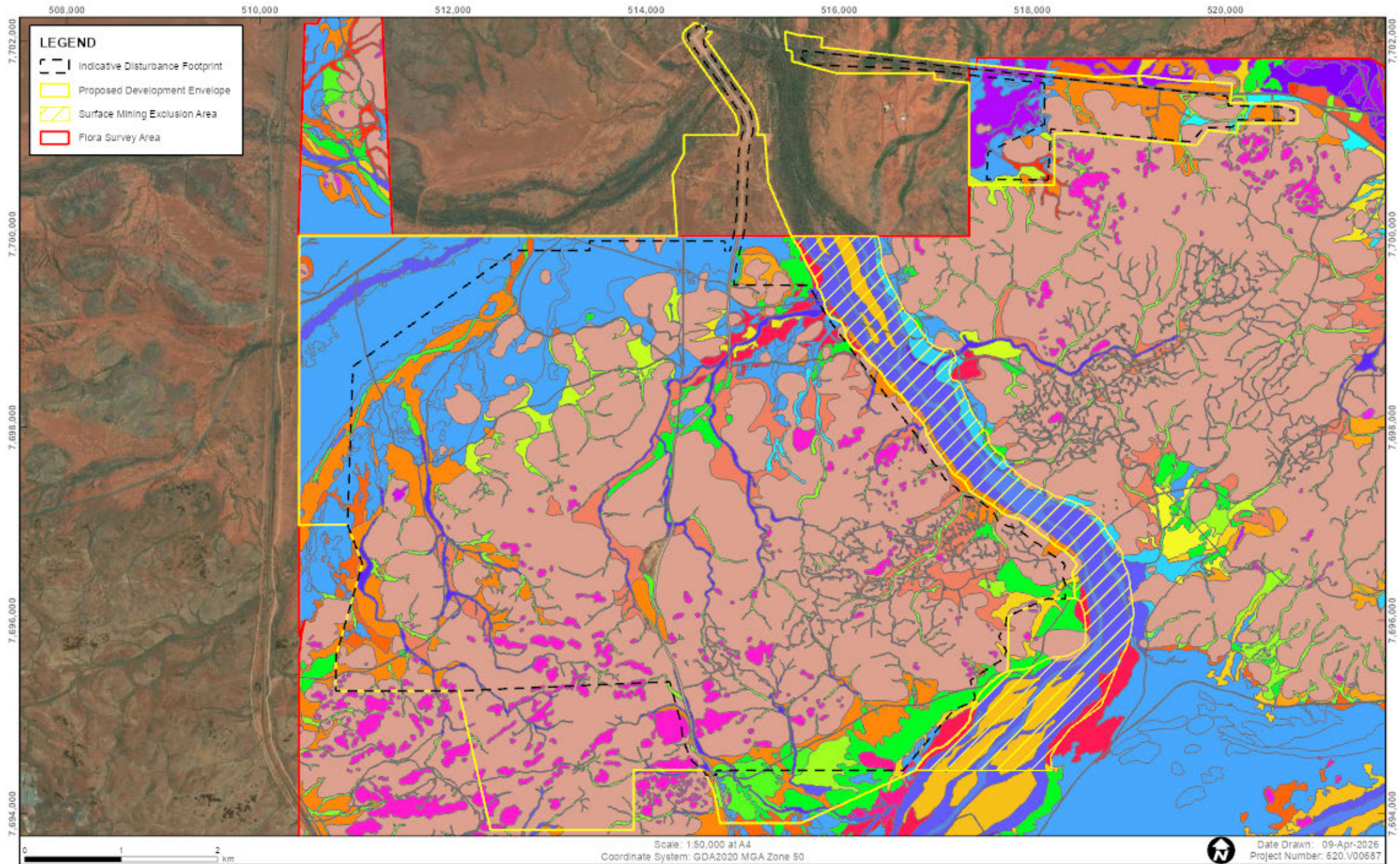
Code	Description	Area Mapped (ha)	Representative Photo
P15	<i>Acacia inaequilatera</i> , <i>Acacia trachycarpa</i> , <i>Ehretia saligna</i> var. <i>saligna</i> tall, isolated shrubs to sparse shrubland over <i>Acacia bivenosa</i> , <i>Scaevola spinescens</i> mid isolated clumps of shrubs over <i>Triodia schinzii</i> mid hummock grassland on red sand on sand plains.	29.6 ha 0.1%	
P16	<i>Corymbia hamersleyana</i> low isolated trees over <i>Acacia inaequilatera</i> , <i>Ehretia saligna</i> var. <i>saligna</i> tall, isolated clumps of shrubs over <i>Acacia bivenosa</i> mid isolated clumps of shrubs over <i>Scaevola spinescens</i> , <i>Ptilotus astrolasius</i> low isolated clumps of shrubs over <i>Triodia schinzii</i> , <i>Triodia epactia</i> mid hummock grassland.	35.2 ha 0.2%	
P17	<i>Acacia stellaticeps</i> low sparse shrubland over <i>Triodia angusta</i> , <i>Triodia epactia</i> low to mid open hummock grassland over <i>Chrysopogon fallax</i> mid isolated tussock grasses on red-brown silty clay loam on sandy/ stony plains.	25.8 ha 0.1%	

Code	Description	Area Mapped (ha)	Representative Photo
P18	<i>Acacia synchronicia</i> , <i>Acacia bivenosa</i> tall to mid isolated clumps of shrubs to open shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> mid hummock grassland over <i>Atriplex codonocarpa</i> , <i>Sclerolaena</i> spp. low isolated chenopod shrubs on orange/ brown sandy clay loam on calcrete stony plains and platforms.	269.4 ha 1.3%	
P19	<i>Corymbia hamersleyana</i> low isolated trees over <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> mid isolated clumps of shrubs over <i>Ptilotus astrolasius</i> , <i>Corchorus walcottii</i> low isolated clumps of shrubs over <i>Triodia epactia</i> mid hummock grassland over <i>*Cenchrus ciliaris</i> low open tussock grassland.	105.9 ha 0.5%	
P20	<i>Acacia stellaticeps</i> , <i>Acacia bivenosa</i> low isolated clumps of shrubs to sparse shrubland over <i>Triodia longiceps</i> , <i>Triodia epactia</i> mid to tall open hummock grassland on red-brown clayey loam on drainage areas/ floodplains and sandy/ stony plains.	8.5 ha 0.04%	

Code	Description	Area Mapped (ha)	Representative Photo
P21	<i>Acacia synchronicia</i> , <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> mid to tall sparse shrubland over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> mid to low isolated shrubs over <i>Triodia wiseana</i> , <i>Triodia epactia</i> mid to low hummock grassland on red-brown sandy clay loam on stony/ sandy plains.	361.0 ha 1.8%	
H01	<i>Acacia arida</i> , <i>Acacia orthocarpa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia bivenosa</i> (<i>Acacia ancistrocarpa</i>) mid to tall isolated shrubs to open shrubland over <i>Indigofera monophylla</i> , <i>Corchorus parviflorus</i> , <i>Ptilotus astrolasius</i> low isolated to isolated clumps of shrubs over <i>Triodia wiseana</i> , <i>Triodia epactia</i> low to mid sparse hummock to closed hummock grassland on red-brown sandy clay loam on ironstone/ basalt low undulating stony hills and hillcrests/ upper hillslopes.	4,986.3 ha 24.4%	
H02	<i>Terminalia circumalata</i> , <i>Ehretia saligna</i> var. <i>saligna</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> (<i>Brachychiton acuminatum</i>) low isolated trees to open woodland over <i>Dichrostachys spicata</i> , <i>Flueggea virosa</i> subsp. <i>melanthesoides</i> tall sparse shrubland over <i>Scaevola spinescens</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Ptilotus obovatus</i> var. <i>obovatus</i> low to mid isolated clumps of shrubs over <i>Triodia wiseana</i> , <i>Triodia epactia</i> low to mid isolated clumps of hummock grasses to hummock grassland with * <i>Cenchrus ciliaris</i> (Buffel grass), <i>Aristida burbridgeae</i> , <i>Eriachne mucronata</i> low isolated tussock grasses over <i>Tinospora smilacina</i> , <i>Trichosanthes cucumerina</i> var. <i>cucumerina</i> low isolated vines on brown sandy clay loam on basalt/ gabbro boulders/ rockpiles and hillcrests/ upper hillslopes.	332.4 ha 1.6%	

Code	Description	Area Mapped (ha)	Representative Photo
H03	<i>Terminalia circumalata</i> , <i>Ehretia saligna</i> var. <i>saligna</i> low isolated trees over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Dichrostachys spicata</i> mid isolated shrubs to tall sparse shrubland over <i>Tephrosia rosea</i> var. <i>clementii</i> , <i>Abutilon lepidum</i> , <i>Triumfetta clementii</i> low isolated shrubs over <i>Triodia wiseana</i> , <i>Triodia epactia</i> low isolated hummock grasses to hummock grassland with <i>*Cenchrus setiger</i> (Birdwood grass), <i>*Cenchrus ciliaris</i> (Buffel grass), <i>Eriachne mucronata</i> , <i>Cymbopogon ambiguus</i> low to mid isolated tussock grasses to open tussock grassland over <i>Fimbristylis dichotoma</i> low isolated sedges over isolated clumps of annual forbs and tussock grasses on orange/ brown sandy clay loam on granite/ basalt outcrops/ boulders/ rockpiles and hillcrests/ upper hillslopes.	35.5 ha 0.2%	
001	<i>Terminalia circumalata</i> low isolated trees to open woodland over <i>Acacia ancistrocarpa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Dichrostachys spicata</i> , <i>Ficus brachypoda</i> (<i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i>) mid to tall isolated shrubs to sparse shrubland over <i>Triodia wiseana</i> , <i>Triodia epactia</i> low to mid hummock grassland with <i>Themeda</i> sp. Mt Barricade (M.E. Trudgen 2471), <i>*Cenchrus ciliaris</i> (Buffel grass) low open tussock grassland over <i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i> , <i>Senna venusta</i> , <i>Polycarpaea longiflora</i> mid to tall sparse forbland on red-brown sandy clay loam on quartz outcrops/ boulders/ rockpiles and hillcrests/ upper hillslopes.	27.1 ha 0.1%	
C	Cleared. Roads, Tracks, Infrastructure, Drill Lines, Exploration Pads.	292.8 ha 1.4%	

Code	Description	Area Mapped (ha)	Representative Photo
R	Rehabilitation/ Revegetation/ Ripping.	12.5 ha 0.06%	



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VEGETATION TYPES

FIGURE 7-2

LEGEND

Vegetation Type

	H01 - <i>Acacia arida</i> , <i>Acacia orthocarpa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia bivenosa</i> (<i>Acacia ancistrocarpa</i>) mid to tall isolated shrubs to open shrubland over <i>Indigofera monophylla</i> , <i>Corchorus parviflorus</i> , <i>Ptilotus astrolasius</i> low isolated to isolated clumps
	P03 - <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia synchronicia</i> mid isolated clumps of shrubs to open shrubland over <i>Acacia stellaticeps</i> , <i>Acacia sphaerostachya</i> low to mid sparse shrubland to shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> low to
	P15 - <i>Acacia inaequilatera</i> , <i>Acacia trachycarpa</i> , <i>Ehretia saligna</i> var. <i>saligna</i> tall isolated shrubs to sparse shrubland over <i>Acacia bivenosa</i> , <i>Scaevola spinescens</i> mid isolated clumps of shrubs over <i>Triodia schinzii</i> mid hummock grassland on red sand on sand plains
	D11 - <i>Acacia inaequilatera</i> , <i>Dichrostachys spicata</i> , <i>Acacia trachycarpa</i> tall open shrubland over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia ancistrocarpa</i> , <i>Acacia arida</i> (<i>Acacia bivenosa</i>) mid to tall sparse shrubland over <i>Indigofera monophylla</i> , <i>Ptilotus astrolasius</i> ,
	P09 - <i>Acacia inaequilatera</i> , <i>Dichrostachys spicata</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> , (<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>) mid to tall isolated clumps of shrubs to open shrubland over <i>Corchorus walcottii</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> low isolated shrubs over
	P02 - <i>Acacia inaequilatera</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , (<i>Dichrostachys spicata</i>) tall isolated shrubs to sparse shrubland over <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> mid isolated clumps of shrubs to sparse shrubland over <i>Indigofera</i>
	P06 - <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> (<i>Acacia arida</i>) mid to tall isolated clumps of shrubs to sparse shrubland over <i>Indigofera monophylla</i> , <i>Ptilotus astrolasius</i> , <i>Corchorus walcottii</i> low isolated clumps of shrubs over
	P08 - <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia inaequilatera</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> tall to mid isolated shrubs to open shrubland over * <i>Cenchrus setiger</i> , * <i>Cenchrus ciliaris</i> , <i>Chrysopogon fallax</i> low to mid tussock grassland with <i>Triodia epactia</i> ,
	D06 - <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia synchronicia</i> tall isolated clumps of shrubs to open shrubland over <i>Triodia epactia</i> , <i>Triodia angusta</i> low to mid isolated clumps of hummock grasses to sparse hummock grassland with * <i>Cenchrus</i> spp.,
	P14 - <i>Acacia stellaticeps</i> low isolated clumps of shrubs to open shrubland over <i>Triodia schinzii</i> , <i>Triodia epactia</i> low to mid hummock grassland on red sand on sand plains.
	P17 - <i>Acacia stellaticeps</i> low sparse shrubland over <i>Triodia angusta</i> , <i>Triodia epactia</i> low to mid open hummock grassland over <i>Chrysopogon fallax</i> mid isolated tussock grasses on red-brown silty clay loam on sandy/ stony plains.
	P20 - <i>Acacia stellaticeps</i> , <i>Acacia bivenosa</i> low isolated clumps of shrubs to sparse shrubland over <i>Triodia longiceps</i> , <i>Triodia epactia</i> mid to tall open hummock grassland on red-brown clayey loam on drainage areas/ floodplains and sandy/ stony plains.
	P18 - <i>Acacia synchronicia</i> , <i>Acacia bivenosa</i> tall to mid isolated clumps of shrubs to open shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> mid hummock grassland over <i>Atriplex codonocarpa</i> , <i>Sclerolaena</i> spp. low isolated chenopod shrubs on orange/ brown sandy clay
	P21 - <i>Acacia synchronicia</i> , <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> mid to tall sparse shrubland over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> mid to low isolated shrubs over <i>Triodia wiseana</i> , <i>Triodia epactia</i> mid to low hummock grassland on red-brown sandy clay loam
	P01 - <i>Acacia xiphophylla</i> mid to tall isolated clumps of shrubs to open shrubland over <i>Triodia epactia</i> , <i>Triodia wiseana</i> low to mid isolated clumps of hummock grasses to hummock grassland over <i>Eragrostis xerophila</i> , * <i>Cenchrus</i> spp. low isolated clumps of tussock
	D10 - <i>Corymbia hamersleyana</i> low isolated clumps of trees to open woodland over <i>Acacia trachycarpa</i> , <i>Dichrostachys spicata</i> tall isolated clumps of shrubs over <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> low isolated clumps of

	D02 - <i>Corymbia hamersleyana</i> low isolated clumps of trees to open woodland over <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Grevillea wickhamii</i> var. <i>hispidula</i> , <i>Acacia bivenosa</i> , (<i>Acacia ancistrocarpa</i>) mid to tall isolated clumps of shrubs to shrubland over <i>Indigofera</i> spp.,
	P19 - <i>Corymbia hamersleyana</i> low isolated trees over <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> mid isolated clumps of shrubs over <i>Ptilotus astrolasius</i> , <i>Corchorus walcottii</i> low isolated clumps of shrubs over <i>Triodia epactia</i> mid
	P16 - <i>Corymbia hamersleyana</i> low isolated trees over <i>Acacia inaequilatera</i> tall isolated clumps of shrubs over <i>Triodia schinzii</i> mid hummock grassland on red sand on deep sand plains.
	D09 - <i>Corymbia hamersleyana</i> low isolated trees over <i>Acacia tumida</i> var. <i>pilbarensis</i> tall open shrubland over <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia ancistrocarpa</i> mid open shrubland over <i>Acacia stellaticeps</i> , <i>Indigofera monophylla</i> low isolated
	P12 - <i>Corymbia hamersleyana</i> low isolated clumps of trees over <i>Acacia bivenosa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> tall open over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> mid isolated shrubs to isolated clumps of shrubs over <i>Triodia epactia</i> mid isolated clumps of hummock grasses over * <i>Cenchrus setiger</i> (Birdwood grass), * <i>Cenchrus ciliaris</i> (<i>Buffel</i> grass) low isolated clumps of tussock grasses.
	P04 - <i>Eragrostis xerophila</i> , <i>Eriachne flaccida</i> , <i>Xerochloa barbata</i> (<i>Aristida contorta</i>) low isolated to closed tussock grassland with <i>Acacia xiphophylla</i> mid to tall isolated clumps of shrubs to open shrubland over <i>Atriplex bunburyana</i> , <i>Sclerolaena</i> spp., <i>Salsola</i>
	D04 - <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> mid isolated clumps of trees to open woodland over <i>Melaleuca argentea</i> , <i>Eucalyptus victrix</i> , <i>Sesbania formosa</i> low isolated clumps of trees to woodland over <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Acacia trachycarpa</i> ,
	D05 - <i>Eucalyptus victrix</i> low isolated clumps of trees to open woodland over <i>Acacia trachycarpa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> , (<i>Acacia ancistrocarpa</i>) mid to tall isolated shrubs to open shrubland over <i>Acacia bivenosa</i> ,
	D01 - <i>Eucalyptus victrix</i> low isolated trees to open woodland over <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Melaleuca glomerata</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> (<i>Melaleuca linophylla</i>) mid to tall sparse to open shrubland over <i>Triodia epactia</i> low to mid open hummock
	P10 - <i>Sclerolaena hostilis</i> , <i>Sclerolaena bicornis</i> var. <i>bicornis</i> , <i>Sclerolaena glabra</i> (<i>Sclerolaena costata</i>) low sparse to open chenopod shrubland with <i>Triodia epactia</i> low to mid open hummock to hummock grassland over * <i>Cenchrus ciliaris</i> , * <i>Cenchrus setiger</i> ,
	P05 - <i>Sclerolaena hostilis</i> , <i>Sclerolaena glabra</i> , <i>Atriplex bunburyana</i> low open chenopod shrubland with <i>Corchorus tridens</i> , <i>Sida fibulifera</i> , <i>Neptunia xanthonema</i> low sparse shrubland over <i>Eragrostis xerophila</i> low sparse to tussock grassland with <i>Triodia epactia</i> low
	Q01 - <i>Terminalia circumalata</i> low isolated trees to open woodland over <i>Acacia ancistrocarpa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Dichrostachys spicata</i> , <i>Ficus brachypoda</i> (<i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i>) mid to tall isolated shrubs to sparse shrubland
	H03 - <i>Terminalia circumalata</i> , <i>Ehretia saligna</i> var. <i>saligna</i> low isolated trees over <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Dichrostachys spicata</i> mid isolated shrubs to tall sparse shrubland over <i>Tephrosia rosea</i> var. <i>clementii</i> , <i>Abutilon lepidum</i> , <i>Triumfetta clementii</i>
	H02 - <i>Terminalia circumalata</i> , <i>Ehretia saligna</i> var. <i>saligna</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> (<i>Brachychiton acuminatum</i>) low isolated trees to open woodland over <i>Dichrostachys spicata</i> , <i>Flueggea virosa</i> subsp. <i>melanthesoides</i> tall sparse shrubland over <i>Scaevola</i>
	D03 - <i>Triodia angusta</i> mid open hummock grassland over <i>Eragrostis xerophila</i> low isolated clumps of tussock grasses over <i>Sclerolaena costata</i> low isolated chenopod shrubs over <i>Trianthema triquetrum</i> low isolated forbs over <i>Dactyloctenium radulans</i> , <i>Sporobolus</i>
	P07 - <i>Triodia angusta</i> mid open to closed hummock grassland over <i>Sclerolaena hostilis</i> , <i>Salsola australis</i> , <i>Atriplex codonocarpa</i> low isolated clumps of chenopod shrubs to sparse chenopod shrubland on orange sandy clay loam on stony/ sandy plains and drainage



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VEGETATION TYPES LEGEND

FIGURE 7-2

7.3.2.2 Ecological Communities

No Threatened Ecological Communities (TEC) were identified in the Survey Area (Biologic, 2025b). Two state listed PECs have been mapped within the Survey Area for the Proposal.

The Chenopod Vegetation Association of the Roebourne Plains (P1) was recorded over 99.6 ha within the Survey Area, dominated by tussock grasses, *Eragrostis xerophila*, with small patches of *Triodia epactia*, ephemeral herbs and low chenopod low shrubs. Vegetation condition of this PEC ranged from good to excellent. The Department of Biodiversity, Conservation and Attractions (DBCA) (2023) states this community grows in saline soils with moderate surface strewn of pebbles and cobbles, and while it appears uncommon, it incorporates alluvial plains of the Horseflat land system, described below.

The Horseflat Land System of the Roebourne Plains (P3) was recorded over a total of 6,353.3 ha within the Survey Area. DBCA (2023) states this community forms extensive clay plains dominated by perennial tussock grasslands; this PEC was dominated by the tussock grass, *Eragrostis xerophila*, with small patches of *Triodia epactia*, ephemeral herbs and low chenopod low shrubs. Vegetation condition of this PEC ranged from Degraded to Excellent. Desktop assessments indicate that the community extends from Peedamulla to Balla Balla surrounding the towns of Karratha and Roebourne.

The extent of both PECs in relation to the DE, as identified through surveys undertaken has been shown in Figure 7-3.



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SIGNIFICANT VEGETATION - PECS

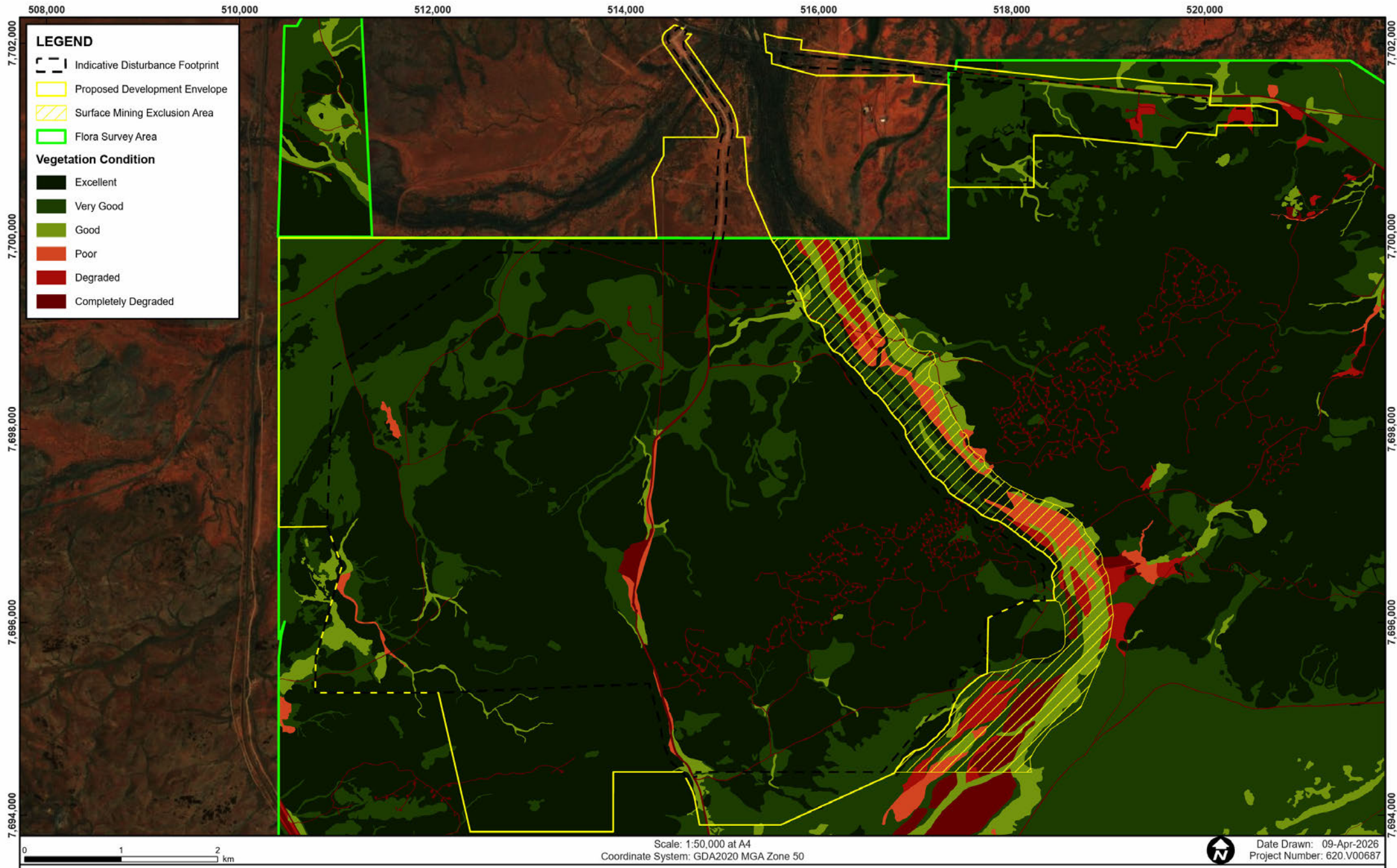
FIGURE 7-3

7.3.2.3 Vegetation Condition

Vegetation within the Survey Area ranged from completely degraded to excellent, with the dominant portion of the vegetation (18,082.9 ha/ 88.7%) in either excellent or very good condition (Table 7-3). The main disturbances effecting condition observed were associated with the presence of introduced flora taxa, predominantly *Cenchrus ciliaris* (buffel grass), and clearing (Biologic, 2025c). Areas lower in the landscape were more heavily impacted, including plains and drainage lines, likely due to the historical pastoral tenure over the Survey Area and the current grazing and trampling from horses and cattle. Vegetation conditions across the Survey Area are shown in Figure 7-4.

Table 7-3: Vegetation condition extent in the Survey Area

Condition	Extent (ha / %)	Comment
Excellent	8,357 / 41.0	Undisturbed areas predominantly in the hills (vegetation types H01 and H02), minor drainage lines within these hills, and less disturbed plains in the southern section of the Survey Area.
Very Good	9,725.9 / 47.7	Less disturbed vegetation in the lower-lying areas (P04 and P05) throughout the Survey Area and some hills in the central and northern sections of the Survey area. Main disturbances were scattered introduced flora taxa, minor trampling and dirt tracks.
Good	1,396.5 / 6.8	Vegetation in Good condition mainly occurred on plains and in more significant drainage lines. Main disturbances were moderate weed invasion, trampling, tracks and clearing, rubbish, evidence of human disturbance to vegetation strata.
Poor	1259.3 / 0.8	Poor condition vegetation was mainly associated with more significant drainage lines and in areas previously cleared (possibly old borrow pits) or adjacent to track and railway.
Degraded	262.7 / 1.3	Mostly associated with floodplains along the Ngurin and east Ngurin (P08) due to high weed invasion (<i>Cenchrus spp.</i>) creating a dominant monoculture.
Completely Degraded	200.8 / 1.0	
Rehabilitation (Completely Degraded)	12.5 / <0.1	Included areas that have been previously disturbed/ were identified by the Proponent disturbance layer. Evident from aerial photography or ground-truthing that they are now revegetated.
Cleared Areas (Completely Degraded)	292.8 / 1.4	Cleared, disturbed and/or currently void of vegetation (or mostly so) from natural processes associated with roads, tracks, mining or exploration operations and infrastructure.



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VEGETATION CONDITION

FIGURE 7-4

7.3.2.4 Flora Values

Flora surveys have identified 439 confirmed vascular flora taxa, representing 176 genera from 55 families within the Survey Area during the two-phase and single-season field survey of the expanded area. This also includes flora identified in Aquatic Ecology surveys (Biologic 2026).

The most species-diverse families recorded were Fabaceae (124), Poaceae (75), and Malvaceae (39), together comprising more than half, 54.2%, of the confirmed total flora (28.2%, 17.1% and 8.9% respectively). The most represented genera were *Acacia* (7.7%), followed by *Ptilotus* (3.4%), *Tephrosia* (2.7%) *Euphorbia* (2.3%) and *Sida* (1.8%) with a combined total of 17.9% of total confirmed flora.

7.3.2.5 Conservation Significant Flora

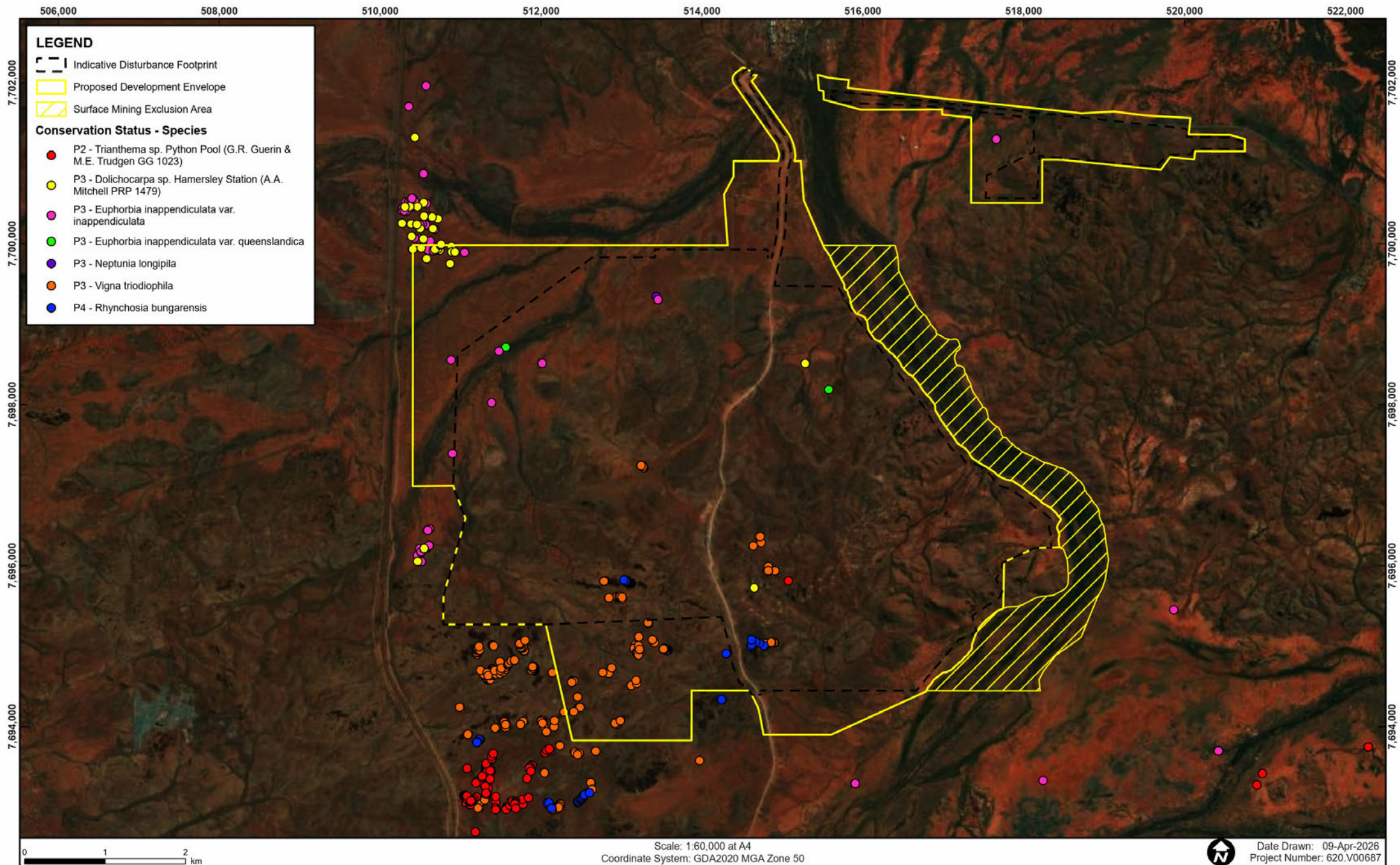
The following were identified in flora surveys undertaken for the Proposal, including a targeted survey for Priority species, following out of season rainfall:

- Seven Priority species (ranging from P2 to P4) (Table 7-4).
- One potentially undescribed species (*Polymeria* sp. Nov).

No Threatened flora species listed under the EPBC Act were recorded during the surveys. Seven Priority taxa were identified and confirmed during the 2022–2025 Biologic surveys (Biologic, 2025c), including one species – *Euphorbia inappendiculata* var. *queenslandica* (P3) – that had not been identified in the Desktop Assessment prior to the commencement of fieldwork. Table 7-4 provides details of the Priority flora species recorded during the surveys undertaken for the Proposal.

Table 7-4: Priority Flora Species

Species	Priority	Individuals Recorded 2022 – 2025 Surveys	Locations total
<i>Trianthema</i> sp. Python Pool (G.R Guerin & M.E. Trudgen GG 1023)	P2	9,351	147
<i>Dolichocarpa</i> sp. Hamersley Station (A.A Mitchell PRP 1479)	P3	137	73
<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i>	P3	179	94
<i>Euphorbia inappendiculata</i> var. <i>queenslandica</i>	P3	29	7
<i>Neptunia longipila</i>	P3	10	1
<i>Vigna triodiophila</i>	P3	3,869	447
<i>Rhynchosia bungarensis</i>	P4	416	63



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PRIORITY FLORA RECORDS

FIGURE 7-5

7.3.2.6 Groundwater Dependent Vegetation

Groundwater Dependent Vegetation (GDV) is defined as a terrestrial ecosystem that relies on the subsurface presence of groundwater. GDV is characterised by the presence of species dependent on groundwater; obligate phreatophytes require access to groundwater, facultative use groundwater for a portion of their requirements as required.

Biologic flora surveys identified one vegetation type with high species dependence on groundwater, D04, which was assessed as GDV, supporting a dominant story of obligate phreatophyte *Melaleuca argenta*. Two vegetation types with Moderate dependence on groundwater types, D01 and D05, were considered potential GDV, with no obligate phreatophytes but facultative phreatophytes. All were associated with drainage lines. The other seven vegetation types associated with drainage were not GDV.

Assessment of the vegetation along the Ngurin and its tributaries, indicated some groundwater dependence but no high-certainty groundwater-dependent ecosystems (GDE). These were assessed through multiple databases including the Bureau of Meteorology (BoM) National GDE Atlas and field-based vegetation mapping (EMM Consulting, 2025). Groundwater dependence was found to be confined to riparian vegetation communities along the Ngurin and East Ngurin. Within these drainage lines, phreatophytes such as *Melaleuca argentea* (obligate), *Eucalyptus camaldulensis* subsp. *Refulgens* (facultative), *Eucalyptus vitrix* (vadophyte) and *Sesbania formosa* (facultative) were recorded (Biologic, 2025b). No groundwater dependent wetlands, springs or baseflow-fed pools were identified within or adjacent the DE (EMM Consulting, 2025).

7.3.2.7 Introduced Weeds

Eighteen introduced taxa, representing nine families were recorded across the Survey Area. Three introduced taxa, **Azadirachta indica*, **Parkinsonia aculeata*, and **Tamarix aphylla* are listed as Declared Pests under the *Biosecurity and Agriculture Management Act 2007* (BAM Act). **Azadirachta indica* is also a 'Priority Alert' weed listed by the DBCA. *Parkinsonia aculeata* and *Tamarix aphylla*, are also listed as Weeds of National Significance (WoNS).

Introduced flora were distributed primarily within drainage lines, floodplain, and stony plain vegetation types. These vegetation types exist within landforms known to present more optimal conditions for introduced flora, due to dispersal of seeds by water movement as well as higher water availability for germination and growth (Biologic, 2025b). Introduced flora recorded in the Survey Area included the following:

- **Aerva javanica* – Kapok bush / Desert cotton.
- **Flaveria trinervia* – Cluster yellowtops.
- **Sonchus oleraceus* – Common sowthistle.
- **Cucumis myriocarpus* subsp. *Myriocarpus* – Paddy melon / Wild cucumber.
- **Parkinsonia aculeata* – Parkinsonia / Jerusalem thorn.

- **Stylosanthes hamata* – Caribbean stylo / Townsville stylo.
- **Vachellia farnesiana* var. *farnesiana* – Mimosa bush / Sweet acacia.
- **Malvastrum americanum* – American false mallow.
- **Melochia pyramidata* – Pyramid flower / Melochia.
- **Azadirachta indica* – Neem tree.
- **Passiflora foetida* var. *hispida* – Stinking passionflower / Wild passionfruit.
- **Cenchrus ciliaris* – Buffel grass.
- **Cenchrus setiger* – Birdwood grass.
- **Chloris virgata* – Feathertop rhodes grass.
- **Cynodon dactylon* – Couch grass / Bermuda grass.
- **Echinochloa colona* – Awnless barnyard grass / Jungle rice.
- **Tamarix aphylla* – Athel pine / Tamarisk.
- **Tribulus terrestris* – Caltrop / Puncture vine.

7.4 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to reduce environmental impacts to as low as reasonably practicable. impacts to environmental values.

7.4.1 Potential Direct Impacts

The potential direct impacts from the Proposal on identified flora and vegetation across the development include:

- Vegetation loss and degradation of vegetation due to clearing.
- Loss of conservation significant flora and ecological communities.

7.4.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact identified flora and vegetation through:

- Introduction of new invasive plant species or spread of existing invasive species.
- Change to fire regime impacting vegetation.
- Decline in vegetation health as a result of:
 - Deposition of dust created during clearing activities, mine operations and other works.
 - Loss or change to GDV due to changes in groundwater regimes.
 - Diversion of surface water drainage channels to allow for mining activities may impact species reliant on streamflow.

7.5 Proposed Mitigation Measures

Upon completion of all relevant studies, the Proponent will apply the following mitigation hierarchy to limit significant impacts to flora and vegetation from the Proposal:

- Avoid:
 - The design of the DE will avoid the Horseflat Land System PEC (P3) to the maximum extent possible (Figure 7-3).
 - Avoid known locations of Priority species, to the maximum extent possible in design of the DE (Figure 7-5).
- Minimise:
 - Limiting clearing to as low as reasonably practicable during mine design phases. Permitted activities within the SMEA will be limited to those listed in Section 2.1.1 minimising disturbance of GDVs as far as reasonably practicable.
 - DE altered to minimise the extent to which PEC Chenopod association of the Roebourne Plains (P1) is required to be disturbed (Figure 7-3)
 - Implementation of a GDP process for all ground disturbing activities onsite, with the inclusion of reviews of geospatial information system (GIS) exclusion and avoidance areas.
 - Using previously disturbed and cleared areas to the extent possible.
 - The presence of Priority flora and PECs, and the need to avoid impacts will be included in the site induction.
 - Implementation of a vehicle hygiene system to minimise the potential for increased weed presence and distribution.
 - Mine vehicles will be required to stay on existing roads and tracks.
 - Weed control measures to be implemented where required within the DE.
 - Installation of fire breaks around critical infrastructure.
 - All mine vehicles fitted with firefighting equipment.
 - Hot works conducted within designated, specifically designed workshops or with controls required by a Hot Works Permit system.
 - Employee, contractor and visitor site inductions will include fire mitigation and management requirements.
 - Any controlled burns would be conducted in consultation with the DBCA.
- Rehabilitate:
 - Development and implementation of a MDCP, in accordance with statutory *Guidelines for preparing Mining Development and Closure Proposals* (DMPE, 2025b) for the Proposal
 - At closure rehabilitate constructed landforms in accordance with the Proposals MCP under the guidance of DMPE.
 - Progressive rehabilitation where feasible.

- Stripping and stockpiling of topsoil for subsequent rehabilitation to preserve seed bank.

7.6 Assessment of Significance of Residual Impacts

7.6.1 Proposal

An assessment of the significance of the residual impacts of the Proposal on flora and vegetation will be summarised and presented in the ERD.

7.6.2 Cumulative Impacts

The cumulative impacts of the Proposal on flora and vegetation will be undertaken with the development of the ERD.

7.7 Environmental Outcomes

The ERD will outline the environmental outcomes for flora and vegetation from implementation of the Proposal in the ERD.

8 Preliminary Key Environmental Factor – Terrestrial Fauna

8.1 EPA Objective

The EPA objective for terrestrial fauna is “to protect terrestrial fauna so that biological diversity and ecological integrity are maintained” (EPA, 2016c).

8.2 Policy and Guidance

The following guidance is applicable to this factor:

- Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020a).
- Environmental Factor Guideline: Terrestrial Fauna (EPA, 2016c).
- Technical Guidance – Sampling of Short-Range Endemic Invertebrate Fauna (EPA, 2016d).
- Cumulative Impact Assessment (EPA, 2026).

8.3 Receiving Environment

8.3.1 Studies and Surveys

The Survey Area encompassed an area of approximately 20,547.61 ha. Fauna studies and surveys are summarised in Table 8-1. Survey effort is summarised in Section 8.3.1.1 to 8.3.1.3, and shown in Figure 8-1.

8.3.1.1 Vertebrate Fauna

A detailed survey has been completed across the DE and beyond across two phases of sampling appropriate to target species, this followed five basic and targeted surveys completed in targeted areas (shown in Figure 8-1). The detailed survey comprised 143 habitat assessments, six water feature assessments, 13 systematic trapping sites (pit traps, funnel traps, Elliott traps, cage traps, camera traps, ultrasonic recorders), avifauna sampling, nocturnal searches, targeted searches, targeted sampling for Ghost Bat and Pilbara Leaf-nosed Bat, Bilby plots, Night parrot acoustic recorders, and opportunistic records. Sampling was considered adequate with 92-100% mammals, 81-90% birds and 85-92% reptiles recorded (Biologic 2025c).

8.3.1.2 Short-Range Endemic Species (SREs)

A detailed SRE survey completed across the DE assessed 146 sites for habitat suitability and 86 were sampled for invertebrate fauna including active foraging, leaf litter and soil sifting, burrow excavation and pitfall trapping (shown in Figure 8-4). Molecular analysis was completed on 104 specimens, with 94 completed successfully (Biologic 2025d). Supplementary surveys completed in and around the DE sampled 40 sites, with the results incorporated into the desktop assessment for the detailed survey (Invertebrate Solutions 2023, 2025).

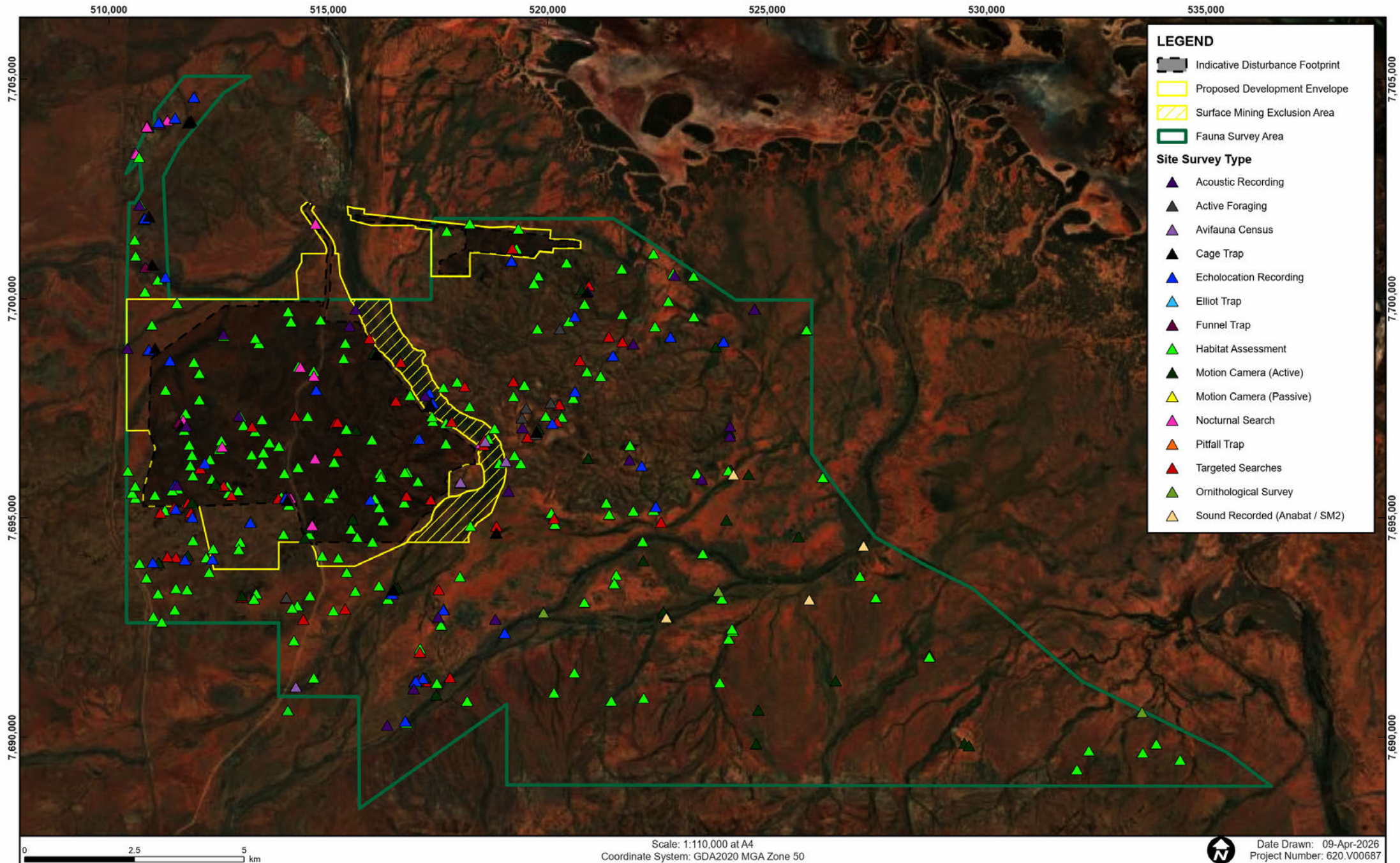
8.3.1.3 Aquatic Ecology

Water samples were collected from five pools offering the most prospective habitat in the wet season to undertake eDNA analysis for Pilbara Olive Python (Biologic, 2023a). Five samples were taken at each site and assessed at eDNA Frontiers laboratory in Perth.

Table 8-1: Summary of Environmental Investigations relevant to Terrestrial Fauna

Survey Description	Survey date	Reference	Details
Terrestrial Fauna			
Andover Nickel-Copper Project: Basic Terrestrial Vertebrate Fauna Survey.	27-29 June 2022	Biologic, 2022b	Basic vertebrate fauna survey of a 1,570.35 ha Survey Area to delineate the extent of fauna habitats and determine the likelihood of occurrence of significant vertebrate fauna species.
Andover Lithium Project: Andover Basic and Targeted Vertebrate Fauna Survey.	7 – 14 June 2023	Biologic, 2024c	Basic and targeted vertebrate fauna sampling for the Andover Proposal, comprising an 1,810 ha Survey Area.
Andover Groundwater Study Area Basic and Targeted Vertebrate Fauna Survey.	18 – 25 August 2023	Biologic, 2024d	Basic and targeted vertebrate fauna sampling for the Andover Groundwater Proposal, comprising two separate areas (northern and southern) totalling 1,553 ha.
Andover Project Basic Terrestrial Vertebrate Fauna Survey.	22 – 26 July 2024	Ecoscope, 2025b	Basic terrestrial fauna survey within a Survey Area of approximately 7,989.59 ha.
Andover Nickel Study Area Basic and Targeted Vertebrate Fauna Survey.	18 – 25 August 2023	Biologic, 2024e	Targeted vertebrate fauna sampling within a portion of the previously known Nickel Project Area over an area of approximately 1,370 ha.
Ghost Bat Roost Characterisation Survey.	13 – 15 June 2024	Bat Call , 2025a	Visual observation and ultrasonic detection methods used to assess 17 historical mines selected and categorised for suitability and potential as diurnal roosts for bat species.
Ghost Bat Roost Activity Monitoring.	11 – 14 July, 2025	Bat Call, 2025b	Echolocation surveys conducted across 18 historical mine sites located within or in proximity to the Proposal, to provide dry season baseline activity and roosting assessment.
	16 – 19 August 2025		
Andover Study Area Detailed Vertebrate Fauna Survey.	19 -29 February 2024	Biologic, 2025c	Basic and targeted vertebrate fauna sampling for the Andover Proposal within an area of approximately 1,810 ha. This area predominantly comprises of the DE.
	14 – 24 October 2024		
	4 – 14 March 2025		

Survey Description	Survey date	Reference	Details
	14 -23 August 2025		
Andover Project Aquatic Ecology Assessment 2023.	21 April – 27 April 2023	Biologic, 2023a	Post wet season survey (wet 2023). Targeted eDNA sampling undertaken for Olive Python in this Survey.
SREs			
Andover Nickel-Copper desktop assessment and baseline field survey for SRE invertebrates.	26 April – 29 April 2022	Invertebrate Solutions, 2023	Phase 1: Baseline field survey inclusive of 20 sites within the Proposal and surrounding area.
Andover Project: Lithium, Groundwater North and additional Areas Short-Range Endemic Invertebrate Fauna Survey.	30 April to 6 May 2024	Biologic, 2025d	Wet and dry season surveys of the Lithium Area and Groundwater North area, assessing for presence of SREs and habitat assessment.
	16 October to 16 October 2024		
	3 April to 8 April 2025		Additional areas (phase 2) sampled during a single-season trip in the wet-season.
Survey for Short Range Endemic Fauna for the Andover Lithium Project, Roebourne, Western Australia.	7 April to 11 April 2025	Invertebrate Solutions, 2025	Phase 2: Baseline field survey across both the eastern and western portions of the DE.



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TERRESTRIAL FAUNA SURVEY EFFORT

FIGURE 8-1

8.3.2 Fauna Habitats

Eleven vertebrate fauna habitats have been identified during the field surveys undertaken from 2022 to 2025 as described in Table 8-2. Critical habitats associated with Threatened and Priority species have been shown in Figure 8-3.

Table 8-2: Vertebrate Fauna Habitats

Habitat	Key Habitat Elements	Mapped within Survey Area (ha)	Representative Photo
Drainage Line/River/Creek (Major)	Areas of significant drainage consisting of multiple braided channels or a single broad (i.e. >3 m) channel. Vegetation was dominated by open eucalypt, Acacia, and Melaleuca trees over mixed shrubs, hummock grasses, reeds and buffel grass (<i>Cenchrus ciliaris</i>). Critical habitat for the following species: - Northern Quoll (foraging and dispersal) - Pilbara olive python (breeding, foraging and dispersal) - Grey falcon (breeding and foraging)	763.49 ha	
Drainage Line/River/Creek (Minor)	Areas of drainage consisting of narrow (i.e. 1-3 m) individual channels or areas that water flow is evident, however, fully formed channels are absent. Eucalypt trees were characteristic over mixed shrubs, hummock grasses and frequently buffel grass (<i>Cenchrus ciliaris</i>).	855.11 ha	

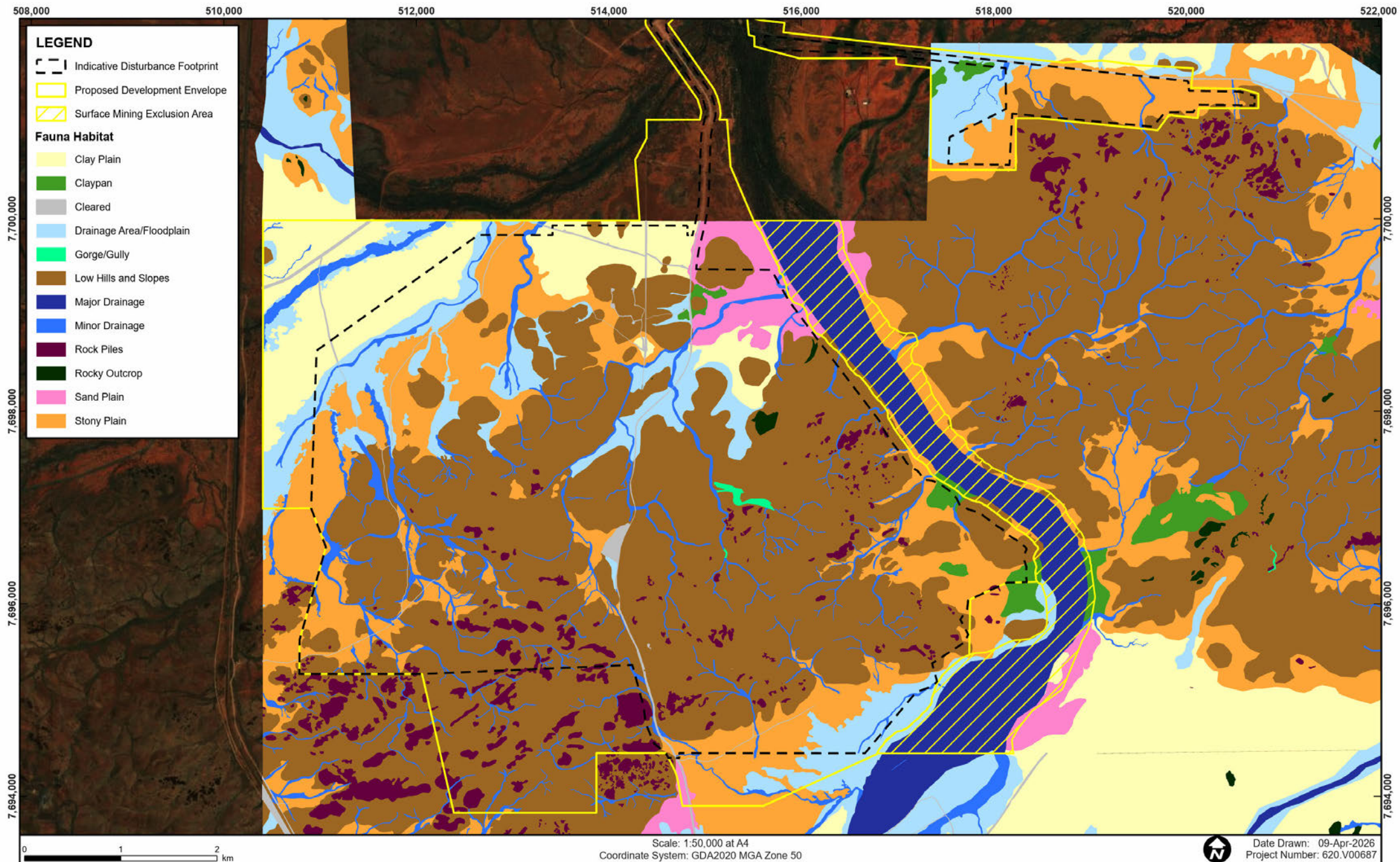
Habitat	Key Habitat Elements	Mapped within Survey Area (ha)	Representative Photo
Drainage Area / Floodplain	Low-lying flat alluvial plain is subject to overland flow following high rainfall events. Occurs adjacent to a minor and major drainage lines. The vegetation is dominated by sparse eucalypt trees over tussock or hummock grasses with a generally high canopy cover.	1976 ha	
Rocky Outcrop	Composed of piles of large granite boulders and crumbling rock surrounding the base, this habitat type was scarce throughout the survey area. Although minor in extent, it contained crevices or hollow areas providing shelter for local fauna species. The vegetation consisted of scattered shrubs and trees over a hummock/tussock grass layer. Critical habitat for the following species: - Northern quoll (breeding, foraging and dispersal) - Pilbara olive python (breeding, foraging and dispersal)	89 ha	

Habitat	Key Habitat Elements	Mapped within Survey Area (ha)	Representative Photo
Rockpiles	Composed of piles of large basalt boulders and crumbling rock faces. Rockpiles habitat provides a huge multitude of deep cracks and crevices for shelter for a range of vertebrate fauna species. In some areas of this habitat scattered eucalypts and <i>Acacia</i> provided additional shelter or foraging opportunities. Critical habitat for the following species: - Northern quoll (breeding, foraging and dispersal) - Pilbara olive python (breeding, foraging and dispersal)	293.34 ha	
Low Hills and Slopes	Consisted of low rocky hills and undulating stony slopes with the occasional rock outcrop. Vegetation was sparse, scattered eucalypt trees and mixed shrubs over hummock grasses and mixed herbs.	5213.29	

Habitat	Key Habitat Elements	Mapped within Survey Area (ha)	Representative Photo
Sandplain	Low-lying sandy areas with accumulated loose sandy substrate. Often supporting an open vegetation cover, dominated by scattered <i>Acacia</i> shrubs over <i>Triodia</i> hummock grasses of various life stages.	262.51 ha	
Clayplain	Clay Plains are flat areas comprised predominantly of medium to heavy clay soils. The vegetation generally is tussock grasslands with a strong presence of introduced species (<i>Cenchrus</i> sp.).	7665.51 ha	

Habitat	Key Habitat Elements	Mapped within Survey Area (ha)	Representative Photo
Claypan	Characterised by heavy clay-based soils of both cracking and non-cracking nature. Occurs on lower lying plains that are often drainage depressions/areas which are subjected to sheet flow following large rainfall events. This habitat is likely to be seasonally inundated. Claypan differs from Clayplain in that there is generally very little to no vegetation cover.	140.8 ha	
Plain (Stony/Gibber)	Stony plains were flat areas with gravel veneer over fine grain soils (clay to sandy clay). The vegetation varied from open tussock and/or hummock grassland to scattered shrubs over hummock grasses.	3175.98 ha	

Habitat	Key Habitat Elements	Mapped within Survey Area (ha)	Representative Photo
Gorge/Gully	Gorge/Gully habitat was characterized by rugged, steep-sided valleys incised into the surrounding landscape. Gorges tend to be deeply incised, with vertical cliff faces, while gullies are more open. Critical habitat for the following species: - Northern quoll (breeding, foraging and dispersal) - Pilbara olive python (breeding, foraging and dispersal)	5.52 ha	
Cleared	-	107.06	-



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HABITAT TYPES

FIGURE 8-2

8.3.3 Conservation Significant Fauna

A Protected Matters Search Tool (PMST) search was conducted with a 10 km buffer of the DE to support likelihood of occurrence of desktop assessments undertaken by Biologic. The species identified through this search included five bird species, six mammal species, two reptile species as known to occur or potentially occurring. This search also identified 15 Migratory species which may occur within proximity to the Proposal.

Conservation significant species considered in the assessment are presented in Table 8-3. The distribution of conservation significant fauna recorded is shown on Figure 8-3.

Table 8-3: Conservation Significant Fauna Species Likelihood and Occurrence

Scientific Name	Conservation Status			Likelihood of Occurrence	Recorded in Development Envelope	Notes
	EPBC Act	BC Act	DBCA			
Threatened Species						
<i>Dasyurus hallucatus</i> (Northern Quoll)	En	En	-	Known to occur	Recorded both within and outside of the DE	Recorded through direct observations and secondary signs within DE and IDF. Critical breeding and foraging/dispersal habitat present within DE. Likely to be a resident population and considered an important population (DoE, 2016).
<i>Liasis olivaceus barroni</i> (Pilbara Olive Python)	Vu	Vu	-	Known to occur	Recorded within the DE (SMEA)	Direct observation recorded within Major Drainage Line habitat. It is likely this species occurs as a resident.
<i>Falco hypoleucos</i> (Grey Falcon)	Vu	Vu	-	Known to occur	Recorded both within and outside of the DE	Recorded through direct observation and avifauna census within and outside of DE. Occasional visitor due to potential foraging habitat along major drainage line. Tall eucalypts along major drainage line offer potential breeding habitat. No current or historical nests have been identified throughout surveys.
<i>Macroderma gigas</i> (Ghost Bat)	Vu	Vu	-	Known to occur	Calls recorded both within and outside of the DE No critical habitat roosts in the DE	Seven Category 2 roosts have been identified in abandoned mine shafts 3.3 km north of DE. Three provisional Category 3 and one Category 4 roosts contained within the DE. DE wholly within foraging habitat 12 km buffer range.

Scientific Name	Conservation Status			Likelihood of Occurrence	Recorded in Development Envelope	Notes
	EPBC Act	BC Act	DBCA			
<i>Pezoporus occidentalis</i> (Night Parrot)	Cr	Cr	-	Unlikely	Not Recorded	Suitable habitat is not present. Closest record to the Survey Area >50 km (Biologic, 2025c). Targeted surveys - No individuals recorded during surveys conducted (2025c; 2024c; 2024d; and 2024e). Favoured roosting habitat is not present within the Survey Area; Structurally complex <i>Triodia</i> patches are not present.
<i>Macrotis lagotis</i> (Greater Bilby)	Vu	Vu	-	Unlikely	Not Recorded	No records of the species within 50km of the Survey Area. Targeted sampling - No observations or secondary signs of Bilbies were observed (2025c; 2024c). Isolated patches of sand that could provide potential foraging habitat for dispersing individuals, however unconnected to any other areas of suitable habitat.
<i>Rhinonictes aurantia</i> (Pilbara Leaf-nosed Bat)	Vu	Vu	-	Unlikely	Not Recorded	No suitable roosting habitat present within the Survey Area. Closest record is within 50 km of the Survey Area (Biologic, 2025c). Targeted surveys - No individuals or secondary signs observed (2025c; 2024c; 2024d; and 2024e). Species roosts within caves and abandoned mines with high humidity (95%) and temperature (32°C). Occurrence is dependent on presence of suitable roost cave sites.
<i>Erythrotriorchis radiatus</i> (Red Goshawk)	En	Vu	-	Unlikely	Not Recorded	Outside of species known distribution. Extremely rare visitor to the Pilbara.
<i>Rostratula australis</i> (Australian Painted Snipe)	En	En	-	Unlikely	Not Recorded	Suitable habitat is not present within the DE. Favours recently flooded areas in shallow lowland freshwater temporary or permanent wetlands.
<i>Sternula nereis nereis</i>	Vu	Vu		Unlikely	Not Recorded	Suitable habitat is not present within the DE.

Scientific Name	Conservation Status			Likelihood of Occurrence	Recorded in Development Envelope	Notes
	EPBC Act	BC Act	DBCA			
Australian Fairy tern						Found on sheltered coasts, and in fresh and saline wetlands. Nests on sandy beaches. None of which occurs within the DE.
Priority Species						
<i>Pseudomys chapmani</i> (Western Pebble-mound Mouse)	-	-	P4	Known to occur	Not Recorded within the DE.	One individual recorded in Stony Plains habitat (Biologic, 2025c), outside of DE. Recorded from secondary evidence; one active and one inactive pebble mound (Biologic, 2022b).
<i>Notoscinus butleri</i> (Lined Soil-crevice Skink)	-	-	P4	Known to occur	Not Recorded within the DE.	Recorded on five occasions during field surveys, all outside of the DE. Individuals recorded within Major Drainage Line, Stony Plain, Claypan and Sandplain habitats. It is likely the species occurs as a resident to the Survey Area.
<i>Leggadina lakedownensis</i> (Northern Short-tailed Mouse)	-	-	P4	Likely	Not Recorded	Not recorded during any of the surveys undertaken for the Proposal, however five records of occurrence within 5 km of the Biologic 2025 Survey Area (Biologic, 2025c). Clay Plain, Claypan and sandplain habitat provide important breeding, foraging and dispersal habitat for the species.
Specialty Protected Species						
<i>Falco peregrinus</i> (Peregrine Falcon)	-	OS	-	Possible	Not Recorded	Potential foraging habitat available along the Ngurin (Major Drainage Line habitat). Preferred nesting habitat not present within the Survey Area.
Migratory Species						
<i>Apus pacificus</i> (Fork-tailed Swift)	Mi	Mi	-	Likely	Recorded	Observations recorded during surveys approximately 500 m from survey area. Considered likely to occur as an infrequent visitor and may forage within the airspace above the DE, however landing/nesting is highly unlikely.
<i>Pandion haliaetus</i> (Eastern Osprey)	Mi	Mi	-	Possible	Not Recorded	Not recorded during surveys undertaken for the Proposal, however considered possible to

Scientific Name	Conservation Status			Likelihood of Occurrence	Recorded in Development Envelope	Notes
	EPBC Act	BC Act	DBCA			
						occur due to previous records in proximity to the Survey Area. Potential foraging and dispersal habitat present within the Survey Area.
<i>Charadrius leschenaultii</i> (Greater sand plover)	Vu/ Mi	Vu/ Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Inhabits tidal flats within Australia, often roosts on beaches at high tide, usually in association with other small waders.
<i>Numenius madagascariensis</i> (Eastern Curlew)	Cr/ Mi	Cr		Unlikely	Not Recorded	Suitable habitat is not present within DE. Mostly favours tidal mudflats, reef flats, sandy beaches and rarely near-coastal lakes including saltwork ponds.
<i>Tringa nebularia</i> (Common Greenshank)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Species occurs as a non-breeding summer migrant, which may occur throughout the region. Often occurs in tidal mudflats, mangrove creeks, flooded samphire flats, beaches, river pools and saltwork/sewage ponds.
<i>Calidris ferruginea</i> (Curlew Sandpiper)	Cr/ Mi	Cr/ Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Inhabits intertidal mudflats in sheltered coastal areas. Rare species generally roosts on bare dry shingle, shell or sand beaches.
<i>Charadrius veredus</i> (Oriental Plover)	Vu/ Mi	Vu/ Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Variety of habitats including tidal mudflats and sandflats, sandy and shelly beaches, estuaries, reefs and other habitats associated with coastal habitat.
<i>Motacilla cinerea</i> (Grey Wagtail)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Rare vagrant visitor to Western Australia.
<i>Motacilla flava</i> (Yellow Wagtail)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Seasonal visitor to the Pilbara region, prefers damp or wet habitats with low vegetation.
<i>Hirundo rustica</i> (Barn Swallow)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE.

Scientific Name	Conservation Status			Likelihood of Occurrence	Recorded in Development Envelope	Notes
	EPBC Act	BC Act	DBCA			
						Non-breeding summer visitor to the Pilbara and Kimberly. Favors areas near water.
<i>Calidris acuminata</i> (Sharp-tailed Sandpiper)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Coastal and inland areas saline and freshwater but prefers non-tidal fresh or brackish wetlands.
<i>Calidris melanotos</i> (Pectoral Sandpiper)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within DE. Associated with coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, flood plains and artificial wetlands.
<i>Glareola maldivarum</i> (Oriental Pratincole)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within the DE. Prefers open plains, floodplains or short grasslands, often with extensive bare plains.
<i>Calidris canutus</i> (Red Knot)	En/ Mi	En/ Mi		Unlikely	Not Recorded	Suitable habitat is not present within the DE. Found in mudflats and sandflats in estuaries, on sheltered coasts near coastal salt lakes, and saltwork ponds.
<i>Actitis hypoleucos</i> (Common sandpiper)	Mi	Mi		Unlikely	Not Recorded	Suitable habitat is not present within the DE. Prefers estuaries and deltas of streams, as well as banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans.



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CONSERVATION SIGNIFICANT
FAUNA RECORDS AND
CRITICAL HABITATS

FIGURE 8-3

8.3.4 Assessment of Occurrence – Unlikely Species

8.3.4.1 Targeted Sampling – Night Parrot (*Pezoporus occidentalis*) Acoustic Recorders

Acoustic recorders were deployed at multiple sites throughout the Survey Area during Biologic surveys (2025c; 2024c; 2024d; and 2024e). Recommendations by the DBCA (2024) states when targeting Night parrot, acoustic recorders should be deployed in roosting/breeding habitat comprising strands of structurally complex, long unburnt spinifex (*Triodia*), in relatively open areas with few trees. Although presence of suitable roosting habitat throughout the Survey Area was limited, some areas of potentially suitable habitat were identified and targeted for sampling. Acoustic monitors were deployed for six consecutive nights at 18 sites across four surveys (2024-2025), for a total of 114 recording nights within the Survey Area (Biologic, 2025c). Recordings were analysed for Night parrot calls by ornithology specialist Louis Masarei from Malu Fauna. The species is considered unlikely to occur as no suitable habitat was found present and no records of the species were detected during the targeted surveys. The nearest known record is located more than 50 km from the Survey Area (Biologic, 2025c).

8.3.4.2 Targeted Sampling – Greater Bilby (*Macrotis lagotis*) Plot Searches

Sampling for Bilby within the Survey Area comprised 2-ha survey plots (plot searches) within areas of potential suitable habitat during Biologic surveys (2025c; 2024c), in accordance with the survey guidelines for the species (DBCA, 2017). Each plot was subject to targeted searches for secondary evidence of the species' occurrence, including burrows, diggings, tracks and scats (Biologic, 2025c). Plot searches within the Survey Area were completed across potential suitable habitat found within Sand Plain and Clay Plain habitats. Isolated patches of sand that may provide potential foraging habitat for dispersing individuals were identified within the Survey Area; however, these patches were not connected to any other areas of suitable habitat. The species is considered unlikely to occur, given no records of the species were detected during the targeted surveys and the nearest record identified is within 50 km of the Survey Area (Biologic, 2025c).

8.3.4.3 Targeted Sampling – Pilbara Leaf-Nosed Bat (*Rhinonicteris aurantia*) Ultrasonic Recordings

The Pilbara leaf-nosed bats roost within caves and abandoned mines with high humidity (95%) and temperature (32°C) (Biologic, 2025c). Overnight recordings of bat echolocation calls targeting Ghost bat and Pilbara leaf-nosed bat were undertaken with Song Meter ultrasonic bat recorders within the Survey Area during the Biologic surveys (2025c; 2024c; 2024d; and 2024e). Acoustic monitors were deployed for a minimum of three consecutive nights at 31 sites, across four surveys (2024-2025), for a total of 173 recording nights within the Survey Area (Biologic, 2025c). Sampling at each location focused primarily on habitats and habitat features (i.e. water features) most likely to support the species (i.e. foraging and dispersal corridors/ areas provided by Major Drainage Line, Gorge/ Gully, Minor Drainage Line, Plain (Stony/ Gibber), Low Hills and Slopes habitats). Ultrasonic recorders were also deployed at abandoned mine shafts (non-

asbestos) within and adjacent to the Survey Areas where Ghost bats were thought to be roosting. Recorders were deployed for a minimum of three consecutive nights at each location, and all recordings were analysed by Robert Bullen of Bat call WA for the presence of Ghost bat and Pilbara leaf-nosed bat. The species was considered unlikely to occur as no suitable roosting habitat was found present and no records of the species were detected during the targeted surveys. The nearest known record is located within 50 km from the Survey Area (Biologic, 2025c).

8.3.5 Short Range Endemic Species (SREs)

SRE invertebrates are those with naturally limited distributions of less than 10,000 km² (Invertebrate Solutions, 2023). SREs typically display ecological and life-history traits, including poor dispersal powers, confinement to discontinuous habitats, highly seasonal activity patterns (many only active during cooler, wetter periods) and low reproduction levels. The limited distribution of SREs makes them vulnerable to extinction from environmental changes and human impacts, even in small areas such as aquifers or ridge formations.

8.3.5.1 Short-Range Endemic Habitats

Surveys undertaken by Biologic (2025d) identified eleven broad habitat types across the Survey Area suitable for SRE fauna. Only 1.75% of the Survey Area is of high suitability for SRE fauna, comprising the areas of Gorge/Gully, Rocky Outcrop and Rock Piles. These habitats all exhibited higher levels of protection, complexity and isolation. Granite Outcrops/Domes, Rocky Outcrop and Rock piles all represent isolated, discontinuous landforms within the landscape that feature an abundance of rocky cracks and crevices offering protected, complex habitats for SRE invertebrate fauna (Biologic, 2025d).

8.3.5.2 SRE Values

Phase 1 of the survey completed by Invertebrate Solutions (2023) recorded 57 specimens representing 13 taxa across five classes, eight orders, and nine families with the potential to contain SRE species. One Confirmed SRE, the millipede *Antichiropus salutis* (including a partial specimen likely of the same species), was recorded, along with three Possible SREs: *Buddelundia* sp. '33' (isopod), *Synsphyronus* sp. 'B' (pseudoscorpion), and *Indolpium* sp. (olpiid pseudoscorpion). Phase 2 (Invertebrate Solutions, 2025) recorded 108 specimens representing 10 taxa across four classes, seven orders, and nine families with SRE potential.

Across both seasons of the Biologic SRE survey (wet and dry), and supplemented by opportunistic collections during vertebrate fauna surveys, a total of 558 invertebrate specimens were collected from targeted groups (Biologic, 2025d). These specimens were morphologically identified, with 104 representative specimens sequenced for DNA barcoding and compared with available regional datasets. The material included ten spiders, 21 pseudoscorpions, seven scorpions, six centipedes, four millipedes, four diplurans, one earwig, 12 isopods, and five snails.

Of the 47 named taxa, three were classified as Confirmed SRE, 39 as Potential SRE, and five as widespread (non-SRE).

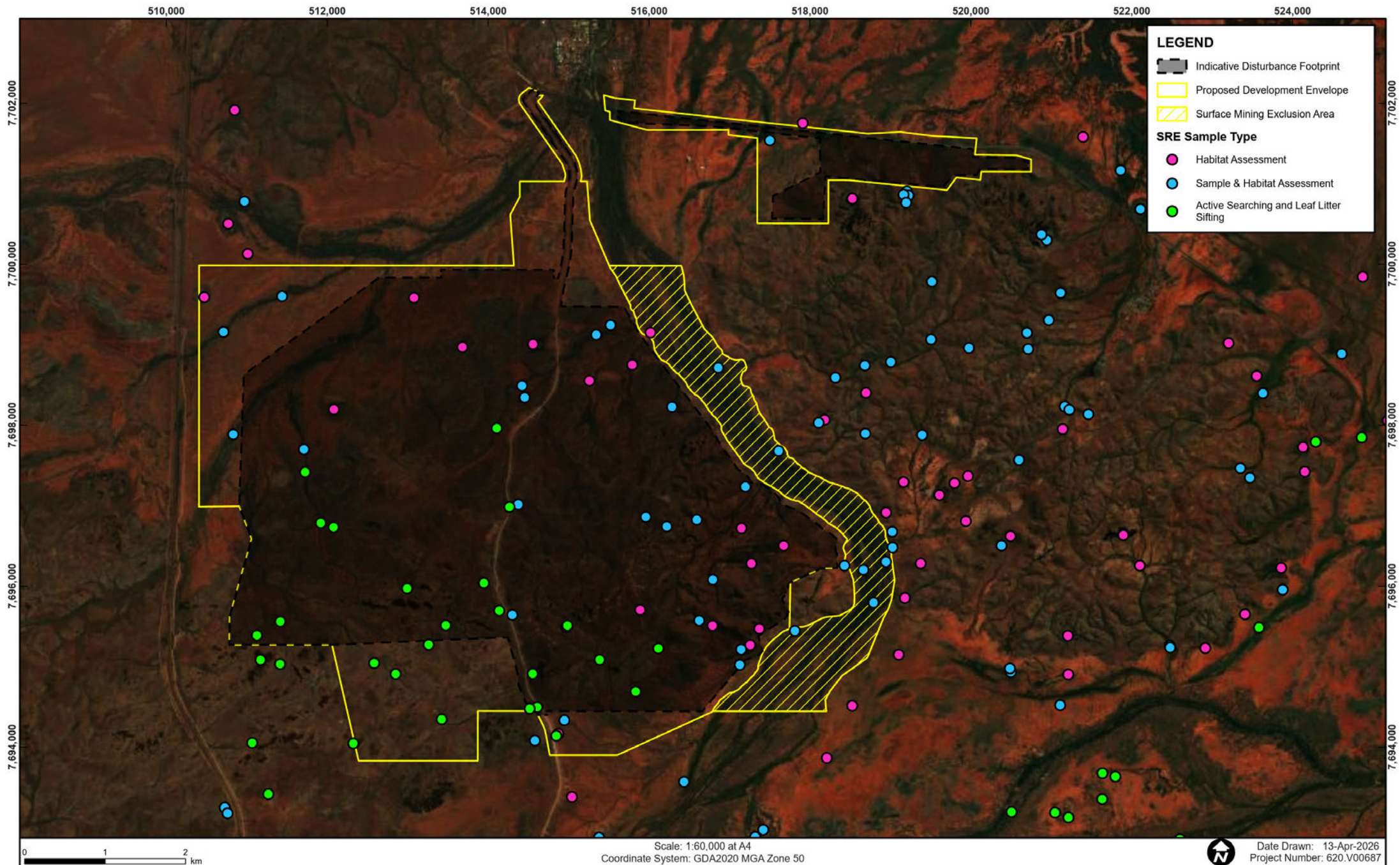
Of the 39 Potential SRE taxa, 37 are currently known only from the Survey Area, many restricted to specific sub-areas, with 16 recorded exclusively in high-suitability habitat. This high number of apparently range-restricted taxa likely reflects limited molecular sequencing of regional specimens, which is still underway.

Three Confirmed SRE species were recorded during the 2024–2025 Biologic surveys (Biologic, 2025d). These include a *Feaella* pseudoscorpion specimen whose COI sequence may represent *Feaella (Tetrafeaella) linetteae*, previously recorded approximately 60 km south in Millstream–Chichester National Park. Confirmation will be provided in the ERD following additional sequencing.

Two additional Confirmed SRE species, *Antichiropus picus* and *Quistrachia* “Species X”, are also known from outside the Survey Area. *A. picus* has a known range of approximately 65 km and was previously recorded in Millstream–Chichester National Park, suggesting the Survey Area may represent an intermediate zone between this species and *A. salutus*. *Quistrachia* “Species X” is a coastal taxon from the Roebourne Plains with a range of approximately 59 km.

Two *Karaops* specimens may represent the Confirmed SRE species *Karaops jaburrara* or *K. ngarluma*, or potentially undescribed taxa, however, the absence of publicly available genetic sequences currently prevents resolution. Further regional sampling and sequencing are likely to demonstrate that many taxa presently considered restricted to the Survey Area have broader distributions.

No species are currently listed under legislation or by DBCA, however, several taxa are considered of potential conservation significance due to their restricted known distributions and limited records. The survey effort has been shown in Figure 8-4.



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SHORT RANGE ENDEMIC FAUNA SAMPLING EFFORT

FIGURE 8-4

8.3.6 Introduced Fauna

Feral fauna species predate on native species and/or compete with native species for habitat, food and/or resources. Feral herbivores can damage vegetation, contribute to soil erosion, and contribute to the spread of weeds. Feral species, particularly cats and foxes are cited as a significant threatening process for several threatened species within the DE. Eight introduced species were recorded within the Survey Area (Biologic, 2025c):

- *Bos taurus* – European Cattle
- *Vulpes vulpes* – red fox
- *Capra aegagrus* – goat
- *Canis familiaris* – Dog
- *Equus caballus* – horse
- *Felis catus* – cat
- *Notomys alexis* – House Mouse
- *Rattus*– black rat

8.4 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to avoid impacts to environmental values.

8.4.1 Potential Direct Impacts

The potential direct impacts from the Proposal on identified terrestrial fauna across the development include:

- Habitat loss and fragmentation impacting terrestrial and SRE fauna populations.
- Direct mortality of vertebrate fauna through impacts resulting from ground disturbance, machinery, infrastructure and mining operations.

8.4.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact identified terrestrial fauna through:

- Unmanaged fire and changes to the fire regime impacting fauna habitat.
- Changes to fire intensity, due to introduction and spread of weeds, impacting fauna habitat.
- Increase in feral predators, due to the presence of waste management facilities and/or artificial water sources onsite, resulting in greater predation and/or competition.
- Accidental introduction and establishment of the Cane Toad.
- Sickness or death due to drinking of process water or supernatant on TSF.
- Fauna mortality as a result of drowning in raw or process water ponds.

- Increased light, dust noise and vibration emissions leading to altered native fauna behaviour.
- Post closure mine voids creating water source in arid area, increasing feral predator numbers.
- Evapo-concentration of metals and metalloids in mine voids causing sickness or death of fauna that drink or are exposed to pit lake water.
- Loss or change to major drainage line habitat due to changes in surface or groundwater regimes.

8.5 Proposed Mitigation Measures

Upon completion of all relevant studies, the Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to terrestrial fauna from the Proposal:

- Avoid:
 - Avoidance of critical habitat as far as reasonably practicable; areas of low relief were favoured for infrastructure over rocky outcrops and rock piles (critical habitat for Northern Quoll and Pilbara Olive Python).
 - Avoid disturbance of critical breeding habitat during the northern quoll breeding season.
 - All large trees containing hollows for shelter will be avoided within Major Drainage Line habitat.
 - Hot works are to be conducted within designated, specially designed workshops or with controls required by a Hot Works Permit system.
- Minimise:
 - Limiting clearing to as low as reasonably practicable during mine design phases. Permitted activities within the SMEA will be limited to those listed in Section 2.1.1 and will facilitate protection of Major Drainage Line critical habitat (critical habitat for Northern Quoll, Pilbara olive python, and Grey falcon).
 - Implementation of a GDP process for all ground disturbing activities onsite, with the inclusion of reviews of GIS exclusion areas.
 - Using previously disturbed and cleared areas to the extent possible.
 - All clearing undertaken for the Proposal will consist of directional clearing towards undisturbed areas, as to allow fauna to voluntarily leave.
 - Retain fauna movement corridors, particularly where related to critical dispersal habitats such as major drainage lines.
 - Minimise the potential for threatened fauna mortality to occur through undertaking pre-clearance surveys during ground-disturbing activities in critical habitats.
 - Implementation of a Conservation Significant Species Management Plan (CSSMP).
 - Conservation significant fauna species and Proposal requirements including controls related to critical habitats will be discussed in the proposal induction.

- Installation of firebreaks around critical infrastructure as to minimise the potential for increased fire incidents and intensity.
- All mine vehicles fitted with fire extinguishers.
- Employee, contractor and visitor site inductions will include fire mitigation and management requirements.
- Any controlled burns would be conducted in consultation with the DBCA.
- Fencing of artificial water sources where practicable and any putrescible landfills.
- Fauna egress structures installed in all water storages.
- Implement additional vehicle hygiene measures to prevent the introduction of the cane toad to the DE, such as strict quarantine and inspection processes for all transport vehicles entering site from regions where cane toads are recorded (Northern Territory).
- Educating personnel on the Cane Toad in the Proposal induction.
- Implement speed limits of 80 and 60 km/h on sealed and unsealed roads, respectively, for mine vehicles within the DE.
- Rehabilitate:
 - Development and implementation of a MDCP, in accordance with statutory *Guidelines for preparing Mining Development and Closure Proposals* (DMPE, 2025b) for the Proposal
 - At closure rehabilitate all newly constructed landforms in accordance with the Proposals MCP under the guidance of DMPE.
 - Implement progressive rehabilitation of disturbed areas, as opportunities arise, throughout the life of the mine, reestablishing natural landforms and ensuring restoration of potential terrestrial fauna habitats.
 - Pits are expected to become saline as they approach steady-state conditions. This will limit exposure and ingestion by fauna.

8.6 Assessment of Significance of Residual Impacts

8.6.1 Proposal

An assessment of the significance of the residual impacts of the Proposal on terrestrial fauna will be summarised and presented in the ERD.

8.6.2 Cumulative Impacts

The cumulative impacts of the Proposal on terrestrial fauna will be undertaken with the development of the ERD.

8.7 Environmental Outcomes

The ERD will outline the environmental outcomes for terrestrial fauna from implementation of the Proposal in the ERD.

9 Preliminary Key Environmental Factor – Subterranean Fauna

9.1 EPA Objective

The EPA objective for Subterranean Fauna is “to protect subterranean fauna so that biological diversity and ecological integrity are maintained” (EPA, 2016d).

9.2 Policy and Guidance

The following guidance is applicable to this factor:

- *Technical Guidance – Subterranean Fauna Surveys for Environmental Impact Assessment* (EPA, 2021).
- *Environmental Factor Guideline – Subterranean Fauna* (EPA, 2016d).
- *Cumulative Impact Assessment* (EPA, 2026).

9.3 Receiving Environment

9.3.1 Studies and Surveys

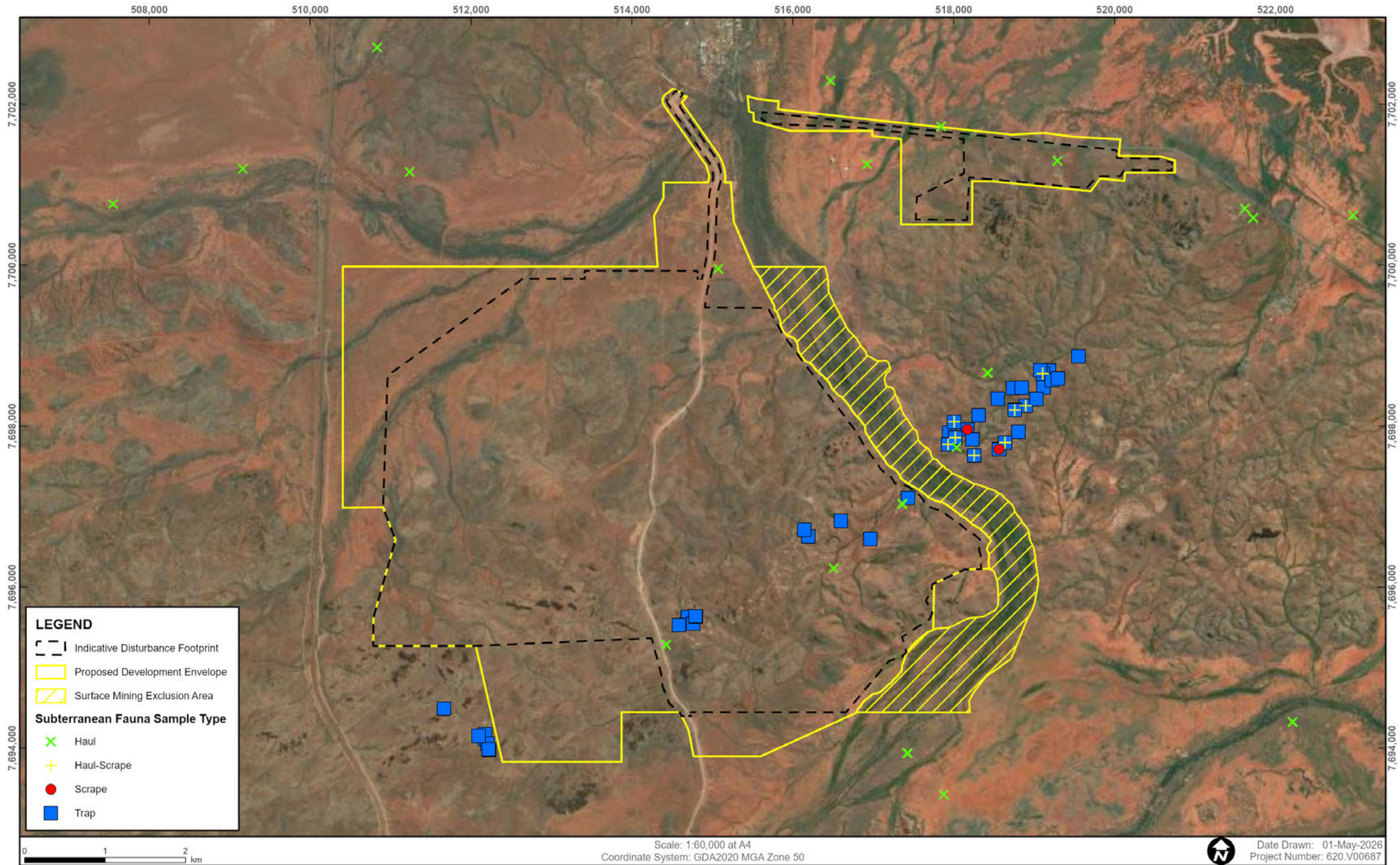
Subterranean fauna (stygo fauna and troglo fauna) are obligate ground-dwelling fauna known from a number of habitats in a variety of rock types, including karst, larval tubes, alluvial sediments, fractured rock aquifers and subterranean carbonate deposits (calcrete aquifers).

The Proponent has undertaken a number of surveys for the presence of subterranean fauna and associated habitats for the Proposal including a detailed survey which will be completed (phase 3) in 2026. This survey includes molecular sequencing completed on resulting specimens to improve taxonomic clarity. Surveys are summarised in Table 9-1. The survey effort has been shown in Figure 9-1

Table 9-1: Summary of Environmental Investigations relevant to Subterranean Fauna

Survey Description	Survey date	Reference	Details
Andover Nickel-Copper Desktop and Field Assessment of Subterranean Fauna	April – June 2022	Invertebrate Solutions, 2022	Assessment of likelihood of subterranean species present within available habitats. No holes had groundwater available for stygo fauna, which was deemed unlikely. A pilot survey for Troglo fauna, sampling 15 bores across 1,570 ha.
Andover Lithium Basic Survey of Subterranean Fauna	29 April – 3 May 2024	Biologic, 2025e	Troglo fauna and stygo fauna reconnaissance and initial sampling within the DE and regional surrounds, comprising of 15 sampled sites.
	15 – 17 June 2024		
Andover Project and Regional Groundwater	7 – 13 November 2024	Biologic , 2025f (interim memo)	Sampling of the DE and regional surrounds, comprising 39 sampled sites.

Survey Description	Survey date	Reference	Details
Detailed Stygofauna Survey	19 – 26 July 2025	Biologic (in prep.)	Sampling undertaken at 70 sites (net haul, filtered solar pump outflow, Karaman-Chappius method).
	April 2026 (TBC)	Biologic (in prep.)	Underway



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ANDOVER PROJECT EPA REFERRAL DOCUMENT

SUBTERRANEAN FAUNA SAMPLING EFFORT

FIGURE 9-1

9.3.2 Subterranean Fauna Habitats

The Proposal is situated within the Pilbara Supergroup, a series of mafic and ultramafic intrusions within the Pilbara Craton of Western Australia (Invertebrate Solutions, 2022) and is largely covered in shallow colluvium and alluvium.

Sampling in multiple geologies throughout the past two decades has shown the presence of stygofauna species in virtually every aquifer type (Invertebrate Solutions, 2022).

Initial assessment and sampling completed determined there to be a low suitability for troglofauna due to the absence of interconnected voids in fine grained units above water table providing poor habitat for troglofauna (Invertebrate Solutions, 2022).

Stygobiotic taxa have been recorded from the hyporheic zones, indicating the groundwater is likely close to the surface, with vertical connection from groundwater through to surface waters, providing refuge habitat in dry times (Biologic, 2025f). Quaternary detritals dominate the groundwater areas and feature shallow depths of water, with alluvial and carbonate deposits typically thought to be the most productive habitats for stygofauna below the water table.

9.3.3 Troglofauna

Trapping undertaken in 15 bores in the southwest of the DE (outside of the proposed pit area) did not record any troglofauna (Invertebrate Solutions, 2022). Further work completed in 2024, included net sampling and trapping of 26 bores in the DE, recorded two troglomorphic beetle specimens (each record yielding a single specimen); *Coleoptera* 'sp. indet.' and *Curculionidae* 'sp. Biologic-COLE058'. Both are considered unlikely to be restricted to the Survey sites, occurring on the eastern side of the Ngurin.

The weevil *Curculionidae* 'sp. Biologic-COLE058' is considered unlikely to be restricted to the Project Area, and the *Coleoptera* 'sp. indet' specimen is also unlikely to represent a highly restricted taxon given its collection from locally extensive surficial detritals. The closest prior record to the Survey Area was approximately 50 km to the east; however, sampling within the vicinity of the Project has been limited and has not targeted comparable habitat. One dedicated troglofauna survey has previously been undertaken in the wider region, more than 100 km west of the current survey location. Low sampling yields from surveys undertaken, combined with geological information provide strong evidence for the inferred low level of prospectivity within the DE. It is considered highly unlikely that either of the taxa recorded has a distribution confined to the Survey Area (Biologic, 2025e).

9.3.4 Stygofauna

A basic survey completed in 2024 of the deposit area (eight drillholes) and regional bores and wells (15 sites) collected 1,212 stygofauna specimens allocated to 23 preliminary identifications (Biologic, 2025e).

A detailed survey commenced in late 2024, encompassing sampling of regional surroundings including exploration drill holes, bores, and pastoral wells from 39 sites (including four sites that had also been sampled in the preceding survey). Interim results for the detailed survey showed 3,517 stygofauna specimens comprising five phyla, 14 orders and 23 families (Biologic, 2025f). Results from subsequent phases are pending, with the final phase of sampling underway.

Sampling to date has recorded a large number of stygofauna in the DE and the surrounding regional area, representing what is considered likely to be a substantial stygofaunal community. Of these, many are considered new to science, which is attributed to the limited sampling completed in the general area prior to Azure's program.

Until the detailed sampling program is complete, the total number of species will not be known, nor their distribution, particularly with consideration to the DE and predicted drawdown from proposed pit dewatering.

9.4 Potential Impacts

A preliminary assessment of the potential direct and indirect impacts of the Proposal has been undertaken as far as is possible without completion of the sampling program, and the mitigation hierarchy applied as to avoid impacts to environmental values.

9.4.1 Potential Direct Impacts

The potential direct impacts from the Proposal on identified subterranean fauna across the DE include:

- Direct loss/mortality of individuals as a result of mining.
- Loss or degradation of subterranean habitat as a result of mining and/or clearing.
- Loss or degradation of subterranean fauna habitat as a result of groundwater drawdown from dewatering/groundwater abstraction.

9.4.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact identified subterranean fauna through:

- Vibration effect on subterranean habitats from blasting activities.
- Contamination of soil or groundwater including leaching of nutrients, wastewater from wastewater treatment facilities, tailings from the TSF, hydrocarbons, or acidic, metalliferous or neutral drainage from waste rock landforms.
- Changes in hydrology associated with the placement of infrastructure and landforms causing degradation and destruction to habitat.

9.5 Proposed Mitigation Measures

Upon completion of all relevant studies, the Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to subterranean fauna from the Proposal:

- Avoid:
 - Avoid groundwater as the main source of processing water by seeking alternative water supply options.
- Minimise:
 - Ground disturbance activities to be confined to approved areas, ensuring only essential land is cleared and/or disturbed.
 - Vegetation clearance limited, where possible to avoid degradation of subterranean fauna habitat quality as a result of a reduction in nutrients transported into habitats.
 - Implementation of a GDP process for all ground disturbing activities onsite, with the inclusion of reviews of GIS exclusion areas.
 - Using previously disturbed areas to the maximum extent possible.
 - Implement effective water management practices to minimise impacts on groundwater levels and quality, including managing surface water infiltration and controlling tailings dam seepage that could alter subterranean fauna habitat and groundwater.
 - Dewatering undertaken in accordance with a Groundwater Licence and through the implementation of a Groundwater Operating Strategy.
 - Storage of contaminating material in accordance with Australia Standards (AS), including compliant locations with bunding, spill controls and leak prevention.
 - Contingency and emergency management plans will be developed and implemented to address any accidental discharge events that may occur on-site.
- Rehabilitate:
 - Development and implementation of a MDCP, in accordance with statutory *Guideline for Preparing Mine Closure Plan* (DMPE, 2025b) for the Proposal.
 - At closure, rehabilitate newly constructed landforms in accordance with the MDCP under the guidance of DMPE.
 - Implement progressive rehabilitation of disturbed areas, as opportunities arise, throughout the life of the mine, reestablishing natural landforms and ensuring restoration of potential subterranean fauna habitats.

9.6 Assessment of Significance of Residual Impacts

9.6.1 Proposal

An assessment of the significance of the residual impacts of the Proposal on subterranean fauna will be summarised and presented in the ERD.

9.6.2 Cumulative Impacts

The cumulative impacts of the Proposal on subterranean fauna will be undertaken with the development of the ERD.

9.6.3 Environmental Outcomes

The ERD will outline the environmental outcomes for terrestrial fauna from implementation of the Proposal in the ERD.

10 Preliminary Key Environmental Factor – Air Quality

10.1 EPA Objective

The EPA objective for Air Quality is *“To maintain air quality and minimise emissions so that environmental values are protected”* (EPA, 2020b).

10.2 Policy and Guidance

The following guidance is relevant to this factor:

- Environmental Factor Guideline – Air Quality (EPA, 2020b).
- National Environment Protection (Ambient Air Quality) (DCCEEW, 2021).
- Air Quality Modelling Guidance Notes (DoE, 2006).
- Draft Air Emissions Guideline (DWER, 2019a).
- Draft Guidelines – Dust Emissions (DWER, 2021b).
- *Cumulative Impact Assessment* (EPA, 2026).

10.3 Receiving Environment

10.3.1 Studies and Surveys

The Proponent has undertaken a number of studies in relation to air quality for the Proposal as summarised in Table 10-1. Assessments were undertaken in accordance with Environmental Factor Guideline – Air Quality (EPA, 2020b), to identify the characteristics related to air quality within the DE and surrounds to assist in mine development, environmental approvals and closure planning.

The Proponent will continue to undertake baseline ambient dust monitoring (at locations specified in Figure 10-1) for the short to medium term, to inform the preparation of an Air Quality Modelling Assessment report and detailed Human Health Risk Assessment (HHRA) for the Proposal. The continued baseline ambient dust monitoring programme includes the assessment of respirable crystalline silica, metals, metalloids and fibrous minerals at sensitive receptors including the township of Roebourne, the transmission pathway between Roebourne and the DE, the community of Mingullatharndo and culturally significant sites adjacent the Ngurin.

Table 10-1: Summary of Environmental Investigations relevant to Air Quality

Study Description	Reference	Details
Azure Mineral Limited Preliminary Human Health Risk Assessment (HHRA) – Andover Project	CDM Smith, 2025	A preliminary HHRA completed December 2025 to be followed by a detailed assessment on obtainment of sufficient ambient air quality monitoring data (inclusive of fibrous minerals, crystalline silica, metals).

Study Description	Reference	Details
Review of Baseline Dust Monitoring Data – October 2024 to March 2025	ETA, 2025a	Review of PM ₁₀ data and evaluation of exceedance days, with relevant meteorological conditions and consideration of diffuse sources from baseline ambient dust monitoring locations from 8 October 2024 to 31 March 2025 and April 1 to 31 September 2025 including at Mingullatharndo and Woodbrook. Includes evaluation of metals in PM ₁₀ against practical quantification limits (PQL) and ambient air quality assessment criteria.
Review of Baseline Dust Monitoring Data – April to September 2025	ETA, 2025b	

10.3.2 Sources of Emissions

The prevalence of southwest to northwest winds during summer indicates this period is expected to present the highest risk of adverse dust impacts upon the sensitive receivers located in proximity to the Proposal (ETA, 2024). The current existing air emissions of the DE are typical of those associated with a rural, arid environment used for pastoralism. Current existing sources of dust air emissions include dust from vehicle movements on local roads/unsealed tracks, wind erosion within the existing landscape and pre-existing site activities such as exploration.

The following aspects directly related to the Proposal have been identified as potential future sources of emissions with the potential to impact on air quality:

- Open cut-mine and mining activities.
- Fugitive emissions from roads, waste rock formation, and mine processing and tailings activities.
- Background dust emissions from roads and existing/historical industrial and mining activities.

10.3.3 Surrounding Land Use and Sensitive Receptors

The Proposal is situated in the Pilbara region of Western Australia, immediately south of Roebourne and 35 km southeast of Karratha. The discrete sensitive receptors identified in proximity to the Proposal (ETA, 2024) include:

- Roebourne town;
- Mingullatharndo;
- Cheeditha;
- Woodbrook Lore Grounds; and
- Indigenous heritage sites identified as intercepting and surrounding the DE (Section 12).

Approximate distances have been calculated from the Roebourne town boundary to the primary airshed source operational areas of the Proposal, as follows:

- Tailings Storage Facility: approximately 3.1 km south.
- Waste Rock Landform: approximately 3.8 km south.
- Open Cut Mine (TA3): approximately 5.0 km south.
- Processing Plant (noting haulage activities will depart from the northern site boundary): approximately 6.8 km south.
- Construction elements including bulk earthworks and development of topsoil stockpiles, construction of haulage and access tracks and borrow pits and laydowns.

Surrounding land use comprises rural, undeveloped land, the Ngurin, the township of Roebourne, the communities of Mingullatharndo and Cheeditha and the Woodbrook Lore Grounds (used in the summer months for ceremonial purposes)(CDM Smith, 2025) as shown in Figure 10-1.

10.3.4 Fibrous Minerals

Preliminary investigation undertaken by Glossop Consulting (Glossop, 2025) and MBS Environmental (MBS, 2025d) identified that fibrous minerals were present within the ore body and waste rock samples collected in 2025.

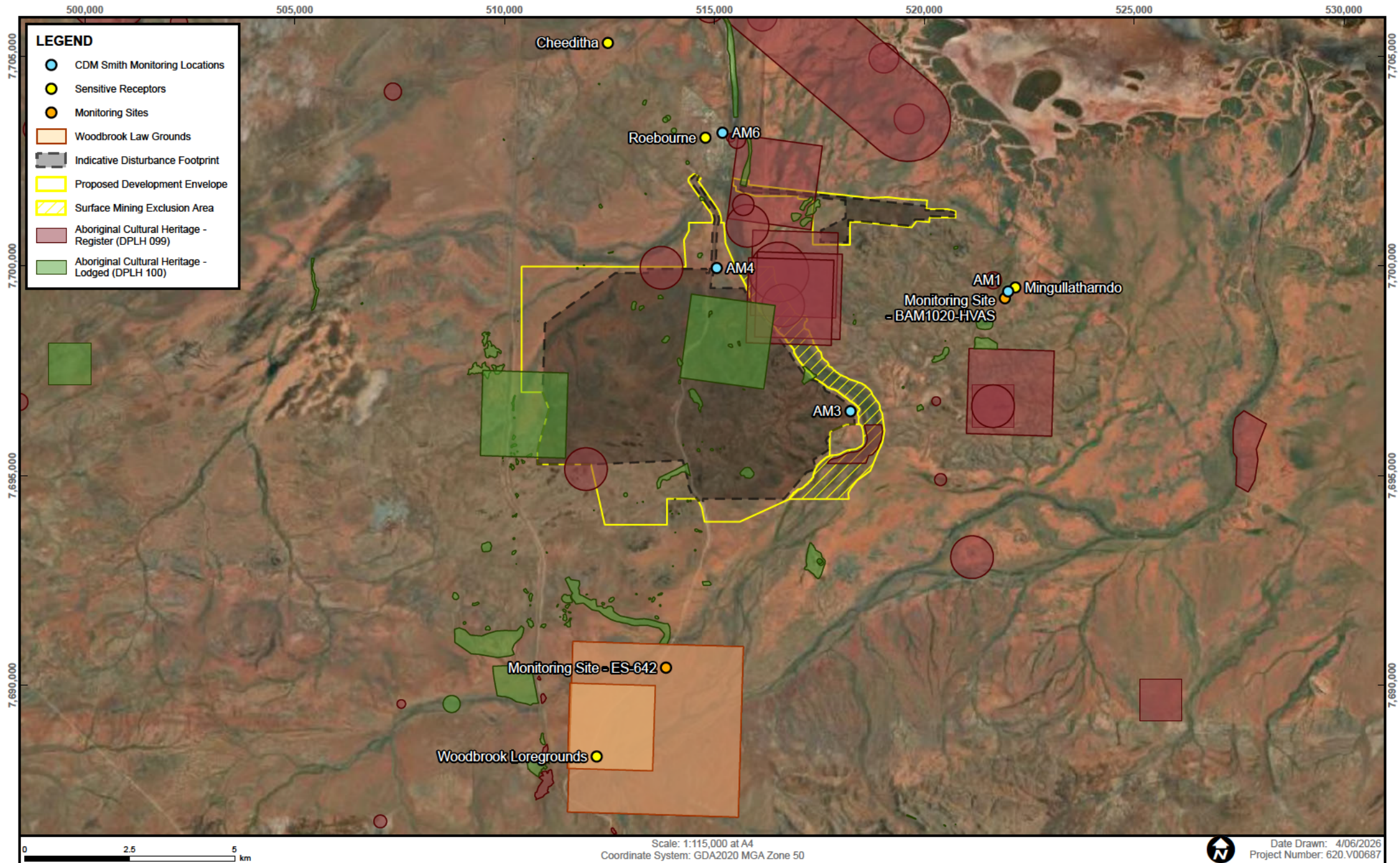
Further investigation and assessment are currently underway to characterise the source in relation to air quality, potential public health impacts and to inform fibrous minerals management requirements that may be anticipated during mining operations.

10.3.4.1 Future Assessment – Fibrous Minerals

The Proponent is undertaking further investigation and assessment of the ore body and waste rock within the deposit to characterise the risk of fibrous minerals and naturally occurring asbestos. The information collected from the assessment will be used to inform the Air Quality Modelling Assessment report and detailed HHRA for the Proposal. The following guidance is relevant to the assessment framework for the investigation:

- *Guideline – Management of fibrous minerals in Western Australian mining operations* (DMP, 2015);
- *Guidance Note on Public Health Risk Management of Asbestiform Minerals Associated with Mining* (DoH, 2013);
- *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (DoH, 2021);
- *Guideline – Assessment and management of contaminated sites* (DWER, 2021a); and
- *Schedule B (1). Guideline on Investigation Levels for Soil and Groundwater* (NEPC, 2011).

The assessment method will be informed by a detailed understanding of resource geology to determine areas with geological characteristics favourable for the formation of fibrous minerals.



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Path: H:\Local Resources\Mining Advisory\ADVG\IS03-Projects\Australia-WA\AndoverProject\ADVAU0068701-ESRI\ADVAU00687_EPBC_EPA.aprx\EPBC Referral Fig 10-1_Sensitive Receptors and Ambient Air Monitoring Locations

ANDOVER PROJECT EPA REFERRAL DOCUMENT

**SENSITIVE RECEPTORS AND
AMBIENT AIR MONITORING
LOCATIONS**

FIGURE 10-1

10.3.5 Baseline Dust Monitoring Results

Adverse impacts to air quality affecting human health are of primary concern, as well as amenity (dust nuisance) impacts and impacts to environmental values adjacent the Proposal, due to increased dust generation and emissions. Fine airborne dust particles associated with both particulate matter (PM)₁₀ and PM_{2.5} dust has been associated with increase in respiratory illness and is considered one of the main impacts on air quality in relation to human health as a result of mining. The trace metal content of the dust generated from metalliferous mining operations may also be of potential concern from an air quality perspective (ETA, 2024).

Environmental Technologies & Analytics Pty Ltd (ETA) has conducted dust monitoring at two locations near the DE – Mingullartharndo (BAM1020) and Woodbrook (ES-642).

Monitoring commenced in October 2024, with sites selected to reflect the proximity of key community receptors. ETA analysed all collected data to characterise dust levels and assess compliance with relevant criteria

The assessment criteria applied by ETA align with the DWER guidelines (2021; 2019), which in turn reference the ambient air quality standards established under the Ambient Air Quality National Environment Protection Measure (NEPM) (NEPC, 2021). Relevant criteria is summarised in Table 10-2.

Table 10-2: Summary of Adopted Air Quality Criteria

Pollutant	Air quality assessment criteria				
	Concentration ¹	Concentration ²	Averaging Period	Allowable Exceedances	Environmental value protected
PM ₁₀	50 µg/m ³	46 µg/m ³	24-hour	Exception event	Human health
	25 µg/m ³	23 µg/m ³	Annual	None	

Notes:

¹ Concentrations referenced to 0°C (excluding reference to dust deposition)

² Concentrations referenced to 25°C (excluding reference to dust deposition)

The monitoring undertaken is solely for particulates (as PM₁₀). High Volume Air Samples (HVAS) was incorporated in the monitoring undertaken at Mingullatharndo to enable analysis of metal speciation analysis. Observations from the data analysed for both monitoring periods have been summarised in the following sections.

10.3.5.1 Mingullatharndo (BAM1020)

Monitoring data indicated maximum 1-hour PM₁₀ concentrations reached 985 µg/m³ in both December 2024 and March 2025, which reflects the upper measurement limit of the BAM1020 instrument; values above this threshold are automatically capped. Despite these peak values, the corresponding 99th percentile concentrations were substantially lower, indicating that these elevated readings were isolated, short-duration events.

During the April–September 2025 period, the highest 1-hour maximum concentration recorded was $147 \mu\text{g}/\text{m}^3$, significantly lower than the summer peaks. Monthly mean concentrations ranged from $25 \mu\text{g}/\text{m}^3$ in November–December 2024 to $15 \mu\text{g}/\text{m}^3$ in March 2025, with the early-2025 decline likely influenced by increased rainfall, including 196.4 mm recorded at Roebourne Aero in January (ETA, 2025a). From April to September 2025, monthly mean concentrations were comparatively stable, ranging from $8\text{--}12 \mu\text{g}/\text{m}^3$.

The maximum 24-hour concentration of $67.5 \mu\text{g}/\text{m}^3$ occurred in December 2024, exceeding the applicable PM_{10} criterion. Exceedances of the 24-hour criterion also occurred in January and March 2025. In contrast, the highest 24-hour concentration recorded between April and September was $20 \mu\text{g}/\text{m}^3$.

10.3.5.2 Woodbrook (ES-642)

Data obtained from the ES-642 nephelometer were considered indicative only, as the instrument is not a regulatory-grade monitor and is used to supplement and contextualise the regulatory BAM1020 monitoring results. PM_{10} concentrations measured by the ES-642 were typically below $50 \mu\text{g}/\text{m}^3$, with occasional short-duration peaks across both reporting periods (October 2024–March 2025 and April–September 2025).

Three hourly PM_{10} peaks above $250 \mu\text{g}/\text{m}^3$ were recorded across both reporting periods (all occurring in the October 2024 – March 2025 period), each coinciding with criteria exceedances observed at the BAM1020. While three additional hourly concentrations exceeded $50 \mu\text{g}/\text{m}^3$, several elevated concentrations measured at the BAM1020 were not reflected in the ES-642 data, indicating limited correlation during some isolated events.

No exceedances of the 24-hour PM_{10} criterion were recorded at the ES-642 during the April–September 2025 period, with the maximum 24-hour value being $20 \mu\text{g}/\text{m}^3$.

HVAS data was unavailable for the October 2024–March 2025 period due to technical issues. In the April–September 2025 period, several analytes exceeded DWER guideline values (2019; 2021), including Chromium, Copper, Zinc, Strontium, Nickel, Manganese, Iron, Dust, α -Quartz and Vanadium. All exceedances occurred on a single day in June 2025.

10.3.5.3 Human Health Risk Assessment (HHRA) – Monitoring

CDM Smith were commissioned by the Proponent to undertake a preliminary HHRA (2025) for the Proposal, with a primary focus on the assessment of health impacts to local communities associated with the proposed mining operations. This assessment will provide a preliminary quantitative risk assessment to consider potential risks to human health based on existing ambient air data. This includes particulates in outdoor air (PM_{10}) and a review of the mineralogy in rock and minerals associated with the Proposal.

The baseline ambient air monitoring program includes testing for PM₁₀, metals, respirable crystalline silica and airborne asbestos fibres at all locations. Ambient air monitoring locations have been summarised in Table 10-3 and shown in Figure 10-1.

Table 10-3: Summary of Ambient Air Monitoring Locations

Location	Rationale for Placement
AM1	Representative location for Mingullathardo.
AM3	Adjacent mine pit location, to represent deposition pathways to Ngurin.
AM4	Up-predominant wind location from the TSF and situated between the TSF, waste rock dump and the township of Roebourne. This location provides good representation of mine-derived ambient air-impact.
AM6	Roebourne

10.3.5.4 Future Assessments - Dust Modelling

Dust dispersion modelling will be undertaken following the completion of baseline dust modelling in quarter two of 2026. This modelling will provide a baseline dust and fibrous minerals assessment based on 12 months of site measurements, to predict the dust, fibrous minerals and crystalline silica impacts on sensitive receptors identified within proximity to the Proposal (including Roebourne).

10.4 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to avoid impacts to environmental values.

10.4.1 Potential Direct Impacts

The potential direct impacts from the Proposal on air quality aspects across the DE include:

- Increased dust generation from clearing of native vegetation and ground disturbance.
- Increased dust generation caused by mining activities, including drilling and blasting, excavation, haulage, handling of materials and stockpiling.
- Increased dust emissions include the risk of airborne asbestos and respirable silica dust/fibres, and subsequent impacts to human health.
- Excessive dust fall impacting nearby sensitive receptors, causing complaints and the potential for health impacts.
- Increased gaseous emissions (carbon dioxide) as a result of power generation.
- Long term dust generation from poorly completed rehabilitation.

10.4.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact air quality through:

- Increased wind erosion as a result of clearing of native vegetation and ground disturbance.

- Project dust generation results in increased PM₁₀ and PM_{2.5} emissions above guidance levels impacting nearby sensitive receptors and/or environmental values.
- Mobilisation of contaminants off site via workforce, equipment or plant that may result in secondary exposure to sensitive receptors.

10.5 Mitigation Measures

Upon completion of all relevant studies, the Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to air quality from the proposal:

- Avoid
 - Handling and storage of dry-stack tailings will be avoided by the Proponent.
 - Wind direction and severity to be considered when planning blasting, stripping and stockpiling of soils.
- Minimise
 - Dust suppression measures incorporated across the infrastructure designs where appropriate, i.e. spray nozzles along conveyor belts and at points of crushing.
 - Dust management protocols applied where waste rock may be handled and stockpiled.
 - Minimise clearing of native vegetation as reasonably practicable to limit the amount of exposed soil.
 - Implement speed limits of 80 and 60 km/h on sealed and unsealed roads, respectively, for mine vehicles within the DE.
 - Undertaking of the Proposal in accordance with an Environmental Licence issued under the EP Act.
 - Management of fibrous materials will be undertaken (as required) through the implementation of a fibrous minerals management plan.
 - Diesel generators will be serviced and maintained at all times.
- Rehabilitate
 - Progressive rehabilitation to be undertaken where practicable to limit extent of exposed soil.
 - Development and implementation of a MDCP, in accordance with statutory *Guidelines for preparing Mining Development and Closure Proposals* (DMPE, 2025b) for the Proposal.
 - At closure, rehabilitate newly constructed landforms in accordance with the Proposal MCP under the guidance of DMPE.
 - Encapsulation of material that may cause air quality concerns.

10.6 Assessment of Significance of Residual Impacts

10.6.1 Proposal

An assessment of the significance of the residual impacts of the Proposal on Air Quality will be summarised and presented in the ERD.

10.6.2 Cumulative Impacts

The cumulative impacts of the Proposal on Air Quality will be undertaken with the development of the ERD.

10.7 Environmental Outcomes

The ERD will outline the environmental outcomes for Air Quality from implementation of the Proposal in the ERD.

11 Preliminary Key Environmental Factor – Greenhouse Gas Emissions

11.1 EPA Objective

The EPA objective for Greenhouse Gas (GHG) emissions is *“To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable”* (EPA, 2024).

11.2 Policy and Guidance

The following policy guidance is applicable to this factor:

- *Environmental Factor Guideline – Greenhouse Gas Emissions* (EPA, 2024).
- *Western Australian Climate Policy – A plan to position Western Australia for a prosperous resilient low-carbon future* (DWER, 2020b).
- *Technical Guidance – Mitigating Greenhouse Gas Emissions* (EPA, 2019).
- *National Greenhouse and Energy Reporting Act 2007*.
- *National Greenhouse and Energy Reporting Determination 2008*.
- *Cumulative Impact Assessment* (EPA, 2026)

11.3 Receiving Environment

11.3.1 Studies and Surveys

SLR Consulting were commissioned by the Proponent to undertake an assessment of GHG emissions of the Proposal (SLR, 2026). The study was undertaken in accordance with Environmental Factor Guideline – Greenhouse Gas Emissions (EPA, 2024). The study provided preliminary GHG calculations with a detailed decarbonisation plan in progress.

11.3.2 Proposal Emission Profile

DCCEEW provide a quarterly report on the state of Australia’s GHG emissions, with the latest report delivered in November 2025 for the June 2025 quarter (DCCEEW, 2025). Emissions for the year to June 2025 are estimated to be 437.5 million tonnes of carbon dioxide equivalent (Mt CO₂-e). This represents a decrease of 2.2% (9.9 Mt CO₂-e) compared with the previous year and 28.5% below June 2005 levels. June 2005 is the base year for Australia’s 43% reduction by 2023 target under the Paris Agreement.

The preliminary emissions profile for the Proposal per annum are detailed in the following sections.

11.3.2.1 Scope 1 Emissions

The primary sources of Scope 1 emissions include direct GHG emissions from sources owned or controlled by the Proponent at the Proposal. The total Scope 1 emissions over the LOM are 3,868,086 tCO₂-e. The Scope 1 emission sources identified are outlined below:

- Diesel stationary combustion and transport from the mining fleet and support equipment, including haul trucks, loaders, excavators, light vehicles, and other mobile plant used for operational and transport purposes on site.
- Construction stationary power generation, primarily from diesel-powered generators used during the construction phase.
- Land use change emissions (biogenic) associated with vegetation clearing and disturbance required for the development of the Proposal.

The following Scope 1 emission sources and energy uses have been excluded from the Proposal's emissions inventory (SLR, 2026), as they are considered immaterial to the overall emissions profile or no use has been identified for the Proposal:

- Consumption of oils and greases.
- Sulphur hexafluoride (SF₆) losses.
- Hydrofluorocarbon (HFCs) and perfluorocarbon (PFCs) losses.
- Consumption of other minor fuels (e.g., unleaded petrol).
- Onsite wastewater treatment plant.

11.3.2.2 Scope 2 Emissions

Scope 2 emissions represent indirect GHG emissions associated with the generation of purchased electricity. The total Scope 2 emissions over the LOM are estimated to be approximately 7,103,600 tCO₂-e. For the Proposal, Scope 2 emissions arise from two electricity supply arrangements over the LOM:

- Third-party on-site power generation (Years 1-10) – During the initial operational phase, electricity will be supplied by an 80 megawatt (MW) natural gas fired power station located on the site. The facility will be owned and operated by a third-party provider, who retains operational control of the power station. As a result, emissions associated with the combustion of natural gas for electricity generation are reported as Scope 1 emissions by the power station operator.

The Proponent will purchase electricity generated by this facility, and therefore the associated emissions are treated as Scope 2 emissions for the Proposal. The estimated annual electricity generation from the power station is 155,894 Megawatt hours (MWh) per year. To ensure a conservative estimate, a 20% uplift has been applied to the electricity consumption associated with the power plant to account for potential uncertainty in the preliminary engineering estimates. There is no grid electricity consumption during construction or during the first ten operational years while the Proposal is supplied by the on-site gas power station.

- Grid electricity supply (post year 10) – Following the initial operational phase, the Proposal is expected to connect to the North West Interconnected System (NWIS) in Western Australia. From this point, electricity imported from the grid will generate Scope 2 emissions.

11.3.2.3 Scope 3 Emissions

Scope 3 emissions represent indirect GHG emissions that occur outside the operational control of the Proposal but within its value chain. These emissions provide an indication of the broader life-cycle emissions associated with the Proposal activities.

Under the GHG Protocol Corporate Value Chain (Scope 3) Standard (2011), Scope 3 emissions are grouped into upstream and downstream categories. Upstream emissions relate to purchased goods and services used by the Proposal, while downstream emissions relate to activities associated with the transport, processing and use of sold products. The estimated total Scope 3 emissions over the LOM are approximately 6,072,842 tCO₂-e. The largest contributor to Scope 3 emissions is the downstream processing of spodumene concentrate into lithium chemicals, which accounts for the majority of Scope 3 emissions associated with the Proposal.

Other significant contributors include the transport of concentrate to export markets, purchased goods and consumables used during operations, and upstream electricity generation associated with purchased electricity.

11.4 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to avoid impacts to environmental values. The Proponent is likely to be a Safeguard Facility, with key project inputs and the breakdown of emissions provided in Table 11-1

Table 11-1: Key Project Inputs and Estimated Emissions

Scope 1 Emissions		
Source	Value (LOM) (tCO ₂ -e)	Notes
Diesel – stationary combustion	3,690,289	Fuel use in stationary equipment during operations
Diesel – transport	44,778	Fuel use in mobile equipment and vehicles
Diesel – stationary power generation (construction)	4,682	Temporary diesel generation during construction prior to grid connection (FY29-FY30)
Land use change	128,336	Emissions associated with vegetation clearing and land-use change
Total Scope 1 Emissions (LOM)	3,868,086 tCO₂-e	
Scope 2 Emissions		
Electricity purchased from third-party on-site gas power station	2,287,600	Prior to grid-connection (years 1-10)

Electricity imported from NWIS grid	4,816,000	Post grid connection
Total Scope 2 Emissions (LOM)	7,103,600 tCO₂-e	
Scope 3 Emissions		
Purchased goods and services	1,351,108	
Fuel and energy-related activities	762,022	Activities not included in scope 1 or 2
Employee commuting	55,344	
Upstream leased assets	75,341	
Downstream transportation and distribution	876,752	
Processing of sold products	2,952,276	
Total Scope 3 Emissions (LOM)	6,072,842 tCO₂-e	

11.5 Mitigation Measures

Upon completion of all relevant studies, the Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to GHG emissions from the Proposal:

- Avoid
 - The Proposal will avoid clearing of native vegetation where practicable.
- Reduce
 - Implementation of a decarbonisation plan to reduce emissions as technology develops.
 - Optimisation of haulage routes and vehicle movement during all phases of mining.
 - Procure and use energy-efficient technology where available and practical.
 - All vehicles and machinery operated and maintained in accordance with manufacturers requirements.
 - Undertake progressive rehabilitation to facilitate carbon sequestration by revegetation.
 - Installation and use of solar farm for energy use, storing excess energy in a BESS for use during downtimes.
- Offset
 - Procure and surrender Australian Carbon Credit Units (ACCUs) in accordance with requirements under the Safeguard Mechanism.

11.6 Assessment of Significance of Residual Impacts

11.6.1 Proposal Impacts

An assessment of the significance of the residual impacts of the Proposal on GHG emissions will be summarised and presented in the ERD.

11.6.2 Cumulative Impacts

The cumulative impacts of the Proposal on GHG emissions will be undertaken with the development of the ERD.

11.7 Environmental Outcomes

The ERD will outline the environmental outcomes for GHG emissions from implementation of the Proposal in the ERD.

12 Preliminary Key Environmental Factor – Social Surroundings

12.1.1 EPA Objective

The EPA objective for Social Surroundings is “To protect social surroundings from significant harm” (EPA, 2023b).

12.1.2 Policy and Guidance

The following legislation and guidance are of relevance to this factor:

- *Environmental Factor Guideline – Social Surroundings* (EPA, 2023b).
- *Technical Guidance EIA Environmental Impact Assessment of Social Surroundings – Aboriginal Cultural Heritage* (EPA, 2023c).
- *Environmental Protection (Noise) Regulations* 1997.
- *Aboriginal Heritage Act* 1972 (WA).
- *Native Title Act* 1993 (Cth) (Ngarluma Native Title Determination).
- *Aboriginal and Torres Strait Islander Act* 2005 (Cth).
- *Cumulative Impact Assessment* (EPA, 2026).

12.2 Receiving Environment

12.2.1 Surveys and Studies

Social Surroundings consultation is currently ongoing with the Ngarluma people as detailed in Section 3 (Stakeholder Engagement). Heritage surveys have been undertaken to identify heritage places within and surrounding the Proposal as detailed in Table 12-1. While heritage surveys are currently ongoing, the Proponent is aware of several significant heritage sites and places of cultural value to the Ngarluma people.

Table 12-1: Summary of Environmental Investigations Relevant to Social Surroundings

Survey Description	Reference	Details
Archaeological and ethnographic work area clearance heritage survey	Tera Rosa – Ongoing (30 heritage survey reports completed as of April 2026).	Comprehensive archaeological and ethnographic heritage surveys as to assess the cultural heritage values in relation to the Proposal DE.
Andover Mine – Baseline Noise Monitoring Study Monitoring Summary report	Worley, 2024b	Baseline noise monitoring for the Proposal including attended and unattended noise monitoring, taking into consideration sensitive receptors in proximity to the Proposal.
Andover Mine – Artificial Light Assessment	Worley, 2024c	Desktop review identifying sensitive receivers including, Roebourne, Mingullatharndo, Cheeditha, cultural heritage sites and terrestrial and marine fauna within proximity to the Proposal footprint and key sources of artificial light and light emissions.

Survey Description	Reference	Details
A women's ethno-ecological survey of the Andover Lithium project area with Ngarluma Traditional Owners prepared for Azure Minerals	Tera Rosa, 2025	Sampling and quantifying a list of culturally significant flora and fauna species to inform environmental studies and rehabilitation efforts.
Social and economic assessment (pending)	Umwelt, 2026	Process and outcomes of a Social and Economic Impact Assessment, including community profiling, scoping and assessment of potential issues, impacts and opportunities. The findings of this will be presented in the ERD.

12.2.2 Social Setting and Other Receptors

The Proposal is located in the Pilbara, an area with a long, ongoing history of mining. Historical mining on the tenements has resulted in a number of shafts and adits, some of which may have fibrous minerals present.

The Proposal is situated on Ngarluma Country (Figure 2-2). An access agreement is in place for exploration and an agreement for mining is in development. The Woodbrook Loregrounds are a meeting place of significance to the Ngarluma and Yindjibarndi people and is broadly significant among other traditional owner groups; located approximately 4.5 km southwest of the Proposal, shown as a sensitive receptor on Figure 10-1.

One pastoral lease underlies the exploration tenure; the Mount Welcome Pastoral Lease, which is owned and operated by NAC. The Proposal sits in proximity to Roebourne, with the gazetted town boundary located immediately north of the DE (Figure 2-1). The town has an estimated population of 975 people (ABS, 2021).

The community of Mingullatharndo (5 mile) is located 8 km southeast of Roebourne and 2.85 km southeast of the DE. The population varies but is currently estimated at 25 people. The community of Cheeditha is located approximately 3 km northwest of Roebourne. The last census recorded approximately 249 people in the Cheeditha – Mingullatharndo community area. Mingullatharndo and Cheeditha are shown on Figure 10-1.

12.2.3 Aboriginal Heritage

12.2.3.1 Aboriginal Heritage Surveys

The Proposal is situated entirely within Ngarluma Country. The NAC was formed as a RNTBC in 2005. Numerous, extensive Aboriginal heritage surveys have been undertaken by heritage consultants and NAC representatives within the DE and surrounds and these are continuing, and will continue, to support exploration disturbance and mine planning (Tera Rosa Consulting, 2024a; Tera Rosa Consulting, 2024b)

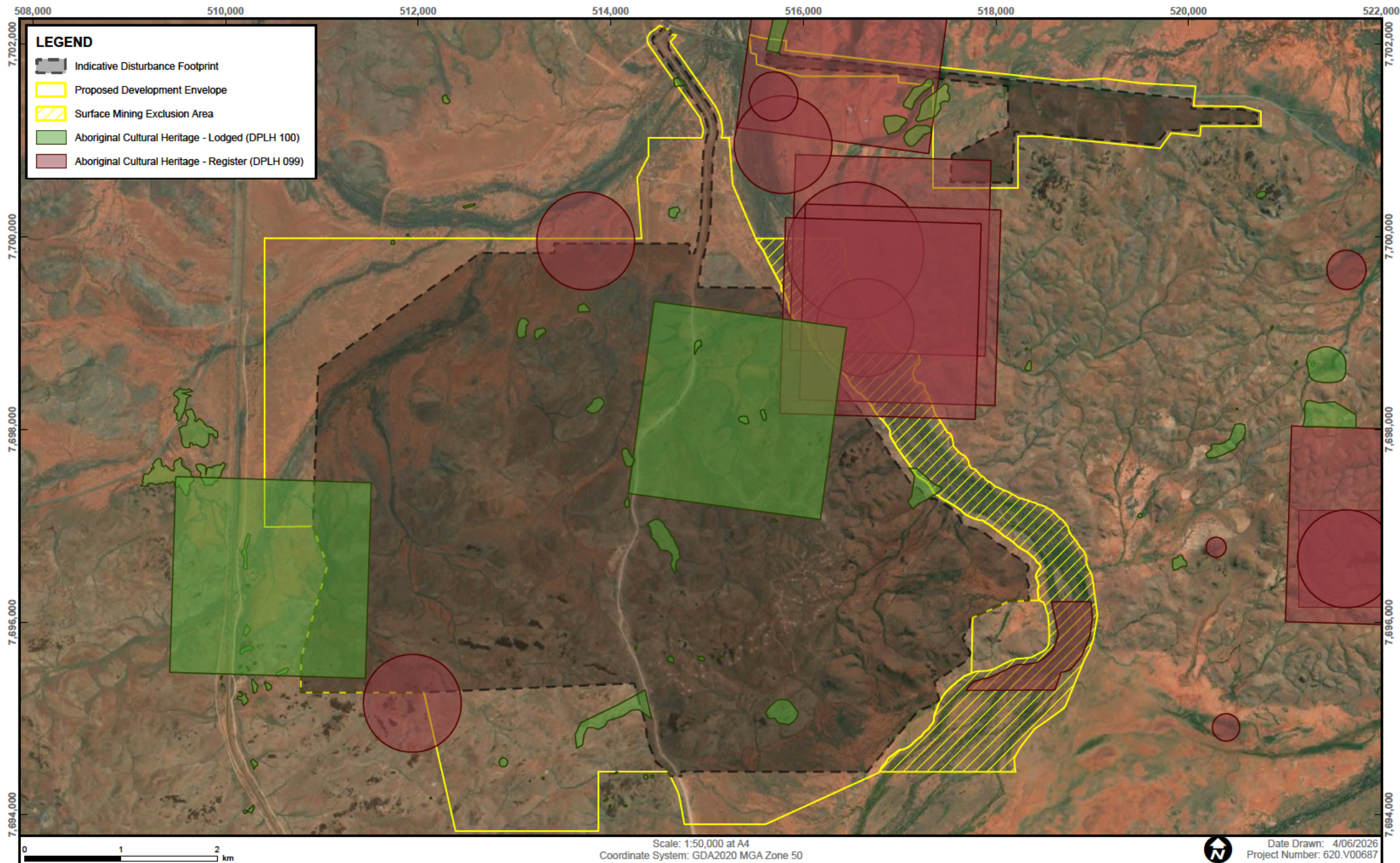
A search of the DPLH Aboriginal Cultural Heritage Inquiry System (ACHIS) was undertaken for the Proposal on June 2, 2026. A total of nine registered sites and 29 lodged sites were identified, intercepting the DE for the Proposal have been detailed in Table 12-2 as shown in Figure 12-1.

Ongoing consultation and surveys with the Ngarluma people have indicated additional cultural heritage sites and values (outside of those provided in ACHIS results, shown in Figure 12-1) are present within the DE and surrounds.

Table 12-2: Search Results ACHIS

Place ID	Type	Name	Description	Restrictions
6009	Register	Law Tree	Ritual / Ceremonial	Yes
6010	Register	Two Mile Reserve	Burial; Artefacts / Scatter; Camp; Traditional Structure	No
7861	Register	Burrumburra and Jigur Daar Talu	Ritual / Ceremonial; Creation / Dreaming Narrative; Traditional Structure	Yes
6012	Register	Two Mile Engravings	Artefacts / Scatter; Engraving; Grinding areas / Grooves	No
7088	Register	Barrumburra Talu	Artefacts / Scatter; Ritual / Ceremonial; Traditional Structure	Yes
7137	Register	Kurtampaa Engravings	Artefacts / Scatter; Camp; Engraving; Grinding areas / Grooves; Water Source	No
7974	Register	Woodbrook	Artefacts / Scatter; Quarry	No
7978	Register	Northwest Coastal Highway	Burial; Ritual / Ceremonial	Yes
7081	Register	Kurrangar Talu	Ritual/Ceremonial	No
33155	Lodged	CRL4-12-04	Artefacts / Scatter	No
35362	Lodged	PIL54-11-36	Engraving	Yes
39840	Lodged	NAC2201-NCA02	Artefacts / Scatter	No
39842	Lodged	NAC2201-NCA01	Artefacts / Scatter; Grinding areas / Grooves	No
39876	Lodged	NAC2201-NCA08	Artefacts / Scatter	No
39904	Lodged	NAC2201-NCA05	Engraving	No
39908	Lodged	NAC2201-NCA04	Artefacts / Scatter	No
39909	Lodged	NAC2201-NCA03	Artefacts / Scatter	No
40681	Lodged	NAC2302-NCA05	Engraving; Traditional Structure. Water Source	No
40928	Lodged	NAC2201-NCA07	Engraving	No
41364	Lodged	Mt Gregory Engravings	Engraving	No
41586	Lodged	NAC2406-002	Artefacts / Scatter	No
42018	Lodged	NAC2406-001	Artefacts / Scatter	No

Place ID	Type	Name	Description	Restrictions
42019	Lodged	NAC2406-005	Artefacts / Scatter; Grinding areas /Grooves; Shell; Water Source	No
42020	Lodged	NAC2406-006	Artefacts / Scatter; Historical; Quarry	No
42198	Lodged	NAC2410-002	Artefacts / Scatter	No
42199	Lodged	NAC2410-005	Artefacts / Scatter; Engraving	Yes
42265	Lodged	NAC2514-006	Artefacts / Scatter; Camp	No
42467	Lodged	NAC2406-009 (Old Government Reserve)	Camp; Ritual / Ceremonial; Historical	No
42541	Lodged	NAC2514-004	Artefacts / Scatter	No
42542	Lodged	NAC2514-001	Artefacts / Scatter; Plant Resource	No
42551	Lodged	NAC2514-003	Artefacts / Scatter; Water Source	No
42607	Lodged	NAC2435-001	Artefacts / Scatter; Water Source	No
42636	Lodged	NAC2435-002	Artefacts / Scatter; Engraving	No
42774	Lodged	NAC2522-001	Artefacts / Scatter	No
42775	Lodged	NAC2522-002	Artefacts / Scatter; Grinding areas /Grooves; Stone Arrangement	No
42776	Lodged	NAC2517-004	Artefacts / Scatter; Engraving	No
42862	Lodged	NAC2601-001	Artefacts / Scatter	No
42863	Lodged	NAC2601-004	Artefacts / Scatter	No



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ABORIGINAL CULTURAL HERITAGE SITES

FIGURE 12-1

12.2.3.2 Native Title

The Proposal is located wholly within the Ngarluma native title determination. The Ngarluma determination is the northern part of a larger Ngarluma/Yindjibarndi determination (WCD2005/001), which was determined on 2 May 2005. The Ngarluma people are represented by the NAC, which was registered as the RNTBC on 10 June 2005 under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006*. To develop the Proposal and procure the grant of leases, Azure is in the process of negotiating an agreement with NAC pursuant to section 31(1)(b) of the *Native Title Act 1993 (Cth)* (NTA) (Future Act Agreement) – the Azure-NAC Agreement (ANA).

Aboriginal Cultural Heritage (ACH), both tangible and intangible, is abundant throughout Ngarluma Country. It includes flints, petroglyphs, grinding stones, campsites and loregrounds, and Dreaming stories, songlines, sacred sites and *thalu* (increase) sites. ACH links the Ngarluma people of today with their history and place, their cultural memory, and provides the context and rationale for important activities and ceremonies and the basis of their identity.

The specific areas around Roebourne (Ieramugadu) are significant not just for the Ngarluma people, but also for other Traditional Owner groups. Yindjibarndi, Banjima and Martu people have also used the loregrounds on Ngarluma Country, and many Yindjibarndi, Banjima, Martu and other people groups live in Roebourne, Wickham, Point Sampson, Cheeditha, Ngurrawanna and Karratha.

The DE contains a number of ACH values including a high number of stone scatters and artefacts, the frequency of complex rock art and petroglyphs, the interwoven Dreaming stories and songlines that intersect large parts of the Proposal, the proximity of the Ngurin, and the cultural value and ongoing use of Woodbrook Lore Grounds.

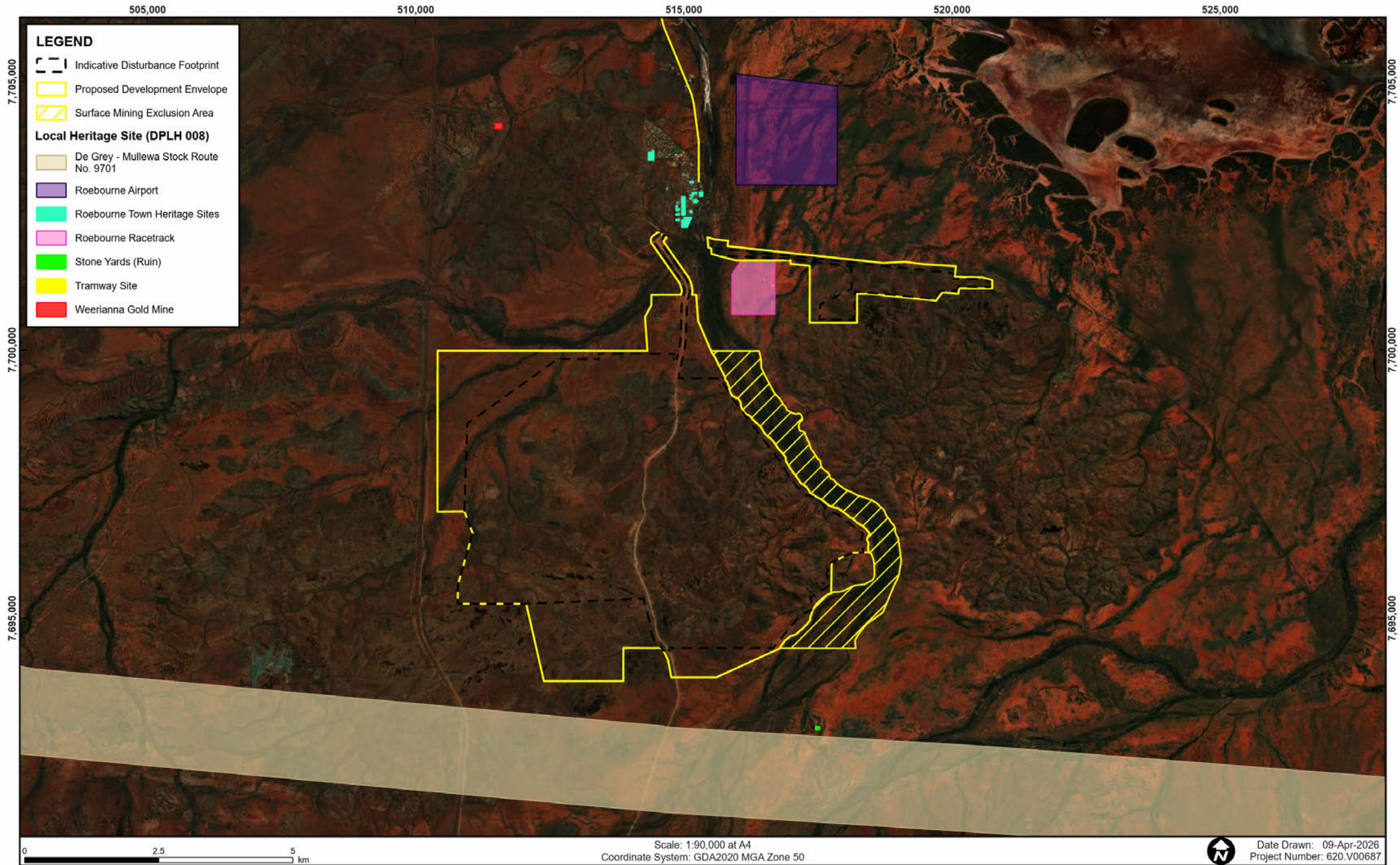
Construction and operation of the Proposal infrastructure will significantly impact ACH, both tangible and intangible, though discussions with Elders and Traditional Knowledge Holders held over recent months indicate a high degree of flexibility and willingness to consider options including removal of artefacts and permanent impact to sites.

12.2.4 Non-Indigenous Heritage

Non-indigenous heritage must also be considered during the approvals process. The Heritage Council of Western Australia maintains a State Register of Heritage Places under the *Heritage Act 2018* (WA). A search of the inHerit (2024) database identified two Heritage Places; the De Grey–Mullewa Stock Route No. 9701 and Roebourne Racetrack, identified in proximity to the DE and other sites in proximity to the Proposal have been presented in in Table 12-3 and shown in Figure 12-2.

Table 12-3: Non-Indigenous Heritage Sites in Proximity to the Proposal

Heritage place Name	Number	Distance from Proposal DE
De Grey – Mullewa Stock Route No 9701	5113	770m
Roebourne Racetrack	8684	adjoining
Original Warambie Station	8688	24.5 km
Hospital	2339	495m
Holy Trinity Anglican Church	2332	750m
Primary School & Quarters	2341	1460m
Mount Welcome House	2343	400m
Dalgety House	13254	690m
Roebourne Post Office	2334	1100m
Police Station Gaol & Court House Precinct	2319	440m



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ANDOVER PROJECT EPA REFERRAL DOCUMENT

NON-INDIGENOUS
HERITAGE PLACES

FIGURE 12-2

12.2.5 Noise

A baseline noise assessment was conducted in September 2024, with noise meters set up at two locations in proximity to sensitive receptors Roebourne and Mingullatharndo. The dominant noise sources were wind, birds and vehicles. Noise levels reflected the wind speed, and often wind exceeding 19 km/hr resulted in noise exceeding the assigned noise level (45 decibels (dB)) during the day (Worley, 2024b).

Noise and vibration modelling will be completed when a project design is further developed, with results presented in the ERD.

12.2.6 Visual Amenity

A Visual Impact Assessment will be undertaken to support the environmental approvals process, the outcomes of which will be presented in the ERD.

12.2.7 Light

A baseline light assessment desktop review was completed in August 2024. Local light sources identified were Roebourne, Roebourne Regional Prison, Wickham, Point Samson and Karratha. Potential risks were identified to fauna (Northern Quoll, turtles and Ghost Bat), the local communities of Roebourne, Mingullatharndo and Cheeditha, the Woodbrook Lore Ground, Aboriginal astronomy, dark sky tourism and astrotourism (Worley, 2024c). Baseline artificial light assessment field work, comprising deployment of light meters near sensitive receptors, was also completed in 2024.

These results will support a light impact assessment when the project design is further developed, the outcomes of which will be presented in the ERD.

12.3 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to avoid impacts to environmental values.

12.3.1 Potential Direct impacts

The potential direct impacts from the Proposal on Social Surroundings across the development include:

- Ground disturbing activities such as clearing of native vegetation, may impact culturally significant places and heritage (both aboriginal and non-indigenous).
- Restricting access to country including access to heritage sites and ethnographically significant flora and fauna resources.
- Potential unauthorised access to registered heritage sites by project personnel.

- Undertaking of activities that have the potential to impact aesthetic values such as large-scale mining activities on landscapes of significant aesthetic value, including the Ngurin through construction of WRL, the TSF and associated mining infrastructure.
- Increased dust emissions, including the risk of fibrous materials and respirable silica dust.
- Visual impact from dust and light emissions and the Proposal as a whole.
- Noise and vibration from operations including blasting impacting nearby sensitive receivers.
- Loss of culturally important water values and water-related sites.

12.3.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact Social Surroundings through:

- Development of the Proposal and associated activities that have the potential to impact the amenity or aesthetic values associated with cultural, environmental and community values.
- Alteration of surface water and groundwater flows and potential impact to the Ngurin.
- Reduced water quality.
- Alteration of surface water flows impacting Aboriginal heritage sites and values.
- Generating of dust, noise and vibration from construction and mining activities including blasting, earth-moving, loading and unloading, transport, stockpiling etc. impacting nearby sensitive receptors.
- Economic impacts to local business and regional tourism.
- Loss or change to GDVs along the Ngurin due to changes in groundwater regimes.
- Loss of Traditional Owner knowledge.
- Dewatering drawdown impacts yield of pastoral bores.

12.4 Proposed Mitigation Measures

Upon completion of all relevant studies, the Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to Social Surroundings from the Proposal:

- Avoid:
 - The Proposal will avoid Heritages Places to the greatest extent possible and in consultation with Traditional Owners.
 - The Proposal design will be informed by an understanding of cultural and Social Surroundings values gained via surveys, studies and consultation with NAC and key stakeholders including the Town of Roebourne, Cheeditha and Mingullatharndo, with a view of avoiding impacts to cultural features and values.
 - Direct impacts to the environmental and cultural aspects associated with the Ngurin will be avoided through the implementation of the SMEA, which has been applied to the boundary extent of the Ngurin, containing a number of Aboriginal heritage sites. Permitted activities within the SMEA will be limited to those listed in Section 2.1.1.

- Culturally significant sites will be avoided with appropriate buffers / 'no-go zones' applied where possible and in consultation with the Ngarluma people.
- Minimise:
 - Implementation of a GDP process for all ground disturbing activities onsite, with the inclusion of reviews of GIS exclusion areas.
 - Continue consultation with relevant stakeholders regarding Social Surroundings as to inform impact assessment and identify additional mitigation measures, as required.
 - Continuation of surveys, relevant studies and consultation with the Ngarluma people, as to understand cultural values relevant to the Proposal.
 - Where Heritage Places cannot be avoided, the Proponent will consult with the Ngarluma people to understand what actions could be implemented to reduce impacts.
 - Where required, Cultural Heritage Management Plans will be developed for the Proposal in consultation with NAC.
 - Undertaking of Visual Impact Assessments to consider impacts to amenity, sites and places of cultural significance and study outcomes.
- Rehabilitate:
 - Development and implementation of a MDCP, in accordance with statutory *Guidelines for preparing Mining Development and Closure Proposals* (DMPE, 2025b) for the Proposal in consideration of Social Surroundings consultation.
 - Ensure final landform designs and closure planning is informed by structured engagement with the Roebourne community, pastoralists, and Ngarluma Traditional Owners.

12.5 Assessment of Significance of Residual Impacts

12.5.1 Proposal

An assessment of the significance of the residual impacts of the Proposal on Social Surroundings will be summarised and presented in the ERD.

12.5.2 Cumulative Impacts

The cumulative impacts of the Proposal on Social Surroundings will be undertaken with the development of the ERD.

12.6 Environmental Outcomes

The ERD will outline the environmental outcomes for Social Surroundings from implementation of the Proposal in the ERD.

13 Other Environmental Factor – Landforms

13.1 EPA Objective

The EPA objective for Landforms is “to maintain the variety and integrity of significant physical landforms so that environmental values are protected” (EPA, 2018b).

In consideration of this objective, the Proponent has been guided by the EPA’s definition of a landform being ‘The distinctive, recognisable physical features of the earth’s surface having a characteristic shape produced by natural processes. A landform is defined by the combination of its geology (composition) and morphology (form)’ (EPA, 2018b).

13.2 Policy and Guidance

The following guidance is applicable to this factor:

- *Environmental Factor Guideline – Landforms* (EPA, 2018b).
- *Guideline for preparing Mine Closure Plans* (DMPE, 2025a).
- *Guideline for preparing Mining Development and Closure Proposal* (DMPE, 2025b).

13.3 Receiving Environment

13.3.1 Studies and Surveys

MBS Environmental were commissioned by the Proponent to undertake an assessment of landforms across the DE and surrounding area (MBS, 2025a). The survey area covered 34,423 ha and was undertaken in accordance with Environmental Factor Guideline – Landforms (EPA, 2018b) and the DMPE (2025b) guidelines for preparing Mining and Development Closure Proposals.

The assessment was undertaken to identify significant physical landforms to assist in mine development, environmental approvals and closure planning.

13.3.2 Regional Landform Context

The Proposal is located within two soil landscape zones being the Harding Hills and Plains Zone and De Grey-Roebourne Lowlands Zone, both within the Fortescue Province of the Western Region. The Harding Hills and Plains Zone is characterised by hills and ranges with stony plains and some alluvial and flood plains on sedimentary, granitic and volcanic rocks of the northern Pilbara Craton. It features stony soils with red/brown non-cracking clays and red shallow loams and some hard cracking clays and exhibits spinifex grasslands with kanji and snappy gum (and some tussock grasslands) (MBS, 2025a).

The De Grey-Roebourne Lowlands Zone is characterised as containing alluvial plains and sandplains and stony plains) on alluvial and marine deposits over rocks of the northern Pilbara Craton. It features red deep sandy duplexes with red loamy earths and some red/brown non-

cracking clays, cracking clays, red sandy earths and red deep loamy duplexes with spinifex grasslands with kanji and tussock grasslands (MBS, 2025a).

13.3.3 Proposal Area Landforms

A desktop assessment was undertaken to identify potential landforms across the DE and surrounding area. The following were considered likely to occur:

- Erosional and depositional surfaces.
- Hills, ridges and plateau remnants on basalt with steep stony slopes.
- Restricted lower slopes, stony interfluxes and minor gilgai plains.
- Mixed drainage, including moderately spaced, small tributary channels in shallow valleys, narrow linear drainage depressions and dissected slopes.
- Gilgaied and non-gilgaied clay plains, stony plains, flood plains and cobble plains.
- River terraces, sandy banks and poorly defined levees.

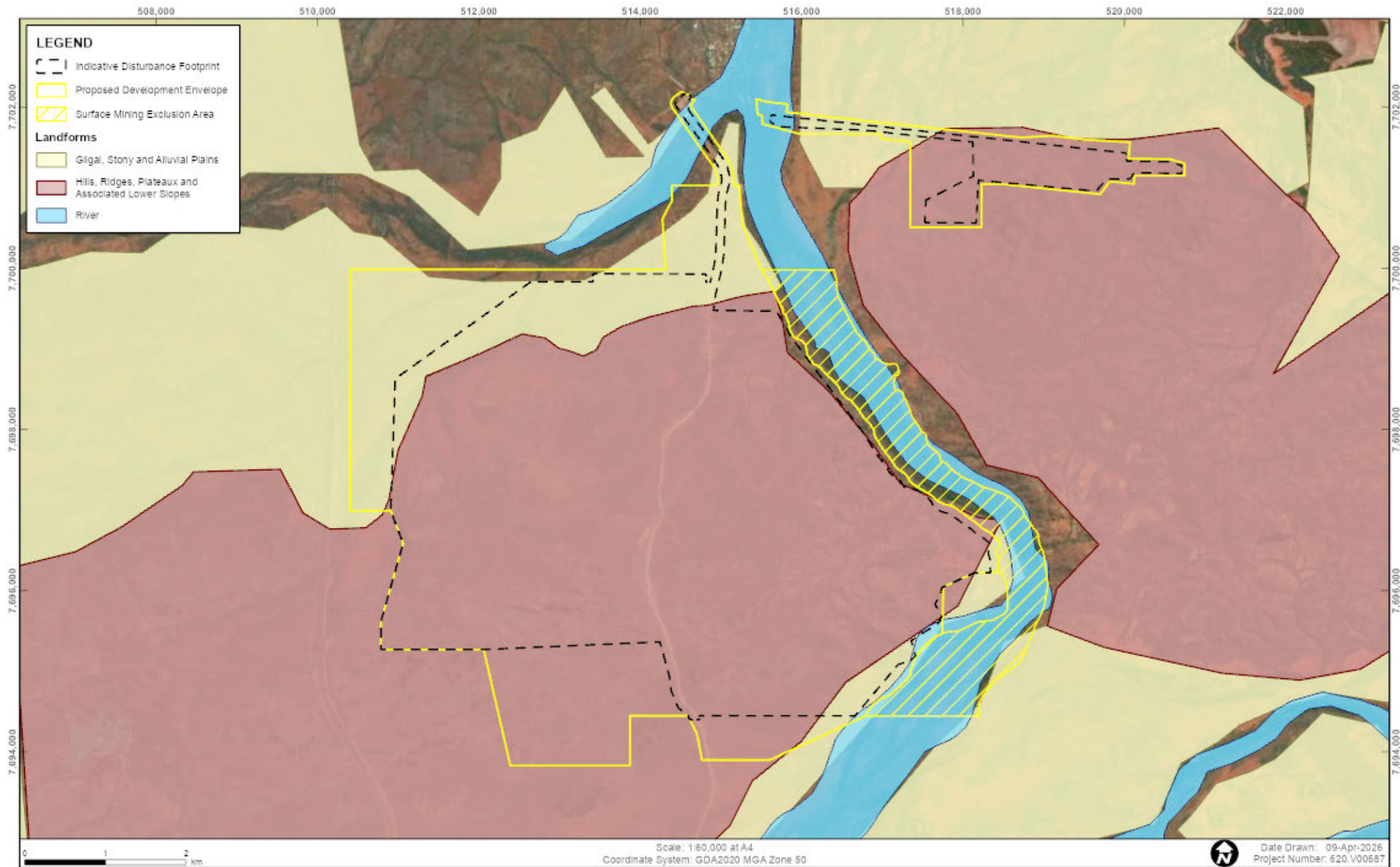
The bulk of the Proposal (76%), including the proposed TA3 pit footprint lie in the Rocklea system (289Rk) in which hills, ridges and plateau (65%) and associated lower slopes (15%) are the dominant landforms. These landforms predominantly contain shallow stony soils with spinifex grasslands the dominant vegetation type.

Following a field survey of 34,423 ha, identified landforms were categorised into three main groups as detailed in Table 13-1 and shown in Figure 13-1.

Table 13-1: Details of Key Landform Groups Across the Proposal Area

Landform Group/Morphology	Estimated Area (ha)	Geology	Soils	Environmental Values
Hills, ridges, plateau and associated lower slopes	10,301	Archaean basalt, Lower Proterozoic basalt, dolerite, tuff and agglomerate, minor shale and jaspilite	Stony soils (1308) dominant	• Ngurin (Harding River) hydrology • Habitat for fauna species of conservation significance (Pilbara olive python, Ghost bat, Northern quoll).
Gilgai, stony and alluvial plains	20,081	Quaternary alluvium	Cracking and non-cracking clays (1503, 1504, 1506)	• Habitats for species of conservation significance (Western pebble mouse, Ghost bat, Lined soil crevice skink). • Horseflat Land System of the Roebourne Plains Priority Ecological Community (PEC)

Landform Group/Morphology	Estimated Area (ha)	Geology	Soils	Environmental Values
Riverine Environments	4,041	Quaternary alluvium	Red sands, loamy earths and sandy earths (1488,1673, 1466) dominant	Ngurin (Harding River) and associated ecosystem(s)



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Path: H:\Local\Preservation\Mining Advice\AD\000003-Project\Australia\BWA\Andover\Project\AD\000003\01-25\01\ANDOV\00001-EPBC-EPN\epn\Referral\Fig 13-1_Landform Groups

ANDOVER PROJECT EPA REFERRAL DOCUMENT

LANDFORM GROUPS

FIGURE 13-1

13.3.4 Landform Significance

A landform significance assessment was conducted for the identified landform groups (MBS, 2025a). The following landforms were identified within the Proposal DE and surrounds –

- Hills, ridges, plateau and associated lower slopes – containing shallow stony soils with spinifex grasslands the dominant vegetation type.
- Gilgai, stony and alluvial plains – which typically contain clay soils and mixed grassland/shrubland vegetation types.
- Riverine Environments – comprised of river channel and flood plain landforms housing a range of grassland and woodland vegetation types.

All three landform groups were not considered to be of significance in terms of variety and scientific importance. However, all three landform groups contain habitats for conservation significance species and have the potential to be ecologically significant. Conservation significant species will be assessed under Terrestrial Fauna and Flora and Vegetation Factors. Most of the identified landforms are considered to be of potential significance with respect the factor of integrity (MBS, 2025a).

While cultural heritage sites occur in all landforms, only riverine environments are likely to represent a significant landform due to the social and cultural significance of the Ngurin to the Ngarluma Traditional Owners. The Ngarluma Traditional Owners identify the Ngurin as a key cultural landscape with interconnected values, including named waterholes, tharlu sites and ceremonial places. These values are recognised under the relevant Aboriginal heritage legislation including the *Aboriginal Heritage Act 1972*. Impacts to the Ngurin will be assessed under the Inland Waters and Social Surroundings Factors.

Other landforms within the Proposal DE (hills, ridges, plateaux, and plains) are not generally considered significant as landform types in their own right. However, individual heritage sites (engraving complexes, named hills) do occur within these landforms. The presence of such sites highlights their cultural importance but does not mean that the broader landform type itself is considered significant under the landform significance criteria (MBS, 2025a).

Landform significance assessment is provided as Table 13-2.

Table 13-2: Landform Significance Assessment

Landform Group/Morphology	Variety	Integrity	Ecological Importance	Scientific Importance	Rarity	Social Importance
Hills, ridges, plateau and associated lower slopes	Not significant The landform is not a particularly important example of its type. The landform is well represented locally and regionally.	Potentially significant. Landform is considered to be in good condition.	Potentially significant. Potential/confirmed habitat for conservation significant fauna species.	Not significant. Landform does not contain sites of scientific importance.	Not significant. The landform is not rare regionally or locally.	Unlikely to be significant. Although registered and identified cultural sites are contained on landform, it is unlikely to be significant socially.
Gilgai, stony and alluvial plains	Not significant The landform is not a particularly important example of its type. The landform is well represented locally and regionally.	Potentially significant. Landform is considered to be in fair to good condition.	Potentially significant. Potential/confirmed habitat for conservation significant fauna species. Contains the Horseflat Land System of the Roebourne Plains PEC (P3).	Not significant. Landform does not contain sites of scientific importance.	Not significant. The landform is not rare regionally or locally.	Unlikely to be significant. Although registered and identified cultural sites are contained on landform, it is unlikely to be significant socially.
Riverine Environments	Not significant The landform is not a particularly important example of its type. The landform is well represented locally and regionally.	Potentially significant. Landform is considered to be in good condition.	Potentially significant. Contains wetlands of local significance. Key water source for conservation significant terrestrial fauna species. Potential to contain conservation significant aquatic flora and fauna.	Not significant. Landform does not contain sites of scientific importance.	Not significant. The landform is not rare regionally or locally.	Potentially significant. The Ngurin is highly significant culturally and socially to Ngarluma People.

13.4 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to avoid impacts to environmental values.

13.4.1 Potential Direct Impacts

The potential direct impacts from the Proposal on identified landforms across the development include:

- Mine pit excavation of material from landforms for mining.
- Dewatering of the mine pit and underground workings.
- Clearing of native vegetation.
- Construction of new permanent landforms on existing natural landforms; IWL, TSF, WRLs pit void and flood levee.

The potential extent of these direct impacts is provided in Table 13-3.

Table 13-3: Predicted Direct Impact (Disturbance) to Identified Landforms

Landform	Total Area (ha)			Impact Summary (% of Area within the IDF when compared to area available within the Survey Area)
	Survey Area	Development Envelope	Indicative Disturbance Footprint	
Hills, ridges, plateau and associated lower slopes	10,301.11	3204.90	2719.15	26.39% impacted as a result of the Proposal.
Gilgai, stony and alluvial plains	20,080.50	779.22	298.61	40.47% impacted as a result of the Proposal.
Riverine Environments	4,358.68	380.91	12.65	0.29% impacted as a result of the Proposal.

13.4.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact the identified landforms through:

- Disruption of the evolution of landforms: landforms evolve due to long-term geomorphic processes such as erosion, weathering and deposition. The development of a mining operation is likely to accelerate these changes leading to increased soil erosion and deposition and altered hydrological regimes.
- Increased erosion of landforms: the removal of native vegetation and stabilising rock piles can expose landforms to high wind and water velocities causing increased erosion rates than if left unexposed.
- Degradation of cultural connection: the Riverine Environments landform holds cultural identity, knowledge and spiritual connection for traditional owners. Alterations to quality or availability of use of the Ngurin has the potential to degrade the cultural connection.
- Visual amenity impact.

13.5 Proposed Mitigation Measures

The Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to landforms from the Proposal:

- Avoid:
 - Groundwater avoided as the main source of processing water by seeking alternative water supply options.
 - Direct impacts to the environmental and cultural aspects associated with the Ngurin (Riverine Environments Landform) will be avoided through the implementation of the SMEA, which has been applied to the boundary extent of the Ngurin. Permitted activities within the SMEA will be limited to those listed in Section 2.1.1.
 - Culturally significant sites will be avoided with appropriate buffers applied where possible and in consultation with Ngarluma.
- Minimise:
 - Limit the extent of disturbance of values of ecological importance including Horseflat Land System of Roebourne Plains PEC (P3), Chenopod Association of the Roebourne Plains PEC (P1), priority flora species and critical habitat for Northern Quoll, the Grey Falcon and Pilbara Olive Python.
 - Construct surface water management infrastructure to manage water flow during storm events, limiting runoff and erosion.
- Rehabilitate
 - Undertake progressive rehabilitation during operations where practicable to stabilise existing landforms.
 - Ensure final landform designs and closure planning is informed by structured engagement with Ngarluma Traditional Owners.
 - Development and implementation of a MDCP, in accordance with statutory *Guidelines for preparing Mining Development and Closure Proposals* (DMPE, 2025b) for the Proposal

13.6 Assessment of Significance of Residual Impacts

13.6.1 Proposal

Considering the identified landforms, potential impacts from the Proposal and implementation of mitigations the potential for residual impact is limited to the physical disturbance and alteration of two landforms, the Hills, ridges, plateau and associated lower slopes, and Gilgai, stony and alluvial plains. None of the residual impacts are assessed as significant as:

- The landforms are well represented locally and regionally and not particularly important examples of their respective types.
- Application of the mitigation hierarchy is likely to protect the integrity of the landform's conditions, including the implementation of the MDCP.

- The ecological values of the landforms will be assessed and regulated under the following preliminary environmental factors: Terrestrial Fauna, Flora and Vegetation, Inland Waters and Social Surroundings. The application of the mitigation hierarchy for these factors will be managed through the Proposal's Environmental Management Plan.
- Ongoing consultation with traditional owners will identify cultural heritage with ongoing protection outlined in a Cultural Heritage Management Plan.

There is no expected residual impact to the physical form of the 'Riverine Environment' landform. The SMEA will limit direct impacts to the physical form of the riverine environment. Hydrological processes have the potential to be impacted by groundwater extraction. Groundwater drawdown modelling is not complete, however impacts on the Ngurin from drawdown will be adequately considered and assessed in the ERD under the Inland Waters and Social Surroundings environmental factors, and further consideration as a landform is not required.

13.7 Cumulative Impacts

Cumulative impact assessments are required for environmental values in a region under cumulative pressure from multiple impacts.

There are limited existing or proposed significant developments in the immediate vicinity of the proposal that would warrant cumulative impacts on landforms being assessed.

The 'Environmental Factor Guideline – Landforms (EPA, 2018) identifies common issues encountered by the EPA for specific landform types; banded iron formations, mesas, dunes and dune fields, and caves and cave systems. The landform assessment of the Proposal did not identify any landforms that are a common issue encountered by the EPA.

Assessment of impacts from the Proposal does not indicate a significant residual impact for Landforms, therefore the Proponent does not consider a cumulative impact assessment on landforms is required. While a cumulative impact assessment is not considered to be required for landforms due to physical disturbance, it is considered that cumulative impact assessments will be required for Inland Waters, Flora and Vegetation and Terrestrial Fauna and Social Surroundings based on impacts to groundwater, surface water, significant species, communities and cultural heritage values.

13.8 Environmental Outcomes

The EPA objective for Landforms is *"to maintain the variety and integrity of significant physical landforms so that environmental values are protected"* (EPA, 2018b).

The Proponent proposes to maintain the variety and integrity of all of the three main identified landforms by protecting the identified environmental values of potential ecological significance during assessment of Flora and Vegetation, and Terrestrial Fauna factors; and the social and cultural significance identified for riverine environments through the Inland Waters and Social Surrounds factors.

No environmental outcomes are proposed for Landforms as the Proponent does not consider it a preliminary environmental factor. The identified significant ecological and cultural values will be assessed under Inland Waters, Flora and Vegetation, Terrestrial Fauna and Social Surroundings factors.

Landform design, visual amenity, environmental and closure outcomes will be regulated by DMPE under the Mining Act, including the application of the MDCP during operations and at closure of the Proposal.

14 Other Environmental Factor – Terrestrial Environmental Quality

14.1 EPA Objective

The EPA objective for Terrestrial Environmental Quality is “to maintain the quality of land and soils so that environmental values are protected” (EPA, 2016e).

14.2 Policy and Guidance

The following guidance is applicable to this factor:

- *Environmental Factor Guideline – Terrestrial Environmental Quality* (EPA, 2016e).
- *Guideline for Preparing Mine Closure Plans* (DMPE, 2025a).
- *Guideline preparing Mining Development and Closure Proposals* (DMPE, 2025b).
- *Contaminated Sites Act 2003*.

14.3 Receiving Environment

14.3.1 Studies and Surveys

MBS Environmental were commissioned to undertake several assessments for waste characterisation for the Proposal. The assessments were undertaken in accordance with Environmental Factor Guideline – Terrestrial Environmental Quality (EPA, 2016e), as to identify the characteristics related to Terrestrial Environmental Quality within the DE and surrounds to assist in mine development, environmental approvals and closure planning. The Studies undertaken have been summarised in Table 14-1.

Table 14-1: Summary of Environmental Investigations relevant to Terrestrial Environmental Quality

Survey Description	Study date	Reference	Details
Andover Project – Lithium Deposit Waste Rock Characterisation	August 2025	(MBS, 2025b)	Geochemical assessment characterising physical and chemical properties of waste rock and low-grade ore likely to be generated from TA3 lithium deposit.
Andover Project Lithium Deposit Static Tailings Geochemical Characterisation	July 2025	(MBS, 2025c)	Geochemical assessment characterising properties of tailings residues to be generated as a result of the Proposal.
Memorandum Waste Rock Asbestiform Assessment	April 2025	(MBS, 2025d)	Analysis of waste rock samples for analysis of asbestiform mineral fibres as part of the Waste Rock characterisation assessment.

14.3.1.1 Future Studies

A 12-month kinetic testing study is currently in progress to better understand the release of lithium and other key species for further risk assessment required, as recommended by MBS Environmental.

14.3.2 Regional Geology

The granite-greenstone terrain in the west Pilbara is characterised by east-northeasterly striking greenstone sequences that envelop elongate to ovoid granitoid complexes. Both the greenstones and the granitoid complexes were intruded by Archaean mafic–ultramafic layered intrusions. The dominant structure affecting the terrain is the Sholl Shear Zone, which appears as a sinuous feature trending easterly to east-northeasterly across the northern part of the area. The greenstones include metamorphosed mafic to ultramafic volcanic rocks, felsic to intermediate volcanic rocks, clastic sedimentary rocks, chert, banded iron formation, and sills of mafic to ultramafic intrusive rocks. The granitoid complexes consist of syntectonic granitoid intrusions, gneissic granitoid, and migmatite, and some contain enclaves of metamorphosed greenstones or layered mafic–ultramafic bodies (MBS, 2025b).

14.3.3 Local Geology

The Andover intrusion is a large mafic–ultramafic body of approximately 200 km², located southeast and southwest of Roebourne in the northern Pilbara Craton. It comprises two main lithological zones (Hoatson & Sun, 2002):

- Ultramafic zone (up to ~1.3 km thick), consisting of rhythmically layered peridotite, lherzolite, websterite and clinophyroxenite with minor orthopyroxenite, anorthosite, leucogabbro and gabbro.
- Gabbroic zone (up to ~8.0 km thick), comprising gabbro, leucogabbro and anorthosite.

Both zones have been affected by regional metamorphism with common assemblages, including chlorite, talc, epidote, serpentine and tremolite–actinolite. These secondary minerals are significant for material characterisation as they influence rock strength, weathering behaviour and potential geochemical reactivity (MBS, 2025b).

Pegmatites occur throughout the intrusion, typically intruding along discrete shears. While they are the host to lithium-bearing minerals, from a material characterisation perspective they are notable for their coarse texture, variable quartz–feldspar–mica composition and relatively low abundance compared to the dominant mafic and ultramafic rocks.

The general weathering profile in the DE and surrounds transitions from shallow soils developed on colluvium and weathered bedrock, through zones of partial oxidation, to fresh rock at depth. Ultramafic lithologies commonly weather to serpentine–talc assemblages, which may produce fine grained, weakly cohesive material, whereas gabbroic units tend to weather to blocky, more

competent material. These contrasts are relevant to both geotechnical stability and the effectiveness of soil and waste management during operations and rehabilitation (MBS, 2025b).

Structural measurements of igneous layering taken along the edge of the intrusion are generally striking west south-westerly, dominantly dipping 20-45° towards northwest. On the northeast and southwest end of the complex, igneous layering tends to strike west north-westerly dipping moderately towards the centre of the complex. This suggests the intrusion has a bowl shape, possibly lying on its side as suggested in Davies (1986).

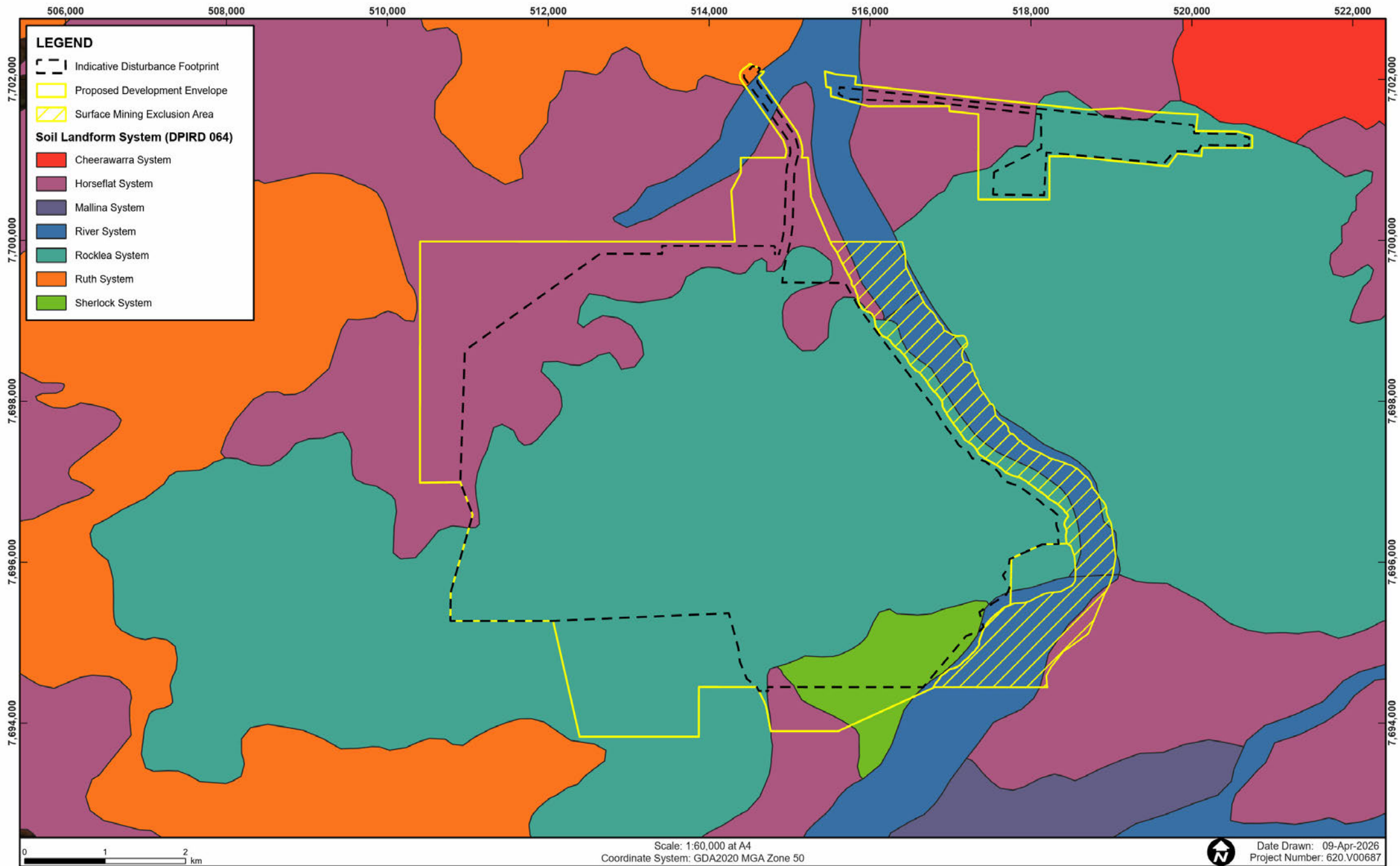
14.3.4 Land Systems and Soils

The Pilbara region has 102 land systems classified by DPIRD and the DPLH (Van Vreeswyk, Leighton, Payne, & Hennig, 2004). The majority of the DE is located within the Harding Hills and Plains Zone with small areas along the tenement boundaries in the De Grey – Roebourne Lowlands Zone. The Harding Hills and Plains Zone for the transition area between the De Grey Lowlands and the Nullagine Hills with stony plains and some alluvial and flood plains. Soils of the zone are stony with red/brown non-cracking clays and red shallow loams with some hard cracking clays (MBS, 2025b).

Soil landform systems present across the DE have been presented in Table 14-2 and Figure 14-1.

Table 14-2: Soil Landform Systems in the DE

System	Description	Area (ha)	% of DE
Horseflat System	Gilgaied clay plains supporting Roebourne Plains grass grasslands and minor grassy snakewood shrublands.	1,006.42	22.42
Rocklea System	Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex and occasionally soft spinifex grasslands with scattered shrubs.	2,899.40	64.59
Sherlock System	Stony alluvial plains supporting snakewood shrublands with patchy tussock grasses and spinifex grasslands.	198.31	4.42
Ruth System	Hills and ridges of volcanic and other rocks supporting shrubby hard spinifex and occasionally soft spinifex grasslands.	4.18	0.09
River System	Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex.	380.90	8.48
Total		4,489.21	100%



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SOIL LANDFORM SYSTEMS

FIGURE 14-1

The DPIRD Dominant Soil Groups database was reviewed to broadly define soils within the DE, as shown in Figure 14-1. The soils of the DE and surrounds are for the most part sandy, but where material is derived from basaltic rocks, mainly in the west around Roebourne and toward Onslow, the soil may consist of “cracking clay”, a dark earth that cracks deeply in the dry season (CSIRO, 1991).

Acid sulphate soils (ASS) are naturally found throughout Western Australia in soils and sediments that contain iron sulphides. When these soils are exposed to air, the iron sulphides react with oxygen and water, forming iron compounds and sulphuric acid. In contrast, waterlogged ASS, which has not been exposed to air, is referred to as potential acid sulphate soils (PASS) (DER, 2015). A desktop assessment of PASS in the DE shows that there is a moderate to low risk of PASS being present. Much of the Harding River system and its tributaries are considered to be of moderate to low ASS risk. The remainder of the DE is assessed as posing a low to negligible risk. However, smaller discrete areas of moderate risk have been identified within the DE for the potential presence of ASS. Further investigations into the presence and risk of encountering ASS within the DE are ongoing and a summary of the findings will be provided in the ERD.

14.3.5 Static Tailings Characterisation

Tailings characterisation studies have been completed by MBS (MBS, 2025c). Static geochemical characterisation of tailings indicates that the material is benign and non-acid forming, with a low potential to generate saline or metalliferous drainage to the receiving environment if leaching occurs during operations and post-closure. Based on current static test work, this includes the release of lithium (which has limited environmental toxicity data) – concentrations in leachates were below those present in existing site groundwater for TA3 deposit. Leachate testing showed circum-neutral to slightly alkaline pH, low salinity, and very low solubility of metals and metalloids, with only minor exceedances of conservative ecological guidelines for aluminium and chromium. These exceedances are attributed to natural mineralogical content and are not expected to represent an environmental risk given containment and management within engineered storage facilities designed to limit and manage seepage to the groundwater systems. The tailings supernatant fluid was slightly alkaline and non-saline.

Investigations into the potential changes in release rate of lithium with time is currently in progress.

14.3.6 Waste Rock Geochemical Characterisation

Waste Rock characterisation was completed in 2025 on 45 samples reflective of waste volumes (MBS, 2025b), as well as testing for fibrous materials on 21 samples in the lithium deposit.

Waste characterisation studies indicated:

- Fresh waste and low-grade ore – the material is non-acid forming (NAF) and presents a low risk of metalliferous or saline drainage. All major lithologies, including ultramafic and mafic

units, were found to be chemically stable under field conditions, with neutral to alkaline leachate pH and low metal solubility. While minor exceedances of guideline values for fluoride, aluminium and arsenic were recorded under laboratory conditions, these were infrequent, marginal exceedances with overall medians within guidelines, and do not represent a material risk to environmental receptors.

- Transitional waste – levels of metals and metalloids were lower than for fresh waste; cobalt, nickel, chromium, and manganese exceeded soil screening criteria; leachates were alkaline (pH 9.1); salinity was low (34–52mg/L TDS), with low levels of metals and metalloids anticipated to leach under strongly oxidising conditions.
- Oxide waste – lithium levels were moderate and within USEPA screening criterion,; nickel levels were slightly elevated from host rocks; leachates were alkaline (pH 8.1–9.8) non-saline and exceeded the Australia and New Zealand Environment and Conservation Council (ANZECC) drinking water guidelines for fluoride on three occasions.
- Asbestiform minerals – testing identified chrysotile asbestiform mineral fibres were consistently present in the dominant ultramafic-type waste lithologies across the lithium deposit areas. No fibres were found in the low-grade ore. Mafic basaltic rock did not contain asbestiform fibres and should be used for any construction needs (MBS, 2025b). Further work is underway to determine the quantitative percentage of chrysotile (Section 10).

A summary of geochemical findings for waste lithologies present in TA3 as described by MBS (2025b) is provided in Table 14-3.

Table 14-3: Geochemical Findings by Waste Type

Waste Type	No. of samples assessed	Proportion of Waste in TA3	Geochemical Findings
Oxide			
Ultramafic	2	0.6	Oxide samples were non-saline, alkaline, contained moderate/high cation exchange capacities (CEC) and were non-sodic.
Mafic	2	0.04	
Reaction/Shear Zone	1	N/A	Oxide materials typically contained low total and soluble concentrations and metal(loid)s. Exceptions to this included elevated nickel concentrations in most materials and elevated soluble fluoride concentrations in selected samples. Local plant species are likely adapted to nickel presence.
Transitional			
Ultramafic	2	4.1	Transitional materials are NAF, alkaline and typically contain low soluble metal(loid) concentrations. Total nickel content is elevated, and the material may contain fibrous minerals (chrysotile) although at lower concentrations than fresh rock.
Mafic	3	0.74	Transitional materials are NAF, alkaline and typically contain low total and soluble metal(loid) concentrations. Slight presence of plant available nickel. Not indicated to contain fibrous material.

Waste Type	No. of samples assessed	Proportion of Waste in TA3	Geochemical Findings
Fresh			
Ultramafic	23	63	NAF, alkaline to strongly alkaline, low salinity, some (variable) indicated potential for aluminium, arsenic and nickel solubility to plant roots. Indicated to contain fibrous material (chrysotile).
Mafic	13	13	NAF, alkaline to strongly alkaline, low salinity. Concentrations of nickel and arsenic appear lower than ultramafic waste and is not indicated to contain fibrous minerals.
Reaction/Shear Zone	4	N/A	Limited waste volume, NAF, alkaline, low salinity, low soluble metals/metalloids.
Low-grade ore	2	18	Pegmatite is NAF and generally low risk except for potential release of lithium and fluoride over extended time periods however local groundwater above the deposit is naturally elevated also.

14.4 Potential Impacts

A preliminary assessment of the direct and indirect impacts of the Proposal has been undertaken and the mitigation hierarchy applied as to avoid impacts to environmental values. Impacts related to the presence of fibrous material from waste characterisation reports has been detailed under the Air Quality key environmental factor and is proposed to be assessed under the Air Quality and Social Surroundings factors.

14.4.1 Potential Direct Impacts

The potential direct impacts from the Proposal on identified Terrestrial Environmental Quality aspects across the development include:

- Land contamination due to inadequate storage and handling of hazardous substances, including but not limited to:
 - Oil/diesel spills.
 - Tailings/return water pipeline breaches.
 - Chemical spills.
- Loss or degradation of topsoil.

14.4.2 Potential Indirect Impacts

The Proposal has the potential to indirectly impact identified Terrestrial Environmental Quality aspects through:

- Erosion due to excessive and inappropriate land clearing.
- Changes to existing fire regime.

- Inadequate surface water management.
- Physical dispersion of waste material into the environment.
- Land contamination due to inappropriate domestic waste management.
- Loss of tailings containment during operation or closure.
- Overtopping of TSF during operations causing soil contamination.
- Residual contamination of processing plant and TSF at closure.
- Loss of soil biota due to inappropriate handling and storage of harvested topsoil.
- Insufficient topsoil for rehabilitation at closure.

14.5 Mitigation Measures

Mitigation measures in relation to fibrous materials have been included in key environmental factor – Air Quality. The Proponent will apply the following mitigation hierarchy to ensure there is no significant impact to Terrestrial Environmental Quality from the Proposal:

- Avoid:
 - Wind direction and severity to be considered when planning blasting, stripping and stockpiling of soils.
 - Material deemed unsuitable for cover of landforms to be encapsulated within benign waste rock.
- Minimise:
 - Dust suppression measures incorporated across the infrastructure designs where appropriate, i.e. spray nozzles along conveyor belts and at points of crushing.
 - Dust management protocols applied where waste rock may be handled and stockpiled.
 - Reuse of suitable material (Saprock only slightly weathered and mafic waste material both saprock and fresh) for rock armouring and construction as required.
 - All clearing is to be undertaken in accordance with an internal Ground Disturbance Permit.
 - Implementation of waste management strategies onsite.
 - WRLs will be designed to be safe, geotechnically stable and non-polluting.
 - Erosion and sedimentation controls will be implemented where required to minimise the risk of potential impacts to surface water flows.
 - Storage of contaminating material in accordance with Australia Standards (AS), including compliant locations with bunding, spill controls and leak prevention.
 - Contingency and emergency management plans will be developed and implemented to address any accidental discharge events that may occur on-site.
- Rehabilitate
 - Undertake progressive rehabilitation during operations where practicable to stabilise existing landforms.

- Recovery and stockpiling of topsoil for use in rehabilitation of cleared areas and landforms.
- Oxide material used as a cover material and growing medium or subsoil moisture store and release layer on waste landforms at closure.
- At closure, rehabilitate all existing and newly constructed landforms in accordance with the Proposals MDCP under the guidance of DMPE.

14.6 Assessment of Significance of Residual Impacts

14.6.1 Proposal

Considering the identified Terrestrial Environmental Quality aspects, potential impacts from the Proposal and implementation of mitigations, the potential for residual impact is limited to physical disturbance and waste rock/tailings disposal. Following implementation of the measures outlined to limit these impacts, none of the residual impacts are considered to be significant:

- Waste characterisation studies indicate the material is NAF and presents a low risk of metalliferous or saline drainage. All major lithologies, including ultramafic and mafic units, were found to be chemically stable under field conditions, with neutral to alkaline leachate pH and low metal solubility. Therefore, indicating the development of the TSF and WRLs is low risk to Terrestrial Environmental Quality of the surrounding landscape.
- Application of the mitigation hierarchy is likely to protect the integrity of the Terrestrial Environmental Quality conditions, including the implementation of the MCP.
- Terrestrial Environmental Quality interplays with other preliminary environmental factors which will be assessed in those factors: Terrestrial Fauna, Flora and Vegetation, Inland Waters, Air Quality and Social Surroundings.

14.6.2 Cumulative Impacts

Cumulative impact assessments are required for environmental values in a region under cumulative pressure. The 'Environmental Factor Guideline – Terrestrial Environmental Quality' (EPA, 2016e) identifies common issues encountered by the EPA for specific terrestrial environments. These include land use practices causing erosion and degradation of soil quality, salinity impacts, ASS, agricultural practices affecting soil structure and quality, and waste containment structures (including tailing storage facilities).

While the Proposal includes an IWL TSF, tailings were benign, non-acid forming, with low potential to generate saline or metalliferous drainage. Leachates showed lithium concentrations were below existing site groundwater concentrations, circum-neutral to slightly alkaline pH, low salinity, and very low solubility of metals and metalloids not expected to represent an environmental risk in engineered storage facilities (MBS, 2025c). The Roebourne region is not considered to be under cumulative pressure from mining development, with no other TSFs in the Ngurin catchment.

Given this, the Proponent does not consider a cumulative impact assessment on landforms is required.

14.7 Environmental Outcomes

The EPA objective for Terrestrial Environmental Quality is *“to maintain the quality of land and soil so that environmental values are protected”*.

Environmental and closure outcomes related to waste rock landforms and tailings storage facilities can be regulated by DMPE under the Mining Act, including the application of the MCP during operations and at closure of the Proposal.

The Proponent considers the EPA’s objective for Terrestrial Environmental Quality can be met with implementation of the mitigation measures outlined in Section 14.5.

No environmental outcomes are proposed for as the Proponent does not consider it a preliminary environmental factor.

15 Offsets

Biodiversity offsets are an offsite action or actions to address significant residual environmental impacts of a Proposal. The following policies have been considered and apply to the proposal:

- WA Environmental Offsets Policy
- EPBC Act Environmental Offsets Policy
- WA Environmental Offsets Guidelines
- Considering Environmental Offsets at a Regional Scale

Through the development of the Proposal, the mitigation hierarchy applied includes:

- Avoid
- Minimise
- Rehabilitate
- Offset

The Proposal is likely to have a significant residual impact on environmental values, after mitigation has been applied. The Proponent will manage offsets primarily through contributions to the Pilbara Environmental Offsets Fund (PEOF). PEOF delivers environmental offset projects in the Pilbara bioregion of WA in partnership with Traditional Owners, conservation agencies, industry and government. It aims to deliver environmental offsets through a strategic landscape-scale approach.

The Proponent will develop an Impact Reconciliation Procedure (IRP) and submit with the ERD. The IRP will detail the reporting requirements and monitoring to determine the biannual contribution to PEOF during the Proposal timeframe.

16 Matters of National Environmental Significance

The Proponent will refer the Proposal to the DCCEEW under the EPBC Act for the potential to have a significant residual impact on MNES. For the EPBC Act referral, the Proposal is referred to as the Proposed Action and is as described in Section 18.1.1.3.

A preliminary assessment of the Proposed Action has been undertaken to determine the MNES that may require assessment. The review is based on surveys and studies undertaken and demonstrates that Threatened species and ecological communities, and Migratory species may be applicable.

Table 16-1: Applicability of the Proposed Action on MNES

MNES	Applicable to the Proposed Action
World Heritage Properties	Not applicable. No world heritage properties are within the DE.
National Heritage Places	Not applicable. No national heritage places are within the DE.
Ramsar Wetlands	Not applicable. No Ramsar wetlands are within the DE.
Threatened species and ecological communities	Applicable. Surveys have recorded the following species listed under the EPBC Act: - Northern Quoll - Pilbara Olive Python - Ghost Bat - Grey Falcon No Threatened flora species or ecological communities have been recorded.
Migratory species	Applicable. Migratory species have been recorded during surveys and suitable habitat is present.
Commonwealth marine areas	Not applicable. No Commonwealth marine areas are within the DE.
The Great Barrier Reef Marine Park	Not applicable. The Great Barrier Reef is not in the vicinity of the Proposed Action.
Nuclear Actions.	Not applicable. The Proposed Action does not trigger a nuclear action.
A water resource, in relation to coal seam gas development and large coal mining development.	Not applicable. The Proposed Action does not include a coal seam gas development of large mining development.

At the time of this EP Act referral, a referral had been submitted to DCCEEW (2026/10499) as to determine whether the Proposal is considered a Controlled Action. An assessment by DCCEEW is currently underway.

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18 Appendices

Appendix A. Legislative Context

18.1.1.1 Environmental Protection Act 1986 Part IV

Part IV of the EP Act provides for the referral and environmental impact assessment of Proposals that are likely to have a significant impact on the environment. Proposals can be referred by the proponent, a Decision-Making Authority (DMA) or any other person aware of the Proposal. In this instance, Azure is referring the Proposal as the Proponent. The referral process is managed by the Department of Water and Environmental Regulation (DWER) EPA Services unit, with the Chairman of the EPA responsible for determining the outcome of referrals.

Assessment of referred significant Proposals is undertaken in accordance with the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (EPA, 2021a) and the *Environmental Impact Assessment Procedures Manual (Part IV Divisions 1 and 2)* (EPA, 2024).

The 'Statement of Environmental Principles, Factors, Objectives and Aims of EIA' (EPA, 2023a) provides guidance on the various matters that can be considered when assessing whether a Proposal's impact on the environment is likely to be significant. All Proposals are assessed on a case-by-case basis, taking into consideration the EPA's objectives for each environmental factor. Factors relating to Land, Water, Air and People are discussed for the Proposal in Table 18-1.

Table 18-1: Proposal Applicable factors relating to Land, Water, Air and People

Key Environmental Factor	EPA Objective	Applicable Environmental Values
Flora and Vegetation	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.	Priority Ecological Communities: • Roebourne Chenopod Association (P1). • Horseflat Land System (P3) surveyed extensively in the southern tenements, with small areas in the proposed mining area. Priority flora species: • <i>Trianthema</i> sp. Python Pool (G.R Guerin & M.E. Trudgen GG 1023 (P2) • <i>Dolichocarpa</i> sp. Hamersley Station (A.A Mitchell PRP 1479) (P3) • <i>Euphorbia inappendiculata</i> var. <i>inappendiculate</i> (P3)

Key Environmental Factor	EPA Objective	Applicable Environmental Values
		• <i>Euphorbia inappendiculate</i> var. <i>queenslandica</i> (P3) • <i>Neptunia longipila</i> (P3) • <i>Vigna triodiophila</i> (P3) • <i>Rhynchosia bungarensis</i> (P4)
Landforms	To maintain the variety and integrity of distinctive physical landforms so that environmental values are protected.	• Landform assessment has been completed. Three broad landform groups determined within the DE. • All three landform groups were not considered to be of significance in terms of variety and scientific importance
Subterranean Fauna	To protect subterranean fauna so that biological diversity and ecological integrity are maintained.	Surveys have identified the presence of subterranean fauna; • Stygofauna – a substantial community with new species has been recorded in the survey area (which includes regional areas). • Troglifaunal – a depauperate community.
Terrestrial Environmental Quality	To maintain the quality of land and soils so that environmental values are protected.	Studies for Lithium deposit indicate: • Waste characterisation of waste rock from TA3 indicated material is non-acid forming (NAF) and presents a low risk of metalliferous or saline drainage.
Terrestrial Fauna	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.	Conservation significant fauna species recorded within the DE include: • Northern Quoll (Endangered) • Pilbara Olive Python (Vulnerable) • Ghost Bat (Vulnerable) • Grey Falcon (Vulnerable) • Fork-tailed Swift (Migratory)

Key Environmental Factor	EPA Objective	Applicable Environmental Values
		- Western Pebble-mound Mouse (P4) - Lined Soil-crevice Skink (P4) Conservation significant fauna species not recorded at the site however considered possible to occur include: - Northern Short-tailed Mouse (P4) - Eastern Osprey (Migratory) - Peregrine Falcon (OS)
Inland Waters	To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.	Dewatering of groundwater from the open pit void. Potential impact as a result of drawdown to identified GDVs along the Ngurin. Surface water management features are also proposed, presenting the potential to alter natural surface water and groundwater regimes.
Air Quality	To maintain air quality and minimise emissions so that environmental values are protected.	- Drill cutting waste contains asbestiform fibres. - Proximity of mine activities to Roebourne and Aboriginal communities. - Dust baseline monitoring commenced, with further work underway for fibrous mineral content and distribution modelling.
Greenhouse Gas Emissions	To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable.	The Proposal will be managed under the Safeguard Mechanism. - GHG Scope 1 emissions to exceed 100,000 t CO₂-e per financial year (Safeguard Mechanism threshold). - GHG Scope 2 emissions to exceed 100,000 t CO₂-e per annum (WA EPA threshold).
Social Surroundings	To protect social surroundings from significant harm.	Numerous sites of Aboriginal cultural value identified both within and surrounding the DE.

Key Environmental Factor	EPA Objective	Applicable Environmental Values
		- Close proximity to Aboriginal communities Cheeditha and Mingullatharndo - Close proximity to the community of Roebourne

The Administrative Agreement between DMIRS and DWER (2024) establishes a framework for referral of Mining Proposals and specifies trigger criteria for DMIRS to seek pre-referral consultation with DWER. Criteria in the Administrative Agreement and their applicability to the Proposal are shown in Table 18-2.

In addition to the Administrative Agreement, the Statement of Environmental Principles, Factors, Objectives and Aims of EIA (EPA, 2023a) is used as a guide for assessing whether a Proposal's impact on the environment is acceptable. Relevant factors are described and assessed in Section 5 to 12.

Table 18-2: Administrative Agreement Criteria and Applicability to the Proposal

Criteria	Applicability to the Proposal
Environmentally Sensitive Areas including: - Within 500 m of World Heritage Property. - Within 500 m of a Bush Forever site. - Within 500 m of a Threatened Ecological Community. - Within 500 m of defined wetlands (as defined in Environmental Protection (Environmentally Sensitive Areas) Notice 2005). - Within 50 m of an area containing rare flora. - Any area covered by an Environmental Protection Policy.	Not Applicable
Within 500 m of a declared/proposed State Conservation Estate, including National Park, Nature Reserve, Conservation Park, or State Forest and Timber Reserves.	Not Applicable
Within a Public Drinking Water Source Area.	Not Applicable
Within two (2) kilometres of a declared occupied town site (for Mining Proposals and petroleum Environment Plans only).	Not Applicable
Hydraulic fracture stimulation exploration and production / development activities.	Not Applicable
Any area previously or currently subject to formal assessment by the EPA.	Not Applicable

18.1.1.2 Environment Protection and Biodiversity Conservation Act 1999

Matters of National Environmental Significance (MNES) are protected by the Australian Government's central piece of environmental legislation, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The EPBC Act applies to nine MNES:

- World Heritage Properties.
- National Heritage Places.
- Wetlands of international importance.
- Nationally threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mining).
- A water resource, in relation to coal seam gas development and large coal mining development.

Desktop and field studies conducted for the Proposal have identified MNES, as summarised in Table 18-3. Initial field studies of the Lithium deposit and potential groundwater abstraction areas have recorded fauna species listed as Threatened under the EPBC Act. A referral can be made by a proposal proponent or a Commonwealth, state or territory government, or agency that is aware of a Proposal.

Table 18-3: MNES Applicable to the Project

Matters of National Environmental Significance	Applicability to the Proposal
World Heritage Properties	Not Applicable. No world heritage properties will be impacted by the Proposed Action.
National heritage areas	Not Applicable. No National heritage areas will be impacted by the Proposed Action.
Wetlands of International Importance (Ramsar)	Not Applicable. No Ramsar wetlands will be impacted by the Proposed Action.
Listed Threatened species and Ecological Communities	Applicable. A Protected Matters Search Tool (PMST) identified threatened fauna species potentially occurring with the Proposed Action Area. Threatened fauna species recorded within the Survey Area for the Proposal – • Northern Quoll (<i>Dasyurus hallucatus</i>) – Recorded both within and outside of the DE. • Pilbara Olive Python (<i>Liasis olivaceus barroni</i>) – One direct observation within the DE recorded during Biologic 2023 survey (Biologic, 2024c) • Ghost Bat (<i>Macroderma gigas</i>) – Recorded during all surveys for the Proposal both within and outside of the DE. • Grey Falcon (<i>Falco hypoleucos</i>) – Recorded both within and outside of the DE.

Matters of National Environmental Significance	Applicability to the Proposal
	No TECs have been identified near the Proposed Action Area. No threatened flora species occur in or near Proposed Action Area.
Migratory species	Yes. The Proposed Action Area does not intersect an area listed on the Ramsar Convention, in which Australia has entered into international agreements to protect the breeding and summer grounds of migratory birds. However, the PMST showed migratory species with potential to occur within the DE. Fifteen (15) species have the potential to occur in the Proposal DE due to the close proximity to the coastline. One migratory species has been recorded during field surveys to date: - Fork-tailed Swift (<i>Apus pacificus</i>) The following species is deemed to possibly occur/suitable habitat occurs in the Proposal DE: - Eastern Osprey (<i>Pandon haliaetus</i>)
Commonwealth Marine Areas	Not Applicable. The Proposed Action Area is not in a Commonwealth marine area.
The Great Barrier Reef Marine Park	Not Applicable. The Proposed Action Area will not impact the Great Barrier Reef Marine Park.
Nuclear Actions (including uranium mines)	Not Applicable. The Proposed Action is not a uranium mine and will not generate radioactive mine wastes.
A water resource, in relation to coal seam gas development and large coal mining development	Not Applicable. The Proposed Action is not a coal mine or coal seam gas development.

18.1.1.3 EPBC Referral

At the time of this EP Act referral, a referral had been submitted to DCCEEW as to assess whether the Proposal constitutes an action that is likely to have a significant impact on a MNES (2026/10499). If DCCEEW concludes that this is the case and the commonwealth minister for the Environment and Water concludes, then the Proposal will be classified as a Controlled Action and an assessment and approval under the EPBC Act is required. If the opposite conclusion is reached, the Proposal will not be a controlled action and an EPBC Act approval is not required.

18.1.1.4 Other State Approvals and Regulation

Provisions in the EP Act (Section 44 (2AA)) allow the EPA and the Minister for Environment to consider other statutory decision-making processes that may mitigate environmental impacts and ensure that environmental factor objectives are met.

Interim EPA guidance (EPA, 2021b) outlines aspects that the EPA will consider when assessing whether an alternative Decision-Making Authority (DMA) can effectively mitigate the environmental impacts of a Proposal. These are:

- The ability of the DMA to consider the impact of the Proposal.
- The process that the DMA uses to assess the potential impacts of the activity on the environment.
- The relevant considerations which the DMA can take into account in decision making.
- The conditions that may be applied as a result of the decision-making process.
- Likely outcomes.

Other legislation and its applicability to environmental factors is described in Table 18-4. Descriptions of DMAs relevant to the Proposal and an analysis against the interim guidance follow in Sections 18.1.1.4 to 18.1.1.7. In the sections of this document that address each environmental factor, where another legislative instrument is applicable, this is specified for each impact identified.

Table 18-4: Assessment of Legislation

Decision-Making Authority	Legislation or Agreement Regulating the Activity	Proposal Element and Approval Required	Does statutory decision-making process mitigate impacts on the environment?
DMPE	<i>Mining Act 1978</i>	• Proposal will proceed under Mining Act Tenure. All disturbance and infrastructure require an approved Mining Development and Closure Proposal and Mine Closure Plan. • Tenement conditions will specify an inspection schedule for the Tailings Storage facility (TSF) by a certified tailings engineer.	Yes – Mitigates potential impacts to: • Inland Waters. • Flora and Vegetation. • Terrestrial Fauna. • Subterranean Flora. • Terrestrial Environmental Quality. • Social Surroundings. • Air Quality.
DMPE – Native Vegetation Branch	<i>Environmental Protection Act 1986, Part V, Division 2 – Clearing of Native Vegetation</i>	• Clearing of native vegetation on mining tenements. • A Native Vegetation Clearing permit (NVCP) is issued following an assessment of the Proposal against the	Yes – Mitigates potential impacts to: • Flora and vegetation. • Terrestrial Fauna.

Decision-Making Authority	Legislation or Agreement Regulating the Activity	Proposal Element and Approval Required	Does statutory decision-making process mitigate impacts on the environment?
		State's 10 clearing principles.	
DWER -Industry Licencing Branch	<i>Environmental Protection Act 1986, Part V, Division 3 – Licences and Works Approvals</i>	Works Approvals and Environmental Licences are required to construct, commission, and operate. Likely Prescribed Premises categories to be sought in a Works Approval and Environmental Licence include the following: • Category 5: Processing plant and TSF. • Category 12: Screening of materials. • Category 52: Electric power generation. • Category 54: Sewage facility • Category 57: Used tyre storage (general) • Category 64: Landfill facilities (and/or Category 65: Secure Landfill site) • Category 73: Bulk storage of chemicals Works Approvals and Environmental Licences regulate emissions and discharges and also set general conditions for chemical storage, housekeeping, noise and dust inside a prescribed premises boundary.	Yes – Mitigates potential impacts to: • Inland Waters. • Flora and Vegetation. • Terrestrial Fauna. • Subterranean Flora. • Terrestrial Environmental Quality. • Social Surroundings. • Air Quality.
DWER – Water Branch	<i>Rights in Water and Irrigation Act 1914</i>	A 26D Licence to construct bores and 5C Licence to abstract groundwater is required for mine dewatering. Licence conditions set a maximum discharge limit and will likely require the implementation of a Groundwater operating strategy and monitoring requirements.	Yes – Mitigates impacts to: • Inland Waters • Subterranean Fauna.

Decision-Making Authority	Legislation or Agreement Regulating the Activity	Proposal Element and Approval Required	Does statutory decision-making process mitigate impacts on the environment?
DPLH	<i>Aboriginal Heritage Act 1972 and Aboriginal Cultural Heritage Act 2021</i>	Impacts to Aboriginal cultural heritage	Yes - Mitigates impacts to: Social Surroundings

18.1.1.5 Mining Act Approvals and Regulation

The Proposal will proceed on mining tenure and requires parallel approval and regulation under the Mining Act. DMPE and the WA minister for Mines are responsible for the implementation of the Mining Act.

DMPE is guided by its Environmental Objectives Policy for Mining (DMPE, 2025c), according to this policy, the principal objective for environmental regulation is:

"Resource industry activities are designed, operated, closed, decommissioned and rehabilitated in an ecologically sustainable manner, consistent with agreed environmental outcomes and post-mining land-uses without unacceptable liability to the State."

The policy lists DMPE's key environmental objectives for the key environmental factors that are relevant to mining activities. In a similar manner to the EPA, DMPE considers the impacts of a Proposal against these objectives, which are shown alongside relevant EPA environmental factors in Table 18-5. An analysis of DMPE's assessment against the EPA's interim DMA guidance is provided in Table 18-6.

Table 18-5: DMPE Key Environmental Objectives

Factor	Objective	EPA Equivalent Environmental factor
Flora, vegetation and fauna	To protect flora and vegetation, subterranean fauna and terrestrial fauna so that biological diversity and ecological integrity are maintained.	• Flora and Vegetation • Terrestrial Fauna • Subterranean Fauna
Inland waters	To maintain the hydrological regimes, quality and quantity of groundwater and surface water so that environmental values are protected.	• Inland Waters • Social Surroundings
Terrestrial environmental quality	To maintain the quality of land and soils so that environmental values are protected.	• Landforms • Terrestrial Environmental Quality • Air Quality • Social Surroundings
Rehabilitation and mine closure	Mining activities are rehabilitated and closed in a manner to make them physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/noncontaminating, and capable of sustaining a post mining land use, with consideration for cultural values and without unacceptable liability to the State.	• Social Surroundings • Human health • Flora and Vegetation • Terrestrial Fauna • Subterranean Fauna • Inland Waters • Landforms • Terrestrial Environmental Quality

Table 18-6: DMPE Assessment of Proposals with reference to EPA's Interim DMA Guidance

Aspect	Description
The ability of the DMA to consider the impact of the proposal	The Proponent must submit a Mining Development and Closure Proposal (MDCP) and Mine Closure Plan (MCP) to DMPE which must be assessed and approved prior to commencement of mining operations.
The process that the DMA uses to assess the potential impacts of the activity on the environment	DMPE assesses each Proposal on a case-by-case basis and must ensure that each application complies with statutory guidance. The assessment considers all elements and activities with an Environmental Group Site (the mining tenements that make up the operation). Mining tenement applications may be objected to by members of the public. Although members of the public may not comment or appeal a MDCP or MCP, statutory guidance requires stakeholder consultation to be undertaken prior to approval submission and DMPE will consider this aspect during assessment. DMPE has administrative agreements with other DMAs (including the EPA) that detail the circumstances where DMPE will refer an application or seek advice.
The relevant considerations which the DMA can take into account in decision making	Statutory guidance for MDCPs (DMPE, 2025b) and MCPs (DMPE, 2025a) give DMPE a broad mandate to assess the environmental impacts of a Proposal and ensure that it meets the Environmental Objectives Policy for Mining. The MDCP considers the impacts associated with construction and operation and the MCP considers the long-term impacts associated with closure, relinquishment of the tenement and the return to an acceptable post-mining land-use. Proponents must: • Characterise and describe the existing environment. • Describe the Proposal including key elements. • Present an environmental risk assessment that considers all potential environmental risk pathways and appropriate mitigation and monitoring measures. • Set environmental outcomes, performance criteria and monitoring requirements. A MCP must provide baseline data, obtained through field surveys, to understand the pre-existing assemblages, diversity, conditions and ecological function of flora, fauna (including SREs and subterranean fauna) and ecosystem(s). Adequate materials characterisation, hydrological and hydrogeological assessment is required, and sufficient data must be provided to enable DMPE to undertake an appropriately informed risk assessment. Surveys must be undertaken, and data collected in accordance with the relevant EPA technical guidance. DMPE can condition a Proposal to provide ecological offsets through its delegated authority to determine applications for Native Vegetation Clearing Permits. The WA Offset Policy (The Government of Western Australia, 2011) also states that offsets can be considered when determining MPs.

Aspect	Description
The conditions that may be applied as a result of the decision-making process	The Proponent makes environmental commitments in the MDCP and MCP that will be agreed by DMPE. Once an MCP is approved a standard condition will be applied to the mining lease that will require the leaseholder to: • Implement the Proposal in accordance with the MDCP and MCP The Environmental Offsets Policy (The Government of Western Australia, 2011) includes a provision for environmental offsets associated with MCPs. • Monitoring - This includes demonstration of compliance with approval conditions as well as monitoring results. • Resubmit a revised MCP every three years. Progress towards addressing closure gaps must be demonstrated in each revision. DMPE may also apply non-standard tenement conditions for specific environmental measures. DMPE will assess compliance on an ongoing basis via the AER mechanism; periodic site inspections; and in response to any environmental incidents. Adaptive management measures can be applied through the triennial updating of the MCP. In the event of poor environmental performance, DMPE may request that the leaseholder lodge performance bonds and in extreme cases withdraw the mining tenement.
Likely Outcome	DMPE's assessment will focus on all environmental risks, with a particular focus on the management of mine wastes, the stability of landforms, and the formation of post-mining pit lakes. The assessment will also consider noise and dust impacts as well as impacts to terrestrial and subterranean fauna; flora and vegetation; and inland waters. DMPE will only approve a Proposal once it is satisfied that it can be designed, operated, closed, decommissioned and rehabilitated in an ecologically sustainable manner.
Conclusion	Factor objectives for Flora and Vegetation, Terrestrial Fauna, Subterranean Fauna, Terrestrial Environmental Quality and Landforms can be met via regulation under the Mining Act. Along with regulation under Part V of the EP Act, Mining Act regulation will ensure that factor objectives for Social Surroundings and Air Quality are met.

18.1.1.6 DWER Part V – Division of Approvals and Regulation

DWER is responsible for Part V, Division 3 of the EP Act which regulates emissions and discharges to the environment. DWER also has responsibility for enforcement of several regulations which it considers during assessment. These include:

- *Environmental Protection Regulation (1987).*
- *Environmental Protection (unauthorised discharge) Regulations 2004.*
- *Environmental Protection (Noise) Regulations 2004.*
- *Environmental Protection (Controlled Waste) Regulation 2004.*
- *Environmental Protection (NEPM-NPI) Regulations 1998.*

- *Environmental Protection (Concrete Batching and Cement Product Manufacturing) Regulations* 1998.
- *Environmental Protection (Abrasive Blasting) Regulation* 1998.
- *Clean Air (Determination of Air Impurities in Gases Discharged to the Atmosphere) Regulations* 1983.
- *Environmental Protection (Clearing of Native Vegetation) Regulation* 2004.
- *Environmental Protection (rural Landfill) Regulations* 2002.

DWER will assess a Proposal in accordance with the following guidance:

- Guideline: Regulatory Principles (DWER, 2020c).
- Guideline: Industry Regulation Guide to Licencing (DWER, 2019b).
- Guideline: Risk Assessments (DWER, 2020d)
- Procedure: Prescribed Premises Works Approvals and Licences (DWER, 2024).

The objectives and principles of the EP Act (see Section 4) apply to DWER and the EPA. DWER's Regulatory Principles (DWER, 2020c) comprise:

- **Risk-based regulation:** The department will regulate to ensure there is not an unacceptable risk of harm to public health or the environment.
- **Evidence-based decision-making:** The department will use the information it already has and ask applicants to provide any technical and general information it needs to support its assessment of the risks of the proposed activity and to conduct its regulatory functions.
- **Application of Environmental Standards:** The department will establish Environmental Standards that set out what levels of environment performance it requires for certain regulated activities. It will base these on the hierarchy of preventing, controlling abating and mitigating pollution and environmental harm.
- **Appropriate conditions:** The department will issue licences and approvals with conditions to prevent an unacceptable risk of harm to public health or the environment. Conditions will be justifiable, clear and enforceable.
- **Fair and equitable decision-making and transparency:** The department will consider all responses to public advertisements and results of consultation on licensing and approval applications and decisions.
- **Competitive neutrality:** The department will administer environmental regulation to minimise unnecessary competitive distortion between industry participants. Note that applicants' technology, process and site selection may require different levels of environmental performance.

The relevance of DWER regulation of the EPA's environmental factor objectives is discussed in Table 18-7.

Table 18-7: DWER Part V Assessment of Proposals with Reference to EPA's interim DMA Guidance

Aspect	Description
The ability of the DMA to consider the impact of the proposal?	A proponent must apply for an Environmental Licence and Works Approval for emissions and discharges to the environment that exceed thresholds in Schedule 1 of the <i>Environmental Protection Regulation 1987</i>. For this Proposal, infrastructure requiring approval includes: • Processing Plant and TSF. • Screening of materials. • Sewage facility • Landfill facilities. • Bulk storage of chemicals • Used tyre storage (general) • Electric power generation The approvals are required regardless of whether the EPA chooses to assess the Proposal.
The process that the DMA uses to assess the potential impacts of the activity on the environment.	The principles and objectives in the EP Act (See Section 4) apply to DWER and the EPA. DWER takes a risk-based approach to ensure that a Proposal does not pose an unacceptable risk to the environment (described above). DWER considers each application on a case-by-case basis, based on the types of emissions; receiving environment; exposure pathways and sensitive receptors. All Works Approval and Licence applications are advertised, and the public may object and appeal. DWER will consider all feedback from the public. Once infrastructure has been constructed, a proponent must submit a construction report to DWER that demonstrates that construction is in accordance with approval conditions. A commissioning report may also be requested by DWER.
The relevant considerations which the DMA can take into account in decision making?	DWER takes risk-based approach to assessing approval applications and setting conditions. DWER's risk assessment is formally captured in a decision document appended to the Works Approval or Licence. DWER will consider each discharge and its potential impact on the receiving environment. For example, DWER will consider the quality and quantity of water to discharge to the Turner River and set conditions to ensure that risks to the river are mitigated. The decision document addresses each identified risk associated with emissions from the Proposal and justifies the conditions set or if no condition is required for that emission.
The conditions that may be applied as a result of the decision-making process	DWER has the authority to set enforceable conditions on Works Approvals and Licences. These will set: • The volumes of waste that can be discharged. • Limits and targets for the levels of pollutants in discharges. • Monitoring requirements.

Aspect	Description
	• Mandatory cleaning up of spills. • Requirements for storing hydrocarbons and chemicals. • Freeboard requirements for the TSF and certain process water ponds. • Bunding requirements for wet processing units. • Inspection requirements for the TSF; tailings; and return water pipelines. • Commissioning requirements. Standard conditions will also set regular compliance reporting and annual environmental reporting requirements. DWER has the authority to enter Prescribed Premises and assess compliance via annual reporting; incident reporting; and site inspections. In the event of non-compliance or environmental harm DWER has the authority to issue Environmental Protection Notices of Closure Notices to proponents that contain conditions to rectify environmental harm. DWER may also levy financial penalties or, in the case of serious environmental harm, prosecute offenders.
Likely Outcome	DWER will effectively regulate the following environmental impacts associated with the Proposal under Part V of the EP Act: • Construction and operation of the Processing facilities and TSF (Flora and Vegetation, Terrestrial Fauna, Subterranean Fauna, Inland Waters; Terrestrial Environmental Quality). • Spill of hydrocarbons, chemical and tailings (Flora and Vegetation, Terrestrial Fauna, Subterranean Fauna Inland Waters and Terrestrial Environmental Quality). • Dust emissions (Flora and Vegetation, Air Quality and Social surrounding). • Noise (Social Surroundings). • DWER will only grant a Works Approval or Environmental Licence if it is satisfied that there is not an acceptable risk of harm to public health of the environment.
Conclusion	Regulation by DWER will ensure that environmental factor objectives are not compromised due to emissions and discharges from the Proposal.

18.1.1.7 Rights in Water and Irrigation 1914 (RIWI Act)

DWER is responsible for the regulation of groundwater abstraction under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The processes DWER follows to assess Groundwater Licence applications in proclaimed areas are detailed in:

- Operational policy no. 5.12 – Hydrogeological reporting associated with a groundwater well licence (DoW, 2009).

The relevance of DWER regulation to interim EPA guidance on DMA is discussed in Table 18-8.

Table 18-8: DWER RIWI Assessment with Reference to EPA's Interim DMA Guidance

Aspect	Description
The ability of the DMA to consider the impact of the proposal?	Abstraction of groundwater in the Pilbara requires a 5C Licence under the RIWI act. DWER has the authority to consider potential impacts to the environment and other groundwater users when assessing a Groundwater Licence application.
The process that the DMA uses to assess the potential impacts of the activity on the environment.	DWER will set a level of hydrogeological assessment based on consideration of the following factors: • Existing groundwater users. • Proposed volume of abstraction. • The presence of groundwater dependent ecosystems (GDEs) or other environmental receptors.
The relevant considerations which the DMA can take into account in decision making?	DWER will consider the following when assessing the Proponent's Groundwater Licence application: • Modelled drawdown and draw up zones. • Chemical analyses of groundwater. • Potential impacts to environmental receptors. • Other groundwater users. • The current level of allocation in the region. • Existing salinity.
The conditions that may be applied as a result of the decision-making process.	Groundwater Licences are issued with enforceable conditions. These typically include: • Annual abstraction volumes. • The purposes for which water may be abstracted. • A requirement to prepare and implement Groundwater Operating Strategy. This is also assessed and approved by DWER and details how water will be abstracted; and what potential environmental impacts are and monitoring requirements. • Reporting requirements.
Likely Outcome	DWER will effectively regulate impacts associated with the abstraction of groundwater through a Groundwater Licence and Groundwater Operating Strategy.
Conclusion	Regulation by DWER will ensure that environmental factor objectives are not compromised due to groundwater abstraction.

Appendix B. Andover Lithium Baseline Hydrology Study Final Report

Appendix C. Andover Lithium – Hydrogeological Assessment

Appendix D. Andover Project Detailed Flora and Vegetation Survey

Appendix E. Andover Detailed Vertebrate Fauna Report

Appendix F. Andover Lithium Project Greenhouse Gas Assessment Technical Report