



ELECTROSTATE MALINDA PTY LTD

YINNETHARRA LITHIUM PROJECT | S38 REFERRAL SUPPORTING INFORMATION

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EXECUTIVE SUMMARY

Introduction

Electrostate Malinda Pty Ltd (ESM), a 100% owned subsidiary of Delta Lithium Limited (DLI), proposes to develop and operate the Yinnetharra Lithium Project (the Project). The Project is a greenfield lithium mining and processing operation located in the Gascoyne Region of Western Australia. The Project includes open cut pits, and underground mining, on-site processing to produce spodumene concentrate, waste rock and tailings storage, and supporting facilities.

The Project will mine at a nominal rate of 9 million tonnes per annum (Mtpa) of material to process 2 Mtpa of ore over a period of up to 11 years. Ore will be processed on site to produce spodumene concentrate. Across the life of mine, the Project is expected to produce approximately 1 million tonnes of spodumene concentrate.

Tailings solids are expected to be generated at a maximum rate of 2 Mtpa and will be transferred via pipeline to a HDPE-lined tailings storage cell located within the Integrated Waste Landform (IWL). The HDPE liner is to maximise water recovery, rather than minimise seepage, with supernatant returned to the processing plant for re-use.

The total volume of tailings expected to be generated over the life of the Project is 14.3 Mm³.

The Development Envelope covers 3,753 ha, with an Indicative Disturbance Footprint of 1,612 ha.

This document supports ESM's referral under Section 38 of the *Environmental Protection Act 1986*, providing detailed environmental impact assessment, predicted outcomes, and proposed mitigation measures.

The Project is located 125 km northeast of the nearest town of Gascoyne Junction, wholly within the Shire of Upper Gascoyne Local Government Area. The Development Envelope is within Mt Phillip pastoral station and Yinnetharra pastoral station. Contemporary land use in the area is predominantly pastoral grazing.

The Project Development Envelope overlies land of the Yinggarda People (represented by the Yinggarda Aboriginal Corporation) and the Burringurrah/Milly Wajarri Yamaji People (represented by the Wajarri Yamaji Aboriginal Corporation RNTBC). Consultation with Native Title holders and baseline surveys of the Project area have identified that cultural and heritage values exist in the area. ESM recognises that cultural and heritage factors will be important considerations in Project design and implementation and has implemented 'exclusion zones' to ensure mitigation and avoidance to these culturally significant sites. Ongoing consultation with the Traditional Owners continues to inform design and management commitments.

The Project will initially target the lithium deposit via open cut pits, followed by the development of underground mining areas. The underground orebody extends from approximately 140 m to 500 m below surface and will be accessed via a boxcut portal located north of the open pit. Establishment of mining infrastructure and related support infrastructure will result in disturbance of up to 1,612 ha within a 3,753 ha disturbance envelope. Although no threatened flora species or vegetation types have been identified within the Project Development Envelope, a number of priority flora species have been recorded. Some groundwater dependent vegetation types exist in the general Project locality, although no direct impacts on groundwater dependent vegetation have been identified.

Three vulnerable fauna species were identified as having the potential to occur in the Project locality. All are classified as 'Vulnerable' under the *Biodiversity Conservation Act 2016*. Targeted field surveys, as well as desktop studies, were carried out for all three species. The baseline studies found no evidence of Yinnietharra Rock-dragons (*Ctenophorus yinnietharra*)- or of habitat suitable for the species – within the Project Development Envelope. It is unlikely that Project implementation would result in significant adverse impacts to the Yinnietharra Rock-dragon.

The second 'Vulnerable' species – the Grey Falcon (*Falco hypoleucos*) – has never been observed within the Project Development Envelope. The nearest sightings of the species were recorded approximately 60 km north-east of the Project Development Envelope. The Grey Falcon is most likely to inhabit the timbered country in stony plains, shrublands (especially Acacia), grasslands (i.e. spinifex and tussock), and wooded areas of arid/semi-arid regions. The species is commonly recorded in drainage lines, along watercourses, or anywhere where there is permanent water throughout arid and semi-arid regions of Western Australia. The birds nest in tall trees on watercourses and occasionally on man-made structures such as transmission line towers. There is no evidence to suggest that an important population (or any population) of Grey Falcons is present in the Project Development Envelope and the habitats that would be impacted by Project implementation do not offer critical habitat for the survival of the species. Significant adverse impacts to Grey Falcons are unlikely.

Targeted surveys using both visual and acoustic observation methods detected Southern Whiteface (*Aphelocephala leucopsis*) both inside and outside the Project Development Envelope. The species' preferred foraging habitat comprises Mulga shrublands/woodlands with an understory of shrubs, or lower Acacia shrubland, and drainage creeks/rivers. The birds prefer habitats in close proximity (but not in) denser vegetation habitats. These areas are often near drainage lines, rather than in open habitats, and ground cover (small grasses and leaf litter) likely influences their habitat selection because of the available foraging resources. For breeding, Southern Whiteface require access to hollows or holes, for example in forked limbs, spouts, stumps, fallen trees, under loose sheets of bark or even in fence posts or clefts in rocks. The species does not display long-term

fidelity to nesting sites. The studies concluded that while parts of the Project Development Envelope offer suitable habitat for the Southern Whiteface and it is likely that some birds are breeding in the Project locality, Project implementation is unlikely to result in a significant negative impact on the local population, providing controls are put in place to prevent disturbance of active nest sites.

No permanent watercourses are intersected by proposed Project infrastructure, and the Indicative Disturbance Footprint generally avoids drainage lines and floodplain areas. Baseline surface hydrology studies have concluded that Project implementation would result in only minor changes in peak flows, flow volumes, flood depths and velocities.

Electricity for the Project will be supplied by on-site power generation. The Project base case is to install a diesel power plant within the Development Envelope. However, ESM will minimise direct greenhouse gas emissions where feasible, such as utilising renewable energy. During early stages of project implementation (construction year and Years 1 through Years 4), there is potential for greenhouse emissions to exceed 100,000 tCO₂-e/year (assuming diesel-only power generation).

Summary of Potential Impacts, Proposed Mitigation and Outcomes

The environmental values that the Project may impact on are flora and vegetation, terrestrial fauna, inland waters, social surroundings (Aboriginal Heritage), and greenhouse gas emissions.

The Project has been designed to avoid and minimise significant environmental impacts where possible. The environmental impacts will be further minimised and managed under secondary environmental approval processes through the *Mining Act 1978*, *Environmental Protection Act 1986 (Part V)*, *Rights in Water and Irrigation Act 1914* and *Aboriginal Heritage Act 1972*. The Project can be implemented in accordance with the EPA environmental principles and objectives for protection of the environment.

No conservation estate or DBCA “land of interest” occurs within 10 km of the Development Envelope. No nationally important wetlands, Ramsar wetlands, legislated lands and waters, or regional parks were identified within the same buffer distance of the Project. Overall, implementation of the Project is unlikely to give rise to significant adverse impacts on any Matter of National Environmental Significance (MNES).

None of the impacts to environmental values are considered significant to require assessment under Section 38 of the EP Act, and impacts can be managed through secondary approval processes.

Acronym Table

Acronym	Term
AEP	Annual Exceedance Probability
ARU	Autonomous Recording Unit
BC Act	Biodiversity Conservation Act 2016
BoM	Bureau of Meteorology
DBCA	Department of Biodiversity, Conservation and Attractions
DIDO	Drive-In Drive-Out
DLI	Delta Lithium Limited
DMPE	Department of Mines, Petroleum and Exploration
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	Environmental Protection Act 1986
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESM	Electrostate Malinda Pty Ltd
FIFO	Fly-In Fly-Out
GDV	Groundwater Dependent Vegetation
GHG	Greenhouse Gas
GL/a	Gigalitres per annum
HDPE	High-Density Polyethylene
IBRA	Interim Biogeographic Regionalisation for Australia
IWL	Integrated Waste Landform
MDCP	Mining Development and Closure Proposal
MCP	Mine Closure Plan
MNES	Matters of National Environmental Significance
Mtpa	Million tonnes per annum
NAF	Non-Acid Forming
NGERS	National Greenhouse and Energy Reporting Scheme
PAF	Potentially Acid Forming
PEC	Priority Ecological Community
PPA	Power Purchase Agreement
ROM	Run-of-Mine
SRE	Short-Range Endemic
TEC	Threatened Ecological Community
tCO ₂ -e	tonnes of carbon dioxide equivalent

Acronym	Term
TSF	Tailings Storage Facility
WRL	Waste Rock Landform

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1 INTRODUCTION

1.1 Purpose and Scope

This document has been prepared to support an Environmental Referral of the proposed Yinnetharra Lithium Project (the Project) under Section 38 of the *Environmental Protection Act 1986* (EP Act). This information will be considered by the Environmental Protection Authority (EPA) in deciding whether to assess the Project under Part IV of the EP Act. This Supporting Document supplements the Referral Form and provides more detailed information about the potential environmental impacts of the Project. This Supporting Document has been prepared in accordance with the *Instructions: Referral of a Project under Section 38 of the Environmental Protection Act 1986* (EPA, 2024b).

The information presented in this document describes proposed mining and processing activities but does not include discussion of minor or preliminary works that are excluded from the Project referral. The referral (and this supporting information document) specifically exclude:

- Exploration activities and associated disturbance, including water exploration, core yard and exploration camp¹.
- Activities associated with the use of existing port facilities.
- Minor works (such as geotechnical or hydrological investigations) required as part of further project definition and detailed design.

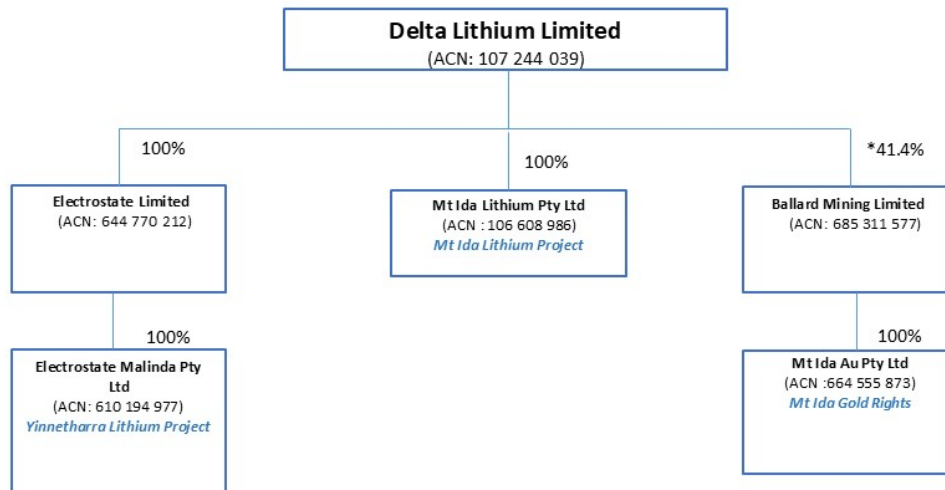
Transport of processed material from the Project to the port facility is also excluded from the referral, except to the extent that product transport may contribute to the Project's greenhouse gas emissions (refer additional information in Section 10).

1.2 Proponent Details

Electrostate Malinda Pty Ltd (Electrostate or ESM) is a 100% subsidiary of Delta Lithium Limited (Delta or DLI). Electrostate is the Proponent of the Yinnetharra Lithium Project. The Company structure is provided in Figure 1-1.

¹ This includes any activities that may be approved under a Programme of Work approval under Mining Act 1986; and for avoidance of doubt may include: existing, ongoing and future exploration activities and support infrastructure; resource definition drilling; ongoing testwork, geotechnical and geophysical assessments, water monitoring and management trials/activities; Heritage, environmental and geotechnical surveys; and any associated rehabilitation

Delta Lithium Limited
(ASX: DLI) ABN: 67 107 244 039
TFN: 823 320 698



* Note: Ballard Mining Ltd is not a subsidiary, but an Equity Accounted Associate per AASB 128 Investments in Associates and Joint Ventures.

Figure 1-1: Delta Lithium Limited Company Structure

All compliance and regulatory requirements regarding this supporting information document and the associated referral should be forwarded by email, post or courier to the following address:

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Title: Environment & Sustainability Manager

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Phone: 08 6109 0104

2 PROJECT DESCRIPTION

2.1 Overview

Electrostate Malinda Pty Ltd (ESM) proposes to develop and operate the Yinnetharra Lithium Project (the Project), located within the Gascoyne Region, approximately 125 km northeast of the town of Gascoyne Junction and 250 km northeast of Carnarvon, Western Australia (WA) (Figure 2-1). Access to the Project site is via the Carnarvon Mullewa Road and Cobra-Dairy Creek Road via Gascoyne Junction.

The Project proposed by ESM is a greenfield operation comprising mining lithium ore and processing of the ore by crushing, milling, and flotation. Project implementation will require the establishment and operation of key activities and infrastructure elements.

The Project features several key activities and infrastructure elements, including:

- Mining and related processing activities to produce spodumene concentrate from both open-pit and underground mining areas.
- Processing facilities, including Run-of-Mine (ROM), processing plant, waste rock landform, integrated waste landform, water storage dams, offices and ablutions.
- Supporting infrastructure, including accommodation facilities, airstrip, linear infrastructure, power & water supply infrastructure.
- Vegetation clearing and infrastructure construction associated with the establishment of the Project.
- Abstraction of water (mine dewatering) for safe mining operations and construction of borefield for the purpose of water supply.

Summary descriptions of key project attributes and operational / physical elements are provided in Table 2-1 and Table 2-2.

The Project life is anticipated to be 11 years.

The Project will occur on mining Lease M09/185 and M09/186 (both pending), as shown in Figure 2-2.

More details about the Project are provided in the subsequent sections.

Table 2-1: Summary of the Project












Project Title	Yinnetharra Lithium Project
Proponent Name	Electrostate Malinda Pty Ltd (ESM)
Short Description	<p>Electrostate Malinda Pty Ltd (ESM) proposes to develop and operate the Yinnetharra Lithium Project (the Project), located within the Gascoyne Region, approximately 125 km northeast of the town of Gascoyne Junction and 250 km northeast of Carnarvon, Western Australia (WA). Access to the Project site is via the Carnarvon Mullewa Road and Cobra-Dairy Creek Road via Gascoyne Junction.</p> <p>ESM is seeking to mine and process lithium ore to produce a spodumene concentrate, with an annual production rate of 2 Mtpa over a period of up to 11 years.</p> <p>The Project includes open cut pits, underground mining areas, a waste rock landform, an integrated waste landform, a processing plant, a run-of-mine (ROM) pad and ancillary infrastructure to supporting mining activities, including water storage dams, a borefield and associated pipework, infrastructure corridors, an accommodation village and an airstrip.</p>

Table 2-2: Location and Proposed Extent of Physical and Operational Elements

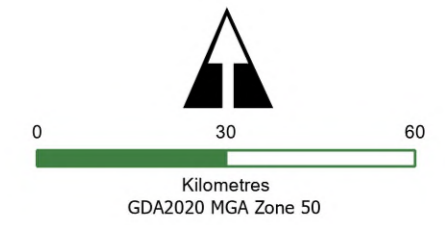
Element	Location	Proposed Extent
Physical Elements		
Mine, processing and associated infrastructure	Figure 2-2	Clearing of up to 1,612 ha of native vegetation within a 3,753 ha Development Envelope.
Operational Elements		
Groundwater abstraction for water supply and mine dewatering	Figure 2-3	Abstraction of up to 3 gegalitres per annum (GL/a)
Process waste (tailings)	Figure 2-3	Disposal of no more than 2 Mtpa of tailings into the Integrated Waste Landform.
Waste Rock	Figure 2-3	Approximately 85 Mt of waste rock will be stored in the waste rock landform and used as construction material for the Integrated Waste Landform over the life of the Project.

For the purpose of this referral, the Development Envelope represents the maximum area within which all Project-related activities may occur over the life of mine. The Development Envelope covers approximately 3,753 ha. The Indicative Disturbance Footprint is a subset of the Development Envelope and represents planned ground disturbance area, being up to 1,612 ha. The proposed Development Envelope and Indicative Disturbance Footprint are shown in Figure 2-2.

Delta Lithium
Figure 2-1:
Project Regional Location

-  Towns
-  Homestead Site
-  Development Envelope
- Roads**
-  CARNARVON MULLEWA ROAD
-  COBRA DAIRY CREEK ROAD
-  Minor Road
-  Principal Road
- Crown Reserves**
-  CONSERVATION OF FLORA AND FAUNA
-  NATIONAL PARK
- Pastoral Station**
-  MT PHILLIP
-  YINNETHARRA

Data sources
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 Base image: Google Earth.Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, USGS

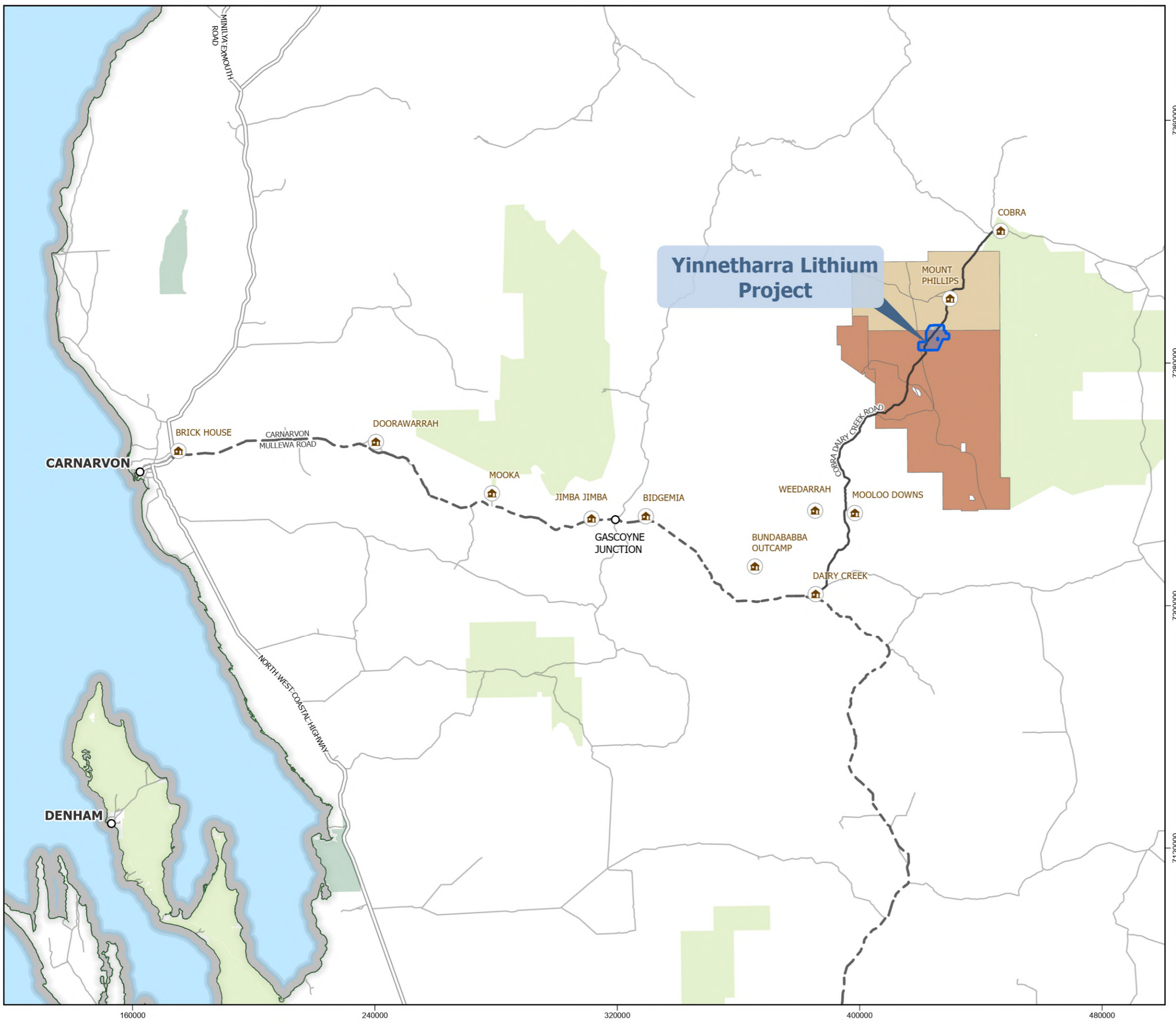


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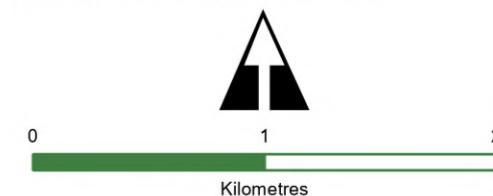


Delta Lithium

Figure 2-2:
Proposed Project Development Envelope and
Indicative Disturbance Footprint

-  Roads
-  Indicative Disturbance Footprint
-  Development Envelope
-  Exclusion Zone
- Tenements**
-  LIVE
-  PENDING

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006); GEODATA TOPO 250K Series 3
 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

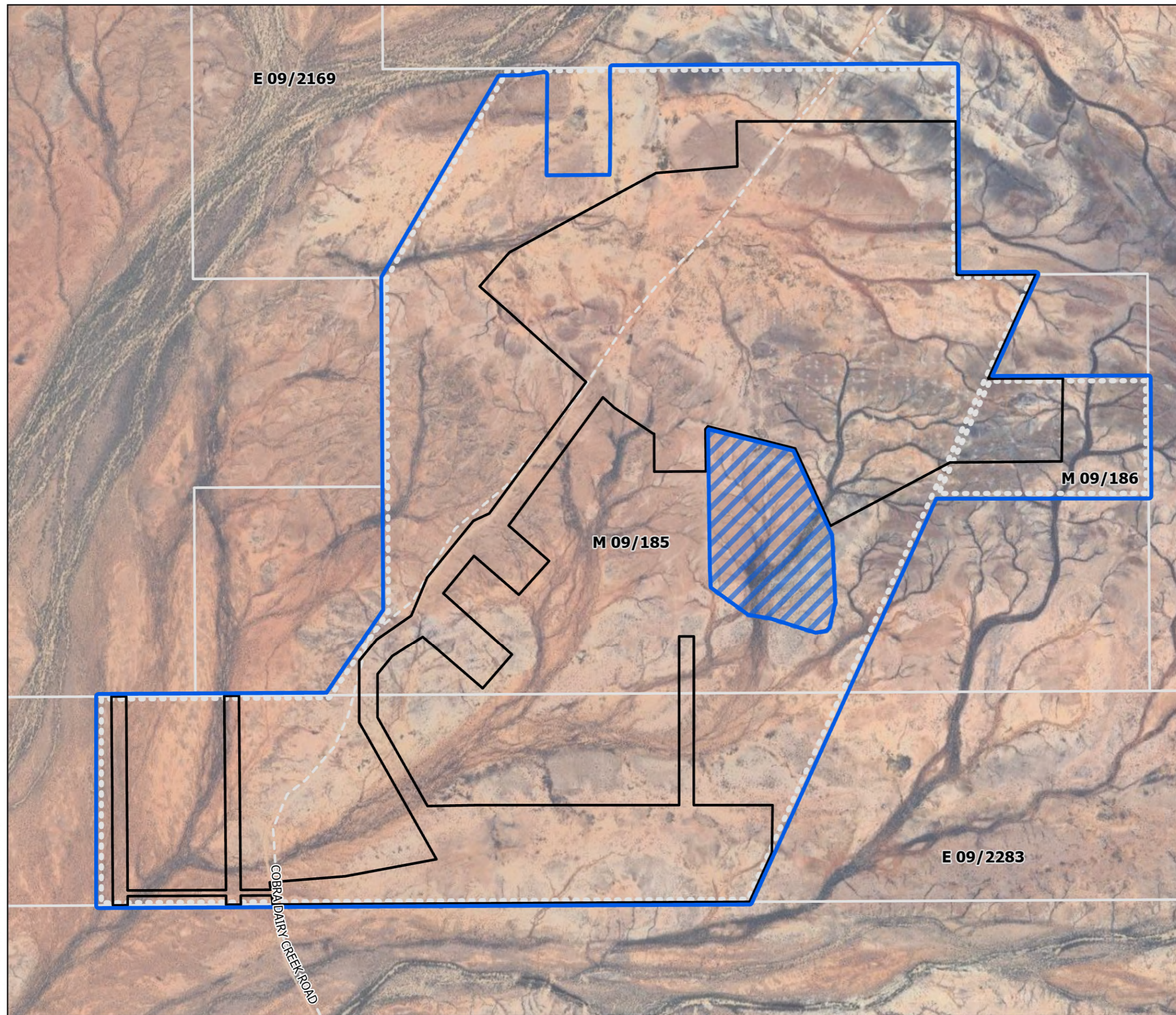


GDA2020 MGA Zone 50
 Date: 31/03/2026 Rev: A
 Project: 240010
 Author: K. Fok; Drawn: A Reay
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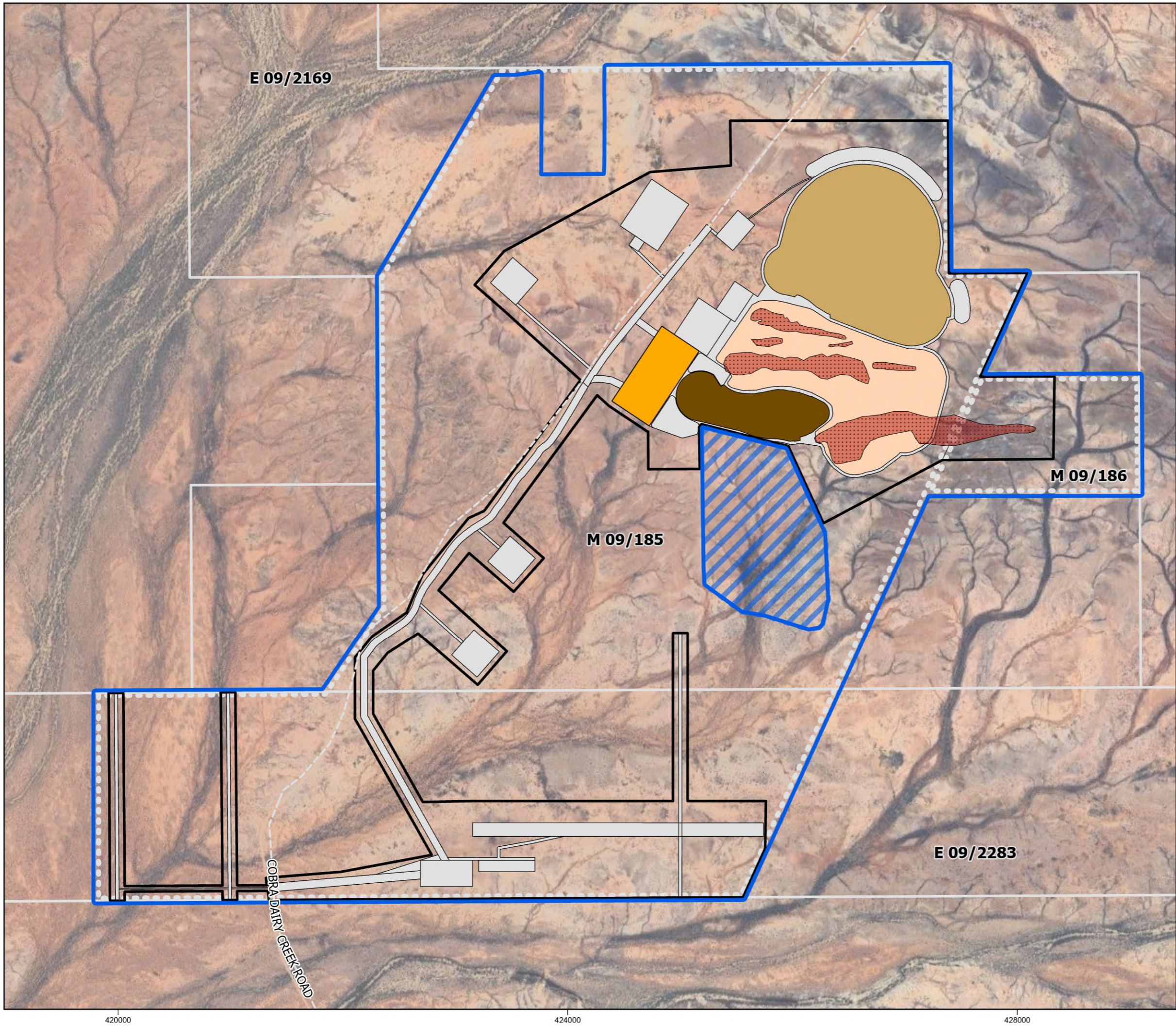
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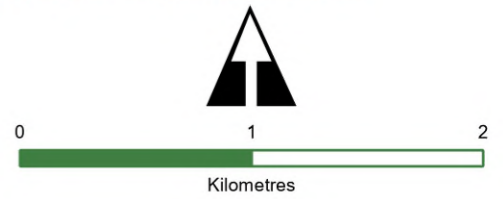
Delta Lithium

Figure 2-3:
Proposed Indicative Disturbance
Footprint and Indicative Site Layout



- Minor Road
- ▭ Indicative Disturbance Footprint
- ▭ Development Envelope
- ▨ Exclusion Zone
- Tenements**
- ▭ LIVE
- ▭ PENDING
- Indicative Site Layout**
- ▭ Pit(s)
- ▭ Processing plant site
- ▭ Waste rock landform
- ▭ Integrated waste landform
- ▨ Underground Mining
- ▭ Supporting Infrastructure

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006); GEODATA TOPO 250K Series 3
 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



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2.2 Mining Operations

The Project is located within a 2,315 km² tenement package, wholly owned by DLI or held through Farm-in-Joint Ventures agreements. Starting in 2022, exploration drilling identified a viable resource at the Malinda prospect. The lithium mineralisation, primarily hosted in spodumene, is situated within tenement pending tenements M09/185 and M09/186² (Figure 2-2). A revised mineral resource estimate of 21.9 Mt at 1% Li₂O (0.5% Li₂O cutoff) was announced in March 2025, and additional resources were announced in January 2026. Exploration drilling, both within the Development Envelope as well as regionally, is ongoing. Further details of Mining Leases associated with the Project are provided in Section 2.6.2.

The Project will initially target the lithium deposit via open cut pits, followed by the development of underground workings (Figure 2-3). The underground orebody extends from approximately 140 m to 500 m below surface and will be accessed via a boxcut portal located north of the open pit (Figure 2-3). A twin-decline system will connect the surface to the upper underground mining areas. All underground infrastructure is positioned in the footwall of the deposit, providing permanent access to the underground workings.

The Project will mine at a nominal rate of 9 million tonnes per annum (Mtpa). Ore processing will occur up to a nominal rate of 2 Mtpa over a period of up to 11 years across the life of mine. The Project is expected to produce approximately 1 million tonnes of spodumene concentrate over the life of mine.

2.3 Processing

Ore will be processed on-site to produce spodumene concentrate. Ore will be fed into a three-stage crushing circuit to produce an ore with a top size of 10 mm. Crushed ore is then fed through a 'wet' plant to further reduce the ore particle size such that it is amenable to flotation. This is achieved using a closed-circuit ball mill with a hydro-cyclone cluster classifying the mill product stream.

Flotation target size (or smaller) material is passed through a series of magnetic separators to remove grinding media and paramagnetic iron bearing minerals, respectively. The non-magnetic lithium-containing material is deslimed prior to flotation to remove ultrafine, 'slimes' material.

Mica pre-flotation precedes spodumene flotation. This pre-flotation stage removes gangue minerals (muscovite and other micas) from the flotation feed. The mica concentrates report to the final tails, together with the magnetic tailings and slimes. This material is then thickened and pumped to the Integrated Waste Landform (IWL).

² Note that these pending tenements currently overlie E09/2169

The spodumene flotation concentrate is thickened, filtered and stockpiled prior to transport offsite.

The indicative process flowsheet is provided in Figure 2-4.

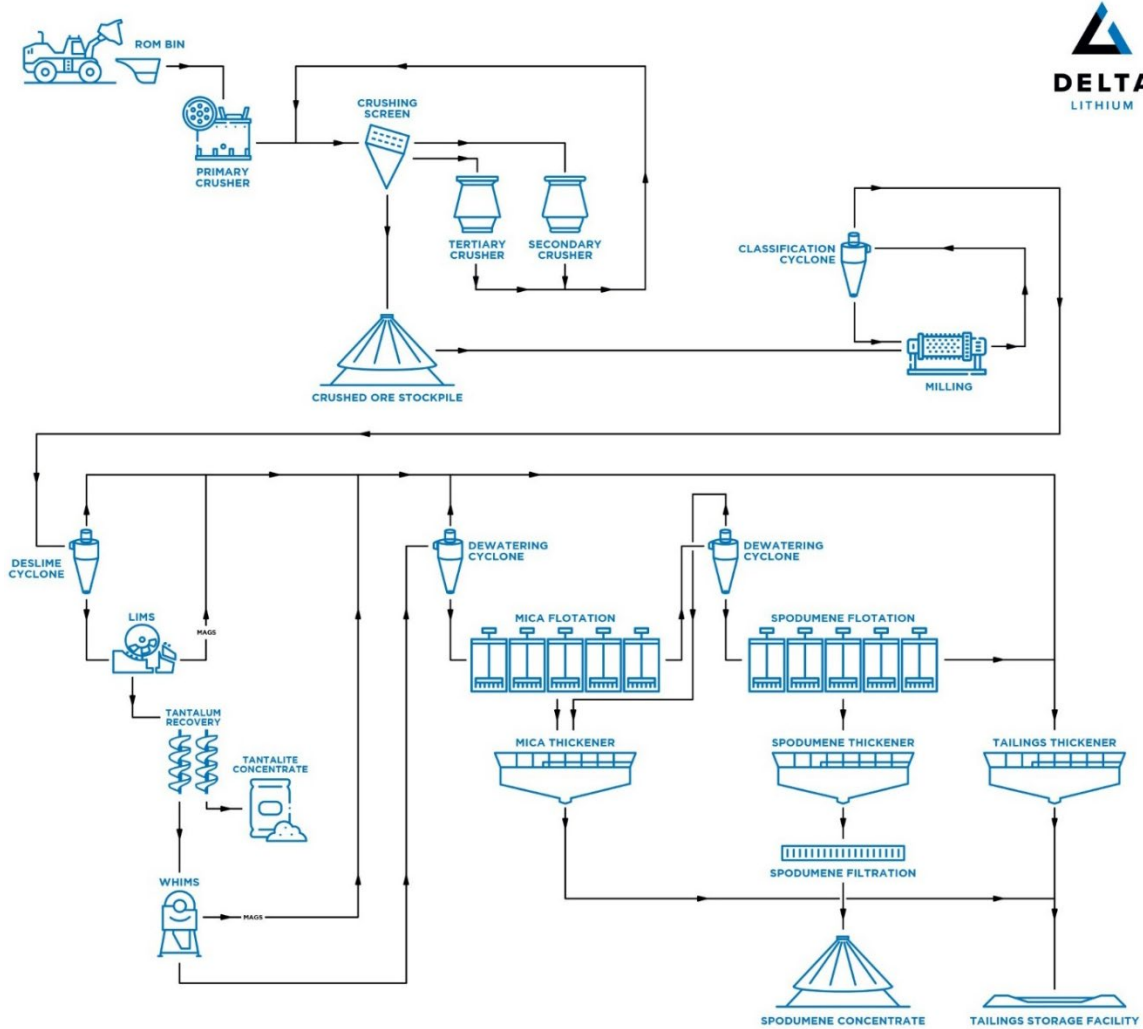


Figure 2-4: Block Flow Diagram – Whole of Ore Flotation Flowsheet

The spodumene concentrate product will be road hauled via Cobra Dairy Creek Road and Carnarvon Mullewa Road to port facilities (likely Geraldton) for shipment. Activities associated with the haulage (i.e. transport of processed material from the Project to the Port) and export of the spodumene concentrate will be managed through relevant regulatory processes, and do not form part of this referral.

2.4 Mineral Waste Management

Two categories of mineral waste will be generated, being the waste rock and tailings. Waste rock comprises fresh chlorite schist and fresh amphibolite waste. The majority of waste rock has been characterised as non-acid forming (NAF). Further details of waste characterisation are provided in Section 4.1.

Two waste landforms will be constructed under this Project: a waste rock landform (WRL) and an Integrated Waste Landform (IWL). The locations of these landforms are shown in Figure 2-3.

Waste rock will be stored in the WRL and the IWL, as shown in Figure 2-3. Initially, waste rock will be prioritised for the construction of the tailings storage area, located centrally within the IWL (Figure 2-5 and Figure 2-6). The indicative final height of the WRL and IWL is 23 m and 26m above ground level, respectively (Table 2-3).

Table 2-3: Preliminary Design Details for WRL and IWL

Parameter	Waste Rock Landform	Integrated Waste Landform
Indicative final height (m)	23	26
Capacity (Mm ³)	11.52	14.3
Embankment Batter angle (degrees)	15-17	15-17

Tailing solids are expected to be generated at a maximum rate of 2 Mtpa. Tailings slurry will be transferred via pipeline from the processing plant to a tailing's storage cell in the IWL. Water recovery and return water from the TSF will be reused within the processing plant. The tailings storage cell will be lined with a HDPE liner to minimise water loss and maximise water return to the processing plant.

The total volume of tailings expected to be generated over the life of the Project is 14.3 Mm³ (CMW Geosciences, 2024).

The design concept of the IWL is a waste rock dump built around a central tailings storage cell (Figure 2-6). The IWL design has been selected to minimise the total disturbance footprint for the Project (CMW Geosciences, 2024). The IWL will be constructed in stages with an indicative final height will be 26 m (Table 2-3).

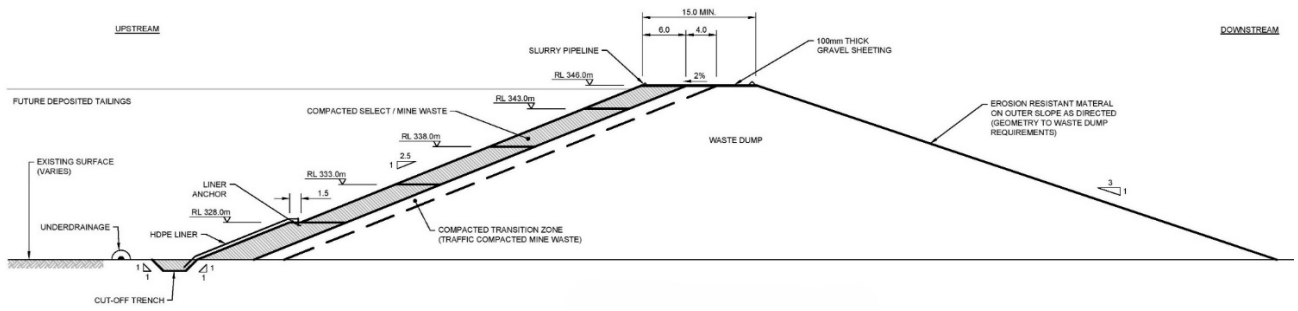
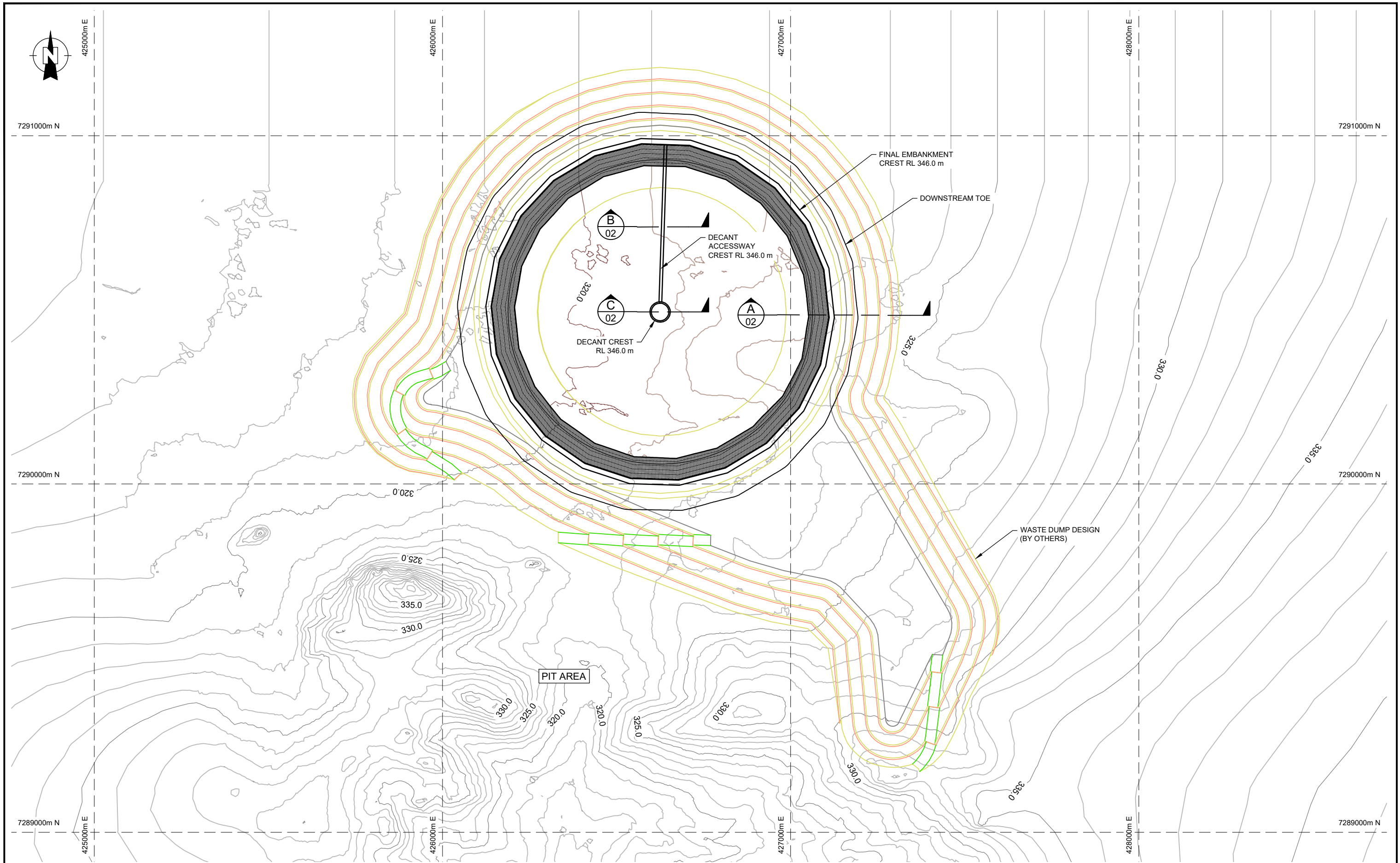
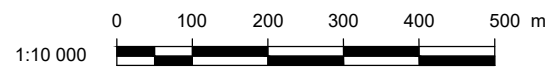


Figure 2-5: Tailings Storage Embankment – Conceptual Cross Section of IWL (CMW Geosciences, 2024)



NOTES:

- COORDINATE SYSTEM: MGA ZONE 50, GDA94



CLIENT:	ELECTROSTATE MALINDA PTY LTD	DRAWN:	DE	PROJECT:	PER2024-0108
PROJECT:	TSF SCOPING STUDY YINNETHARRA LITHIUM PROJECT	CHECKED:	CH	DRAWING:	01
TITLE:	PLAN	REVISION:	A	SCALE:	1:10,000
		DATE:	28.05.24	SHEET:	A3 L

2.5 Ancillary Infrastructure

2.5.1 Power Supply

The Project is expected to require an energy supply with a cumulative maximum demand of approximately 20.4 MW, and an average demand of 15 MW. ESM proposes to use a hybrid power solution combining diesel and solar energy to ensure reliable and sustainable operations. Power will be provided under a Power Purchase Agreement (PPA) with an Independent Power Producer.

ESM has completed an initial greenhouse gas (GHG) emissions assessment, adopting a conservative scenario that assumes 100% of power is supplied by a diesel power plant. Further details of GHG emissions are provided in Section 10.

2.5.2 Water Supply

Water required for processing and other operational requirements will be sourced from a proposed borefield located within the Development Envelope (Figure 2-3).

During operations, the Project is expected to require up to 3 GL/a of water for ore processing and other ancillary uses. ESM proposes to prioritise water abstraction from the Gascoyne tributary paleochannel aquifer, utilising approximately 15 to 20 production bores, each with an estimated yield of up to 10 L/s. The borefield will be supplemented through dewatering the pits. Water efficiency measures have been incorporated into the design; this includes the lining of the TSF to maximise water return, and the use of recycled water for dust suppression.

2.5.3 Accommodation Village

An accommodation village will be constructed approximately 4.5 km south of the main mining area, as shown in Figure 2-3. The accommodation village will be sized to accommodate up to 250 personnel. Workforce will predominantly Fly-In Fly-Out (FIFO) from Perth, with some personnel utilising Drive-in Drive-out (DIDO) from Carnarvon or Gascoyne Junction.

2.5.4 Other Mine Infrastructure

Additional infrastructure to support the Project may include administration buildings, workshops, fuel storage (diesel), hardstand and laydown areas, airstrip, an explosives magazine and landfill facilities.

2.6 Regional and Local Context

2.6.1 Community and Land Use Context

The Project is in a relatively remote part of the Gascoyne region of WA, located approximately 125 km northeast of the nearest town of Gascoyne Junction and lies wholly within the Shire of Upper Gascoyne Local Government Area. Access to the Project site is via the Carnarvon Mullewa Road and Cobra-Dairy Creek Road out of Gascoyne Junction (Figure 2-1).

The current land use in the Development Envelope is predominantly pastoral stations (cattle grazing). The Development Envelope overlies the Mt Phillip pastoral station and Yinnetharra pastoral stations (Figure 2-1).

No 'lands of interest', which includes Crown and freehold land in which the Department of Biodiversity, Conservation and Attractions (DBCA) has an interest in for future conservation purposes, was identified within 10 km of the Project (DBCA, 2025b).

No nationally important wetlands, Ramsar wetlands, legislated lands and waters, or regional parks were identified within the same buffer distance of the Project (DBCA, 2025a, 2025c, 2025d).

2.6.2 Tenure and Land Access

The Project will be developed on mining leases M09/185 and M09/186. Tenement details are provided in Table 2-4 below. At the time of submission of this referral, these tenements were pending grant by DMPE.

Table 2-4: Tenement Details

Tenement ID	Holder	Status	Date received	Area (ha)
M 09/185	Electrostate Malinda Pty Ltd	Pending	15/10/2024	3,806
M 09/186	Electrostate Malinda Pty Ltd	Pending	17/03/2026	172

The Project lies within the determined Native Title Claim area of the Yinggarda People (WCD2019/016), managed by the Yinggarda Aboriginal Corporation (YAC), and lands of the Burringurrah/Milly Milly Wajarri Yamaji People (WCD2017/007), managed by the Wajarri Yamaji Aboriginal Corporation RNTBC.

ESM have commenced negotiations for a Native Title Land Agreement (NTLA) for the development and operation of the lithium mine, with both Native Title groups.

M 09/185 lies wholly within Yingardda native title area, whilst M 09/186 lies with the Burringurrah/Milly Milly Wajarri Yamaji native title area lands (Figure 9-1).

No surface disturbance is expected within the Wajarri Yamaji country. Notwithstanding this, engagement with Wajarri Yamaji people will be continued as part of the general stakeholder engagement.

ESM has consulted with YAC, the Prescribed Body Corporate (PBC) representing the Yinggarda Traditional Owners / Common Law holders. The outcomes of this consultation have been incorporated into the basis of design and implementation of the Project. This includes the identification of an exclusion zone in the middle of the Development Envelope, as shown in Figure 2-3.

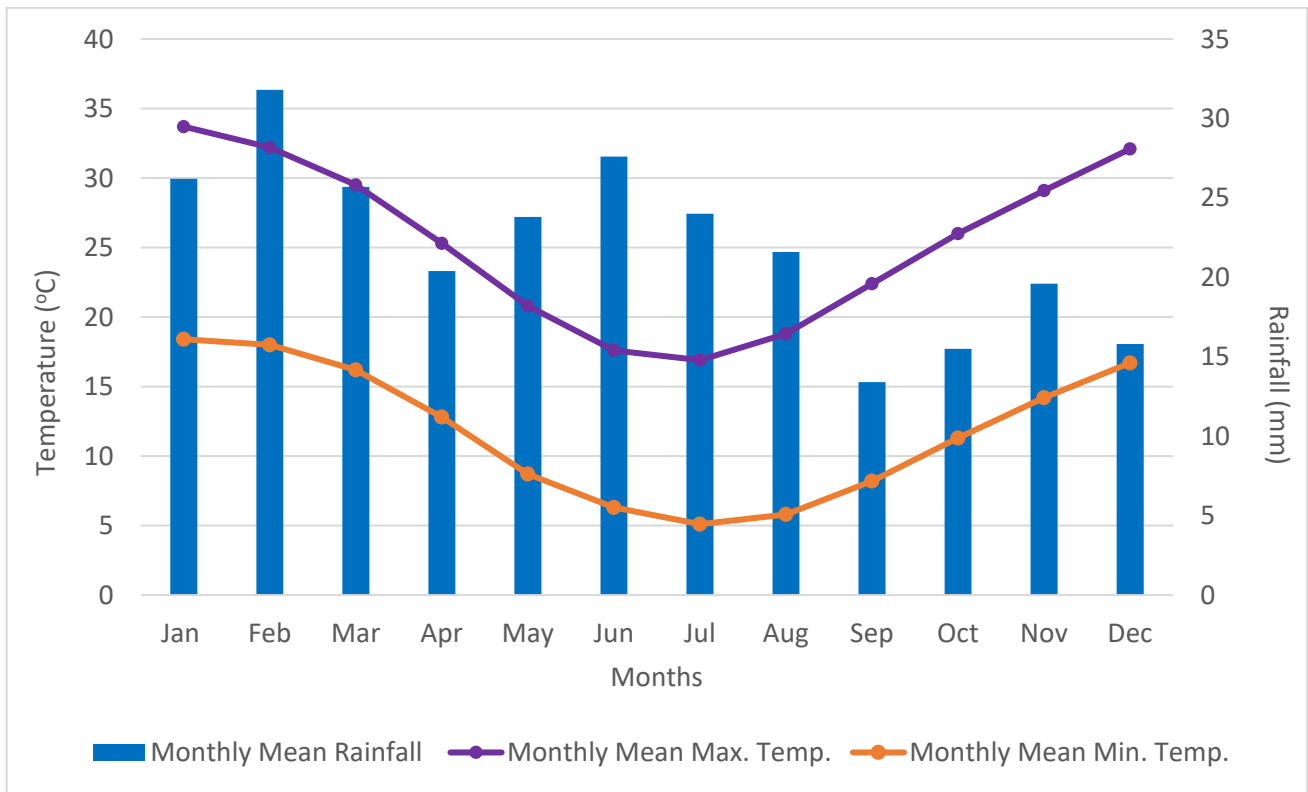
ESM and YAC have committed to continuing to work together to minimise the Project impacts on the heritage values of the Gascoyne region. Where impacts are unavoidable, these will be assessed and managed in accordance with the NTLA, a cultural heritage management plan (to be developed) and relevant legislation (i.e. *Aboriginal Heritage Act 1972*). A summary of stakeholder engagement to date – including engagement with the Yinggarda People, the Wajarri Yamaji People and their respective representative bodies corporate, is provided in Section 2.7.

2.6.3 Climate

The closest active Bureau of Meteorology (BoM) weather station to the Project is located at Gascoyne Junction (Site Number 006022), approximately 125 km west-southwest from the Project. The current climate of Gascoyne Junction is described as hot dry summers and mild winters (BoM, 2025a). Mean annual rainfall and temperature data from Gascoyne Junction weather station are presented in Graph 2-1.

The Gascoyne Junction weather station records a mean monthly maximum temperature ranging from 40.7°C in January to 23.0°C in July, and a mean monthly minimum temperature ranging from 24.4°C in February to 9.3°C in July (BoM, 2025c) (Graph 2-1). Mean annual rainfall in this region is 210 mm, ranging between a maximum average monthly rainfall of 31.1 mm in June and a minimum of 2.9 mm in September (BoM, 2025c) (Graph 2-1)³.

³ Rainfall averages at Gascoyne Junction are for the period from 1907 to 2025.



Graph 2-1: Climate Summary for Gascoyne Junction (006022) (BoM, 2025c)

Climate records for Gascoyne Junction indicate the regional prevailing wind direction in the morning is from west to east. Afternoon winds are more variable (i.e. east to west in summer, and west to east in winter) (BoM, 2025c).

Future climate change projections have been sourced from the Climate Change in Australia website (CSIRO, 2025) for the Rangeland South region. Future climate for the region is projected with high confidence to include the following changes:

- Average temperatures increase in all seasons, including more hot days and warm spells.
- Winter rainfall decreases but increased intensity of extreme rainfall events.
- Harsher fire weather climate.
- A climate in 2030 that is analogous to the current climate of Wiluna and Warburton.

Current and projected future climate has been considered in planning for mining operations, mine rehabilitation and closure. Climate aspects considered in the mine planning and environmental assessment process include prevailing wind direction, high evaporation and low rainfall, and designed for extreme rainfall events.

2.7 Stakeholder Engagement

ESM is undertaking ongoing consultation with a range of stakeholders and interested parties. The Project's key stakeholders are listed in Table 2-5. ESM strives to keep stakeholders informed of developments in the Project planning and will continue to actively consult stakeholders as the Project progresses.

Table 2-5: Key Stakeholders for the Project

Stakeholder Group	Stakeholder	Area of Interest
State Government	DBCA	<ul style="list-style-type: none"> Administers the <i>Biodiversity Conservation Act 2016</i> Flora, fauna conservation
	DMPE	<ul style="list-style-type: none"> Administers the <i>Mining Act, Mining Rehabilitation Fund Act 2012</i> and associated regulations. Mining Development and Closure Proposal, Programs of Work Tenement Conditions Closure and rehabilitation Safety
	Department of Planning, Lands and Heritage (DPLH)	<ul style="list-style-type: none"> Aboriginal heritage Heritage, cultural and archaeological sites
	EPA	<ul style="list-style-type: none"> Environmental impact assessment of the Project
	DWER	<ul style="list-style-type: none"> Administers the EP Act Part V Regulates water use Groundwater quality and quantity
Local Government	Shire of Upper Gascoyne	<ul style="list-style-type: none"> Road Use Regional employment and economic growth
Traditional Owners	Yinggarda People	<ul style="list-style-type: none"> Heritage Protection Employment and business opportunities
	Burringurrah/Milly Wajarri Yamaji People	
Local Landholders	Yinnetharra Station	<ul style="list-style-type: none"> Interaction with pastoral activities
	Mt Phillip Station	<ul style="list-style-type: none"> Post-mine rehabilitation
Other Interested Parties	Main Roads	<ul style="list-style-type: none"> Road Use

3 ENVIRONMENTAL IMPACT ASSESSMENT AND PERMITTING

3.1 EPA Principles

The EPA has identified a set of principles for environmental management (EPA, 2023b). An overview of how these principles have been incorporated in the design of the Project is provided in Table 3-1.

Table 3-1: Principles of Environmental Management at the Yinnetharra Lithium Project

Principle	Application
<p>Precautionary Principle</p> <p>Where there are threats of serious irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</p> <p>In the application of the precautionary principle, decisions should be guided by:</p> <ul style="list-style-type: none"> • Careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and • An assessment of the risk-weighted consequences of various options. 	<p>ESM has conducted baseline studies and associated impact assessments in a manner that supports an informed, risk-based assessment of the Project.</p> <p>Peer review of baseline ecological surveys was undertaken to ensure confidence in quality and extent of survey work.</p> <p>Study areas of ecological surveys encompassed regional extents, consisting of approximately 127,526 ha of areas surveyed, inclusive of the Development Envelope. As such, baseline environment and regional extents of environmental features are well characterised.</p> <p>Additional Targeted Surveys were undertaken for significant fauna species (Yinnietharra Rock-dragon and Southern Whiteface), which were identified as potentially occurring through desktop assessment.</p> <p>ESM has carefully considered the impacts of the Project and taken all practicable steps to avoid impacts.</p>
<p>Intergenerational Equity</p> <p>The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.</p>	<p>ESM commits to managing environmental factors within its control so that future adverse impacts are minimised, and, wherever possible, the quality of the environment is maintained.</p> <p>ESM has committed to working with both Native Title parties to minimise impacts on the heritage values of the region. A cultural heritage management plan is to be developed to identify, protect, and preserve sites and values of cultural significance throughout the Project lifecycle.</p> <p>ESM will rehabilitate the Project at the cessation of mining to a state suitable for existing land uses, or other land uses that may be identified by stakeholders. Closure requirements will be captured in a Mine Closure Plan (MCP) to be approved by DMPE prior to the commencement of operations.</p>
<p>Conservation of Biological Diversity and Ecological Integrity</p> <p>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</p>	<p>Conservation of local biological diversity was incorporated into the design of the Project. The Project design seeks to avoid impacts to significant fauna habitat to the greatest extent practicable.</p> <p>The impact to conservation significant flora and fauna has been minimised and does not present a significant risk to the biodiversity or ecological integrity of the receiving environment. Further details are provided in Section 4.</p>

Principle	Application
<p>Improved Valuation, Pricing and Incentive Mechanisms</p> <ul style="list-style-type: none"> • Environmental factors should be included in the valuation of assets and services. • The polluter pays principle – those who generate pollution and waste should bear the cost of containment, avoidance or abatement. • 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 waste. • 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. 	<p>Environmental management, including qualified site personnel, consultants, ongoing studies and equipment have been incorporated into the Project feasibility costs.</p> <p>ESM will pay fees associated with estimated emissions to the environment through applications for Works Approvals and a prescribed premises licence under Part V of the EP Act (consistent with the polluter pays principle).</p> <p>Fees associated with EP Act referral will also apply.</p> <p>Continuous improvement over the Project lifecycle, including (but not limited to) the implementation of greenhouse gas abatement measures, will provide opportunities for reducing costs and minimising overall impacts to the environment, such as:</p> <ul style="list-style-type: none"> • Enhanced strategies to minimise clearing; Water recycling and reuse via engineering design. • Reducing waste through recycling schemes. • Progressive rehabilitation to restore natural ecosystems and reduce Mining Rehabilitation Fund costs. • Adoption of Environment, Social and Governance (ESG) principles and policies, and • Implementation of renewable energy and / or technology to reduce GHG emissions intensity.
<p>Waste Minimisation</p> <p>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</p>	<p>Waste generated on site will be segregated and reused or recycled where possible.</p> <p>Tailings will be contained within IWL, constructed using waste rock material extracted from the open pits.</p>

3.2 Regulatory Framework

Table 3-2 provides a summary of the statutory approvals that are likely to be required or amended prior to the Project being implemented.

Table 3-2: List of Environmental and Safety Approvals Required for the Project

Administering authority	Legislation or Agreement regulating the activity	Approval required (and specific Project element the approval is related to)
Department of Climate Change, Energy, the Environment and Water	<i>Environmental Protection and Biodiversity Act 1999</i> (EPBC Act)	A self-assessment has been completed and concluded the Project development does not result in significant adverse impacts to Matters of National Environmental Significance. Assessment and permitting under the EPBC Act is not required.
Department of Mines, Petroleum and Exploration (DMPE)	<i>Mining Act 1978</i>	Grant of tenure (mining lease) to allow mining activities.
	<i>Mining Act 1978</i>	MDCP and MCP – authorises the construction, operation and closure of key mine activities and associated supporting activities for the Project.
	<i>Dangerous Goods Safety Act 2004</i>	Dangerous Goods Licence – for the storage and use of explosives for mining operations and the storage of fuel required for mechanical equipment and light and heavy vehicles.
Department of Water and Environmental Regulation (DWER)	<i>Rights in Water and Irrigation Act 1914</i>	26D Groundwater Licence – construction or alteration of groundwater bores in the Project (Ref: 076071). 5C Groundwater Licence – abstraction of groundwater for Project water supply and dewatering of open pits or underground mine workings.
	<i>Environmental Protection Act 1986 – Part V</i>	Works approval and prescribed premises licence. Relevant category numbers include: <ul style="list-style-type: none"> • Category 5 – Processing or beneficiation of metallic or non-metallic ore. • Category 6 – Mine dewatering. • Category 52 – Electric power generation. • Category 54 – Sewage facility. • Category 89 Putrescible landfill site.
Department of Planning, Lands and Heritage (DPLH)	<i>Aboriginal Heritage Act 1972</i> (WA)	Section 18 approval(s) – Aboriginal heritage sites have been identified within the Indicative Disturbance Footprint, which will require a Section 18 consent prior to implementation of the Project.
National Native Title Tribunal (NNTT)	<i>National Native Title Act 1993</i> (Commonwealth)	No approval required for Native Title, but NNTT facilitates aspects of the <i>National Native Title Act 1993</i> regime, including administering notifications, mediating

Administering authority	Legislation or Agreement regulating the activity	Approval required (and specific Project element the approval is related to)
		negotiations, and arbitrating Right to Negotiate matters where agreement cannot be reached.
Department of Health (DoH), Shire of Gascoyne	<i>Health Act 1911</i> <i>Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974</i>	Application to construct accommodation facilities and infrastructure

4 IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL FACTORS

4.1 Identification of Key Environmental Factors

The EPA describes key environmental factors in its *Statement of Environmental Principles, Factors, Objectives and Aims of EIA* (EPA, 2023b). A preliminary assessment was undertaken against these factors to identify key environmental impacts that may be relevant to the Project. The purpose of the assessment was to identify key social or environmental risks of Project implementation and to inform the environmental assessment pathway.

The identification and assessment of environmental factors is based on:

- Information collected during baseline surveys undertaken by specialists; and
- Consultation with key stakeholders, including local government and Traditional Owners to identify areas of significance.

Several baseline environmental surveys have been completed within the Development Envelope and surrounding regional areas. Additional targeted surveys and investigative studies were also undertaken where it was determined to be required. Table 4-1 outlines the potential key environmental factors due to the anticipated impacts of the Project.

Table 4-1: Key Environmental Factors for the Yinnetharra Lithium Project

Theme	Factor	Potential localised impact	Residual Significant Impact from the Project	Can be managed under other regulatory process
Sea	Benthic Communities Habitat	N/A	N/A	N/A
	Coastal Processes	N/A	N/A	N/A
	Marine Environmental Quality	N/A	N/A	N/A
	Marine Fauna	N/A	N/A	N/A
Land	Flora and Vegetation	✓	X	Impacts to flora and vegetation can be managed under a native vegetation clearing permit (NVCP).
	Landforms	N/A	N/A	N/A
	Subterranean Fauna	N/A	X	Impacts to subterranean fauna can be managed under a groundwater licence under RIWI Act.

Theme	Factor	Potential localised impact	Residual Significant Impact from the Project	Can be managed under other regulatory process
	Terrestrial Fauna	✓	X	Impacts to terrestrial fauna can be managed under a native vegetation clearing permit (NVCP).
	Terrestrial Environmental Quality	N/A	X	Impacts to terrestrial environmental quality can be managed under MDCP under Mining Act.
Water	Inland Waters	✓	X	Impacts to inland waters can be managed under a prescribed premises licence and groundwater licence under Part V of EP Act and RIWI Act respectively.
Human Health	Social Surrounds	✓	X	Impacts to Aboriginal heritage can be managed under Section 18 of Aboriginal Heritage Act.
	Human Health	N/A	X	Impacts to human health can be managed under a prescribed premises licence under Part V of EP Act.
Air	Air Quality	N/A	X	Impacts to air quality can be managed under a prescribed premises licence under Part V of the EP Act.
	Greenhouse Gas Emissions	✓	X	Impacts to greenhouse gas emissions can be managed under <i>National Greenhouse and Energy Reporting Act 2007</i> .

4.2 Assessment of Environmental Factors

The outcomes of the preliminary assessment of environmental factors relevant to the Project are summarised in Table 4-2.

Further discussions of the relevant environmental factors within the Project area are provided in Section 5 through Section 10 of this document. The assessments include consideration of the potential impacts on each key environmental factor due to Project implementation. The potential for direct impacts, indirect impacts and cumulative impacts was assessed in the context of proposed management actions. The predicted environmental outcomes for each environmental factor take into consideration the state of knowledge about environmental values in the Project locality and the demonstrated effectiveness of actions proposed to avoid or mitigate adverse impacts.

Table 4-2: Summary of Assessment of Preliminary Environmental Factors

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
Sea	Benthic Communities Habitat	-	-	Not applicable, as the Project is not within a coastal environment; no further assessment of these factors is necessary.
	Coastal Processes	-	-	
	Marine Environmental Quality	-	-	
	Marine Fauna	-	-	
Land	Flora and Vegetation	Further information is provided in Section 5	<p><i>Yinnetharra Lithium Project - Detailed Flora and Vegetation Survey</i> (Stantec, 2024c) (Appendix 1)</p>	<p>Stantec completed a detailed flora and vegetation survey of three tenements (E09/2169, E09/2170 and E09/2283) held by the Proponent between 2023 and 2024. Tenements E09/2169 and E09/2283 partially overlap with pending leases M09/185 and M 09/186.</p> <p>The flora survey covered an area of 11,215.3 ha, inclusive of the whole of the Development Envelope. Key results are provided below:</p> <ul style="list-style-type: none"> • 32 vegetation units were mapped in the flora survey area, 22 of which occur within the Development Envelope. • None of the vegetation units represent a Threatened Ecological Community (TEC) or Priority Ecological Community (PEC) under State or Commonwealth legislation. • One vegetation unit contained <i>Eucalyptus camaldulensis</i> which are regarded as indicators for groundwater dependent vegetation (GDV). This vegetation type occupies 363.3 ha (3.2% of the flora survey area). This vegetation unit does not occur within the Development Envelope. • Vegetation condition ranged from ‘Excellent’ to ‘Completely Degraded’, with the majority of the flora survey area (approximately 58.0%) mapped as ‘Excellent’ condition. Of the ‘Excellent’ vegetation, approximately 2,537 ha (37.2% of the mapped ‘Excellent’ condition vegetation) are within the Development Envelope. • No threatened flora species were identified within the flora survey area. • Seven Priority (P) flora species were identified within the flora survey area, comprising two P1 (<i>Acacia curryana</i> and <i>Isotropis forestii</i>), two P2 (<i>Wurmbea fluviatilis</i> and <i>Acacia</i>

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
				<p><i>petricola</i>) one P3 (<i>Sporobolus blakei</i>) and two P4 (<i>Dodonaea amplisemina</i> and <i>Goodenia berringbinensis</i>).</p> <ul style="list-style-type: none"> Of the priority flora species identified, <i>Acacia curryana</i> (P1), <i>Isotropis forestii</i> (P1) and <i>Sporobolus blakei</i> (P3) were recorded within the Development Envelope. <p>Flora and vegetation may be a key environmental factor associated with this referral, however the implementation of the Project is unlikely to result in significant adverse impact and can be appropriately managed under a Native Vegetation Clearing Permit administered under Part V of the EP Act.</p> <p>Further information is provided in Section 5.</p>
	Landforms	N/A	<p><i>Yinnetharra Project - Baseline Soil Assessment</i> (Mine Earth, 2025) (Appendix 2)</p>	<p>There are no unique landforms within the Development Envelope or in proximity to the Development Envelope, and therefore no specific landform studies have been completed. The closest unique landform in the region is Mount Augustus, which is located within Burringurrah National Park (previously named Mount Augustus National Park), approximately 53 km east of the Development Envelope.</p> <p>The Development Envelope is located predominantly within the Durlacher land system (Stony plains, lower tributary drainage plains and low stony rises) and Philips land system (Low hills and undulating uplands on gneiss and quartz).</p> <p>The Project will result in two permanent landforms at closure: the WRL and IWL. These landforms will be reprofiled and revegetated to ensure they blend in with the surrounding natural environment. Relevant stakeholders will be engaged, and regulatory requirements will be complied with for closure planning of landforms that will remain after closure. The assessment of the landforms can be appropriately managed under a MDCP administered under the Mining act.</p> <p>Landforms are not considered to be a key environmental factor associated with this referral.</p>
	Subterranean Fauna	N/A	<p><i>Yinnetharra Lithium Project Subterranean Fauna Study: Malinda Prospect</i> (Bestiolas Consulting, 2024) (Appendix 3)</p>	<p>A three-phase subterranean fauna survey was completed between June 2023 and March 2024 for the project.</p> <p>A preliminary desktop assessment did not identify any significant subterranean fauna values within a 100 km radius of the Development Envelope. One P1 stygofauna PEC (The Gifford Creek, Mangaroon, Wanna calcrete groundwater assemblage type) is located approximately 30 km north of the Development Envelope and unlikely to be impacted by the Project.</p>

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
				<p>The survey sampling effort is summarised as:</p> <ul style="list-style-type: none"> • Stygofauna: a total of 94 haul net samples from 53 sites consisting of uncased exploration drill holes, cased pastoral bores and cased production bores. • Troglofauna: a total of 88 scrape samples from 48 uncased exploration drill holes, and 101 litter traps deployed in 56 uncased exploration drill holes. <p><u>Stygofauna Survey Results Summary:</u> A total of 823 stygofauna specimens, representing six species from four higher level taxonomic groups (Amphipoda, Cyclopoida, Harpacticoida, and Isopoda) were collected. Four stygofauna species were collected from the proposed pit areas. Three of these four species were also collected from regional reference sites. Only <i>Robustura</i> sp (YIN01). YIN01 was not collected outside of the Development Envelope. Based on an assessment of local lithologies and the observed distribution of sympatric stygofauna species, the distribution of <i>Robustura</i> sp. YIN01 is considered likely to extend for at least several kilometres beyond the localised fractured rock aquifer system, and to extend into associated alluvial / colluvial aquifers lower in the landscape (Bestiolas Consulting, 2024).</p> <p>It is unlikely that any stygofauna species are restricted to the fractured rock aquifer system within the Development Envelope, as most of the species recorded from the Development Envelope were found to have distributions in regional sites. Additionally, the fractured rock aquifer provides less optimal habitat conditions for stygofauna, compared to the alluvial / colluvial and calcrete aquifers. The seemingly restricted distribution of a taxon (such as <i>Robustura</i> sp YIN01) to a single site is often an artefact of sampling a species with low population densities that may have a patchy and irregular distribution, rather than the actual distribution being confined to one limited area that was intercepted by a single drilled hole.</p> <p><u>Troglofauna Survey Results Summary:</u> 189 samples were recovered from 56 sites. Only three troglofauna specimens, collected from two of the 56 sampling locations were discovered. The three specimens represent two species from two high level taxonomic groups (Diplura and Polyxenida). The Dipluran sample was badly damaged and could not be positively identified as troglobitic: it may instead be a soil-dwelling organism (edaphofauna). Both species were each recorded from a single sample, and they were collected within the proposed pit areas but not outside of the Development Envelope. The study concluded that the substrates within the Development Envelope offer very low (potentially zero) troglofauna habitat value.</p>

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
	Terrestrial Fauna	Further information is provided in Section 6	<p><i>Yinnetharra Detailed Terrestrial Vertebrate Fauna and Short-range Endemic Invertebrate Fauna Survey</i> (Stantec, 2024b) (Appendix 4)</p> <p>Targeted Yinnietharra Rock-dragon Survey and Species Distribution Model (Stantec, 2024a) (Appendix 5)</p> <p>Southern Whiteface and Grey Falcon Survey – Yinnetharra Lithium Project Area (Terrestrial Ecosystems, 2026) (Appendix 6)</p>	<p>Based on the available evidence from the study, subterranean fauna and their habitats are not considered to be a key environmental factor associated with this referral.</p> <p>Stantec completed detailed terrestrial vertebrate fauna and short-range endemic invertebrate fauna surveys between June 2023 and May 2024. Targeted surveys for the Yinnietharra Rock Dragon were carried out in May 2024.</p> <p>The fauna survey covered an area of ~11,215 ha, inclusive of the whole of the Development Envelope. Key results of the studies are provided below:</p> <ul style="list-style-type: none"> • Nine broad fauna habitat types were identified, and five of these nine habitat types (Major Drainage, Minor Drainage, Low Hills, Rocky Hills and Mulga Woodland) were considered habitats which may be used by conservation significant species for shelter and foraging. Of the suitable habitats identified, three habitats (Major Drainage, Minor Drainage and Low Hills) lie within and / or intersect with the Development Envelope. • Two conservation significant fauna species were recorded during the fauna survey, being the Southern Whiteface (listed as Vulnerable under the EPBC Act and BC Act) and the Yinnietharra Rock-dragon (listed as Vulnerable under the EPBC Act and BC Act). • Suitable habitat for the Southern Whiteface occurs within three broad fauna habitats; Major Drainage (4.7% of the survey area); Minor Drainage (13.7% of the survey area), and Mulga Woodlands (0.09% of the survey area). • A further targeted survey for Southern Whiteface was completed by Terrestrial Ecosystems (2026). Southern Whiteface was confirmed across the survey area through visual records and autonomous recording units (ARU). 12 of the 13 visual records of Southern Whiteface occurred outside the Development Envelope. Positive ARU records were recorded at 25 out of 110 survey sites, both inside and outside the Development Envelope. • Terrestrial Ecosystems concluded that the Southern Whiteface was mostly recorded in habitats adjacent to ephemeral drainage lines. These habitats are common throughout the landscape, both inside and outside the development envelope. Given that this small bush bird will move if disturbed, the impact of clearing vegetation and mining is unlikely to be significant for this species (Terrestrial Ecosystems, 2026). • The Yinnietharra Rock-dragon was recorded opportunistically at one location during the fauna survey, outside of the Development Envelope. A subsequent targeted survey for

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
				<p>the species was completed by Stantec (2024a), of which no Rock-dragons nor suitable habitat were recorded within the Development Envelope.</p> <ul style="list-style-type: none"> • Three habitats were classified as potentially suitable for Short-Range Endemic (SRE) species; Rocky Outcropping (3.1% of the survey area); Major Drainage (4.7% of the survey area) and Rocky Hill (0.8% of the survey area). • Three taxa (one mygalomorph spider and two scorpions) were identified as likely to represent SRE species based on their occurrence in only high value SRE habitat. <p>Terrestrial fauna may be a relevant environmental factor associated with this referral; however the implementation of the Project is unlikely to result in significant adverse impact and can be appropriately managed under a Native Vegetation Clearing Permit administered under Part V of the EP Act.</p> <p>Further information is provided in Section 6.</p>
	Terrestrial Environmental Quality	N/A	<p><i>Yinnetharra Project - Baseline Soil Assessment</i> (Mine Earth, 2025) (Appendix 2)</p> <p><i>Yinnetharra Lithium Project - Static Tailings Characterisation Malinda Deposit</i> (MBS Environmental, 2025a) (Appendix 7)</p> <p><i>Yinnetharra Lithium Project - Static Waste Rock and Low-grade ore</i></p>	<p>Mine Earth (2025) completed an assessment of the physical and chemical characteristics of soil resources from 27 locations within the Development Envelope. Sampling sites were focussed within and surrounding the Indicative Disturbance Footprint. Key results are provided below:</p> <ul style="list-style-type: none"> • Surface soils have been grouped into five Soil-Landform Associations (SLAs); Undulating Stony Plain; Outcropping Low Rises; Undulating Low Hills; Major Channels and Major Drainage Tracts. • The topsoil from Undulating Low Hills SLA is considered suitable as a surface rehabilitation material, as its erodibility is likely to be low. It is recommended to be used preferentially on the slopes of waste rock landforms. • The topsoil from the Undulating Stony Plain, Outcropping Low Rises and Major Drainage Tracts SLAs is potentially more saline, clay rich, sodic and dispersive, compared to the topsoil from the Undulating Low Hills SLA, and is likely to be more erodible. It is recommended that this topsoil be stockpiled separately, with application as a surface rehabilitation medium restricted to flat areas, where possible. • The soil samples have high baseline concentrations of selenium (Se), arsenic (As), cobalt (Co) and lead (Pb) relative to the average crustal abundance, however they are unlikely to have any implications for soil management or rehabilitation.

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
			<p><i>characterisation - Malinda Deposit</i> (MBS Environmental, 2025b) (Appendix 8)</p>	<p>MBS Environmental (2025a, 2025b) completed geochemical characterisation of waste rock and tailings materials, and low-grade ore. Key results are provided below:</p> <ul style="list-style-type: none"> • No fibrous materials were identified and naturally occurring radioactive materials (NORM) activity is low in all samples. • Approximately 5% of fresh chlorite schist rock are potentially acid forming (PAF), and this material will be encapsulated within the WRL at closure. All other waste rock types are non-acid forming (NAF). • All waste rock samples were alkaline in nature (pH 7.9 to 9.4), and composite samples have low levels of salinity / soluble salts and moderate soluble alkalinity. • Tailings samples were classified as NAF and do not present a risk of acid mine drainage. • Several metals were found to be enriched in tailings composite, and manganese (Mn) (564 mg/kg) and nickel (Ni) (85 mg/kg) exceeded ecological investigation limits (500 mg/kg for Mn; 60 mg/kg for Ni) (DEC, 2010) but both Mn and Ni are considered insoluble under circum-neutral pH conditions. • Metal and metalloid concentrations in the tailings supernatant were below all respective non-potable use and livestock drinking water guidelines. • Leachate is expected to be low salinity (TDS: 12 mg/L – 22 mg/L) and not expected to confer significant environmental risk. <p>The development of the Project will require limited storage of dangerous or hazardous materials associated with general mine site operations (i.e. diesel fuel).</p> <p>Terrestrial environmental quality is not considered to be an environmental factor associated with this referral. Potential impacts to terrestrial environmental quality can be managed through the MDCP administered under the <i>Mining Act 1978</i> and Dangerous Goods licensing requirements, as per the <i>Dangerous Goods Safety Act 2004</i>.</p>
Water	Inland Waters	Further information is provided in Sections 7 and 8	Yinnetharra Lithium Project – Baseline Hydrology Study (Advisian, 2023) (Appendix 9)	<p>The Project is located within the upper reaches of the Gascoyne River catchment, with multiple non-perennial minor watercourses intersect the Development Envelope. These watercourses join the Gascoyne River, approximately 12 km south.</p> <p>Two hydrological studies were completed: Advisian (2023) was engaged to characterise the pre-existing flood conditions, and Worley (2025) modelled the hydrological regime under operational conditions and closure. Key results are provided below:</p>

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
			<p>Yinnetharra Lithium Project – Hydrology Assessment (Worley, 2025) (Appendix 10)</p> <p>Yinnetharra Lithium Project – Expanded Water Source Options Study (Rockwater, 2024) (Appendix 11)</p> <p>Yinnetharra Project-Aquatic Ecology Assessment (Biologic, 2025) (Appendix 12)</p>	<ul style="list-style-type: none"> Under the existing (pre-development) conditions, the local site hydrology is characterised by sheet flow runoff and flooding of minor creeks at depths up to 0.3 m and velocities below 1 m/s in events up to 1% annual exceedance probability (AEP) event. Under the operational conditions, the proposed location of the airport and mine camp are located within the 1% AEP floodplain of Thirty-Three River. The locations of all other infrastructure will have a flood depth of 0.15 m to 0.8 m, and peak velocities are less than 1 m/s in an 1% AEP event. At closure, Probable Maximum Flood (PMF) modelling indicated the peak flood depths range from 0.9 m – 3 m, with peak velocities between 2 to 2.4 m/s. <p>A hydrogeological assessment was undertaken by Rockwater (2024). The Project is located within the Gascoyne Groundwater Area, which is a proclaimed groundwater area under the <i>Rights in Water and Irrigation Act 1914</i>. There is no groundwater allocation plan for this area. The key aquifer details and suitability of water supply options for the Project are summarised below:</p> <ul style="list-style-type: none"> Gascoyne paleochannel (tributary) comprising unconsolidated sand, silt, and clays, with the channel base at approximately 120 meters below ground level (mbgl). The water level occurs at approximately 16 – 26 mbgl. Water quality is saline (7,720 to 25,000 mg/L TDS). This aquifer is the preferred water supply options for the Project. Fractured Rock (Ti Tree Shear Zone) comprising fractured granitic metamorphic rocks. The base of this aquifer is approximately 150 mbgl deep, with water level occurs at approximately 16 – 26 mbgl. Water quality is saline (7,720 to 25,000 mg/L TDS). Lyons paleochannel (tributary) comprising unconsolidated sand, silt, and clays. The channel base at approximately 140 – 180 mbgl deep, with water level occurs at approximately 15 – 21 mbgl. Water quality is brackish to saline (1,000 to 10,000 mg/L TDS). <p>An aquatic ecology assessment was completed by Biologic (2025), and key results are provided below:</p> <ul style="list-style-type: none"> The Project occurs in the immediate vicinity of Morrissey Creek and the Thirty-Three River, and they retained pools between the wet and dry seasons, providing refuge habitats for aquatic species during dry periods. Addition claypans sites are highly

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
				<p>ephemeral systems with limited water retention during the dry season. No permanent pools or creeks are within the Development Envelope.</p> <ul style="list-style-type: none"> Water quality in most sites provides suitable conditions for freshwater ecosystems for pH and electrical conductivity (EC), but localised elevated turbidity and dissolved metals were observed in the claypans, and the Gascoyne River exhibited slightly elevated EC levels. A high proportion of aquatic plant species with moderate to high groundwater dependency were recorded on Morrissey Creek and Thirty-Three River, but no priority flora species were recorded. The highest aquatic invertebrate richness was recorded at Morrissey Creek sites (approximately 1 km west of the southwest corner of the Indicative Disturbance Footprint), and the diversity there is broadly comparable to that observed downstream in the Gascoyne River. Sampling sites at the Thirty-Three River (approximately 600 m south of the southern edge of the Development Envelope) recorded one species of fish. The downstream Gascoyne River supports the highest floristic richness of the systems sampled, with abundant macrophyte assemblages and diverse riparian flora. It also supports a rich vertebrate fauna assemblage and noxious fish species, including Golden Gudgeon (P2 under BC Act), flat-shelled turtle and Mozambique Tilapia. <p>Inland waters may be an environmental factor associated with this referral, however the implementation of the Project is unlikely to result in a significant adverse impact and can be appropriately managed through performance and closure outcomes administered through the MDCP under the Mining act.</p>
Human Health	Social Surrounds	Further information is provided in Section 9	Due to cultural considerations, the original heritage reports are confidential and have not been submitted along with this referral. They can be	<p>Eight heritage surveys have been completed across the Development Envelope since 2017, in addition to regional surveys of the wider tenement package. Key results are provided below:</p> <ul style="list-style-type: none"> The Development is located within the Yinggarda country and Native Title Determination Area (WCD2019/016) Yinggarda, Baiyungu and Thalanyji People, and the Wajarri Yamatji country and Native Title Determination Area (WCD2017/007). The Development Envelope that intersects with the Wajarri Yamatji country is associated with underground mining areas, and surface disturbance is not expected.

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
			provided to EPA upon request.	<ul style="list-style-type: none"> Of the surveys completed to date, 113 potential Aboriginal heritage sites were identified from the site identification and work clearance surveys. <p>The Development Envelope and Disturbance Footprint have been designed to avoid impacts to Aboriginal cultural landscapes where practicable, this includes an exclusion zone in the middle of the Development Envelope, south of the WRL.</p> <p>Although sites of cultural significance may need to be moved or disturbed through the development of the Project, ESM will avoid sites as far as practicable and in consultation with the traditional owners. If sites cannot be avoided, an application will be submitted under Section 18 of the <i>Aboriginal Heritage Act 1972</i>. The implementation of the Project is unlikely to result in an impact to cultural sites outside of the Development Envelope, and as such does not warrant assessment under Part IV of the EP Act.</p>
	Human Health	N/A	-	<p>Yinnetharra Station is the closest sensitive human receptor relevant to the Project, and it is located approximately 14 km southwest to the Development Envelope boundary and approximately 20 km from the processing plant site.</p> <p>There are no townsites in close proximity to the Project.</p> <p>Due to the remoteness of the Project, exposure of sensitive human receptors is unlikely. Therefore, human health is not considered to be a key environmental factor associated with this referral.</p>
Air	Air Quality	N/A		<p>Yinnetharra Station is the closest sensitive receptor relevant to the Project, and it is located approximately 14 km southwest to the Development Envelope boundary and approximately 20 km from the processing plant site. Gascoyne Junction is the closest population town centre, and it is located approximately 125 km southwest to the Development Envelope.</p> <p>There is potential for dust generation from construction activities, however it can be appropriately managed through standard operational procedures (i.e. use of water cart for dust suppression). Dust generated during operations (i.e. blasting, load and haul activities, processing and light vehicle movement) can be managed through the MDCP administered under the <i>Mining Act 1978</i>, and Works Approval and Prescribed Premises Licence administered under the Part V of EP Act.</p> <p>ESM has committed to monitoring dust prior to commencement of operations and throughout the Project's operations. A dust monitor has been installed 6 km north of the Yinnetharra Station to collect baseline dust data. Traffic counters have been placed along the Cobra-Dairy Creek Road, as this serves as a main access road for public road users to the</p>

Theme	Factor	Relevant Section of this Document	Studies Completed	Comment
				<p>Mount Augustus National Park. Dust emissions exposure to public road users will be insignificant and can be managed through standard operating procedures.</p> <p>Due to the remoteness of the Project, exposure of sensitive receptors will be minimal, therefore air quality is not considered to be a key environmental factor associated with this referral.</p>
	Greenhouse Gas Emission	Further information provided in Section 10	is in <i>Yinnetharra Lithium Project – Greenhouse Gas Assessment Summary Report</i> (Greenbase, 2025) (Appendix 13)	<p>A greenhouse gas assessment was completed by Greenbase (2025) for the Project, key results are provided below:</p> <ul style="list-style-type: none"> • The main sources of Scope 1 emissions identified for the Project are from the mining fleet, product haulage to port, and power generators. During the operational period, the average annual Scope 1 emissions are estimated to be 99,537 tCO₂-e/year. However, the first 5 years (i.e. construction year and the first 4 years of operation) will each have annual emissions exceeding 100,000 tCO₂-e, with Year 2 recording the highest total of 145,445 tCO₂-e. • No Scope 2 emissions expected from the Project. • Total estimated Scope 3 emissions over the life of the Project are estimated at 6,590,163 tCO₂-e, with average Scope 3 emissions estimated to be 599,105 tCO₂-e/year during the operational phase. • Scope 1 greenhouse gas emissions of Project are estimated to contribute 0.21% to Western Australia’s annual emissions and 0.03% to Australia’s annual emissions. <p>Because the greenhouse gas emissions from the Project are predicted to exceed 100,000 tCO₂-e in several years, greenhouse gas emissions may be an environmental factor associated with this referral, however will be regulated under the National Greenhouse and Energy Reports Scheme (NGERS). Further information is provided in Section 10.</p>

5 FLORA AND VEGETATION

5.1 EPA Objective

The EPA objective for the factor Flora and Vegetation is:

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

Ecological integrity is defined by the EPA as the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements (EPA, 2016a).

5.2 Relevant Policy and Guidance

Laws and regulations relevant to the consideration of Flora and Vegetation include:

- *Environmental Protection Act 1986* (EP Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Biodiversity Conservation Act 2016* (BC Act)
- *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*
- *Biosecurity and Agriculture Management Act 2007* (BAM Act)

Guidelines relevant to the consideration of Flora and Vegetation include:

- *Statement of Environmental Principles, Factors, Objectives and Aims of EIA* (EPA, 2023b)
- *Environmental Impact Assessment Practice Guide: Assessment of Proposals in Western Australia under Part IV of the Environmental Protection Act 1986* (EPA, 2025)
- *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016a)
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016c)

5.3 Supporting Studies

The assessment of potential impacts to existing flora and vegetation values is informed by a field flora and vegetation study (Stantec, 2024c). Details of the flora and vegetation study completed are listed in Table 5-1. The flora survey area covers the Development Envelope and surrounds, as shown in Figure 5-1.

Table 5-1: Flora and Vegetation Supporting Study

Reference	Study Timing	Study Area	Study Methods and Effort
Yinnetharra Lithium Project - Detailed Flora and Vegetation Survey (Stantec, 2024c) Appendix 1 IBSA Number: ISA-0001323	6 to 11 June 2023 15 to 28 August 2023 16 to 28 March 2024 2 to 11 July 2024	11,215.3 ha encompassing tenements E09/2169, E09/2170 and E09/2283. Tenements E09/2169 and E09/2283 partially overlap with pending mining leases M09/185 and M09/186.	<ul style="list-style-type: none"> Literature review and database searches 11 ecologists (plus 1 zoologist) over 4 survey trips. 142 quadrats (20 m x 20m) 11 relevés sites.

Weather was identified as a moderate limitation to the detailed flora survey (Stantec, 2024c), as rainfall in the six months prior to both surveys was considerably below the long-term average. This likely reduced the number of species identified during the survey. A lack of regional flora survey in the vicinity of the Development Envelope was also identified as a minor limitation due to the remoteness of the survey area (Stantec, 2024c). For locations within the survey area that could not be accessed, vegetation type and condition mapping were inferred and extrapolated from high-quality aerial imagery (Stantec, 2024c).

Delta Lithium

Figure 5-1:
Flora and Vegetation Survey Effort

- Roads
- Detailed Flora Sampling Sites
- - - Detailed Flora Survey Area
- ▨ Exclusion Zone
- ▭ Development Envelope

Data sources
Tenement: DMIRS Data and Software Centre
ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

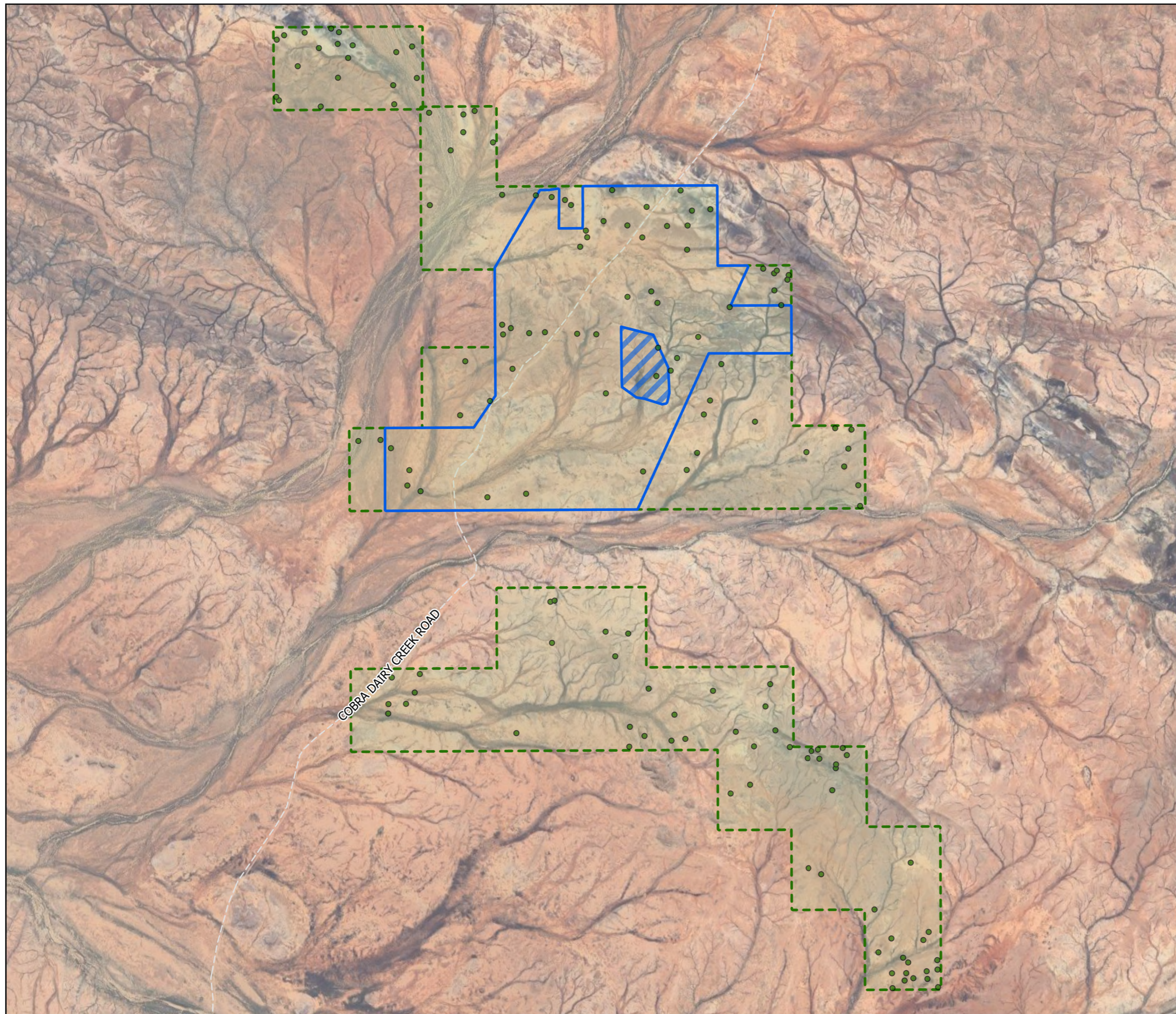


Kilometres
GDA2020 MGA Zone 50
Date: 25/03/2026 Rev: A
Project: 240010
Author: K. Fok; Drawn: A Reay
Print @ A3



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5.4 Receiving Environment

5.4.1 Flora

Stantec recorded a total of 325 vascular flora within the flora survey area, representing 55 families and 159 genera (Stantec, 2024c). The most represented families were Fabaceae (54 taxa) and Poaceae (46 taxa), and the most diverse genus was *Acacia* (20 taxa), followed by *Eremophila* (18 taxa), *Senna* (12 taxa) and *Ptilotus* (11 taxa) (Stantec, 2024c).

5.4.2 Significant Flora

Flora may be considered significant for a range of reasons (EPA, 2016a), and significant flora in the Project comprise:

- Listed protected flora, i.e. identified as Priority species under the BC Act.
- Range extension flora, i.e. flora at locations that represent extensions of a taxon's previously known geographic range.

No flora taxa listed as Threatened under the EPBC Act or the BC Act have been recorded in the Development Envelope.

Further details regarding the significant flora recorded in the flora survey area are provided below.

5.4.2.1 Listed Protected Flora

Seven Priority flora species were recorded within the flora survey area. The Priority flora species are listed in Table 5-2 and their locations are shown in Figure 5-2. The distribution and abundance of Priority Flora species are considered approximate, as some species within the flora survey area may occur in greater numbers than could be reasonably recorded during the field assessment (Stantec, 2024c).

Table 5-2: Priority Flora Species in the Flora Survey Area (Stantec, 2024c)

Species	Conservation Status	Record Counts within the Flora Survey Area	Estimated Abundance of Individuals within Survey Area
<i>Acacia curryana</i>	P1	798	5,387
<i>Isotropis forrestii</i>	P1	8	161
<i>Acacia petricola</i>	P2	18	62
<i>Wurmbea fluviatilis</i>	P2	1	150
<i>Sporobolus blakei</i>	P3	9	165
<i>Dodonaea amplisemina</i>	P4	14	195
<i>Goodenia berringbinensis</i>	P4	1	1

5.4.2.2 Range Extension Flora

A total of 25 flora taxa found in the flora survey area represent range extensions. This relatively large number of range extension species is possibly due to the lack of comprehensive scientific surveys conducted in the bioregion, in comparison to other parts of WA (Stantec, 2024c).

The extension of the known ranges of distribution for flora recorded during the surveys was subdivided into two categories, according to the criteria below as stated by EPA (2016c):

- **Category A – Bioregional Extension:** the taxon has not previously been recorded in the Interim Biogeographic Regionalisation for Australia (IBRA) bioregion from which the specimen was recorded;
- **Category B – Outlier:** A record is an isolated outlier of the main range of the species' distribution.

A list of the species identified as range extensions is summarised in Table 5-3, along with their nearest known records in relation to the flora survey area and their categories.

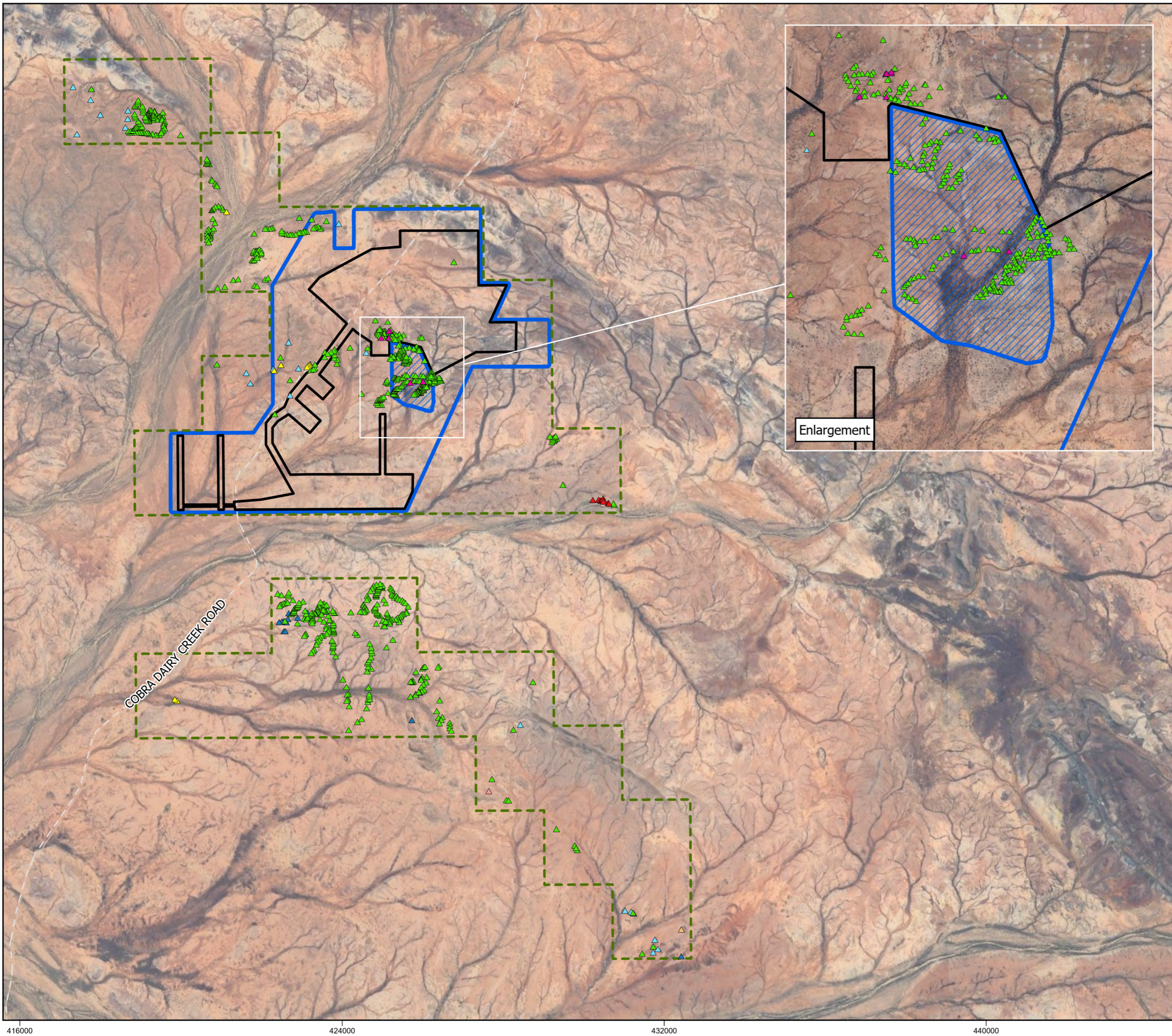
The potential impacts to significant flora species are assessed later in this section.

Table 5-3: Range Extension Flora Recorded in the Flora Survey Area (Stantec, 2024c)

Species	Nearest Published Record to Flora Survey Area (km)	Records within the Flora Survey Area	Records within Development Envelope	Category
<i>Abutilon fraseri</i> subsp. <i>fraseri</i>	188.2	12	0	A and B
<i>Acacia curryana</i> (P1)	52.3	765	598	B
<i>Acacia incurvaneura</i>	137	1	0	B
<i>Acacia petricola</i> (P2)	56.1	1	0	B
<i>Calandrinia monosperma</i>	57	2	0	B
<i>Calandrinia schistorhiza</i>	60	2	0	B
<i>Cyperus cunninghamii</i> subsp. <i>cunninghamii</i>	67	1	0	B
<i>Dodonaea amplisemina</i> (P4)	194.1	14	0	B
<i>Exocarpos aphyllus</i>	159.8	3	1	A
<i>Gomphrena canescens</i> subsp. <i>canescens</i>	177.4	1	0	A and B
<i>Goodenia muelleriana</i>	76	4	0	B
<i>Gossypium australe</i>	213.1	1	0	A
<i>Homalocalyx staminosus</i>	58.4	2	0	B
<i>Oxalis perennans</i>	308.1	1	0	A
<i>Ptilotus clementii</i>	86	2	0	B
<i>Sclerolaena beaugleholei</i>	156.9	2	2	B
<i>Sclerolaena limbata</i>	244.9	2	1	A
<i>Sclerolaena tridens</i>	87.8	10	4	A
<i>Sisymbrium irio</i>	111	2	0	B
<i>Solanum lachnophyllum</i>	295.1	1	0	B
<i>Streptoglossa odora</i>	87.8	5	1	A
<i>Trachymene cyanopetala</i>	297.8	1	0	A and B
<i>Trachymene oleracea</i> subsp. <i>oleracea</i>	86.1	8	2	B
<i>Wurmbea densiflora</i>	146.7	1	1	A and B
<i>Wurmbea fluviatile</i> (P2)	58.6	1	0	B

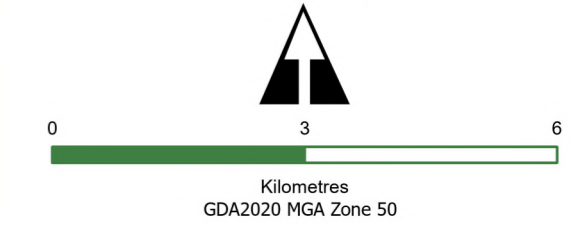
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Figure 5-2:
Significant Flora in the Flora Survey Area



- | | | | |
|---|----------------------------------|--|--------------------------------------|
| — | Roads | | <i>Acacia ?curryana</i> (P1) |
| | Indicative Disturbance Footprint | | <i>Acacia ?petricola</i> (P2) |
| | Exclusion Zone | | <i>Acacia curryana</i> (P1) |
| | Development Envelope | | <i>Acacia petricola</i> (P2) |
| | Flora Survey Area | | <i>Dodonaea amplisemina</i> (P4) |
| | | | <i>Goodenia berringbinensis</i> (P4) |
| | | | <i>Isotropis forrestii</i> (P1) |
| | | | <i>Sporobolus blakei</i> (P3) |
| | | | <i>Wurmbea fluviatilis</i> (P2) |

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
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5.4.3 Vegetation

Vegetation communities in the detailed flora and vegetation survey area have been described using established classifications and mappings. According to the IBRA system, the flora survey area occurs in the Ashburton Botanical District of the Eremaean Botanical Province (Beard et al., 2015). The Ashburton Botanical District is described as predominantly mulga (*Acacia aneura* complex) often with snake wood (*Acacia xiphophylla*) and other *Acacia* species. as scrub on the hills and as low woodland on the plains. There are some areas of dwarf scrub of *Eremophila* and *Senna* (Beard et al., 2015).

The flora survey area intersects five vegetation associations, mainly comprising the Yinnetharra Hills 163.1 association (Table 5-4). This association is described as shrublands comprising *Eremophila* and *Senna* species. The remaining associations comprise shrublands and woodlands of mulga and various other *Acacia* species.

Table 5-4: Vegetation Associations in the Flora Survey Area (Stantec, 2024c)

System Association	System Code	Description	Extent in the Flora Survey Area	
			ha	%
Yinnetharra Hills 163	163.1	Shrublands; <i>Eremophila</i> and <i>Senna</i> dwarf scrub.	1,298.4	11.58
Yinnetharra Hills 160	160.1	Shrublands; snakewood and <i>Acacia victoriae</i> scrub.	7,006.0	62.47
Yinnetharra Hills 166	166	Low woodland; mulga and <i>Acacia victoriae</i> .	1,302.0	11.61
Yinnetharra Hills 181	181	Shrublands; mulga and snakewood scrub.	6.7	0.06
Yinnetharra Hills 39	39	Shrublands; mulga scrub.	1,602.2	14.29
Total			11,215.3	100

A total of 32 vegetation types were described and mapped within the flora survey area (Figure 5-3), none of which represent a TEC or PEC. The dominant vegetation type within the flora survey area is described as *Acacia xiphophylla* tall open shrubland over *Acacia synchronicia*, *Senna* sp. Meekatharra (E. Bailey 1-26) and *Eremophila cuneifolia* open shrubland over *Sclerolaena densiflora* scattered herbs (AxAsSmEcuSd) (Figure 5-3).

5.4.3.1 Potential Groundwater Dependent Vegetation

Eucalyptus camaldulensis, considered to be a key facultative phreatophytic tree species and a key potential GDV indicator, was recorded within the flora survey area. *Eucalyptus camaldulensis* subsp. *obtusata* is a dominant feature of the upper stratum in one vegetation type: *Eucalyptus camaldulensis* subsp. *obtusata* and *Acacia citrinoviridis* woodland over *Cyperus vaginatus* very open sedgeland over **Cenchrus ciliaris* open tussock grassland (EcoAciCvCc, (Figure 5-3). This vegetation type closely resembles the 'moderate' potential

GDE mapped by Bioregional Assessment Program (BAP) (BoM, 2025b), which is associated with House Creek and Thirty-three River within the survey area. It covers approximately 363.3 hectares, representing 3.2% of the flora survey area (Figure 5-3).

5.4.3.2 Vegetation Supporting Priority Flora

Vegetation supporting Priority flora may be considered designated as core habitat if it includes a Priority species as a dominant species (Stantec, 2024c). Five vegetation types exhibited *Acacia curryana* (P1) as a dominant species (Figure 5-3 and Table 5-5) and are therefore considered to present core habitat providing important refuge.

Table 5-5: Vegetation Types that Support *Acacia curryana* (P1)

Vegetation Unit	Description	Extent in the Flora Survey Area	
		ha	%
AcuEeSahAc	<i>Acacia curryana</i> (P1), <i>Eremophila exilifolia</i> and <i>Senna artemisioides</i> subsp. <i>helmsii</i> open shrubland over <i>Aristida contorta</i> very open tussock grassland.	762.62	6.80
AcuSahAc	<i>Acacia curryana</i> (P1) and <i>Senna artemisioides</i> subsp. <i>helmsii</i> scattered shrubs over <i>Aristida contorta</i> very open tussock grassland	146.73	1.31
AfAcuSgAc	<i>Acacia fusca</i> tall open woodland over <i>Acacia curryana</i> (P1) and <i>Senna glaucifolia</i> open shrubland over <i>Aristida contorta</i> open tussock grassland	73.81	0.66
AcuEffSaoEcrAc	<i>Acacia curryana</i> (P1) tall open shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> low open shrubland over <i>Enneapogon caerulescens</i> and <i>Aristida contorta</i> open tussock grassland	66.34	0.59
AcuAkSahCcPooAhhAc	<i>Acacia curryana</i> (P1) and <i>Acacia kempeana</i> tall open shrubland over <i>Senna artemisioides</i> subsp. <i>helmsii</i> , <i>Corchorus crozophorifolius</i> and <i>Ptilotus obovatus</i> var. <i>obovatus</i> open shrubland over <i>Aristida holathera</i> var. <i>holathera</i> and <i>Aristida contorta</i> open tussock grass	24.47	0.22

Collectively, these vegetation types represent 9.58% (1,073.97 ha) of the flora survey area and all support *Acacia curryana* (P1). These vegetation types are not considered restricted and are likely to be present in the landscape outside of the flora survey area (Stantec, 2024c). No other significant flora species were found to dominate any vegetation types mapped within the flora survey area (Stantec, 2024c).

5.4.4 Introduced Species

A total of 16 introduced species were recorded during the flora survey (Table 5-6), none of which are listed as weeds of national significance or declared pests under the BAM Act (Stantec, 2024c). The weed species with the highest number of records within the flora survey area were **Cenchrus ciliaris* (Buffel Grass) and **Argemone ochroleuca* subsp. *ochroleuca* (Mexican Poppy). These weeds were particularly prolific in habitats of deeper flood plain soils and riparian vegetation, typical of these habitats in the Gascoyne bioregion (Stantec, 2024c).

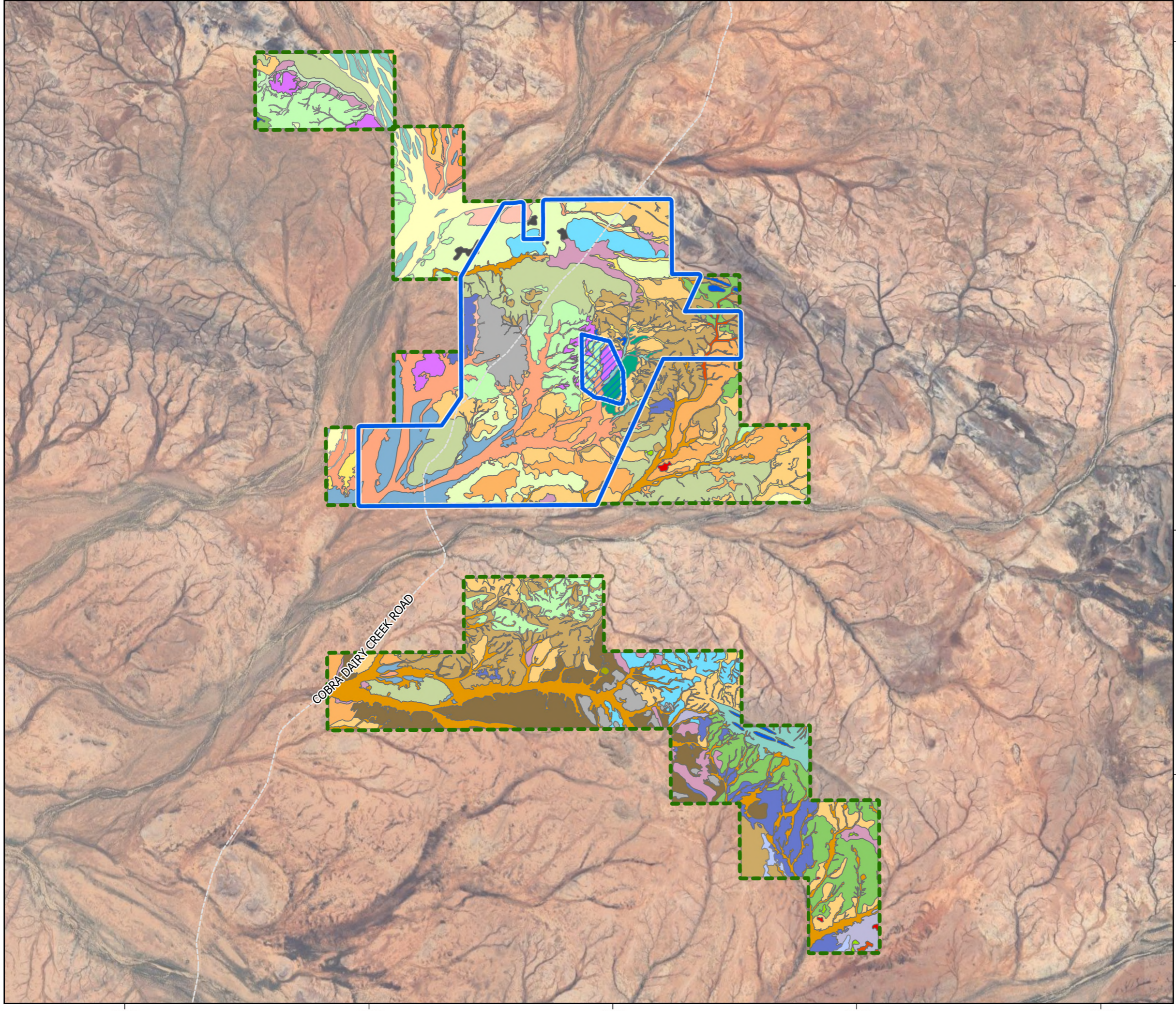
Table 5-6 summarises the introduced species recorded within the flora survey area, and their ecological impact and invasiveness classifications in Midwest region (DBCA, 2023).

Table 5-6: Introduced Flora Recorded within the Survey Area (Stantec, 2024c)

Weed Species	Common Name	Number of Records	Ecological Impact ⁴	Invasiveness ⁵
<i>*Argemone ochroleuca</i> subsp. <i>ochroleuca</i>	Mexican Poppy	5,491	Unknown	Rapid
<i>*Asphodelus fistulosus</i>	Onion Weed	1,194	Medium	Rapid
<i>*Bidens bipinnata</i>	Bipinnate Beggartick	2,764	Unknown	Rapid
<i>*Cenchrus ciliaris</i>	Buffel Grass	392,864	High	Rapid
<i>*Cenchrus setiger</i>	Birdwood Grass	9,179	High	Rapid
<i>*Citrullus amarus</i>	Pie Melon	2	Unknown	Rapid
<i>*Citrullus colocynthis</i>	Colocynth	1	Low	Rapid
<i>*Citrullus</i> sp.	N/A	38	N/A	N/A
<i>*Datura leichhardtii</i> subsp. <i>leichhardtii</i>	Native Thornapple	3	High	Rapid
<i>*Echinochloa colona</i>	Awnless Barnyard Grass	3	Low	Rapid
<i>*Flaveria trinervia</i>	Speedy Weed	206	N/A	N/A
<i>*Malvastrum americanum</i>	Spiked Malvastrum	3,362	High	Rapid
<i>*Rumex vesicarius</i>	Ruby Dock	3	Low	Moderate
<i>*Sisymbrium irio</i>	London Rocket	2	Unknown	Unknown
<i>*Sonchus oleraceus</i>	Common Sowthistle	4,140	Unknown	Rapid
<i>*Vachellia farnesiana</i> var. <i>farnesiana</i>	Needle Bush	40	High	Moderate

⁴ Ecological impact ratings were classified by DBCA (2023)

⁵ Invasiveness ratings were classified by DBCA (2023)

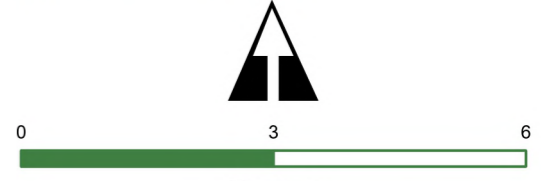


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Figure 5-3: Vegetation Types in the Flora Survey Area

- Roads
 - Exclusion Zone
 - Development Envelope
 - Flora Survey Area
- Significant Vegetation Types**
- AcuEffSaoEcrAc
 - AcuEeSahAc
 - AcuAKSahCcPooAhhAc
 - AfAcuSgAc
 - AcuSahAc
 - EcoAciCVcc
 - AaAtEppAc
 - AaSglEcr
 - Ac
 - AcsAsAcSd
 - AcsAssHpReSaoFs
 - AcsHpAsEcuSmReMspp.Sspp.
 - AdAssHpSscReCcCs
 - AfAccAkSahCcAcDc
 - AfAciSahPooCczAcCc
 - AfEIIcc
 - AiAkAtSahPooDbAc
 - AiAtEIIeppAc
 - AkAfSahAcEaCc
 - AkAtApPooSahEtEf
 - AssHpReAsSahCc
 - AtAsyErSaoEaCcEs
 - AtEeSahAc
 - AtSahAcCcCa
 - AtSglEcuAc
 - AxAcSsmEcuSdSc
 - AxAsSmEcuSd
 - CD
 - EffErSahAc
 - EffSahAtCczIdAc
 - EppAc
 - HpAcsAsEcuSaoScoSd
 - HpAtAsEcuReSmEaEf

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



Kilometres
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5.5 Potential Environmental Impacts

Implementation of the Project has the potential to have the following direct impacts to flora and vegetation:

- Loss of native vegetation due to clearing.
- Clearing of significant flora.
- Clearing of vegetation that supports significant flora.

The Project may have the following indirect impacts to flora and vegetation:

- Fragmentation of vegetation communities due to clearing.
- Changes to surface water patterns or quality, due to establishment of infrastructure and mining landforms associated with the Project potentially impacting on downstream flora and vegetation.
- Potential introduction or increased spread of weeds leading to reduced vegetation health in proximity to cleared areas.
- Loss of native seed bank due to inappropriate topsoil stripping, handling and storage leading to reduced revegetation success.
- Smothering of vegetation by dust emissions from excavation, material handling, stockpiles, vehicle movements, crushing and screening.

5.5.1 Direct Impacts

The Project will be clearing up to 1,612 ha of native vegetation within a 3,753 ha Development Envelope. The sections below present an assessment of direct impacts to significant flora and vegetation in the Indicative Disturbance Footprint.

5.5.1.1 Direct Impacts to Significant Flora

Significant flora identified within the flora survey area are described in Section 5.4.2 and include:

- Seven species of Priority flora.
- 25 species of range-extension flora.

Of the 32 significant flora species recorded in the flora survey area, only *Acacia curryana* (P1) and *Isotropis forrestii* (P1) are within the Disturbance Footprint and may be impacted by the Project. The other significant flora species are outside of the Disturbance Footprint and will not be directly impacted by Project activities. An assessment of the potential direct impacts to *Acacia curryana* (P1) and *Isotropis forrestii* (P1) is presented below.

5.5.1.1.1 *Acacia curryana* (P1)

A total of 798 records of *Acacia curryana* (P1), representing 5,387 individuals were recorded within the flora survey area (Stantec, 2024c). Of these, 292 individuals fall within the Disturbance Footprint, representing 5.42 % of the surveyed population (Figure 5-2).

The species grows in open stony plain landforms consisting of granite and quartz gravel / boulders on red-brown sandy loam substrate (Stantec, 2024c). It was also recorded across 20 vegetation types, which suggests it is not restricted to limited habitats in the Development Envelope. The impact of vegetation types associated with *Acacia curryana* (P1) is assessed in Section 5.5.1.2.

The potential removal of *Acacia curryana* (P1) individuals within the Disturbance Footprint will have a minor impact on the species. As part of the desktop assessment, Stantec (2024c) reviewed several flora and vegetation reports within 100 km of the flora survey area, identifying an additional 42,468 individuals. The regional population of the species may be larger than currently documented, as a search of the Index of Biodiversity Surveys for Assessments (IBSA) revealed a lack of previous surveys undertaken within or near the Indicative Disturbance Footprint.

These records suggest that *Acacia curryana* (P1) are not regionally significant.

5.5.1.1.2 *Isotropis forrestii* (P1)

A total of eight records of *Isotropis forrestii* (P1), representing 161 individuals were recorded within the flora survey area (Stantec, 2024c). Of these, 157 individuals fall within the Indicative Disturbance Footprint and are proposed to be cleared, representing 97.52 % of the local population identified from the flora survey (Figure 5-2).

The species is an erect shrub with yellow / orange flowers from April to September to December, and was found in two vegetation types within the flora survey area (AfAciSahPooCczAcCc, AssHpReAsSahCc) (Stantec, 2024c). Direct impact of these two vegetation types is assessed in Section 5.5.1.2.

Although the Project may potentially clear the majority of the local population, the species is represented by six vouchered specimens on FloraBase, with a distribution surrounding the flora survey area and is known from the Ashburton, Augustus, Hamersley and Wooramel subregions (Stantec, 2024c). Additionally, there are 27 records of *Isotropis forrestii* (P1) documented on Atlas of Living Australia (2025a), spanning locations such as Carnarvon (approximately 250 km west to the Development Envelope) and Tom Price (approximately 250 km northeast to the Development Envelope). These records indicate that the species has a broad distribution range and is not geographically restricted to the local area near the Development Envelope.

Given the limited flora and vegetation survey coverage in the region, it is likely that the species' occurrence range extends beyond the survey area, and the regional population is larger than currently documented. Based on this, the potential removal of *Isotropis forrestii* (P1) individuals will have a minor impact on the regional population of the species.

5.5.1.2 Direct Impacts to Significant Vegetation

Vegetation types in the Development Envelope are considered significant if they exhibit *Acacia curryana* (P1) as a dominant species (Stantec, 2024c) and therefore represent core habitat for a priority species. Significant vegetation types cover 123.97 ha of the Disturbance Footprint, representing 11.5 % of the mapped vegetation within the flora survey area. Table 5-7 presents the significant vegetation types recorded during the flora and vegetation survey and the proportion of mapped extents that occur within the Indicative Disturbance Footprint and Development Envelope.

The significant vegetation type that will be most impacted by vegetation clearing in the Indicative Disturbance Footprint is AcuEeSahAc (*Acacia curryana* (P1), *Eremophila exilifolia* and *Senna artemisioides* subsp. *helmsii* open shrubland over *Aristida contorta* very open tussock grassland). All other significant vegetation types will retain nearly or at least half of their mapped extents within the survey area (Table 5-7). These vegetation types are not considered restricted and are likely to be present in the landscape outside of the Development Envelope (Stantec, 2024c). Therefore, the Project will not have a significant effect on the regional abundance and distribution of these vegetation types.

Table 5-7: Significant Vegetation Types Within the Project Footprint

Vegetation Type Code	Extent in the Survey Area (ha)	Area within Disturbance Footprint (Direct Impact)		Areas in Development Envelope (ha)		Areas outside Development Envelope	
		ha	%	ha	%	ha	%
AcuEeSahAc	762.62	95.13	12.5	257.55	33.8	505.07	66.2
AcuSahAc	146.73	14.47	9.9	23.69	16.1	123.04	83.9
AfAcuSgAc	73.81	0	0	31.02	42.0	42.79	58.0
AcuEffSaoEcrAc	66.34	14.37	21.7	33.44	50.4	32.90	49.6
AcuAkSahCcPooAhhAc	24.47	-	-	-	-	24.47	100
Total	1,073.97	123.97	11.5	345.7	32.2	728.27	67.9












In addition to the five significant vegetation types identified by Stantec (2024c), two additional vegetation types (AfAciSahPooCczAcCc and AssHpReAsSahCc) were also assessed as *Isotropis forrestii* (P1) was recorded within these vegetation types. Approximately 62.66 ha (6.5 %) of their combined mapped extent occur within the

Disturbance Footprint. Approximately 50 % of the combined extent of these two vegetation types lie outside the Development Envelope.

One vegetation type (EcoAciCvCC) is considered to be potentially groundwater dependent, as *Eucalyptus camaldulensis* subsp. *obtusa* is a dominant feature in the upper stratum of this vegetation type (Stantec, 2024c). This vegetation type closely resembles the 'moderate' potential GDE mapped by Bioregional Assessment Program (BAP) associated with House Creek and Thirty-three River within the flora survey area (Stantec, 2024c). This vegetation type lies entirely outside of the Development Envelope (Figure 5-4) and will not be directly impacted by the implementation of the Project.

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Figure 5-4:
Significant Vegetation Types
Mapped in the Survey Area

-  Roads
-  Development Envelope
-  Indicative Disturbance Footprint
-  Exclusion Zone
-  Flora Survey Area
- Significant Vegetation Types**
-  AcuEffSaoEcrAc
-  AcuEeSahAc
-  AcuAkSahCcPooAhhAc
-  AfAcuSgAc
-  AcuSahAc
-  EcoAciCvCc

Data sources
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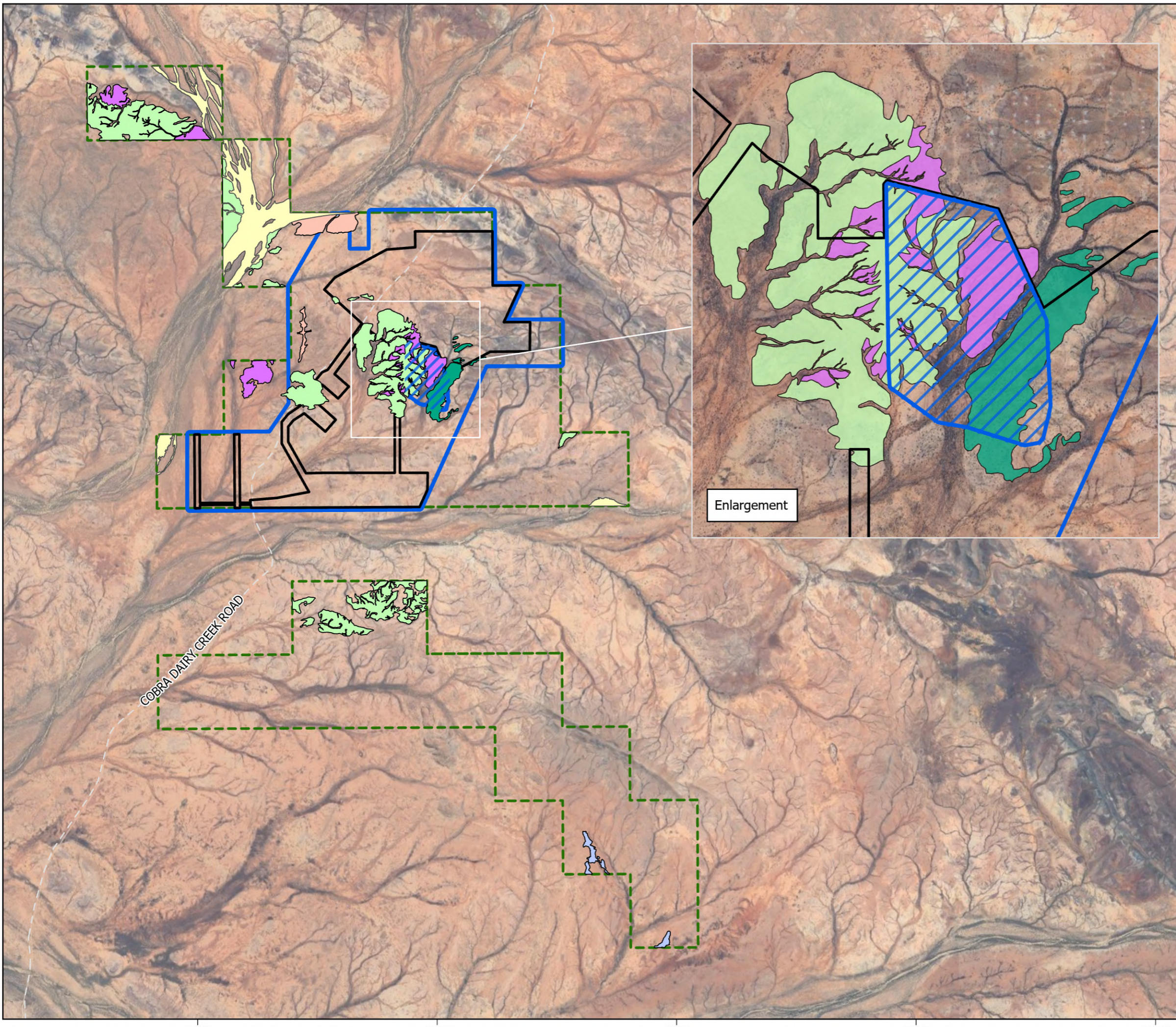
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5.5.2 Indirect Impacts

The potential indirect impacts of the Project that may affect flora and vegetation include fragmentation of vegetation communities, introduction or spread of weeds, loss of native seed bank, and dust impacts on vegetation health. Impacts associated with groundwater drawdown are assessed in Section 7.4.1.1.

5.5.2.1 *Fragmentation of Vegetation Communities*

Vegetation loss has the potential to result in patches of isolated ecological communities with reduced connectivity and resilience to other threatening processes. None of the vegetation types within the Development Envelope are considered restricted, and are likely to be typical for the region and present outside of the Development Envelope (Stantec, 2024c). Therefore, the Project is not expected to cause significant fragmentation of vegetation communities that would result in material harm to vegetation in the regional area.

5.5.2.2 *Introduced Flora Species*

Introduced flora species (weeds) can compete with native flora for space, water and nutrients and can adversely impact the structure and composition of vegetation communities. None of the weeds present are listed as weeds of national significance or declared pests under the BAM Act, and the diversity of introduced flora species is considered typical for the Gascoyne region (Stantec, 2024c).

Movement of vehicles and machinery, ground disturbance, vegetation clearing, soil handling and storage can introduce, transport and promote establishment of weeds in the Development Envelope. Vehicle site access and weed management controls will be implemented to mitigate potential impacts to the flora and vegetation of the Development Envelope.

5.5.2.3 *Loss of Native Seed Bank*

The role of the native seedbank in the Development Envelope in sustaining vegetation communities is unknown. Clearing vegetation types that support significant flora may remove seeds and propagules of significant species and limit the re-establishment of significant communities during rehabilitation efforts. Controls during vegetation clearing and topsoil management will mitigate this potential impact, and mitigation is further described in Section 5.5.3.

5.5.2.4 *Dust Emissions*

Dust emissions above background levels may adversely impact vegetation health and function. A dust monitor has been installed approximately 6 km southwest of the Development Envelope for dust baseline monitoring. No specific mitigation measures have been developed for control of dust impacts on vegetation. Standard

industry controls (for example, use of water carts for dust suppression on unsealed roads) will be implemented to minimise the dust emissions from mining operations (Section 5.5.3).

5.5.3 Mitigation

This section describes the mitigation measures that have been applied during preliminary design of the Project, and the mitigation measures that will be applied during detailed design, construction and operations, to minimise the Project's impact on significant flora and vegetation.

The following measures have been implemented to avoid potential impacts to significant vegetation and flora:

- The Indicative Disturbance Footprint has been designed to avoid and / or minimise impacts to native vegetation and priority flora. This includes minimising overlap with *Acacia Curryana* (P1), *Isotropis Forrestii* (P1) and significant vegetation types.
- In particular, an exclusion zone has been established to minimise direct and indirect impacts to flora and vegetation. A significant number of *Acacia Curryana* occurs within the exclusion zone, specifically minimising impact to this species and associated vegetation.

The following measures will be implemented to minimise potential impacts to significant vegetation and flora:

- A ground disturbance permit procedure will be implemented to minimise the risk of unplanned or unauthorised clearing.
- A weed management plan will be developed and implemented, and it will involve monitoring and control programs (as required), and equipment hygiene inspections procedures.
- Dust mitigation measures will be implemented, such as use of water carts and limited clearing during high winds, to minimise impacts to flora and native vegetation from dust deposition.
- Undertake progressive rehabilitation wherever practicable throughout operations and rehabilitate the Project at the cessation of mining to a state suitable for stakeholder expectations.

5.6 Predicted Outcome

The Project will result in the clearing of up to 1,612 ha of native vegetation, however the vegetation is well-represented at state, bioregional and local levels and therefore not considered significant.

The Project will not cause any impacts to nationally significant (listed under the EPBC Act) flora species or vegetation communities. No state significant (listed under the BC Act) threatened flora or vegetation communities will be impacted by the Project.

Some individuals of *Acacia Curryana* (P1) and *Isotropis Forrestii* (P1) will be directly or indirectly impacted by Project activities, but this is not expected to significantly impact the regional biological diversity and range of these species.

The Project is not expected to reduce biological diversity or ecological integrity of flora and vegetation communities, and therefore the Project meets the EPA objective for protection of flora and vegetation.

6 TERRESTRIAL FAUNA

6.1 EPA Objective

The EPA objective of the factor Terrestrial Fauna is:

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

6.2 Relevant Policy and Guidance

Laws and regulations relevant to the consideration of terrestrial fauna include:

- *Environmental Protection Act 1986*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Biodiversity Conservation Act 2016*

Guidelines relevant to the consideration of terrestrial fauna include:

- *Statement of Environmental Principles, Factors, Objectives and Aims of EIA* (EPA, 2023b)
- *Environmental Impact Assessment (Part IV Division 1 and 2) Administrative Procedures 2024* (EPA, 2025)
- *Environmental Factor Guideline: Terrestrial Fauna* (EPA, 2016b)
- *Technical Guidance Sampling of Short Range Endemic Invertebrate Fauna* (EPA, 2016d)
- *Technical Guidance - Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)
- Conservation advice for *Aphelocephala leucopsis* (Southern Whiteface) (DCCEEW, 2023)
- Approved Conservation Advice for *Ctenophorus yinnietharra* (Yinnietharra Rock-dragon) (Department of the Environment, Water, Heritage and the Arts, 2008)
- *Falco hypoleucos* (Grey Falcon) Conservation Advice (Threatened Species Scientific Committee, 2019)
- *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (Department of the Environment, 2013)

6.3 Supporting Studies

Project-specific terrestrial fauna studies are listed in Table 6-1, and the survey areas are shown in Figure 6-1.

This environmental assessment draws on three field fauna studies for the Development Envelope and surrounds. These three studies provide suitable information on which to base the environmental assessment of terrestrial fauna.

The survey completed by Stantec (2024b) in the Development Envelope and surrounds was a Detailed Survey in accordance with applicable guidelines (EPA, 2020) (Figure 6-1). Two additional surveys in the surrounding

region (Stantec, 2024a; Terrestrial Ecosystems, 2026) were completed as targeted surveys to gather more information on significant fauna species and their habitats (Figure 6-1).

A lack of regional fauna surveys in the vicinity of the Development Envelope was identified as a partial limitation to the detailed fauna survey (Stantec, 2024b), as there was limited regional reference information to draw on. Weather was also identified as a partial limitation to the detailed fauna survey (Stantec, 2024b), as rainfall was below average, and this may reflect in lower capture numbers and lower species diversity.

There is no access issue to the proposed mining footprint, but there was an access issue to surrounding tenements for the Yinnietharra Rock-dragon targeted searches, and therefore access constraints were identified as a partial limitation by Stantec (2024a). However, this did not affect the habitat assessment within the Development Envelope, as all suitable habitat for the Yinnietharra Rock-dragon within the Development Envelope was fully accessible and surveyed.

No limitations were identified by Terrestrial Ecosystem (2026) for the Southern Whiteface targeted survey.

Table 6-1: Terrestrial Fauna Studies

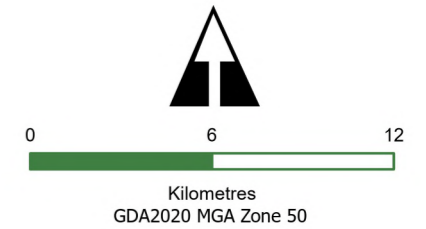
Reference	Study Timing	Study Area	Study Methods and Effort
<p>Yinnetharra Detailed Terrestrial Vertebrate Fauna and Short-range Endemic Invertebrate Fauna Survey (Stantec, 2024b)</p> <p>Appendix 4</p> <p>IBSA Number: ISA-0001324</p>	Multiple surveys between June 2023 to May 2024	<p>11,215.3 ha encompassing tenements E09/2169, E09/2170 and E09/2283</p> <p>Tenements E09/2169 and E09/2283 are partially overlap with pending tenement M09/185.</p>	<p><u>Vertebrate fauna</u></p> <ul style="list-style-type: none"> Habitat assessment (45 locations) Trapping using pitfall, small Elliot, funnel and cage trapping (total of 5,824 trap nights) Targeted avifauna census (16 locations, 280 minutes each) Ultrasonic bat recording (16 locations, 32 sampling nights) Bird acoustic units (16 locations, 32 sampling nights) Systematic searches and nocturnal searches (both 16 locations, and 640 mins each) <p><u>Invertebrate fauna</u></p> <ul style="list-style-type: none"> Habitat assessment (45 locations) 1,120 dry pitfall trap nights 10.7 systematic search hours over 15 habitats.
<p>Targeted Yinnietharra Rock-dragon Survey and Species Distribution Model (Stantec, 2024a)</p> <p>Appendix 5</p> <p>IBSA Number: ISA-0001327</p>	30 April to 3 May 2024	<p>43,372 ha encompassing tenements E09/2169, E09/2170, E09/2283, E09/2388, E09/2354, E09/2375 and E09/2552</p> <p>Tenements E09/2169 and E09/2283 partially overlap with pending tenement M09/185.</p>	<ul style="list-style-type: none"> 15 targeted searches at 13 locations Habitat assessment Species distribution modelling to identify areas of potential habitats during the targeted survey.
<p>Southern Whiteface and Grey Falcon Survey - Yinnetharra Project Area (Terrestrial Ecosystems, 2026)</p> <p>Appendix 6</p> <p>IBSA Number: ISA-0001325</p>	Multiple surveys between March to August 2025	<p>72,930 ha encompassing tenements E09/2169, E09/2170, E09/2283 and its surroundings.</p> <p>Tenements E09/2169 and E09/2283 are partially overlap with pending tenement M09/185.</p>	<ul style="list-style-type: none"> Three avifauna surveys (344 locations, 20 minutes each) Autonomous Recording Unit (ARU) (110 locations, from sunrise until sunset) Habitat delineation of Southern Whiteface

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Figure 6-1:
Terrestrial Fauna Survey Effort

- Roads
- ▨ Exclusion Zone
- ▭ Development Envelope
- Fauna Survey Name**
- ▭ Targeted Yinnietharra Rock-dragon Survey Area
- ▭ Detailed Terrestrial Vertebrate Fauna and Short-range Endemic Invertebrate Fauna Survey Area
- ▭ Targeted Southern Whiteface Survey Area

Data sources
Tenement: DMIRS Data and Software Centre
Fauna: Department of Biodiversity, Conservation and Attractions Threatened and Priority Fauna (DBCA-037)
ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

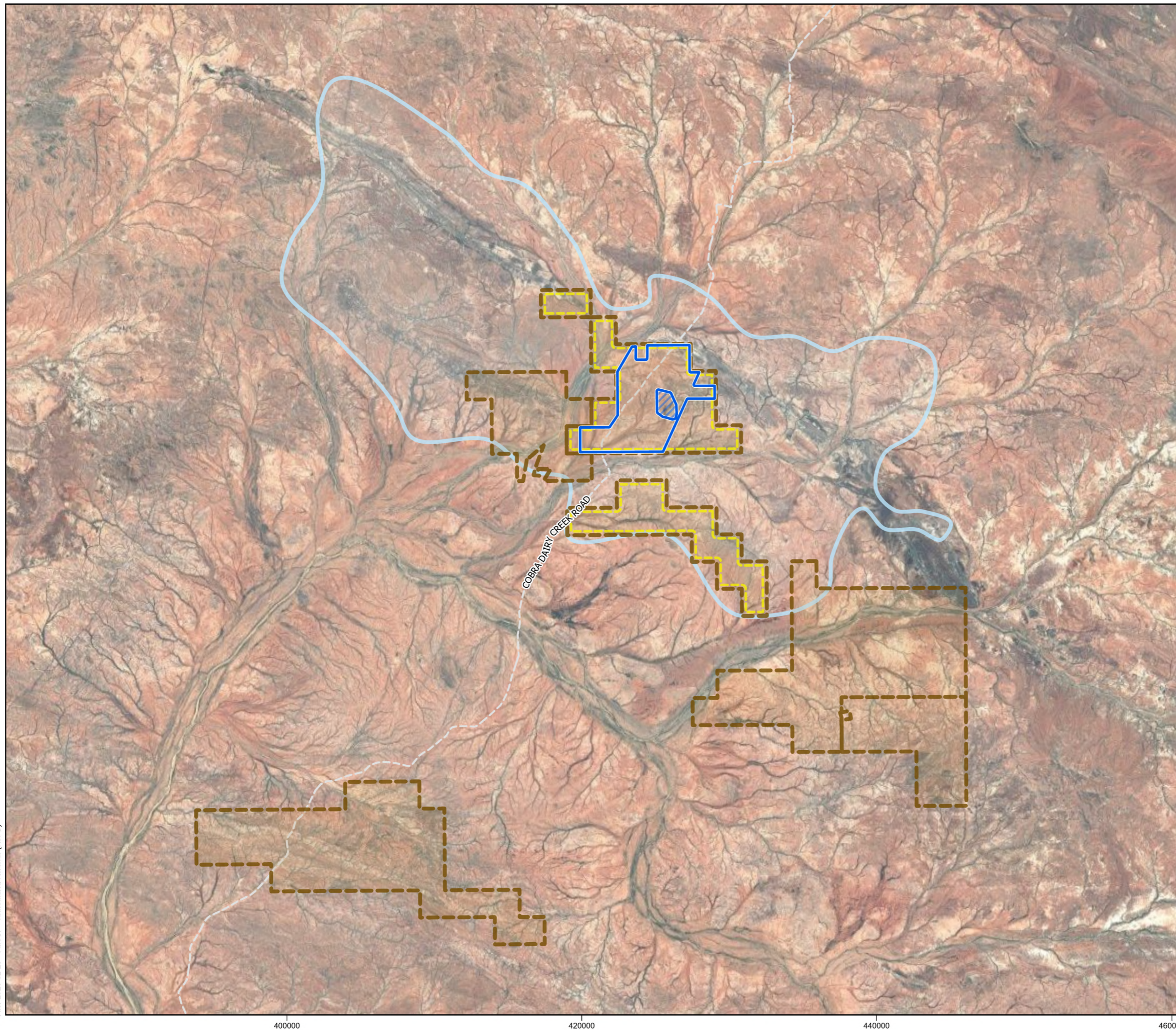


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6.4 Receiving Environment

6.4.1 Fauna Habitats

The detailed fauna survey (Stantec, 2024b) identified nine fauna habitats, and the broad descriptions of each habitat types are summarised in Table 6-2. Stony Plain habitat made up the majority of the detailed fauna survey area (6,601.8 ha or 58.9%), followed by Minor Drainage (1,539 ha or 13.7%) (Table 6-2; Figure 6-2). Habitat condition ranged from completely degraded (Disturbed habitat) to excellent, mainly influenced by livestock grazing and presence of weeds (e.g. Buffel Grass) (Stantec, 2024b).

Habitats that are widespread and common throughout the detailed fauna survey area were categorised as 'widespread', otherwise, they were categorised as 'limited extent' (Stantec, 2024b). Three of the nine habitats (i.e. Stony Plain, Minor Drainage and Low Hills) were categorised as 'widespread', and the remaining six were considered 'limited extent' (Table 6-2; Figure 6-2) (Stantec, 2024b). While some of the habitat types are considered limited, not all of them are of special significance to support terrestrial fauna.

Habitat types were classified as significant if they supported significant vertebrate fauna. Of the nine habitats identified in the detailed fauna survey, five habitat types (Minor Drainage, Low Hills, Major Drainage, Rocky Hill and Mulga Woodland) were considered as significant (Table 6-2) (Stantec, 2024b). They may support significant fauna, particularly listed threatened species, or distinct assemblages. The remaining four habitats were of limited significance for supporting significant fauna (Table 6-2). Habitat types that were classified as significant are shown in Figure 6-3.

Habitat types were classified as suitable for Short Range Endemics (SRE) invertebrate fauna based on their distribution and connectivity within the landscape, and presence of microhabitats. Three habitat types (Rocky Outcrop, Major Drainage and Rocky Hill) were assessed as having high suitability to support SRE taxa (Table 6-2). These habitats contained multiple microhabitat features and were all of limited extent within the landscape (Stantec, 2024b).

Three habitat types (Minor Drainage, Low Hills and Mulga Woodland) were assessed as having moderate suitability to support SRE species (Table 6-2). Low Hills and Minor Drainage were considered to be well connected and widespread, but they both contained multiple important microhabitat features (Stantec, 2024b). Mulga Woodland habitat was considered to be of limited extent in the landscape and contained an important microhabitat feature (leaf litter) (Stantec, 2024b).

The remaining three habitat types (Stony Plain, Alluvial Plain and Sandy Plan) were assessed as containing limited microhabitats suitable, therefore limited suitability, for supporting SRE taxa (Table 6-2). Habitat types which are classified as having moderate or high suitability for SRE invertebrates are shown in Figure 6-4.

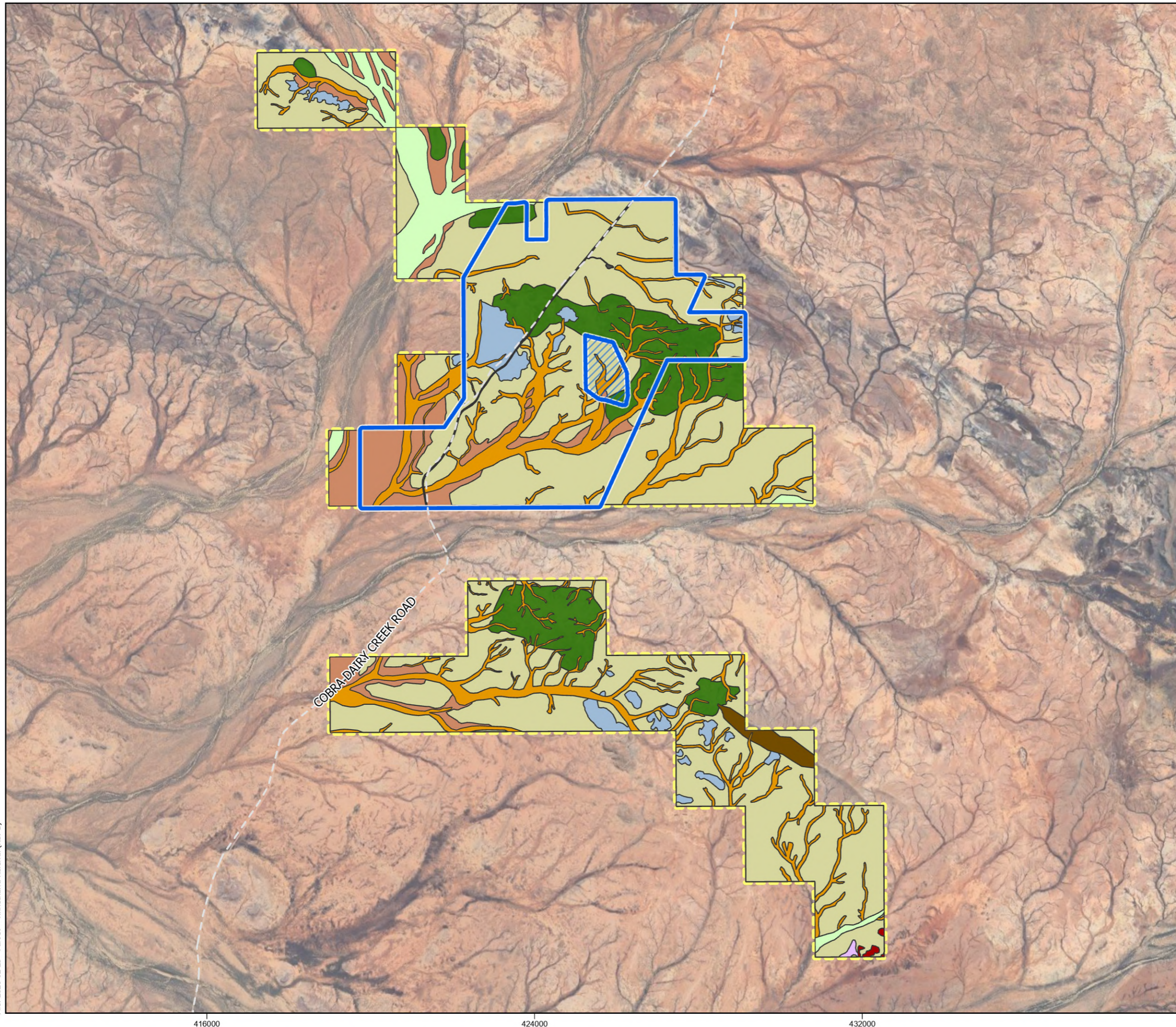
Table 6-2: Habitat Types Identified in the Detailed Fauna Survey Area and Significance (Stantec, 2024b)

Fauna Habitat	Broad Habitat Description	Extent within Detailed Fauna Survey Area		Significance / Suitability for Fauna	
		Ha	%	Vertebrates	SRE Invertebrates
Stony Plain	Widespread Stony Plain habitat comprised low lying areas that have slight to no gradient and a substrate of quartz and granite stones, gravel and pebbles.	6,601.8	59.0	Limited	Limited
Minor Drainage	Widespread Minor Drainage habitat comprised relatively small channels, usually dominated by shrubs with scattered tall hollow bearing trees.	1,539	13.8	Significant – two individuals of Southern Whiteface (EPBC Act and BC Act: Vulnerable) recorded.	Moderate – deep leaf litter and drainage system
Low Hills	Widespread Low Hills habitat comprised low, undulating quartz and granite hills interspersed by drainage and areas of Stony Plain. This habitat also contains calcrete landforms such as hills and lower plains.	1,157.3	10.3	Significant – suitable habitat for Long tailed Dunnart (P4) and the survey area is within the species' known distribution range.	Moderate – Outcropping and crevices
Alluvial Plain	Limited Extent Alluvial Plain habitat comprised flat, open, low-lying floodplains found in association with drainage lines.	904.2	8.1	Limited	Limited
Major Drainage	Limited Extent Major Drainage habitat was associated with large channels supporting an upper storey of relatively tall and mature <i>Eucalyptus camaldulensis</i> subsp. <i>obtusa</i> and <i>Acacia citrinoviridis</i> woodland over <i>Cyperus vaginatus</i> very open sedgeland over <i>*Cenchrus ciliaris</i> open tussock grassland.	521.9	4.7	Significant – suitable habitat for Southern Whiteface (Vu), Grey Falcon (Vu) and Peregrine Falcon (OS), and the survey area is within the species' known distribution ranges. This habitat is also a suitable nesting and foraging habitat for Peregrine Falcon.	High – Deep leaf-litter, drainage system and outcropping
Rocky Outcrop	Limited Extent Rocky Outcropping habitat comprised large granite boulders	353	3.2	Limited	High – South-west facing slopes, ficus groves, deep leaf-

Fauna Habitat	Broad Habitat Description	Extent within Detailed Fauna Survey Area		Significance / Suitability for Fauna	
		Ha	%	Vertebrates	SRE Invertebrates
	and domes rising above sandy-clay soils with limited rock cover. Granite outcropping radiated out from larger boulders, gradually becoming lower and less complex.				litter, boulder / rock pile, outcropping, alcoves and crevices
Rocky Hill	Limited Extent Rocky Hill habitat comprised slopes and crests of larger quartz hills rising above the surrounding Low Hills and Stony Plain.	91.8	0.8	Significant – suitable habitat for Long tailed Dunnart (P4) and the survey area is within the species' known distribution range.	High – South-west facing slopes, outcropping, crevices and alcoves
Mulga Woodland	Limited Extent Mulga Woodland habitat comprised bands of <i>Acacia incurvaneura</i> open woodland on clay-based soils.	10.3	0.1	Significant – suitable habitat for Southern Whiteface.	Moderate – leaf litter
Sandy Plain	Limited Extent Sandy Plain habitat comprised low lying grassland that had a very slight to no gradient and a of substrate of red-brown sand	8.0	0.1	Limited	Limited
	Total	11,187.30	100		

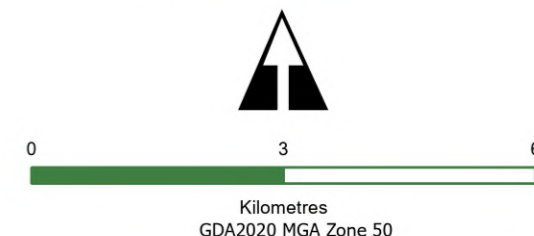
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Figure 6-2:
Terrestrial Fauna Habitat in the Fauna Survey Area



- | | | | |
|-----|--|---|----------------------|
| --- | Roads | | Fauna Habitat |
| /// | Exclusion Zone | ■ | Disturbed |
| □ | Development Envelope | ■ | Alluvial Plain |
| □ | Detailed Terrestrial Vertebrate Fauna and Short-range Endemic Invertebrate Fauna Survey Area | ■ | Low Hills |
| □ | | ■ | Minor Drainage |
| | | ■ | Major Drainage |
| | | ■ | Mulga Woodland |
| | | ■ | Rocky Hill |
| | | ■ | Rocky outcrop |
| | | ■ | Sandy Plain |
| | | ■ | Stony Plain |

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

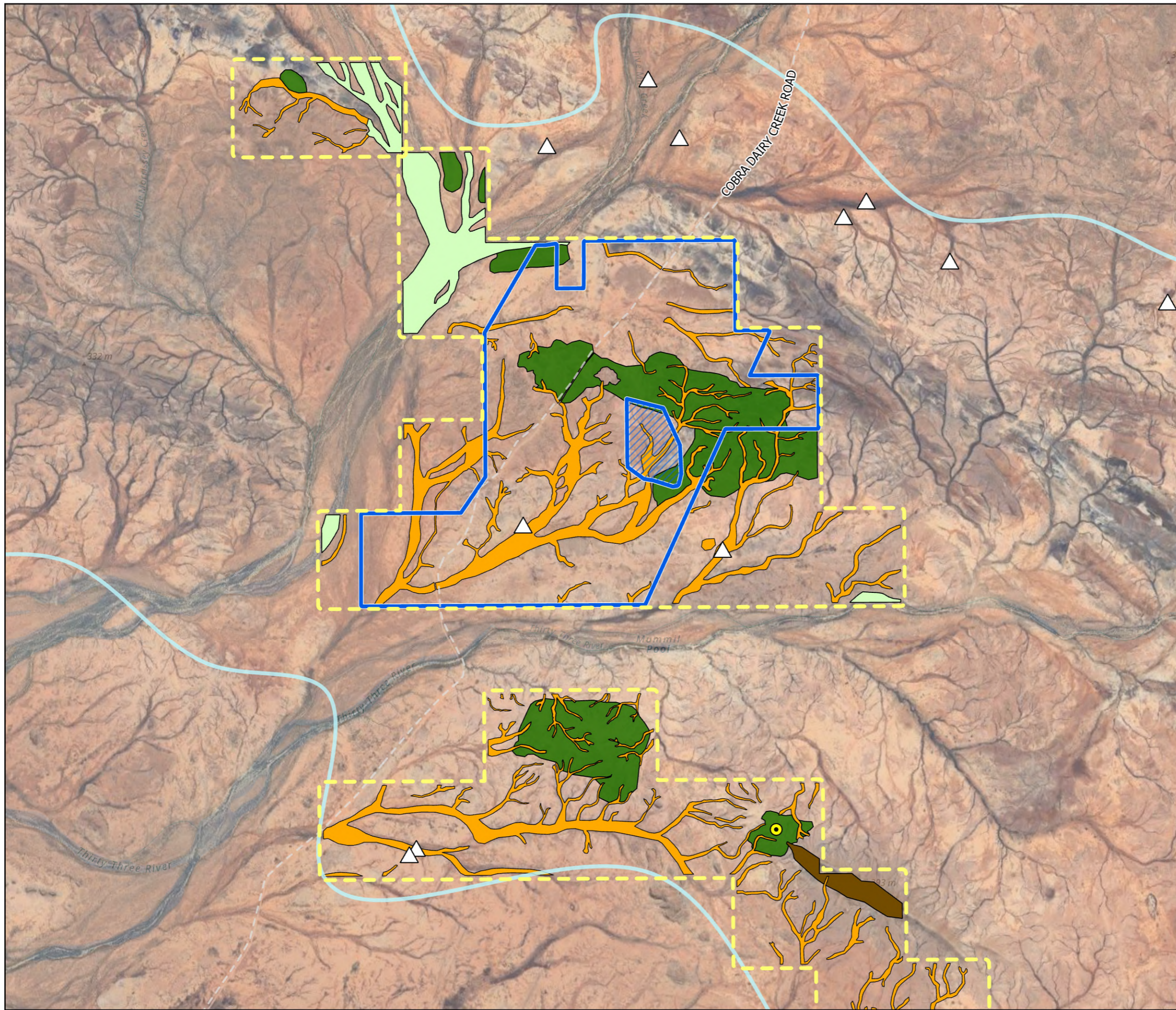


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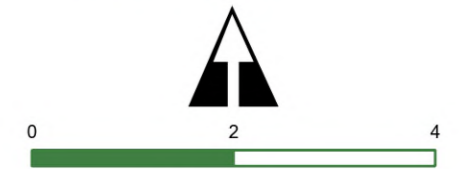


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Figure 6-3:
Significant Fauna Habitat and Fauna
Individuals in the Fauna Survey Area

- Roads
 - Exclusion Zone
 - Development Envelope
 - Western Pebble-Mound Mouse (P4)
 - Southern Whiteface (Vu) Observations
 - Yinnetharra Detailed Terrestrial Vertebrate Fauna and Short-range Endemic Invertebrate Fauna Survey Area
 - Targeted Southern Whiteface Survey Area
- Significant Fauna Habitat**
- Low Hills
 - Minor Drainage
 - Major Drainage
 - Mulga Woodland
 - Rocky Hill

Data sources
 Tenement: DMIRS Data and Software Centre
 Fauna: Department of Biodiversity, Conservation and Attractions Threatened and Priority Fauna (DBCA-037)
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, Geoscience Australia, NASA, NGA, USGS
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
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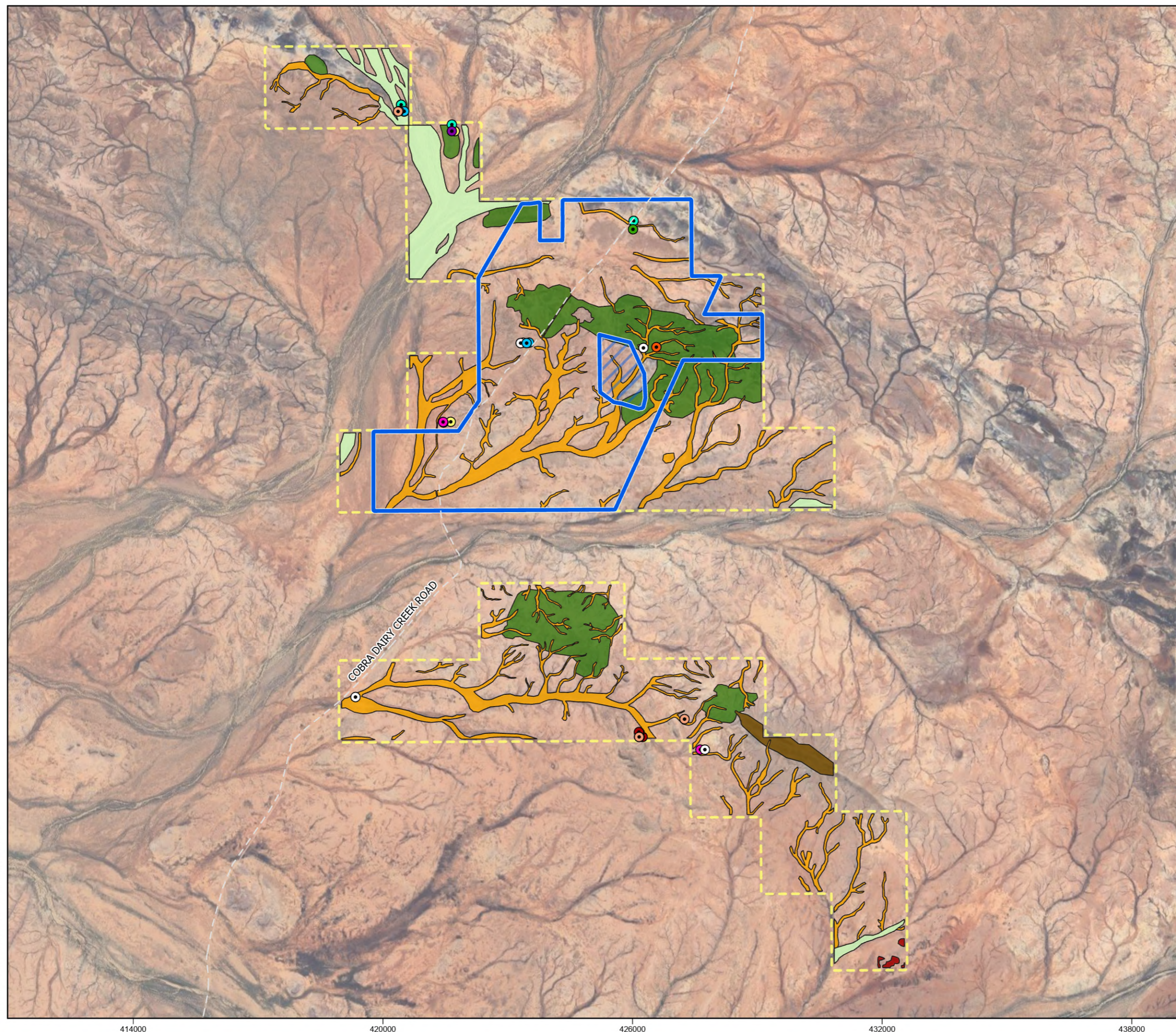


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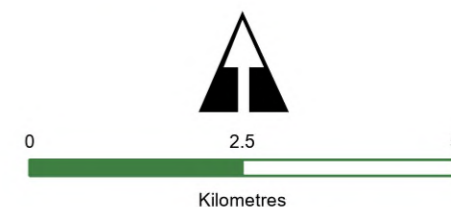
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Figure 6-4:
Habitat and Short-Range Endemic Invertebrate
Fauna in the Survey Area



- | | | | |
|---|--|--|--|
| — | Roads | | <i>Aname</i> 'Yin01' |
| | Development Envelope | | <i>Urodacus</i> 'Yin02' |
| | Exclusion Zone | | <i>Aname</i> 'Yin02' |
| | Detailed Terrestrial Vertebrate Fauna and Short-range Endemic Invertebrate Fauna Survey Area | | <i>Beierolpium</i> 'Yin01' |
| | Low Hills | | <i>Buddelundia</i> 'Yin01' |
| | Minor Drainage | | <i>Buddelundia</i> 'Yin02' |
| | Major Drainage | | <i>Indolpium</i> 'Yin02' |
| | Mulga Woodland | | <i>Kwonkan</i> 'Yin03' |
| | Rocky Hill | | <i>Lychas</i> 'bituberculatus complex' (Yin01) |
| | | | <i>Lychas</i> 'harveyi complex' (Yin02) |
| | | | <i>Urodacus</i> 'Yin01' |

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
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6.4.2 Vertebrate Fauna

A literature review and database searches identified 289 vertebrate fauna species which have been previously recorded / or have the potential to occur within the detailed fauna survey area (Stantec, 2024b). 28 of these species were listed as conservation significant species under the EPBC Act and / or BC Act (Stantec, 2024b).

The detailed fauna survey recorded 126 vertebrate fauna species comprising 18 native mammals, 4 non-native mammals, 74 birds, 29 reptiles and 1 amphibian species (Stantec, 2024b). All the species that were recorded during the detailed fauna survey were also identified within the desktop assessment (Stantec, 2024b).

Significant vertebrate fauna identified during the detailed fauna survey study included listed protected fauna species. The sections below provide details of significant vertebrate fauna.

6.4.3 Significant Vertebrate Fauna

Significant fauna are those that are listed and protected under the EPBC Act or BC Act. The desktop assessment identified that a total of 28 listed vertebrate fauna species has the potential to occur in the detailed fauna survey area (Stantec, 2024b). Of the species with the potential to occur, only one was recorded within the detailed fauna survey area, one was observed opportunistically outside the defined survey area, and four were considered to possibly occur in the detailed fauna survey area. The remainder were considered unlikely to occur within the detailed fauna survey area.

Table 6-3 presents the significant vertebrate fauna species that were recorded in the detailed fauna survey area, and Table 6-4 presents those considered possible / likely to occur in the detailed fauna survey area.

Figure 6-3 shows the locations of significant vertebrate fauna species recorded in all fauna survey areas.

Table 6-3: Significant Vertebrate Fauna Species Recorded in the Survey Area (Stantec, 2024b)

Species	Conservation Status		Habitat
	EPBC Act	BC Act	
Southern Whiteface, <i>Aphelocephala leuciposis</i>	Vu	Vu ⁶	Minor Drainage, Major Drainage and Mulga Woodland
Yinnietharra Rock-dragon, <i>Ctenophorus yinnietharra</i>	Vu	Vu	Opportunistically recorded 15 km southwest outside of the survey area.

⁶ Listed as Vulnerable species in July 2025.

Table 6-4: Likelihood of Occurrence of Significant Fauna within the Survey Area (Stantec, 2024b)

Species	Conservation Status		Habitat	Likelihood
	EPBC Act	BC Act		
Peregrine Falcon, <i>Falco peregrinus</i>	-	OS	Major Drainage	Likely
Long-tailed Dunnart, <i>Antechinomys longicaudata</i>	-	P4	Low Hills and Rocky Hill	Possible
Grey Falcon, <i>Falco hypoleucos</i>	Vu	Vu	Major Drainage	Possible
Western Pebble-mound Mouse, <i>Pseudomys chapmani</i>	-	P4	Stony Plain and Low Hills	Possible

6.4.3.1 Southern Whiteface (*Aphelocephala leuciposis*) (Vulnerable (EPBC Act and BC Act))

The Southern Whiteface was listed as Vulnerable under the EPBC Act in March 2023 and was also listed as Vulnerable species under the BC Act in July 2025. It is a small (approximately 11.5 cm) thornbill-like bird which has a characteristic white band across its forehead. It is distributed across the majority of mainland Australia, inhabiting a variety of open woodlands and shrublands containing an understorey of grasses or shrubs (Higgins et al., 2002). Typically it occurs in woodlands dominated by *Acacia* or *Eucalyptus* on ranges, foothills and lowlands and plains (Higgins et al., 2002).

Breeding takes place between July to October, however exact timing in arid regions can be impacted by rainfall (Higgins et al., 2002). Nesting often occurs in a hollow or crevice, and less frequently in low bushes, where nests are made of a combination of grass, bark and roots forming a large, dome-like shape (Higgins et al., 2002).

Two individuals were recorded emerging during the detailed fauna survey from a tree hollow, indicative of nesting, within Minor Drainage habitat (Stantec, 2024b) (Figure 6-3). Additionally, the species was detected at three sites via targeted acoustic units (ARU) during the Stantec (2024b) survey: one site within Minor Drainage habitat (three detections), one within Sandy Plain habitat (two detections), and one site within Stony Plain habitat (three detections) (Figure 6-5). The Minor Drainage habitat in the detailed fauna survey area is consistent with published reports of the species occurring within a wide range of woodlands and shrublands habitat, typically dominated by *Acacias* or *Eucalypts* (Stantec, 2024b). Previous records of the species appear to align with this habitat type in the surrounding survey area, based on aerial imagery.

ARUs within the Sandy Plain and Stony Plain habitats detected the Southern Whiteface on multiple occasions, but these habitats are not consistent with known descriptions of suitable habitats for the species. However, both

ARUs were located within 200 m of Mulga Woodland and Minor Drainage habitats, which were considered as suitable habitats for the species, and this may explain the detections of the species in unsuitable habitats (Stantec, 2024b).

Further targeted search of the species was undertaken by Terrestrial Ecosystem (2026), Southern Whiteface individuals were recorded at 13 locations during the observation and visual surveys (Figure 6-3). None were nesting, and most were foraging or resting in shrubs and in small flocks of 1 – 5 individuals (Terrestrial Ecosystems, 2026). Additionally, 110 ARUs were placed within the targeted survey area, and Southern Whiteface were recorded at 25 of the 110 ARU sampling sites (Terrestrial Ecosystems, 2026) (Figure 6-5). On some ARUs, there were multiple Southern Whiteface calls over multiple days, but on others, there was one or a few calls on a single day (Terrestrial Ecosystems, 2026). These data suggest that Southern Whiteface were present for multiple days at some locations, whereas they were transient at other locations (Terrestrial Ecosystems, 2026).

Although the movement, home range, and social structure of Southern Whiteface are poorly understood, records indicate that the birds will move locally to new areas, particularly in drought years (Higgins et al., 2002). Recent surveys in the Goldfield region of WA also provide evidence that the species can shift its activity areas (Terrestrial Ecosystems, 2026).

Threats to Southern Whiteface include (DCCEEW, 2023):

- Habitat loss caused by clearing for agriculture.
- Habitat degradation caused by domestic livestock grazing.
- Increased frequency or length of droughts.
- Increased likelihood of extreme events (i.e. wildfire, drought and heatwaves).

Recommended mitigation measures focus on avoiding clearing of suitable habitat, preventing intensive grazing in high-value habitats, and raising awareness among landholders in areas known to be important for the species, to engage them in proactive management and monitoring of the species' population on their land (DCCEEW, 2023).

6.4.3.2 *Yinnietharra Rock-dragon (Ctenophorus yinnietharra) (Vulnerable (EPBC Act and BC Act))*

The Yinnietharra Rock-dragon is listed as Vulnerable under the EPBC Act and BC Act. It is a rock-dwelling agamid lizard known only from areas of southern Yinnietharra Station (approximately 12 km south of the Development Envelope), and a single location from Minnie Creek (approximately 75 km northwest of the Development Envelope) (Stantec, 2024b). It is an understudied reptile with a limited distribution, and consequently little is known about the species. One individual was observed opportunistically 15 km southwest outside of the survey

area during the detailed survey along Cobra-Dairy Creek Road (Stantec, 2024b), which is outside of the Development Envelope.

A separate targeted survey for the species was undertaken (Stantec, 2024a) within the detailed fauna survey area and broader region where the species has been recorded historically (Figure 6-1). The species was recorded on 19 occasions from two locations (Figure 6-6), approximately 22 km southwest of the Development Envelope (Stantec, 2024a). Habitat assessments were undertaken during the targeted survey, and a definition of suitable habitat for the species was established in collaboration with a Subject Matter Expert (SME) Steve Wilson (Stantec, 2024a). Based on the definition, a habitat to be considered suitable for the Yinnietharra Rock-dragon must have the following four characteristics:

- Substrate – Primarily gravel (1 – 4 cm) but may be pebble sized (5 – 10 cm) quartz and granite on sandy clay soils. Rock cover is sparse compared to dense quartz plain habitat that commonly occurs in the surrounding region.
- Presence of granite outcrops – Species requires low weathered granite outcrops.
- Size of granite outcrops – Majority (> 90%) of outcrops present are only 0.5 to 1 m in height and less than 2 m in length.
- Density of granite outcrops – Outcrops are sparsely distributed, often separated by distances of 50 m to 100 m.

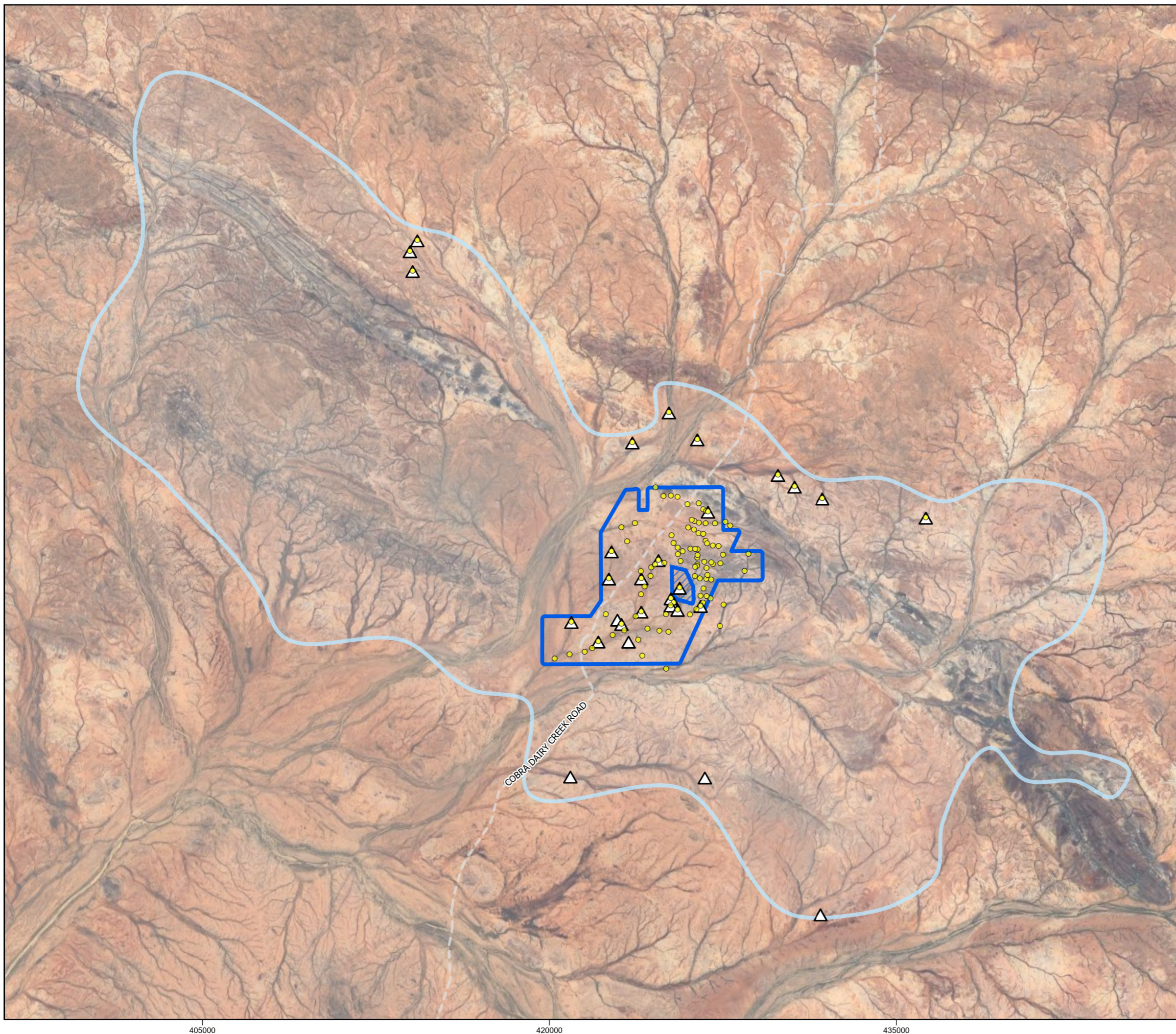
Using these criteria, suitable habitats for the species were identified and all of them were outside of the Development Envelope, but within the regional survey area.

Species distribution modelling (SDM) was developed to provide a more refined understanding of broad-scale occurrence of Yinnietharra Rock-dragon habitat in the region. Based on the model, the area with the highest habitat suitability for the species is located approximately 16 km southwest of the Development Envelope (Figure 6-6). This finding is consistent with both historical records and data from the targeted survey (Stantec, 2024a). Moderately suitable habitats are found approximately 5 km south of the Development Envelope, appearing as isolated patches that are not connected to the highly suitable habitat (Figure 6-6). No individuals were recorded within the moderately suitable habitats (Figure 6-6). Modelled habitat that overlaps the Development Envelope are all classified as low suitability habitat (Figure 6-6).

The main identified threats to the Yinnietharra Rock-dragon include habitat degradation by pastoral activities and cattle grazing, garden boulder harvesting, and stochastic events that may affect the species due to its small population size (Department of the Environment, Water, Heritage and the Arts, 2008).

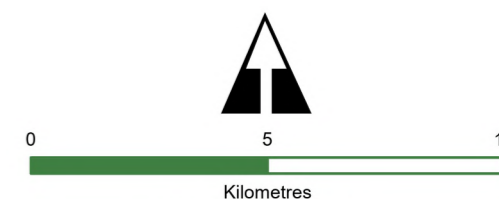
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Figure 6-5:
Southern Whiteface ARU Records and
ARU Recording Sites



- Minor Road
- /// Exclusion Zone
- Development Envelope
- Targeted Southern Whiteface Survey Area
- ARU Recording Sites
- △ Southern Whiteface (Vu) Recordings

Data sources
GEODATA (2006). GEODATA TOPO 250K Series 3 (Shape file format) dataset (<http://pid.geoscience.gov.au/dataset/ga/64058>)
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<http://pid.geoscience.gov.au/dataset/ga/64058>



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Author: K. Fok; Drawn: A Reay
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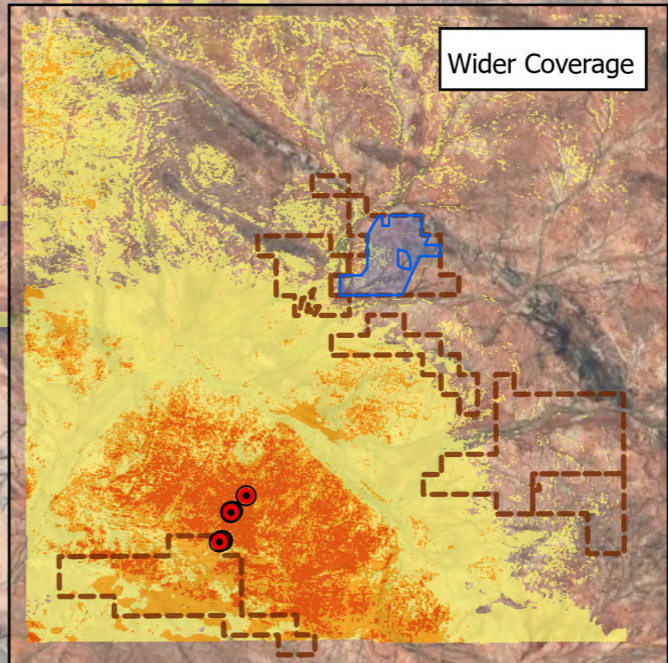
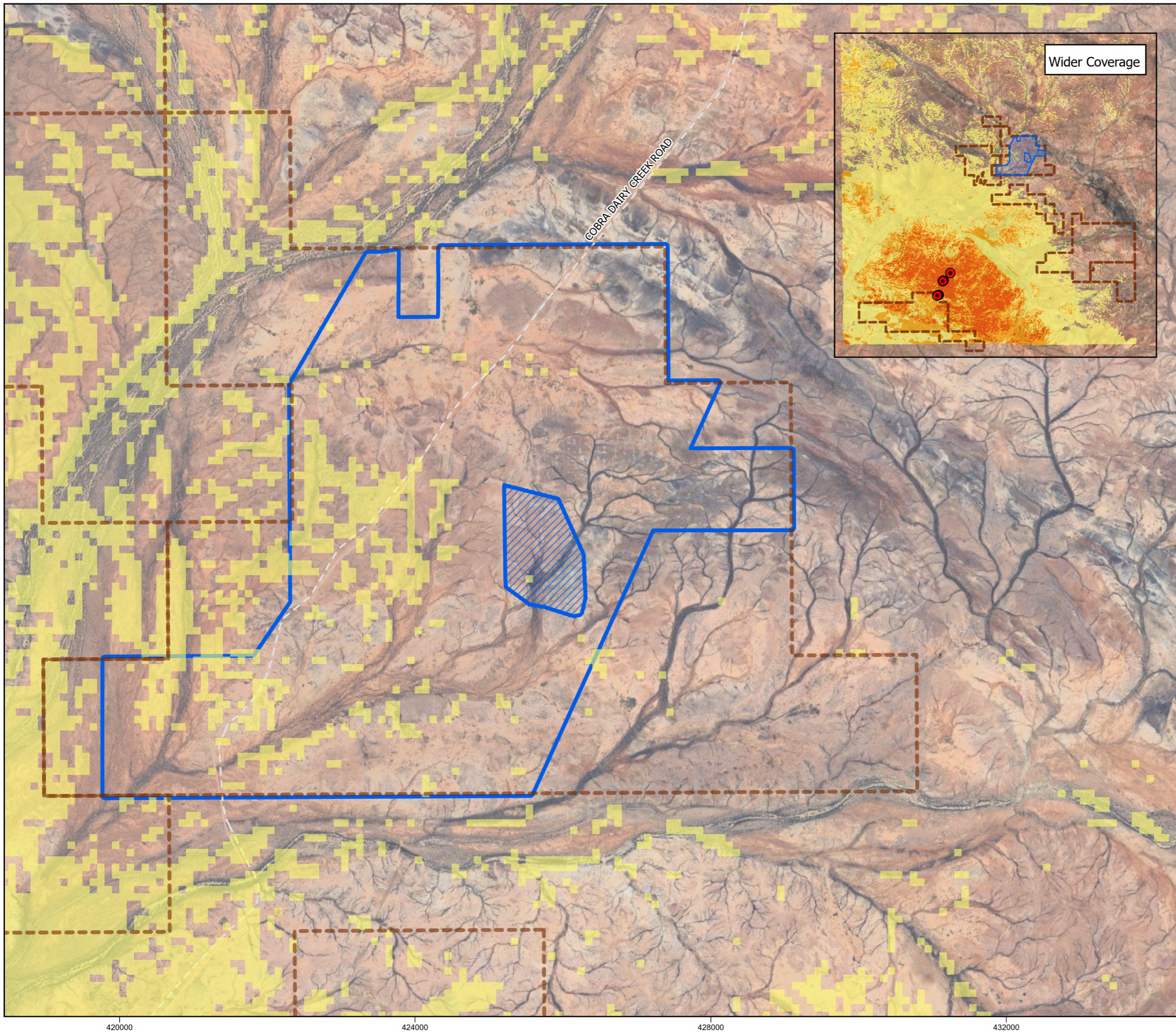


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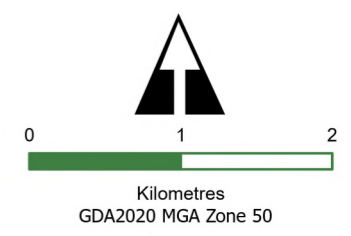
Delta Lithium

Figure 6-6:
Yinnetharra Rock Dragon Species Distribution
Model (Stantec, 2024b)



- Roads
 - Yinnetharra Rock Dragon (Vu)
 - Exclusion Zone
 - Development Envelope
 - Targeted Yinnetharra Rock-dragon Survey Area
- Yinnetharra Rock-dragon Modelled STM Habitat (Stantec)
- High
 - Medium
 - Low

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006); GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



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6.4.3.3 *Peregrine Falcon (Falco peregrinus) (Other Specially Protected Fauna (BC Act))*

The Peregrine Falcon is listed as of special concern under the BC Act. It is a large bird of prey with a black hood, blue-black upperparts and creamy white chin, throat and underparts, which are finely barred from the breast to the tail. It inhabits most environments with suitable nesting sites across Australia, with a preference for cliff faces for nesting (Stantec, 2024b).

Peregrine falcons are not confined to a specific habitat and are found across Australia (and internationally), although they are not common anywhere. No Peregrine Falcon individuals were recorded during the detailed fauna survey but has been recorded at 15 locations historically (Stantec, 2024b). The nearest record occurs approximately 39 km north of the Development Envelope, and the most recent observation was recorded in 2015, approximately 55 km northeast of the Development Envelope (Stantec, 2024b).

Primary threats to peregrine falcons include accumulation of pesticides (now-outlawed DDT) and chemicals such as fire retardant (polybrominated diphenyl ethers) in their eggs (Parks, 2004). The high swooping speed of peregrine falcons suggests they might be at risk of injury from overhead powerlines. However, they are known to live in cities (Queensland Government, 2024) and powerlines have not been documented as a threat.

6.4.3.4 *Long-tailed Dunnart (Antechinomys longicaudata) (P4 (BC Act))*

The Long-tailed Dunnart is a small marsupial weighing up to 15 – 20 g, with a tail twice the length of its head and body (WA Museum, 2025). The species is known to occur throughout the arid zone of WA, among rocky landscapes with generally little vegetation (WA Museum, 2025). It is a nocturnal species that feeds on a variety of invertebrates.

The species was not recorded during the detailed survey, but has been historically recorded within 100 km of the Development Envelope, with the nearest record approximately 56 km to the northeast of the Development Envelope (Stantec, 2024b).

Threats to dunnarts include (Bush Heritage Australia, 2023):

- Habitat loss and fragmentation.
- Feral predators such as cats and foxes.
- Frequent, intense or extensive fires.
- Habitat destruction by feral herbivores and stock (e.g. cattle).
- Use of pesticides that kill insects that dunnarts eat.

6.4.3.5 Grey Falcon (*Falco hypoleucos*) (Vulnerable (EPBC Act and BC Act))

The Grey Falcon is a compact, pale grey falcon with a heavy thick chest, long wings and dark wing tips (Threatened Species Scientific Committee, 2019). It occurs in arid and semi-arid Australia, including the Murray-Darling Basin, central Australia and Western Australia (Threatened Species Scientific Committee, 2019). The Grey Falcon inhabits open plains with treed watercourses in inland arid regions (Stantec, 2024b). It tends to forage near watercourses by ambushing flocks of smaller drinking birds (Stantec, 2024b).

No Grey Falcon individuals were recorded during the detailed fauna survey and the targeted survey (Stantec, 2024b; Terrestrial Ecosystems, 2026), and the nearest record of the species was approximately 68 km northeast of the Development Envelope (Stantec, 2024b). Suitable habitat type was identified (Major Drainage), and the Development Envelope lies within the species' known distribution range (Stantec, 2024b). Therefore, it is considered possible that the Grey Falcon may occur within the Development Envelope.

6.4.3.6 Western Pebble-mound Mouse (*Pseudomys chapmani*) (P4 (BC Act))

The Western Pebble-mound Mouse has a body with light brown hair, fawn sides and back and a darker head (Atlas of Living Australia, 2025b). Six individuals have been historically recorded within 100 km of the Development Envelope, with the nearest record located approximately 6 km east of the Development Envelope (Stantec, 2024b). There is also one possibly active mound recorded from a fauna survey completed in 2017, where is approximately 40 km north of the detailed fauna survey area (Stantec, 2024b).

The species' distribution range previously extended south into the Gascoyne and Murchison regions, however, it is believed that the species is now confined to the central and eastern Pilbara (Stantec, 2024b). The species was opportunistically observed outside of the Development Envelope (Figure 6-3), but it is considered possible to occur within the Development Envelope due to the proximity of nearby records and the occurrence of potentially suitable habitat (Stony Plain and Low Hills) for the species within the Development Envelope (Stantec, 2024b).

6.4.4 Terrestrial Invertebrate Fauna

The EPA identifies that invertebrate groups with small distributions might be at 'greater risk of changes in conservation status as a result of habitat loss or other threatening processes' (EPA, 2016d). Invertebrate taxa can be conservation-significant if they have restricted distributions, commonly referred to as short range endemic (SRE). SRE terrestrial invertebrates have natural distributions of < 10,000 km², within which occupied areas might be small, discontinuous, or fragmented. SRE invertebrates typically exhibit poor dispersal ability, highly seasonal activity patterns, low fecundity and are confined to discontinuous habitats. Their restricted distributions mean that SRE species are at greater risk of local population or taxon extinction, compared to more

widely distributed taxa. There is limited knowledge on the biology and life histories of potential SRE invertebrate taxa, which makes it difficult to determine the degree of endemism or identify suitable management measures.

During the detailed fauna survey, 70 specimens from 13 invertebrate taxa were collected. Of these, 11 taxa were represented by undescribed morphospecies and subsequently classified as potential SRE species due to insufficient geographical context. The remaining two taxa were considered widespread and are not discussed in further detail (Stantec, 2024b).

The potential SRE records from the survey, and the habitats in which they were found, are presented in Table 6-5 and Figure 6-4.

Table 6-5: Potential SRE Invertebrate Taxa Identified in the Survey Area (Stantec, 2024b)

Taxa	SRE Status (DDG/DDT) ⁷	Habitat	No. of Specimens (Locations)	Within Indicative Disturbance Footprint
Mygalomorph Spiders				
<i>Aname</i> 'Yin01'	DDG	Rocky Outcropping	4 (1)	Outside
<i>Aname</i> 'Yin02'	DDG	Alluvial Plain; Stony Plain	4 (2)	Outside
Kwonkan 'Yin03'	DDG	Stony Plain	1 (1)	Within
Pseudoscorpions				
<i>Beierolpium</i> 'Yin01'	DDG	Rocky Outcropping; Minor Drainage	8 (3)	Two individuals in one location are within; Remainder are outside
<i>Indolpium</i> 'Yin01'	DDG	Minor Drainage	1 (1)	Within
Scorpions				
<i>Lychas</i> 'bituberculatus complex Yin01'	DDG	Rocky Outcropping; Major Drainage	4 (3)	Outside
<i>Lychas</i> 'harveyi complex Yin02'	DDG	Stony Plain	1 (1)	Outside
<i>Urodacus</i> 'Yin01'	DDG	Rocky Outcropping; Major Drainage	13 (3)	Outside
<i>Urodacus</i> 'Yin02'	DDG	Low Hills; Major Drainage; Alluvial Plain	4 (3)	Outside
Isopod				
<i>Buddelundia</i> 'Yin01'	DDT	Low Hills; Major Drainage	27 (3)	One individual in one location is within; Remainder are outside
<i>Buddelundia</i> 'Yin02'	DDT	Low Hills	1 (1)	Outside

⁷ DDG: Lack of Geographic Information; DDT: Lack of Taxonomic Information

6.5 Potential Environmental Impacts

The Project has the potential to have the following direct impacts to terrestrial fauna:

- Loss of fauna habitat due to clearing.
- Direct injury or mortality of terrestrial fauna.

The Project may have the following indirect impacts to terrestrial fauna:

- Interruptions to fauna behaviours (migrating, foraging, hunting, breeding, nesting etc.).

6.5.1 Direct Impacts

6.5.1.1 *Direct Impacts to Vertebrate Fauna Habitat*

The Project will result in the clearing of up to 1,612 ha of potential vertebrate fauna habitat.

The indicative Disturbance Footprint encompasses 461.8 ha of habitat that was classified as significant to vertebrate fauna, primarily Low Hills and Minor Drainage habitats (Figure 6-3). Table 6-6 presents all fauna habitat types mapped during the detailed fauna survey and the proportion of mapped extents that occur within the Development Envelope and Indicative Disturbance Footprint.

More than 66% of the mapped extent of significant fauna habitats occurs outside the Development Envelope and Indicative Disturbance Footprint (Table 6-6). These habitats are not considered restricted within the landscape locally. Therefore, the Project is unlikely to have a significant effect on the regional abundance and distribution of these fauna habitats.

Table 6-6: Fauna Habitat Types Mapped During the Detailed Fauna Survey

Fauna Habitat Type	Significant Fauna Habitat	SRE Suitability	Detailed Survey Area (ha)	Area within indicative Disturbance Footprint		Area within Development Envelope		Mapped Area Outside of Development Envelope	
				ha	%	ha	%	ha	%
Stony Plain	-	Limited	6,601.8	1,036.2	15.7	2,130	32.3	4,471.8	67.7
Minor Drainage	Yes	Moderate	1,539	127.8	8.3	562	36.5	977	63.5
Low Hills	Yes	Moderate	1,157.3	334	28.9	521.3	45.0	636	55.0
Alluvial Plain	-	Limited	904.2	61.8	6.8	334.5	37.0	569.7	63.0
Major Drainage	Yes	High	521.9	0	0	3.4	0.6	518.5	99.4
Rocky Outcropping	-	High	353	34.3	9.7	178.8	50.7	174.2	49.3
Rocky Hill	Yes	High	91.8	0	0	0	0	91.8	100
Mulga Woodland	Yes	Moderate	10.3	0	0	0	0	10.3	100
Sandy Plain	-	Limited	8.0	0	0	0	0	8	100
Total			11,187.3	1,594.1⁸	14.2	3,730	33.3	7,457.3	66.7

6.5.1.2 Direct Impacts to Vertebrate Fauna

The impact assessment for significant vertebrate fauna is based on the Indicative Disturbance Footprint (i.e. direct impacts). The sections below describe the direct impacts for each significant vertebrate fauna species recorded and habitat values in the Indicative Disturbance Footprint.

6.5.1.2.1 Southern Whiteface (*Aphelocephala leuciposis*) (Vulnerable (EPBC Act and BC Act))

The impact assessment of Southern Whiteface is supported by two field surveys (Stantec, 2024b; Terrestrial Ecosystems, 2026). Southern Whiteface individuals were observed at 14 locations by two field surveys (Figure 6-3), and most of the observation records were outside of the Development Envelope and Indicative Disturbance Footprint. Based on the observation records recorded by Terrestrial Ecosystems (2026), Southern Whiteface were mostly recorded in proximity to small ephemeral creek lines on open areas, but close enough to the

⁸ Note that 17.90 ha is classified as cleared

ephemeral creek line to rapidly retreat to shrubs and trees when disturbed. These areas aligned with the “Minor Drainage” habitat mapped by Stantec (2024b).

Observation records also suggest that Southern Whiteface were predominantly recorded along the creek lines north and northwest of the Development Envelope (Figure 6-3). While not conclusive, this indicates that the species may prefer the vegetation types and conditions in those areas compared with those within the Indicative Disturbance Footprint.

In addition to the observation records, the ARU recordings show that there were multiple Southern Whiteface calls over multiple days on some ARUs but only one or a few calls on a single day on other ARUs (Terrestrial Ecosystems, 2026). The locations of these ARU units that recorded Southern Whiteface calls were also immediately adjacent to the Minor Drainage habitat (Figure 6-5). By combining both the observation records and ARU recordings, all data suggest Southern Whiteface recorded in the region have their preferred habitat type (i.e. Minor Drainage) and would present for multiple days in those habitat areas but were transient at other locations.

Although there are important habitats documented in the *Conservation Advice for Aphelocephala leucopsis (Southern Whiteface)* published by DCCEEW (2023), these important habitat definitions are very broad and includes very large areas in Western Australia (e.g. Murchison, Midwest and Goldfields region) (Terrestrial Ecosystems, 2026). In addition, there is no critical habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (DCCEEW, 2023). As a result, the Conservation Advice is not particularly informative for identifying which specific habitat types within the Development Envelope and its surrounding are most likely to be utilised by the Southern Whiteface.

In contrast, field surveys completed for the Project provide a much clearer picture of habitat use at the local scale, showing that Southern Whiteface were predominantly recorded in proximity to Minor Drainage habitat. Of the Minor Drainage habitat mapped by Stantec (2024b), 36.5% (562 ha) of the habitat occurs within the Development Envelope, while more than 63% (977 ha) of habitat lies outside the Development Envelope (Table 6-6).

It is unlikely that Southern Whiteface recorded are restricted to the habitats within the Development Envelope and surroundings, and unlikely the Project implementation will have a significant impact on Southern Whiteface populations.

6.5.1.2.2 Yinnietharra Rock-dragon (*Ctenophorus yinnietharra*) (Vulnerable (EPBC Act and BC Act))

The Yinnietharra Rock-dragon is an understudied reptile with a limited distribution, and ground surveys to determine the species habitat preferences are a high research priority (Department of the Environment, Water, Heritage and the Arts, 2008). Under the current habitat descriptions, the species occupies tall open shrublands where it inhabits low granite outcrops which are often less than 1 m² in area (Stantec, 2024a). It is also noted that the Yinnietharra Rock-dragon is a habitat specialist, inhabiting granite outcrops composed of Archaean gneissic biotite granites and granodiorite (Stantec, 2024a).

One individual was observed opportunistically outside of the Development Envelope during phase 2 of the detailed fauna survey, and a separate targeted survey was completed in the surrounding area, where 12 individuals were recorded (Stantec, 2024a, 2024b). It is noted that the species does not appear to occupy the massive granite outcrops in the same area, which are instead inhabited by the widely distributed Ring-tailed Dragon (*Ctenophorus caudicinctus*) (Stantec, 2024a). Herpetologists have suggested that the Yinnietharra Rock-dragon and Ring-tailed Dragon do not co-occur (Stantec, 2024a).

The final ensemble Species Distribution Modelling (SDM) indicated that habitat classified as highly suitable for the Yinnietharra Rock-dragon was consistent with the findings of the targeted survey (Figure 6-6) (Stantec, 2024a). The targeted survey also expanded on the limited published information on suitable habitat and the known ecological preferences for the species. It was previously noted that the species favoured lower granite outcrops, the spacing of outcrops (sparse) and substrate (predominantly a limited cover of gravel) were also important environmental variables that influence the presence of the species (Stantec, 2024a).

The results of the targeted survey also support the hypothesis that Yinnietharra Rock-dragon do not co-occur with Ring-tailed Dragons (Stantec, 2024a). While the reason for this is currently unknown, Ring-tailed Dragons were frequently observed on larger granite outcrops within the Development Envelope but they were not found where Yinnietharra Rock-dragons occurred (Stantec, 2024a). The presence of Ring-tailed Dragons may serve as a useful indicator that Yinnietharra Rock-dragons are absent from an area.

The outcomes of the SDM, together with the targeted survey results, support the finding that the Indicative Disturbance Footprint does not have suitable habitat for the Yinnietharra Rock-dragon (Figure 6-6). Given the absence of suitable habitat for the species and the lack of records despite intensive survey effort, it is unlikely that an important population of the Yinnietharra Rock-dragon is present within the Development Envelope.

6.5.1.2.3 Listed Vertebrate Fauna – Possible or Likely to Occur

Fauna surveys completed for the Project found no evidence of species listed in Table 6-7, despite extensive search effort, which indicates that these species might be present at very low densities. These species would

not be exclusively reliant on habitat in the Development Envelope. Table 6-7 below assesses the potential impacts to listed vertebrate fauna that were rated as Possible or Likely to Occur in the Development Envelope. It is unlikely that these listed vertebrate fauna species will be impacted by the Project.

Table 6-7: Assessment of Potential Impacts on Listed Vertebrate Fauna Likely or Possible to Occur Within the Development Envelope

Species	Habitat Type	Assessment of Impacts from the Development Envelope
Long-tailed Dunnart (<i>Antechinomys longicaudata</i>)	<p>Rocky, hilly areas, occasionally open areas with a stony, rocky mantle.</p> <p>Suitable habitat in the survey area for this species includes:</p> <ul style="list-style-type: none"> • Low Hills • Rocky Hill 	<p>Unlikely to have any impact.</p> <p>Nearest record 56 km away (recorded in 1992), and the most recent record is 81 km away (recorded in 2012).</p> <p>Suitable habitats identified in the Development Envelope do not connect with each other (Figure 6-2), and no evidence of long-tailed dunnart use of the area was recorded during the surveys.</p>
Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>)	<p>Rocky ranges with spinifex and stony substrates.</p> <p>Suitable habitat in the survey area for this species includes:</p> <ul style="list-style-type: none"> • Stony Plain • Low Hills 	<p>Unlikely to have any impact.</p> <p>Nearest record 6 km away (recorded in 1997). Studies completed previously indicated that the species' distribution extended south into the Gascoyne and Murchison regions.</p> <p>Clearing and infrastructure development are unlikely to significantly impact habitat values for this species.</p>
Grey Falcon (<i>Falco hypoleucos</i>)	<p>Inhabits open plains with treed watercourses in inland arid regions. Tends to forage near watercourses by ambushing flocks of smaller drinking birds.</p> <p>All habitat types mapped within the survey area are considered suitable habitat.</p>	<p>Unlikely to have any impact.</p> <p>The Development Envelope does not intersect with the critical habitat (i.e. Major Drainage Line) within the detailed fauna survey area (Figure 6-2), and all other habitats identified within the detailed fauna survey area are also supporting habitats for this species. In addition, no Grey Falcon individuals were recorded in any of the surveys (Stantec, 2024b; Terrestrial Ecosystems, 2026).</p> <p>This species is not restricted to one habitat type, and the Project is unlikely to significantly impact habitat values for this species.</p>
Peregrine Falcon (<i>Falco peregrinus</i>)	<p>The species occurs in habitats supporting nest sites, preferentially cliff-faces however also uses raptor stick nests.</p> <p>All habitat types mapped within the survey area are considered suitable habitat.</p>	<p>Unlikely to have any impact.</p> <p>The Development Envelope does not intersect with the nesting habitat (i.e. Major Drainage Line with tall stands of eucalypts) within the detailed fauna survey area (Figure 6-2), and all other habitats identified within the detailed fauna survey area are considered foraging habitat for the species.</p> <p>This species is not restricted to one habitat type, and the Project is unlikely to significantly impact habitat values for this species.</p>

6.5.1.3 *Matters of National Environmental Significance*

From the ecological surveys completed for the Project, two Matters of National Environmental Significance (MNES) terrestrial fauna species (Southern Whiteface and Yinnietharra Rock-dragon) were recorded, and one MNES terrestrial fauna species have the potential to occur in the detailed fauna survey area (Table 6-3 and Table 6-4). All species are classified as 'Vulnerable' under the EPBC Act and BC Act. An assessment against the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (Department of the Environment, 2013) was completed for fauna listed under the EPBC Act. The assessment determined that all species are not likely to be impacted by the Project development. Table 6-8 presents the assessment for MNES terrestrial fauna species.

Table 6-8: MNES Significant Impact Assessment – Terrestrial Fauna Species

<p>MNES Significant Impact Guidelines 1.1 – Vulnerable Species</p>	<p>Southern Whiteface <i>Aphelocephala leuciposis</i> Vulnerable – EPBC Act & BC Act</p>	<p>Yinnietharra Rock-dragon <i>Ctenophorus yinnietharra</i> Vulnerable – EPBC Act & BC Act</p>	<p>Grey Falcon <i>Falco hypoleucos</i> Vulnerable – EPBC Act & BC Act</p>
<p>Lead to a long-term decrease in the size of an important population of a species</p>	<p>The Southern Whiteface is broadly distributed across inland Western Australia. Some of the habitats observed within the Development Envelope are suitable for use by the Southern Whiteface. However, similar habitats exist in neighbouring areas and throughout the region.</p> <p>The recent avifauna survey completed by Terrestrial Ecosystem (2026) completed 344 observation surveys and 110 acoustic⁹ surveys over the Development Envelope and surrounds. Southern Whiteface were recorded at 13 locations during observational surveys and 25 locations in the acoustic surveys, with most of the observations occurring outside of the Development Envelope (Figure 6-3). The acoustic recordings detected the birds both inside and outside the Development Envelope (Figure 6-5).</p> <p>Regionally, there are more than 52 records of Southern Whiteface within 200 km of the Development Envelope (Terrestrial Ecosystems, 2026). The density of Southern Whiteface is likely similar across the neighbouring regional areas.</p> <p>It is considered that the Southern Whiteface individuals recorded are not an important population as defined by the Department of the Environment (2013).</p> <p>Terrestrial Ecosystems (2026) stated “Given that this small bush bird will move if disturbed, the impact of clearing vegetation and mining is unlikely to be significant for this species”.</p> <p>The implementation of the Project is unlikely to result in a long-term decrease in the size of an important population of a species.</p>	<p>Fauna surveys completed (Stantec, 2024a, 2024b) indicated that no suitable habitat for the Yinnietharra Rock-dragon occurs within the Development Envelope. No individuals were observed / recorded within the Development Envelope during detailed fauna survey and targeted search. There is no evidence that an important population of the species is present within the Development Envelope.</p> <p>As there is no suitable breeding or foraging habitat for the Yinnietharra Rock-dragon within the Development Envelope, the implementation of the Project is unlikely to result in a long-term decrease in the size of an important population of a species.</p>	<p>Fauna surveys completed (Stantec, 2024b; Terrestrial Ecosystems, 2026), and no individuals were observed or recorded within the Development Envelope. The closest recording of the species is approximately 39 km away from the Development Envelope.</p> <p>This species was only rated as possible to occur in the Development Envelope (Stantec, 2024b), and there is no evidence that an important population of Grey Falcon occupies the area.</p> <p>It is unlikely that the development of the Project would result in a long-term decrease in the size of an important population of a species.</p>

⁹ Acoustic surveys using Autonomous Recording Devices (ARU)

<p>MNES Significant Impact Guidelines 1.1 – Vulnerable Species</p>	<p>Southern Whiteface <i>Aphelocephala leuciposis</i> Vulnerable – EPBC Act & BC Act</p>	<p>Yinnietharra Rock-dragon <i>Ctenophorus yinnietharra</i> Vulnerable – EPBC Act & BC Act</p>	<p>Grey Falcon <i>Falco hypoleucos</i> Vulnerable – EPBC Act & BC Act</p>
<p>Reduce the area of occupancy of an important population</p>	<p>The mapped data of Southern Whiteface records by Terrestrial Ecosystem (2026) indicate that it is widespread in the central and interior parts of Western Australia. Terrestrial Ecosystem (2026) also suggested that, had the Southern Whiteface’s occupancy in Western Australia been surveyed randomly, rather than concentrating on mining areas and locations accessible by vehicles, it would likely have demonstrated that the species is broadly distributed throughout Western Australia and potentially more abundant within the Gascoyne and Murchison bioregions.</p> <p>There is no evidence to indicate that the number of Southern Whiteface recorded in and around the Development Envelope represents an important population (Terrestrial Ecosystems, 2026). Therefore, the loss of a small quantity of vegetation in the Development Envelope will not materially reduce the area of occupancy of an important population.</p>	<p>The ‘area of occupancy’ for the Yinnietharra Rock-dragon has been estimated by means of a Species Distribution Model (SDM) (Stantec, 2024a). The whole of the Development Envelope has been mapped as ‘low suitability habitat’. Accordingly, the implementation of the Project is unlikely to reduce the area of occupancy of an important population.</p>	<p>The Grey Falcon extent of occurrence is estimated at 6.1 million km², and the area of occupancy estimated at 6,000 km² (Threatened Species Scientific Committee, 2019). There is uncertainty about historical declines and recent evidence of declines is lacking, and no population trend data is available (Threatened Species Scientific Committee, 2019).</p> <p>The Development Envelope is situated within the current distribution of the species and is not located near the limit of the species current known distribution. Although the Project proposed to clear up to 1,612 ha of vegetation, due to similar habitat types are abundant in the regional area, the Project is unlikely to materially change the availability or quality of habitat for the species, to the point where an important population of the species’ area of occupancy would be reduced.</p>
<p>Fragment an existing important population into two or more populations</p>	<p>The Southern Whiteface has a broad geographic distribution, spanning across the entire width of southern Western Australia and extends into South Australia and the Northern Territory (Terrestrial Ecosystems, 2026). The proposed clearing of up to 1,612 ha represents only a very small proportion of the species’ overall habitat. Given the species’ mobility and its ability to readily shift activity areas when disturbed, the Project is not expected to fragment an existing population into two or more populations.</p>	<p>No population was recorded within the Development Envelope, so the Project will not fragment an existing important population.</p>	<p>No individuals / population were recorded within the Development Envelope, so the Project will not fragment an existing important population. There is no evidence that an important population exists within or near to the Development Envelope.</p>
<p>Adversely affect habitat critical to</p>	<p>There is no critical habitat for Southern Whiteface as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (DCCEEW, 2023). The ‘habitat critical to</p>	<p>No critical habitat has been defined by DCCEEW for this species (Department of the Environment, Water, Heritage and the</p>	<p>Stantec (2024b) identified Major Drainage Line as important habitat (i.e. Gascoyne River) for Grey Falcon.</p>

<p>MNES Significant Impact Guidelines 1.1 – Vulnerable Species</p>	<p>Southern Whiteface <i>Aphelocephala leuciposis</i> Vulnerable – EPBC Act & BC Act</p>	<p>Yinnietharra Rock-dragon <i>Ctenophorus yinnietharra</i> Vulnerable – EPBC Act & BC Act</p>	<p>Grey Falcon <i>Falco hypoleucos</i> Vulnerable – EPBC Act & BC Act</p>
<p>the survival of a species</p>	<p>the survival’ for the Southern Whiteface described in DCCEEW (2023) is very general and applies to most of the inland Western Australia (i.e. Midwest, Murchison, Goldfields and Gascoyne regions). Although the habitats associated with drainage lines occur within the Development Envelope, this vegetation assemblage is common throughout the surrounding landscape, and as such, the impact on the species is not significant (Terrestrial Ecosystems, 2026).</p> <p>Given the density and shifting activities of the Southern Whiteface population in the vicinity of the Development Envelope, the removal of vegetation in the Development Envelope is unlikely to adversely affect habitat critical to the survival of the species.</p>	<p>Arts, 2008). The habitat within the Development Envelope was determined as not suitable for the species (Stantec, 2024b).</p> <p>Based on this, the development of the Project will not adversely impact habitat critical to the survival of the species.</p>	<p>The key infrastructure of the Project (i.e. processing plant, tailings storage facility, open pits) is approximately 15 km away from the Gascoyne River, and direct impacts on the Gascoyne River and associated riparian zones are unlikely. In addition, the nearest known record of Grey Falcon is approximately 39 km away from the Development Envelope, and therefore they are not restricted to Major Drainage Line habitat type for survival.</p> <p>It is unlikely that the Project will adversely impact habitat critical to the survival of the species.</p>
<p>Disrupt the breeding cycle of an important population</p>	<p>The nesting opportunities and materials described by Johnstone et al. (2004) are widely available in Western Australia and further afield (Terrestrial Ecosystems, 2026). Based on geographic records, the Southern Whiteface was found breeding in different locations in the widely semi-arid areas of Western Australia (Terrestrial Ecosystems, 2026), and there is no evidence that the Southern Whiteface recorded in and around the Development Envelope represents an important population.</p>	<p>As the Development Envelope does not contain any breeding habitat, it is unlikely to disrupt any breeding cycles for Yinnietharra Rock-dragon. There is no evidence that an important population of the species is present within the Development Envelope.</p>	<p>Vegetation along the Gascoyne River is identified as suitable breeding habitat for Grey Falcon, but the key infrastructure of the Project is unlikely to directly or indirectly affect the river or associated riparian vegetation.</p> <p>In addition, there is no important population identified within the Development Envelope from the surveys completed (Stantec, 2024b; Terrestrial Ecosystems, 2026). Therefore, it is unlikely the Project will disturb the breeding cycles of Grey Falcon.</p>
<p>Modify, destroy and remove or isolate or decrease the availability or quality of habitat to the extent that the</p>	<p>The description of ‘quality habitat’ for the Southern Whiteface is not defined in the current Conservation Advice (DCCEEW, 2023). Although the species was recorded within and near the Development Envelope, available evidence does not indicate that this habitat constitutes higher-quality habitat (Terrestrial</p>	<p>The Development Envelope is not a suitable habitat for the Yinnietharra Rock-dragon. As such, the development of Project is unlikely to modify, destroy, remove, isolate, or decrease the</p>	<p>No project activities are proposed within the important habitat area (i.e. Gascoyne River), as it is outside of the proposed Development Envelope.</p>

<p>MNES Significant Impact Guidelines 1.1 – Vulnerable Species</p>	<p>Southern Whiteface <i>Aphelocephala leuciposis</i> Vulnerable – EPBC Act & BC Act</p>	<p>Yinnietharra Rock-dragon <i>Ctenophorus yinnietharra</i> Vulnerable – EPBC Act & BC Act</p>	<p>Grey Falcon <i>Falco hypoleucos</i> Vulnerable – EPBC Act & BC Act</p>
<p>species is likely to decline</p>	<p>Ecosystems, 2026). Of the 13 observations made during the avifauna survey, only 1 observation occurred within the Development Envelope (Figure 6-3), and the habitats within the Development Envelope are consistent with those found throughout the surrounding landscape (Terrestrial Ecosystems, 2026).</p> <p>Given this similarity and the species’ broad distribution beyond the Development Envelope, there is no indication that habitat within the Development Envelope is of greater importance or higher-quality than neighbouring areas.</p>	<p>availability or quality of habitat to the extent that the species is likely to decline.</p>	<p>The Project proposes to clear vegetation that could be used for foraging by the species (if present). However, the species has not been reported or seen in or in the vicinity of the Development Envelope by any of the surveys (Stantec, 2024b; Terrestrial Ecosystems, 2026), it is unlikely the Grey Falcon species will utilise the area as supporting habitat. In addition, the critical habitat, which supports breeding and roosting as described by Stantec (being the major drainage lines) is outside of the proposed Development Envelope.</p> <p>Considering there is abundant habitat outside of the Development Envelope that can be utilised by the species for foraging, Project impacts are unlikely to result in modification, destruction, removal, degradation or isolation of habitat to a degree that would cause the species to decline.</p>
<p>Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat</p>	<p>The development of the Project is unlikely to result in invasive species (e.g. feral cats) harmful to the Southern Whiteface. The Proponent intends to undertake annual feral control programs during operations. The implementation of the Project is unlikely to result in the introduction or spread of additional invasive species.</p>	<p>Four introduced mammal species were recorded within the detailed fauna survey area, including European Cattle (<i>Bos taurus</i>), Feral Cats (<i>Felis catus</i>), European Rabbits (<i>Oryctolagus cuniculus</i>), and House Mice (<i>Mus musculus</i>).</p> <p>The Project lies within an operating pastoral station. Although cattle grazing is a known threat to the Yinnietharra Rock-dragon (Department of the Environment, Water, Heritage and the Arts, 2008), no individuals or suitable habitat for the</p>	<p>Four introduced mammal species were recorded within the detailed fauna survey area, including European Cattle (<i>Bos taurus</i>), Feral Cats (<i>Felis catus</i>), European Rabbits (<i>Oryctolagus cuniculus</i>), and House Mice (<i>Mus musculus</i>).</p> <p>The largest threat to the species is associated with clearing for agriculture (Threatened Species Scientific Committee, 2019) but not associated with introduced species. However, predation by cats is also listed as a very high threat to Grey Falcons (Threatened Species Scientific</p>

<p>MNES <i>Significant Impact</i> 1.1 – <i>Vulnerable Species</i></p>	<p>Southern Whiteface <i>Aphelocephala leuciposis</i> Vulnerable – EPBC Act & BC Act</p>	<p>Yinnietharra Rock-dragon <i>Ctenophorus yinnietharra</i> Vulnerable – EPBC Act & BC Act</p>	<p>Grey Falcon <i>Falco hypoleucos</i> Vulnerable – EPBC Act & BC Act</p>
		<p>Yinnietharra Rock-dragon have been recorded within the Development Envelope. Feral cats were recorded in every habitat type present within the fauna survey area except for Sandy Plain (Stantec, 2024b). The implementation of the Project is unlikely to result in the introduction or spread of additional invasive species.</p>	<p>Committee, 2019). Grey Falcons may feed on House Mice, although their main diet consists of other birds.</p> <p>The development of Project is unlikely to result in the introduction or spread of additional invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat.</p>
<p>Introduce disease that may cause the species to decline</p>	<p>The development of the Project is unlikely to introduce disease that may cause the species to decline. In addition, no disease identified in the approved Conservation Advice (DCCEEW, 2023).</p>	<p>The Project is unlikely to introduce disease that may cause the species to decline. In addition, no disease identified in the approved Conservation Advice (Department of the Environment, Water, Heritage and the Arts, 2008).</p>	<p>The Project is unlikely to introduce disease that may cause the species to decline.</p>
<p>Interfere substantially with the recovery of the species</p>	<p>There is no recovery plan for Southern Whiteface, and it is highly improbable that the Project implementation will significantly and detrimentally impact the overall Southern Whiteface population or the bioregion’s Southern Whiteface population (Terrestrial Ecosystems, 2026).</p>	<p>The development of the Project is unlikely to interfere substantially with the recovery of the Yinnietharra Rock-dragon as the area does not contain suitable habitat for the species and is not assessed to be important for the recovery of this species.</p>	<p>The nearest known record of Grey Falcon is approximately 39 km away from the Development Envelope. The development of the Project is not expected to directly or indirectly impact the Gascoyne River or adjoining riparian zones, considered as the primary nesting and roosting habitat for the species. There is no published recovery plan for the Grey Falcon, but preservation of known nesting trees (including adequate buffer areas) is identified as a priority action in the Conservation Advice for this species.</p> <p>The implementation of the Project will, if anything, reduce existing pressures on Grey Falcons by improving fire management and</p>

<i>MNES Impact 1.1 – Vulnerable Species</i>	<i>Significant Guidelines</i> Southern Whiteface <i>Aphelocephala leuciposis</i> Vulnerable – EPBC Act & BC Act	Yinnietharra Rock-dragon <i>Ctenophorus yinnietharra</i> Vulnerable – EPBC Act & BC Act	Grey Falcon <i>Falco hypoleucos</i> Vulnerable – EPBC Act & BC Act
			grazing management within the Development Envelope. Based on this, the implementation of the Project is unlikely to interfere substantially with the recovery of the Grey Falcon.

6.5.1.4 *Direct Impacts to SRE Invertebrate Fauna*

The potential scale of impact to recorded potential SRE invertebrates was determined based on their location relative to the Indicative Disturbance Footprint, and whether their habitat connectivity is isolated or connected, as well as whether its extent is limited or widespread. Potential SRE invertebrate fauna individual populations would be directly impacted by the Project if they occur in the Indicative Disturbance Footprint. If populations are isolated and lack connectivity for broader dispersal, this impact may be significant to the taxa. However, if their habitat extends outside of the Indicative Disturbance Footprint and there is connectivity for broader dispersal, it is likely that the taxa will occur outside of the area of Indicative Disturbance Footprint (i.e. outside the area of direct impact).

An assessment of the scale of impact to potential SRE invertebrate taxa is provided in Table 6-9. The habitat connectivity and habitat extent were drawn from the habitat identified by Stantec (2024b) (Table 6-4). For taxa recorded across multiple habitat types, the habitat rating was determined using the habitat with the greatest extent and connectivity, as this indicates the taxa are not limited to one habitat type.

In Table 6-9, the column 'Within the Indicative Disturbance Footprint' indicates which taxa were recorded only within the Indicative Disturbance Footprint by a 'Yes' entry in the table; taxa recorded outside the Indicative Disturbance Footprint by a 'No' entry in the table; and those taxa with multiple records within and outside the Indicative Disturbance Footprint are indicated by a 'Some' entry in the table.

The type of impact considers whether the habitat type is restricted and if all records were within the Indicative Disturbance Footprint.

Table 6-9: Scale of Impact to Potential SRE Invertebrate Taxa in the Indicative Disturbance Footprint

Taxa	Habitat Type(s) (Figure 6-2)	Habitat Connectivity	Habitat Extent	Within the Indicative Disturbance Footprint	Type of Impact
Mygalomorph Spiders					
Aname 'Yin01'	Rocky Outcropping	Isolated	Limited	No	No direct impact. Records are entirely outside of the Development Envelope
Aname 'Yin02'	Alluvial Plain; Stony Plain	Connected	Widespread	No	No direct impact. Records are entirely outside of the Development Envelope
Kwonkan 'Yin03'	Stony Plain	Connected	Widespread	Yes	Some direct impact, unlikely to be significant.
Pseudoscorpions					
<i>Beierolpium</i> 'Yin01'	Rock Outcropping; Minor Drainage	Connected	Widespread	Some	Some direct impact, unlikely to be significant.
<i>Indolpium</i> 'Yin02'	Minor Drainage	Connected	Widespread	Yes	Some direct impact, unlikely to be significant.
Scorpions					
<i>Lychas 'bituberculatus</i> complex 'Yin01'	Rocky Outcropping; Major Drainage	Connected	Limited	No	No direct impact. Possible low-level indirect impact, as two individuals were recorded within the Development Envelope but outside of the Indicative Disturbance Footprint.
<i>Lychas 'harveyi</i> complex 'Yin02'	Stony Plain	Connected	Widespread	No	No direct impact. Records are entirely outside of the Development Envelope
<i>Urodacus</i> 'Yin01'	Rocky Outcropping; Major Drainage	Connected	Limited	No	No direct impact. Records are entirely outside of the Development Envelope
<i>Urodacus</i> 'Yin02'	Low Hills; Major Drainage; Alluvial Plain	Connected	Widespread	No	No direct impact. Records are entirely

Taxa	Habitat Type(s) (Figure 6-2)	Habitat Connectivity	Habitat Extent	Within the Indicative Disturbance Footprint	Type of Impact
					outside of the Development Envelope
Isopod					
<i>Buddelundia</i> 'Yin01'	Low Hills; Major Drainage	Connected	Widespread	Some	Some direct impact, unlikely to be significant.
<i>Buddelundia</i> 'Yin02'	Low Hills	Connected	Widespread	No	No direct impact. Records are entirely outside of the Development Envelope

6.5.1.5 Direct Impacts to SRE Invertebrate Fauna Habitat

Specific habitat types that were classified as significant based on their potential to support SRE invertebrate fauna are discussed below, including a discussion of the impact of the Project on these habitat types.

Based on the survey completed by Stantec (2024b), Rocky Outcropping, Rocky Hill and Major Drainage were classified as highly suitable habitat for SRE invertebrates; while Minor Drainage, Low Hills and Mulga Woodland were classified as moderate suitable habitat (Stantec, 2024b).

The Rocky Hill, Major Drainage and Mulga Woodland habitat types are entirely outside of the Development Envelope, and no impact is expected to these habitat types from the Project activities (Figure 6-4). The Minor Drainage and Low Hills habitat types extend up to 15 km beyond the disturbance footprint (Figure 6-4). Therefore, the Project will not materially reduce the extent of Rocky Hill, Major Drainage, Mulga Woodland, Minor Drainage and Low Hills habitat types in the region.

The Rocky Outcropping habitat type is not continuous, and extensive areas of similar habitat occur outside the Indicative Disturbance Footprint (Figure 6-4). While nearly half of the Rocky Outcropping habitat mapped (178 ha; 50.4%) lies within the Development Envelope, only 34.3 ha (9.7%) falls inside the Indicative Disturbance Footprint (Table 6-6). The Project will not significantly reduce the extent of Rocky Outcropping habitat type in the regional area.

Potential SRE invertebrate fauna recorded within the Indicative Disturbance Footprint occur in habitat types that generally occur outside of the Indicative Disturbance Footprint. While these taxa were identified as potential SRE due to limited taxonomic or geographic information, their presence in similar habitats outside the Indicative

Disturbance Footprint suggests that the Project will not significantly impact potential SRE invertebrate fauna or their habitats.

6.5.2 Indirect Impacts

The potential indirect impacts of the Project that may impact terrestrial fauna individuals or adversely impact habitat in the Development Envelope include:

- Degradation or alteration of habitat as a result of altered hydrological regimes.
- Habitat degradation associated with construction and operational activities, including dust and altered fire regimes.
- Disturbance from light, noise and / or vibration, resulting in the displacement of fauna associated with construction, operational and closure activities.

6.5.2.1 *Degradation or Alteration of Habitat as a Result of Altered Hydrological Regimes*

Surface water features within the Development Envelope and Indicative Disturbance Footprint provide important habitat for significant fauna, such as the Southern Whiteface. The Project is traversed by several drainage lines, and the potential changes resulting from catchment loss and / or discharge have been assessed in Section 8. The hydrological assessment concludes that there will not be a significant change to the hydrological regimes associated with the Project activities and, therefore, habitat values of watercourses and associated riparian zones will not be adversely affected.

Potential impacts on aquatic fauna are addressed in Section 8 as part of the Surface Water environmental factor.

6.5.2.2 *Habitat Degradation Associated with Construction and Operation Activity*

6.5.2.2.1 Dust

Dust emissions above background levels can adversely impact fauna individuals and harm fauna habitats. A dust monitor has been installed in the vicinity of the Yinnetharra Station (approximately 6 km southwest of the Development Envelope) for baseline monitoring. No specific mitigation measures have been developed for control of dust impacts on terrestrial fauna. Standard industry controls will be implemented to minimise the dust emissions from mining operations, which has been described in Section 5.5.3 as part of the Flora and Vegetation factor.

6.5.2.2.2 Fire

Fire may impact fauna directly or modify their habitats through altered fire frequency and intensity (Jhariya & Raj, 2014). Too frequent, hot, or extensive fires during hot, dry times of the year can reduce habitat capacity to

support diverse fauna assemblages by altering the vegetation structure and composition, resulting in changes in food quantity and quality and changes in cover and microhabitats (Griffiths & Brook, 2014).

6.5.2.3 *Disturbance For Light, Noise and / or Vibration, Resulting in the Displacement of Fauna*

6.5.2.3.1 Light

Light emissions can disorient flying birds, particularly during migration, and cause them to divert from efficient migratory routes or collide with infrastructure (DoEE, 2020). Artificial lights may disrupt nocturnal mammals' behaviour and cause migration away from the Development Envelope into potentially unsuitable habitats. Lighting at the Development Envelope will be designed to minimise light spill in alignment with the *Position Statement: Dark sky and astrotourism* (DPLH, 2022), where feasible and safe to do so.

6.5.2.3.2 Noise and Vibration

Increased noise can disturb fauna. Potential impacts caused by noise can cause interruptions in feeding and resting behaviour, reducing reproductive success and complete abandonment of an area (Newport et al., 2014). Mine equipment will be selected and maintained to minimise noise emissions.

6.5.2.4 *Increase in Abundance and Diversity of Introduced Fauna Species*

Four introduced fauna species were recorded within the detailed fauna survey area, including European Cattle (*Bos taurus*), Feral Cats (*Felis catus*), European Rabbits (*Oryctolagus cuniculus*), and House Mice (*Mus musculus*) (Stantec, 2024b). The development of a putrescible landfill has the potential to attract and increase the abundance and diversity of introduced species, which may increase competition with and predation of native species.

Putrescible waste generated within the Development Envelope will be managed in accordance with the *Environmental Protection (Rural landfill) Regulations 2002*, or licence conditions issued under Part V of the EP Act. The putrescible landfill will be sited, designed and constructed in accordance with *Water Quality Protection Note (WQPN) 111 - Landfills for disposal of putrescible materials* (DoW, 2009b). The landfill site will also be fenced and gated to prevent access to both native and introduced fauna.

6.5.3 Mitigation

This section describes the mitigation measures that have been applied during preliminary design of the Project, and the mitigation measures that will be applied during detailed design, construction and operations, to minimise the Project's impact on significant terrestrial fauna.

The following measures have been implemented to avoid potential impacts to significant terrestrial fauna individuals and their habitats:

- The Indicative Disturbance Footprint has been designed to avoid and / or minimise impacts to identified significant fauna habitat.

The following measures will be implemented to minimise potential impacts to significant terrestrial fauna individuals and their habitats:

- A ground disturbance permit procedure will be implemented to minimise the risk of unplanned or unauthorised clearing.
- Pre-disturbance inspections will be undertaken to confirm presence of significant terrestrial fauna species.
- Undertake progressive rehabilitation wherever practicable throughout operations and rehabilitate the Project at the cessation of mining to a state suitable for stakeholder expectations.
- Implementation of feral animal control program (if required) to minimise threat to native species.
- All equipment and vehicles are restricted to designated tracks.
- Implementation of waste management plan to minimise risk of vermin and attracting introduced fauna species.
- Open excavations, trenches and water storage facilities to be fitted with adequate fauna egress and fenced where practical.
- Reporting of fauna deaths in annual environmental reports.

6.6 Predicted Outcome

The Project is unlikely to have a significant impact on the biological diversity and ecological integrity of terrestrial fauna in the Development Envelope and surrounds. The Project maintains biological diversity through avoidance of direct impacts to significant fauna individuals and the habitats that support them.

Ecological integrity of habitats that support significant fauna will be maintained. The Project will not substantially reduce the regional extent of habitats that support significant fauna recorded in the Development Envelope. Although potential SRE invertebrate fauna were recorded within the Indicative Disturbance Footprint, their distribution is not restricted to the Development Envelope.

Mitigation measures to be applied during detailed design, construction and operations will reduce the likelihood of indirect impacts as low as reasonably practicable.

The Project meets the EPA objective to protect significant terrestrial fauna so that biological diversity and ecological integrity are maintained.

7 INLAND WATERS – GROUNDWATER

The EPA defines inland waters as ‘the occurrence, distribution, connectivity, movement, and quantity (hydrological regimes) of inland water including its chemical, physical, biological and aesthetic characteristics (quality) (EPA, 2018). Inland waters include groundwater and surface water. For the purposes of this document, potential impacts to groundwater are discussed in the following sections, while surface water is discussed in a separate section (Section 8 Inland Waters – Surface Water).

7.1 EPA Objectives

The EPA objective of the factor Inland Waters is:

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

The focus of the factor and objective is on:

- Significant impacts that alterations of the hydrological regime will have on social or environment values, including water dependent ecosystems
- How discharge of waste or effluents to the environment is minimised and managed
- How any discharge or storage of waste or use of land or water might significantly impact on water quality, the local hydrological regime, and the supported environmental values.

7.2 Relevant Policy and Guidance

Laws and regulations relevant to the protection and management of groundwater include:

- *Environmental Protection Act 1986*
- *Rights In Water Irrigation Act 1914 (RIWI Act)*

Policy and guidelines relevant to the consideration of Inland Waters (groundwater) include:

- *Statement of Environmental Principles, Factors, Objectives and Aims of EIA (EPA, 2023b)*
- *Environmental Factor Guideline - Inland Waters (EPA, 2018)*
- *Western Australian Water in Mining Guideline (DWER, 2013)*
- *Operational policy no. 5.12 – Hydrogeological reporting associated with a groundwater well licence (DoW, 2009a)*
- *National Water Quality Management Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1, Chapter 3 – Aquatic Ecosystems (ANZECC, 2000)*

- *Guidelines for groundwater quality protection in Australia: National Water Quality Management Strategy* (Commonwealth of Australia, 2013)
- Various Water Quality Protection Notes published by DWER

7.3 Receiving Environment

A Project-specific groundwater study has been completed by Rockwater (2024) to provide background context of groundwater opportunities and impacts. This section provides a summary of the groundwater regime, groundwater quality and nearby environmental values. An adequate understanding of these aspects is essential to assess the potential impacts on environmental values resulting from changes to the hydrogeological region or groundwater quality due to the implementation of the Project.

7.3.1 Hydrogeological Regime

The Project is located within the Gascoyne Province of the West Australian Craton, approximately 125 km northeast of Gascoyne Junction. The regional geology comprises Neoproterozoic to Paleoproterozoic gneisses, granites and metasedimentary rocks, overlain locally by sedimentary successions of the Edmund and Collier Basins, and by Carboniferous–Permian sedimentary rocks of the Merlinleigh Sub-basin to the west (Rockwater, 2024). The northwest–southeast trending Ti Tree Shear Zone is a dominant structural feature influencing local groundwater occurrence and flow (Rockwater, 2024).

Groundwater occurs within three main hydrostratigraphic units: fractured rock aquifers, palaeochannel aquifers, and sedimentary aquifers (Rockwater, 2024).

- **Fractured rock aquifers** occur within granitic and metamorphic rocks of the Gascoyne Province, where groundwater is stored and transmitted through interconnected fractures and weathered zones. Sustainable yields are generally low (< 5 L/s) but can be higher along major structural features such as the Ti Tree Shear Zone.
- **Palaeochannel aquifers** associated with the Lyons and Gascoyne River systems comprise unconsolidated sands, silts, clays and calcrete infill within buried drainage channels. These aquifers can exceed 100 m in thickness and generally provide higher groundwater yields (4 –16 L/s). Recharge occurs episodically via infiltration of surface water following significant rainfall events and through lateral inflow from surrounding fractured rock.
- **Sedimentary aquifers** of the Lyons Group and Moogooloo Sandstone, located within the Merlinleigh Sub-basin approximately 90 km southwest of the Development Envelope, consist of interbedded sandstone, siltstone and conglomerate units with moderate permeability. Historical testing has recorded sustainable yields between 2 and 10 L/s.

Groundwater depths across the Development Envelope range from approximately 13 to 26 metres below ground level (mbgl), corresponding to elevations between 303 and 309 m AHD (Figure 7-1) (Rockwater, 2024). Groundwater flow generally follows topography, trending west to southwest towards the Gascoyne River, with an estimated hydraulic gradient of 0.0023 (Figure 7-1) (Rockwater, 2024). Recharge is limited due to the region's arid climate, low rainfall (mean annual 227 mm) and high evaporation (approximately 3,000 mm/year). Discharge occurs primarily via regional throughflow towards the coast and local evapotranspiration by riparian vegetation along drainage features (Rockwater, 2024).

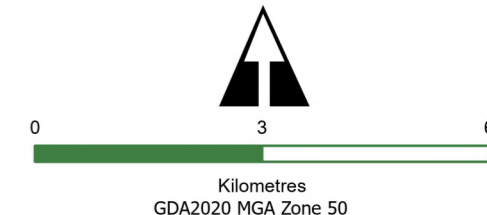
Delta Lithium

Figure 7-1:
Conceptual Hydrogeology
of the Project Area

- Groundwater Levels
- ▨ Exclusion Zone
- Development Envelope
- Roads
- Groundwater Contours
- Gascoyne Paleovalley

Data sources

Tenement: DMIRS Data and Software Centre
 Groundwater
 Info: Rockwater, Yinetharra Lithium Project, Expanded Water Source Options Study (01/05/2024)
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA,
 Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, Geoscience Australia, NASA, NGA, USGS
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

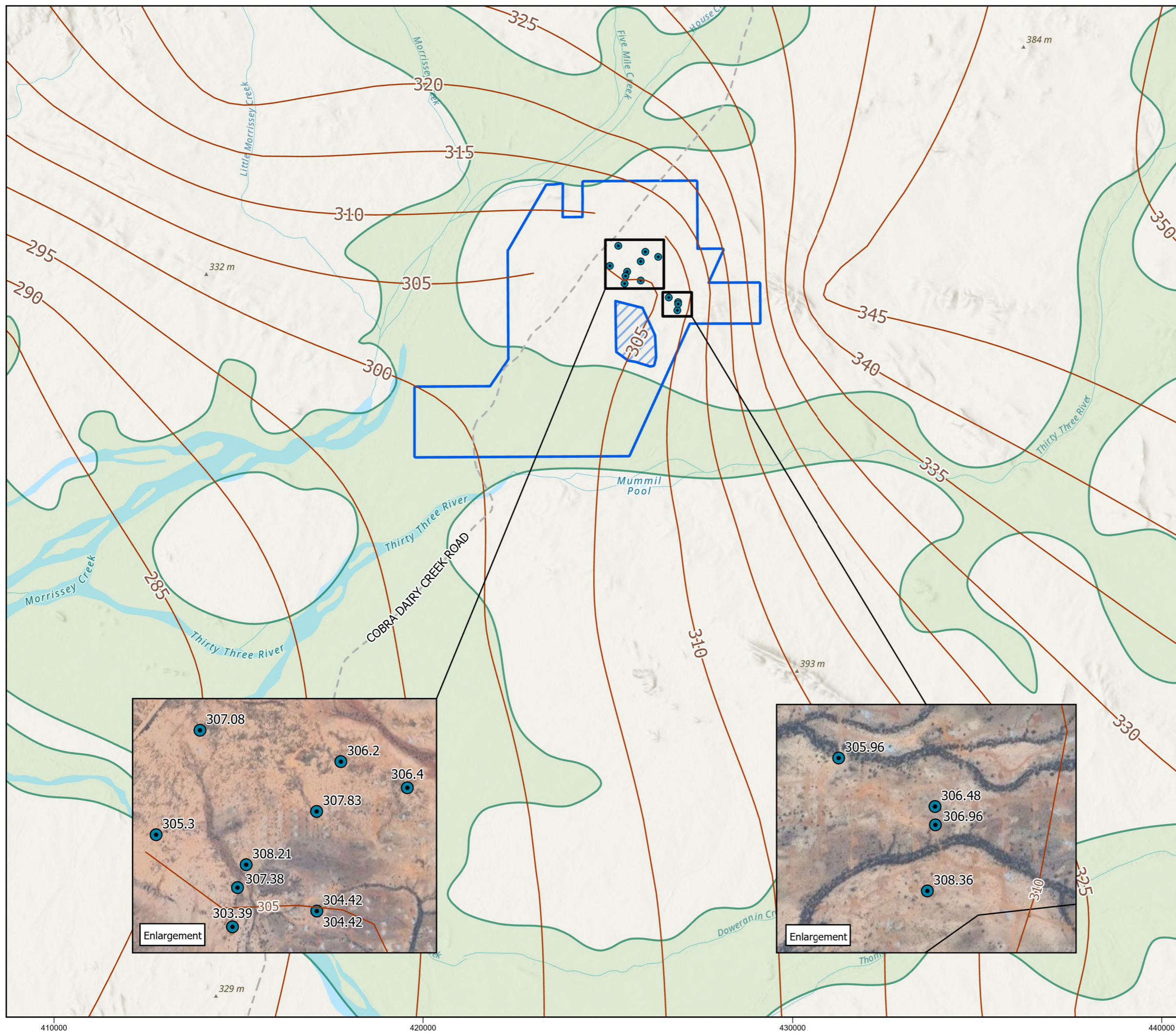


Date: 25/03/2026 Rev: B
 Project: 240010
 Author: K. Fok; Drawn: A Reay
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7.3.2 Groundwater Quality

Groundwater quality within the Development Envelope is variable and generally reflects the geological and hydrogeological diversity of the aquifer systems. Overall, groundwater across the region is saline to hypersaline, with limited occurrences of fresh to marginally fresh (brackish) water. Salinity and chemical composition are largely influenced by aquifer lithology, groundwater residence time, and evaporation processes under the arid climate.

Groundwater from the fractured rock aquifer is saline, with total dissolved solids (TDS) concentrations ranging between approximately 7,720 and 25,000 mg/L (Rockwater, 2024). Analytical results indicate high hardness and elevated levels of sulfate, nitrate, uranium and arsenic (Rockwater, 2024), exceeding guideline values for potable use under the *Australian Drinking Water Guidelines 6* (National Health and Medical Research Council, 2025).

In the palaeochannel aquifers, groundwater quality varies spatially between main and tributary channels. Water within the main Lyons palaeochannel is saline (approximately 9,300 mg/L TDS), while tributary systems contain brackish groundwater, with TDS concentrations approximately 1,000 mg/L (Rockwater, 2024).

Groundwater from the sedimentary aquifers is typically brackish to saline, ranging from 1,300 to 5,000 mg/L TDS, with salinity increasing with depth (Rockwater, 2024).

7.3.3 Nearby Environmental Values

Environmental values in the vicinity of the Development Envelope that might be impacted by changes to the groundwater regime or quality include private groundwater users, groundwater dependent ecosystems, and Aboriginal heritage areas.

The most significant private groundwater user in the area is the Yangibana mine operated by Hastings Technology Metals, which is approximately 45 km north from the Development Envelope. The Yangibana mine holds a 2.6 GL/a allocation from the palaeochannel aquifer and fractured rock aquifer, and its groundwater use is primarily from the Lyons paleochannel and fractured rock aquifers (Rockwater, 2024). The remaining groundwater licences are relatively small (< 50,000 kL) and are allocated to private owners and the local Shire (Rockwater, 2024).

The BoM's GDE Atlas (2025b) does not identify any subterranean GDEs in the immediate vicinity of the Development Envelope; however, there is one PEC listed by DBCA located approximately 15 km southwest to the Development Envelope (Figure 7-2) (Rockwater, 2024). This PEC is associated with calcrete deposits along the Gascoyne and Lyons palaeochannels that support unique assemblages of stygofauna (Rockwater, 2024).

Terrestrial vegetation types within the region are typically mulga shrublands, other acacias and chenopods communities occurring on stony plains, lower tributary drainage plains and low stony rises (Rockwater, 2024). These vegetation units have a low to moderate GDE potential (Rockwater, 2024) (Figure 7-2).

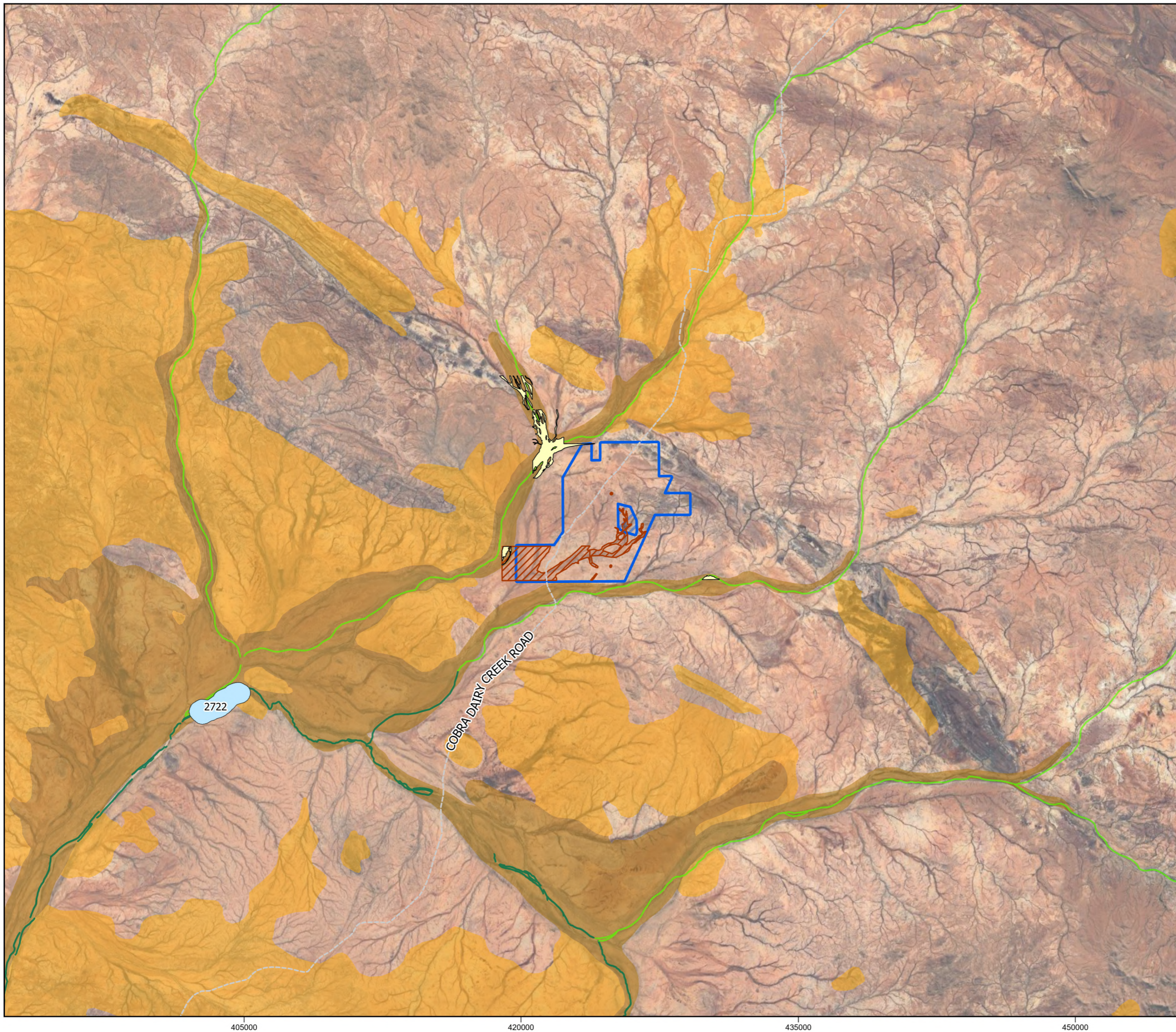
Eucalyptus camaldulensis has been recorded as a key potential GDV indicator (Stantec, 2024c) (Section 5.4.3.1), and the closest record is approximately 300 m west of the Development Envelope. The vegetation has been observed to be in generally poor condition (rated as 'Degraded') and has been significantly altered by historical and ongoing pastoral activities (Stantec, 2024c). None of this vegetation type occurs within the Development Envelope (Figure 7-2).

Aquatic ecology studies conducted for the Project by Biologic (2025) identified plant species indicative of groundwater dependency associated with Thirty-three River and Morrissey Creek; both outside the Development Envelope. The aquatic ecology studies did not find evidence of groundwater dependent vegetation associated with claypans within the Development Envelope and inferred that there is not a close hydrological connection between the seasonally inundated claypans and the underlying groundwater aquifers (Biologic, 2025).

Several Aboriginal heritage sites have been identified in proximity to the Development Envelope, including three culturally significant water sources, located north, south, and west of the Project area (Figure 7-2). Details of these Aboriginal heritage sites are further described in Section 9.

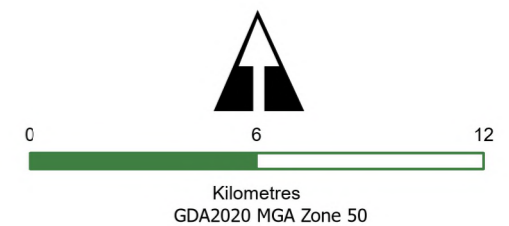
Delta Lithium

Figure 7-2:
Groundwater Dependent Receptors
Surrounding the Project Area



- Roads
- Development Envelope
- Exclusion Zone
- EcoAcicVcC
- PEC
- Culturally Significant Water Sources
- Aquatic GDE**
- High potential GDE
- Moderate potential GDE
- Low potential GDE
- Terrestrial GDE**
- High potential GDE
- Moderate potential GDE
- Low potential GDE

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Priority ecological communities: Threatened Ecological Communities, Department of Biodiversity, Conservation and Attractions (DBCA-038)
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



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7.4 Potential Environmental Impacts

Implementation of the Project has the potential to change the hydrogeological regime and groundwater quality, resulting in impacts to groundwater dependent ecosystems and other environmental values.

7.4.1 Direct and Indirect Impacts

Direct and indirect impacts to environmental values that might result from the Project include:

- Groundwater abstraction (i.e. mine dewatering and development of borefield) causing groundwater level drawdown, changing local flow patterns and potentially impacting environmental values, such as GDV or significant stygofauna species or habitats.
- Seepage from the leakage of contaminants potentially contaminating groundwater, impacting on pastoral bores or significant stygofauna species or habitats.

7.4.1.1 Groundwater Abstraction Causing Drawdown

Groundwater exploration drilling indicates that the groundwater within the Development Envelope predominantly occurs between 20 to 80 mbgl (Rockwater, 2024).

The proposed nominal pit depth of the Project is beyond 150 mbgl, which is below the main zones of groundwater interconnected fractures. While groundwater may occur at deeper depth, Rockwater (2024) indicated that groundwater in fractured rock aquifers is mainly stored and transmitted through interconnected fracture networks, and these fractures become less common at depths beyond 70 m. As a result, groundwater inflows from deeper levels of the pit are expected to be relatively low (Rockwater, 2024). The works completed to date are preliminary and based on the availability of regional data and historic drill records. ESM plan to progress further water supply assessments as part of the detailed design of the Project.

Initial plans for water supply are to be sourced from bores located within the southern portion of the Development Envelope (Figure 2-3). These bores are designed to intersect the Gascoyne tributary paleochannel aquifer, but also avoid areas where calcrete and stygofauna PEC have been identified (Rockwater, 2024).

Groundwater flow generally follows topography, trending west to southwest toward the Gascoyne River. The proposed borefield is located in the south of the Development Envelope (Figure 2-2), approximately 300 m east of the mapped GDV extent (Figure 7-2).

Based on current information, groundwater abstraction from the borefield is not expected to substantially impact the GDV as the aquifers are not considered to be linked. As drilling and hydrogeological investigations

progress, assessments will be undertaken to confirm the relationship between groundwater abstraction and GDV presence within the Development Envelope.

7.4.1.2 Seepage and Leakage Impacting Groundwater Quality

Potential seepage or leaks from the mine processing and residue storage areas may lead to contamination of groundwater. Rockwater (2024) indicated that the hydraulic gradient is low (i.e. 0.0023 m/d), is relatively limited and relatively low sustainable yields. These characteristics suggest that potential contaminant migration is likely to be low.

The following have been incorporated into the design (CMW Geosciences, 2024):

- Cut-off trench under the upstream zone of the embankment around the full perimeter of the TSF. The cut-off will be backfilled with clayey mine waste.
- Placement of a HDPE liner in the TSF to reduce permeability.
- Inclusion of an underdrainage system.
 - Underdrains will be installed around the perimeter embankment toe, draining to an external sump(s). Submersible pumps deployed within the sump(s) will allow recovery of leachate water.
 - An underdrainage network around the TSF decant area over the lined area.

These measures are likely to minimise any seepage impacts from tailings management and unlikely to result in impacts to the surrounding environment.

Waste characterisation completed for the Project indicates that any potential seepage produced by the waste rock is expected to be non-saline, and tailings samples were classified as NAG and do not present a risk of acid mine drainage (MBS Environmental, 2025a, 2025b). Details on material characterisation have been provided in Table 4-2.

The final design of the integrated waste landform, including controls to manage environmental risk from seepage, will be assessed and managed through secondary approvals including Part V of the EP Act and the MDCP required under the *Mining Act 1978*.

7.4.2 Mitigation

Changes to the hydrogeological regime or groundwater quality that might lead to impacts to environmental values will be managed and reduced by applying the mitigation as described below:

- Storing and handling hydrocarbons and chemicals in accordance with relevant Australian Standards and guidelines.

- Managing and monitoring groundwater abstraction in accordance with licence conditions under the RIWI Act. This will include installation of groundwater monitoring bores around all major facilities that have a risk of causing groundwater contamination. Regular monitoring of groundwater quality and standing water level will be undertaken throughout the life of the Project. Records of groundwater abstraction will also be collected, which is standard under RIWI Act licences.
- The design, operation and maintenance of hazardous materials containment structures will be undertaken to minimise risks that may lead to release of hazardous materials, such as overtopping of bunds or failure of containment structures. Potential seepage or leaks from mining and processing activities will be regulated through the Mining Act approvals.
- Geochemical characterisation of waste materials will inform design of the operational and post closure mine waste landforms to manage any potential impacts to groundwater quality from waste rock leachate. The geochemical waste characterisation and closure landform design information is required to be submitted as part of Mining Act approvals.

7.5 Predicted Outcome

The Project is expected to meet the EPA objective of maintaining the hydrological regime and quality of groundwater so that environmental values are protected.

Potential impacts to groundwater will be managed through secondary approvals, including:

- Manage groundwater abstraction for dewatering through a groundwater licence under RIWI Act and associated licence conditions.
- Management potential discharges to the environment in accordance with Part V of the EP Act through obtaining and complying with a Works Approval and Prescribed Premises Licence and associated conditions.
- Obtain approval for the Project through submission of a MDCP under the Mining Act.

It is not expected that this Project will have a significant impact to inland waters (groundwater), and it is expected that the EPA's objective for inland waters will be met.

8 INLAND WATERS – SURFACE WATER

This section assesses the potential impacts to Inland Waters – Surface Water associated with the Project. For this purpose of this document, surface water has been presented separately to groundwater. It is recognised that there are links between surface water and groundwater, and this section refers back to Section 7 Inland Waters – Groundwater as appropriate.

8.1 EPA Objectives

The EPA objective of the factor Inland Water is:

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

8.2 Relevant Policy and Guidance

Laws and regulations relevant to the consideration of inland waters (surface water) include:

- *Environmental Protection Act 1986*
- *Rights In Water Irrigation Act 1914* and Regulations

Guidelines relevant to the consideration of inland waters (surface water) include:

- *Environmental Factor Guideline - Inland Waters* (EPA, 2018)
- *Australian Rainfall and Runoff: A Guide to Flood Estimation* (Ball et al., 2019)
- *Statement of Environmental Principles, Factors, Objectives and Aims of EIA* (EPA, 2023b)
- *National Water Quality Management Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1, Chapter 3 – Aquatic Ecosystems* (ANZECC, 2000)
- *Water Quality Protection Guidelines No. 6 – Mining and Mineral Processing – Minesite Stormwater* (Water and Rivers Commission, 2000a)
- *Water Quality Protection Guidelines No. 10 – Mining and Mineral Processing – Above-ground fuel and chemical storage* (Water and Rivers Commission, 2000b)
- *Water Quality Protection Note 26 – Liners for Containing Pollutants, Using Synthetic Membranes* (DoW, 2013)

8.3 Receiving Environment

Two Project-specific hydrology studies (Advisian, 2023; Worley, 2025), and one aquatic ecology study (Biologic, 2025) have been completed for the Project. This section describes the surface water hydrological regimes and quality and the associated environmental values relevant to the Project. An understanding of regional and local surface water regimes, nearby surface water users and potential local receptors is required to evaluate the potential impacts of the Project on existing water patterns, quality and values.

8.3.1 Regional Hydrology

The Project is located within the upper reaches of the Gascoyne River catchment. The Project lies 12 km north of the main tributary of the Gascoyne River and its associated floodplain (Worley, 2025). Thirty-three River, a significant tributary of the Gascoyne River is located approximately 3 km south of the Development Envelope (Worley, 2025). The confluence of Thirty-three River and the Gascoyne River lies approximately 18 km to the southwest of the Development Envelope (Figure 8-1). The Gascoyne River and its tributaries flow in response to extreme rainfall events often associated with cyclonic activity, typically between the months of November and April (Worley, 2025).

8.3.2 Local Hydrology

Two desktop surface water studies were undertaken to inform the infrastructure layout and surface water management within the Development Envelope (Advisian, 2023; Worley, 2025). A digital elevation model (DEM) developed by Landgate using photogrammetry analysis of 80 cm high resolution scanned aerial photography was sourced for catchment mapping (Advisian, 2023). The total catchment area (including all sub-catchments) is 2,461 km², with the topographic elevations ranging from 750 mAHD in the northeast to 240 mAHD in the southwest (Figure 8-1) (Advisian, 2023).

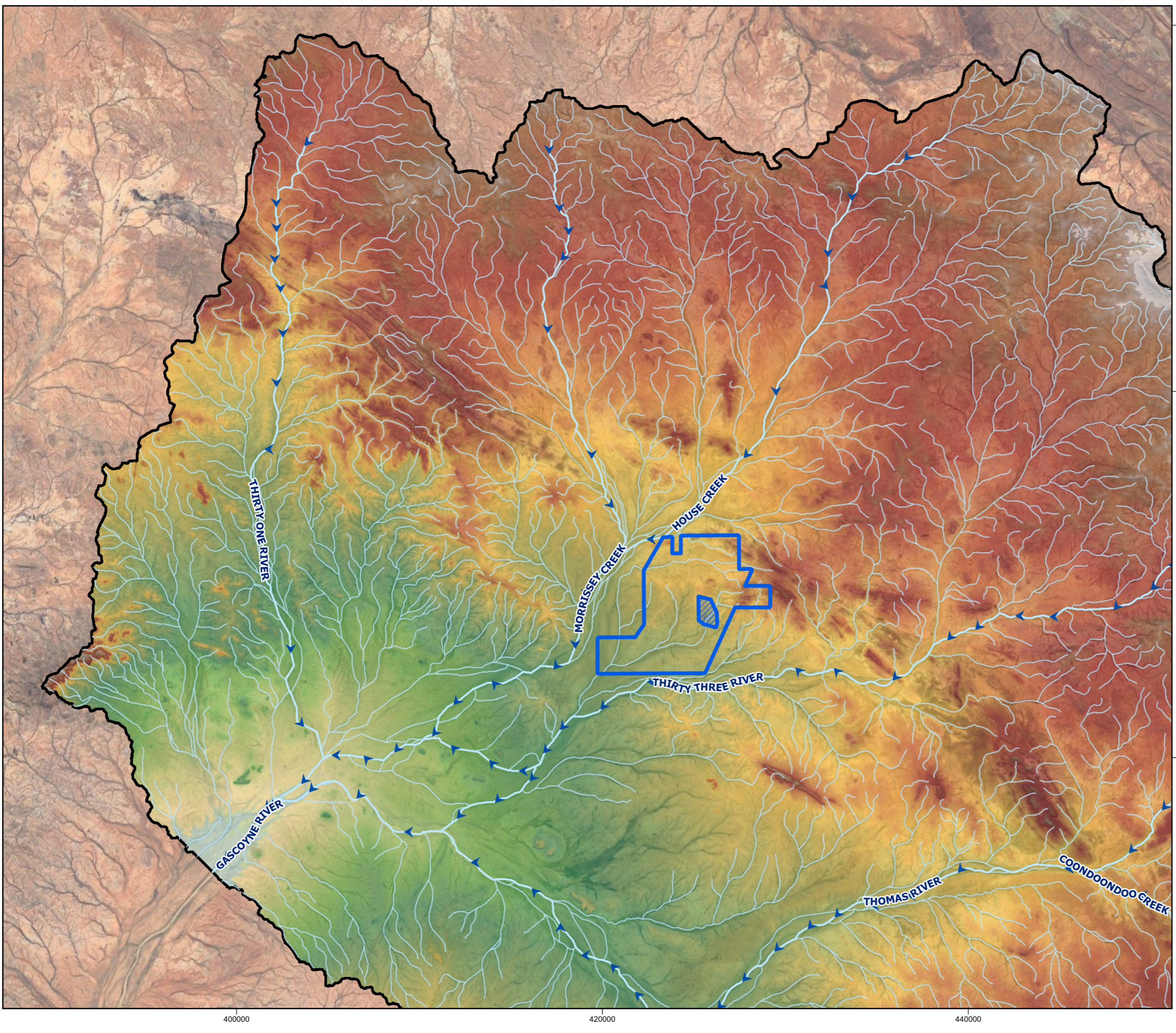
The Development Envelope is traversed by several minor non-perennial drainage lines, which flow northwest and southwest before discharging into Morrissey Creek and Thirty-three River, approximately 3 km west and 4 km south of the Development Envelope (Figure 8-1) (Advisian, 2023). These drainage lines and tributaries, as well as the Gascoyne River, are characterised by episodic flows occurring in response to heavy rainfall events and cyclonic activity, interspersed with extended periods of no flow (Department of Water, 2011; Halse et al., 2000).








The desktop surface water study used the TUFLOW model to estimate flow volumes and map flood areas and depths for 20%, 10%, and 1% Annual Exceedance Probabilities (AEP) events at the Development Envelope. Figure 8-2 and Figure 8-3 show the estimated flood depths in the Development Envelope for a 1% and 10% AEP event, under existing, pre-development conditions, respectively. Modelled water depths across the

Development Envelope for the 1% AEP event are shallow (up to 0.3 m) (Worley, 2025) (Figure 8-2). Similar results were observed for the 10% AEP event, with modelled water depths up to 0.1 m across the Development Envelope (Worley, 2025) (Figure 8-3).

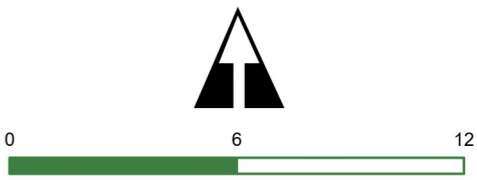
Figure 8-4 shows the estimated flood velocities in the Development Envelope for a 1% AEP event, under existing, pre-development conditions. Modelled water velocities across the Development Envelope for the 1% AEP event up to 0.5- 1 m/s (Figure 8-4), and up to 0.2 – 0.5 m/s for the 10% AEP event (Figure 8-5) (Worley, 2025).

Figure 8-1:
Key Surface Drainage Features and Local
Catchments in the Project Area



-  Exclusion Zone
-  Development Envelope
-  Gascoyne Catchment
- DEM (m)
-  750
-  240
- Watercourse Lines
-  Major Network
-  Minor Network

Data sources
 Tenement: DMIRS Data and Software Centre
 Groundwater
 Info: Rockwater, Yinetharra Lithium Project, Expanded Water Source Options Study (01/05/2024)
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA, Esri, CGIAR
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



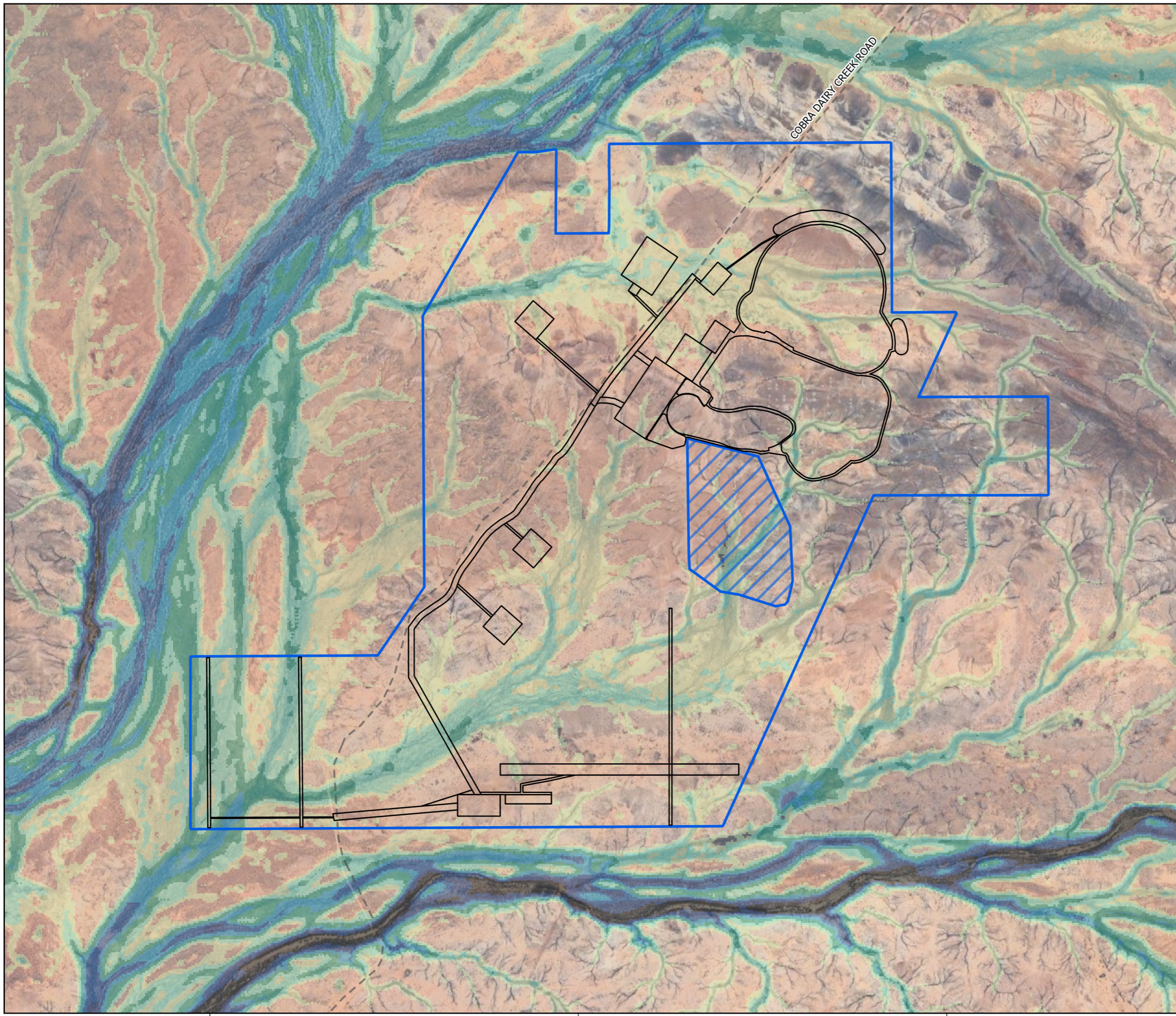
Kilometres
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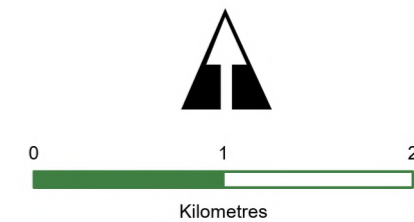


Delta Lithium

Figure 8-2:
1% AEP Baseline Flood Depth

- Exclusion Zone
 - Indicative Site Layout
 - Development Envelope
- Depth (m)
- < 0.05
 - 0.05 - 0.20
 - 0.20 - 0.50
 - 0.50 - 1.00
 - 1.00 - 1.50
 - 1.50 - 2.00
 - 2.00 - 3.00
 - >3.00
- Roads

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Flood Depth: Worley, Yinnetharra Lithium Project. Hydrology Assessment (18/03/2025)
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

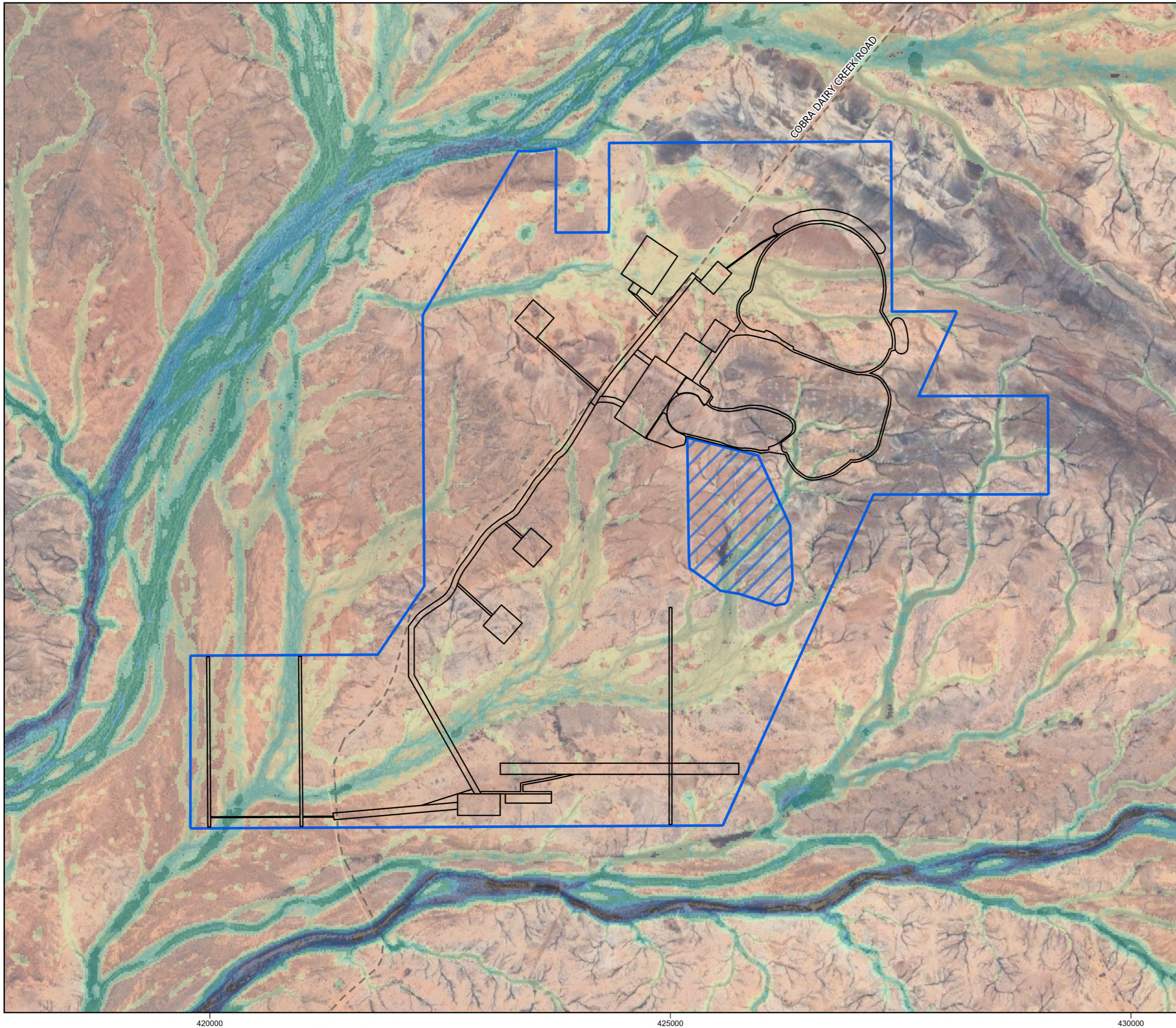


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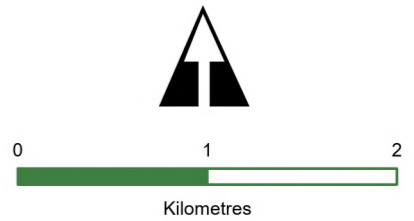


Delta Lithium

Figure 8-3:
10% AEP Baseline Flood Depth

- Roads
 - ▭ Indicative Site Layout
 - ▭ Development Envelope
 - ▨ Exclusion Zone
- Depth (m)
- < 0.05
 - 0.05 - 0.20
 - 0.20 - 0.50
 - 0.50 - 1.00
 - 1.00 - 1.50
 - 1.50 - 2.00
 - 2.00 - 3.00
 - >3.00

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Flood Depth: Worley, Yinnetharra Lithium Project. Hydrology Assessment (18/03/2025)
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

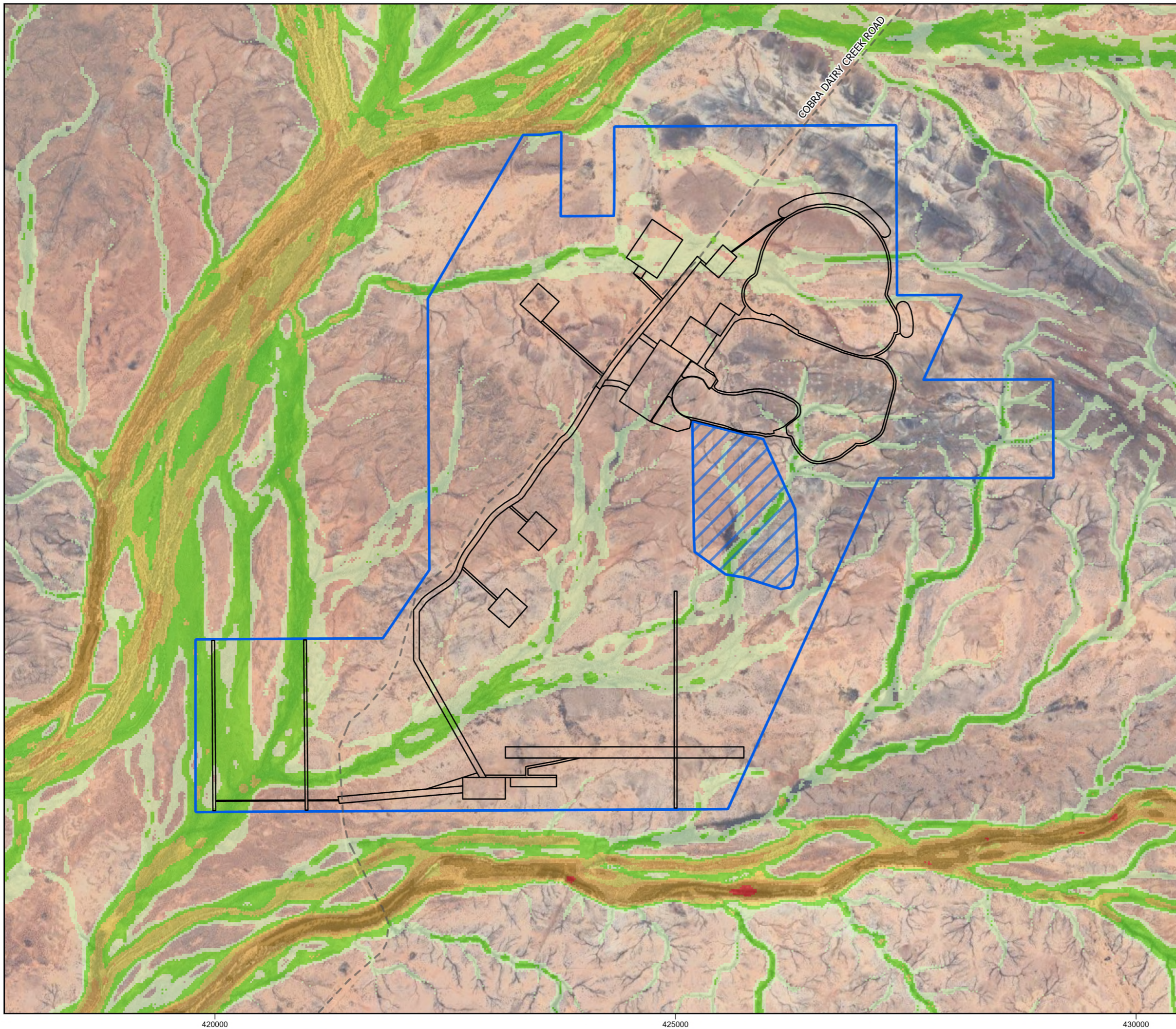


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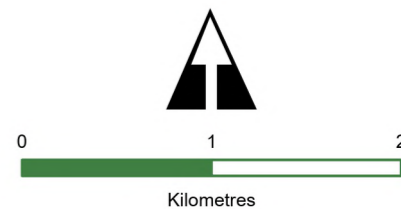


Delta Lithium

Figure 8-4:
1% AEP Baseline Flood Velocity

- Roads
- ▭ Indicative Site Layout
- ▭ Development Envelope
- ▨ Exclusion Zone
- Velocity (m/s)
- < 0.2
- 0.20 - 0.50
- 0.50 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- 2.0 - 3.0
- > 3

Data sources
 Tenement: DMIRS Data and Software Centre
 Flood Velocity: Worley, Yinnetharra Lithium Project. Hydrology Assessment (18/03/2025)
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



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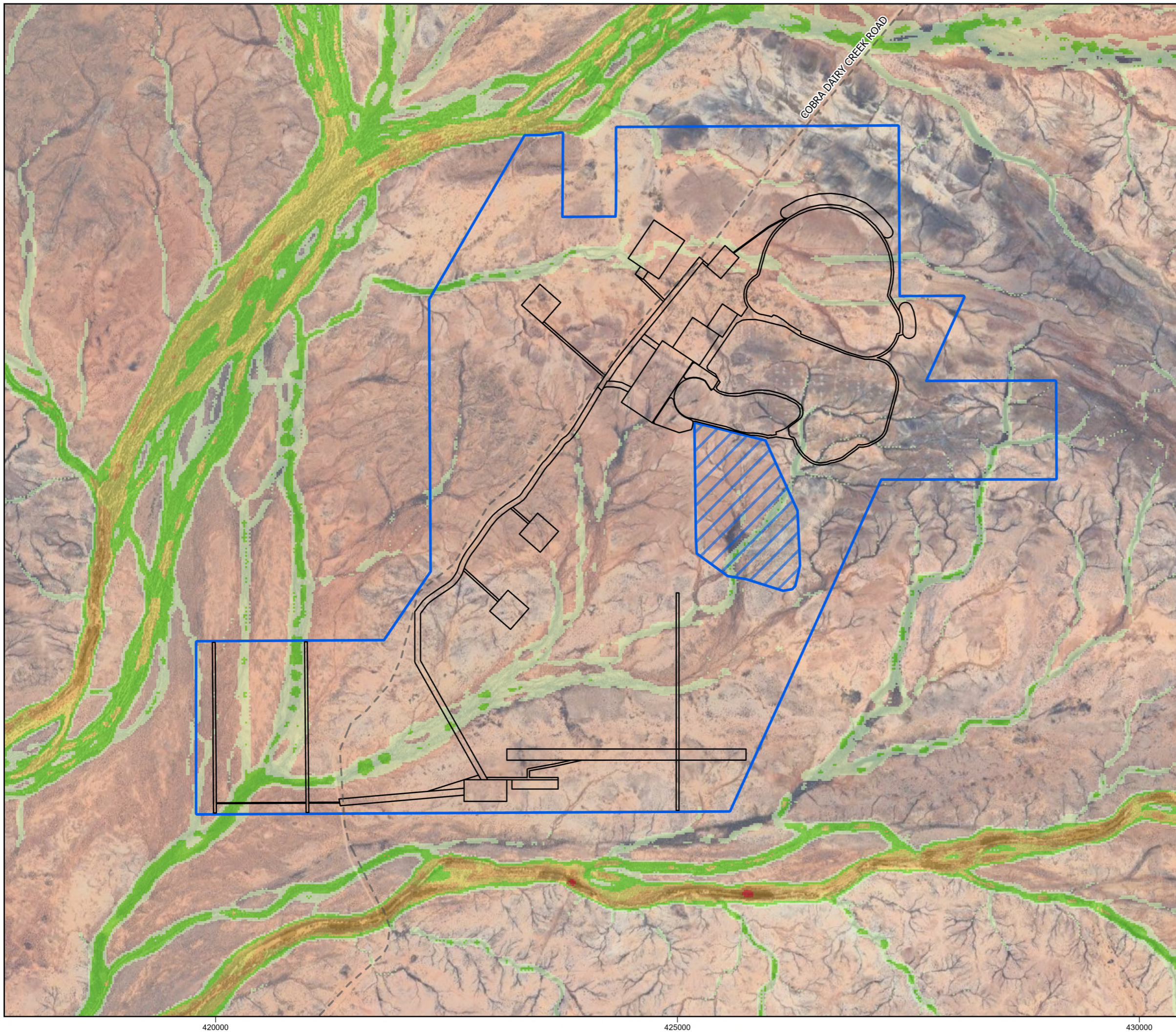


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Delta Lithium

Figure 8-5:
10% AEP Baseline Flood Velocity

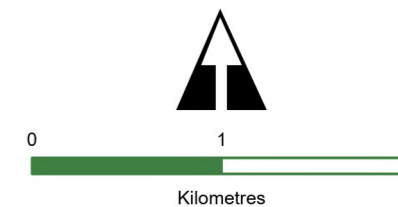


- Roads
- Exclusion Zone
- Indicative Site Layout
- Development Envelope

Velocity (m/s)

< 0.2
0.20 - 0.50
0.50 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 3.0
> 3

Data sources
 Tenement: DMIRS Data and Software Centre
 Flood Velocity: Worley, Yineharra Lithium Project. Hydrology Assessment (18/03/2025)
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
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8.3.3 Surface Water Quality

Surface water quality has been recorded within the Development Envelope and regional area, as part of the aquatic ecology survey (Biologic, 2025). Sampling locations are shown in Figure 8-6, and the results of surface water quality are summarised below.

Water quality across the Development Envelope and regional area was generally fresh (electrical conductivity (EC < 1,500 $\mu\text{s/cm[L]}$) and clear, with circum-neutral to basic pH (6.76 – 9.0) (Biologic, 2025). During the wet season, EC and pH levels at most sites were below *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC) (2000) 95% species protection guidelines for freshwater ecosystems, but increased in the dry season due to evapo-concentration (Biologic, 2025). The Gascoyne River was naturally brackish (EC > 1,500 $\mu\text{s/cm}$), naturally exceeding the ANZECC 95% species protection guidelines for freshwater ecosystem (Biologic, 2025).

Dissolved oxygen (DO) was highly variable, often below ANZECC 80% species protection guideline limits in the wet season and above in the dry season, linked to algal blooms (Biologic, 2025). Ionic composition reflected carbonate-rich geology, with calcium and bicarbonate dominant in Morrissey Creek and Thirty-One River, while claypans, which are within the Development Envelope, showed higher sodium and chloride concentrations than Morrissey Creek (Biologic, 2025).

Turbidity was mostly low (< 15 Nephelometric Turbidity Units (NTU)) except for localised spikes in claypans, Thirty-Three River and Morrissey Creek in wet season, and Morrissey Creek and Thirty-Three River in dry season (Biologic, 2025). The high turbidity in the wet season was likely due to the influx of mobilised sediment following rainfall events, and the suspension of clay substrates within the claypans, while in the dry season was associated with cattle impacts and abundant planktonic algae in the water (Biologic, 2025).

Nutrient levels (Total nitrogen and total phosphorus) were high, exceeding the ANZECC eutrophication default guideline values (Biologic, 2025). Dissolved metals were mostly low, but aluminium, arsenic, copper, and iron exceeded ANZECC 99% and / or 95% toxicity default guideline values at claypans, Morrissey Creek and Thirty-Three River (Biologic, 2025). The source of these metals is likely associated with the local geology, with metals in the surrounding landscape being mobilised during wet season rainfall events and concentrating during the dry season as pools recede.

8.3.4 Aquatic Ecology

Multi-season baseline aquatic ecology assessment was completed by Biologic (2025). Field surveys were carried out in watercourses and claypans within a nominal 10 km radius of the Development Envelope to assess aquatic habitat characteristics, water and sediment quality, aquatic and riparian flora and aquatic and semi-aquatic fauna. Additional sites on the Gascoyne River and Thirty-One River, which both outside of the Development Envelope, were also sampled for regional ecological values context.

Figure 8-6 illustrates the aquatic survey area and sampling sites in relation to the Development Envelope. This section describes the aquatic habitat characteristics, and the aquatic flora and fauna values relevant to the Development Envelope. Water and sediment quality is summarised in Section 8.3.3.

Survey sites on Morrissey Creek and the Thirty-Three River, located outside of the Development Envelope (Figure 8-6), retained pools between the wet and dry seasons, providing refuge habitat for aquatic species during dry periods (Biologic, 2025). In contrast, claypan systems within and adjacent to the Development Envelope (Figure 8-6) were ephemeral, displaying minimal water retention during the dry season and influenced by seasonal variability and anthropogenic pressures such as cattle grazing (Biologic, 2025). Comparative sites in the region, such as the Gascoyne River demonstrated the most stable hydrological conditions, characterised by large, permanent pools and diverse habitat structures, whereas the Thirty-One River was highly ephemeral and did not retain water between seasons (Biologic, 2025) (Figure 8-6).

A relatively high proportion of groundwater-dependent aquatic and riparian flora species were recorded on Morrissey Creek and the Thirty-Three River, indicating pools are seasonal persistence potentially supported by groundwater (Biologic, 2025). Claypan habitats were species-poor, associated with their ephemeral nature, cattle impacts and high turbidity (Biologic, 2025). In the regional area, the Gascoyne River supported the highest floristic richness of the systems sampled, with abundant macrophyte assemblages and diverse riparian flora (Biologic, 2025). No threatened and priority aquatic flora species were recorded within the aquatic ecology survey area.

The highest aquatic invertebrates richness was recorded at Morrissey Creek, with diversity broadly comparable to those of the permanent pools of the Gascoyne River in the region (Biologic, 2025). However, there was no significant difference in invertebrate richness between seasons (Biologic, 2025).

Most invertebrates recorded were widespread, common species but a small number of taxa were recorded that are restricted to northern Western Australia, specifically the Pilbara and Gascoyne regions (Biologic, 2025). All sites except the claypans recorded at least one endemic taxon in both seasons, with the number of species endemic to northern WA ranging from one to four (Biologic, 2025). Most of the remaining taxa have distributions

extending across Australia (58%), the world (cosmopolitan taxa; 10%), Northern Australia (7%), or the Australasian region (8%) (Biologic, 2025).

Nine significant invertebrate taxa (four hyporheic fauna and five aquatic invertebrates) were recorded in the aquatic ecology survey area, and they are summarised in Table 8-1. Most taxa were deemed as significant because no matching sequences were found or identified as potential SRE (Data Deficient) (Table 8-1). This is likely due to historically limited sampling in the Gascoyne Region, and further morphological and molecular work are required for these taxa (Biologic, 2025). It is possible these taxa have a wider distribution across the region (Biologic, 2025). One clam shrimp sample matched the known widespread taxon *Ozostheria* cf. *packardi* lineage Q, however that was the first record in the area and, therefore, identified as a significant invertebrate taxon (Table 8-1) (Biologic, 2025). All significant invertebrate taxa were recorded outside of the proposed Disturbance Footprint (Figure 8-6).

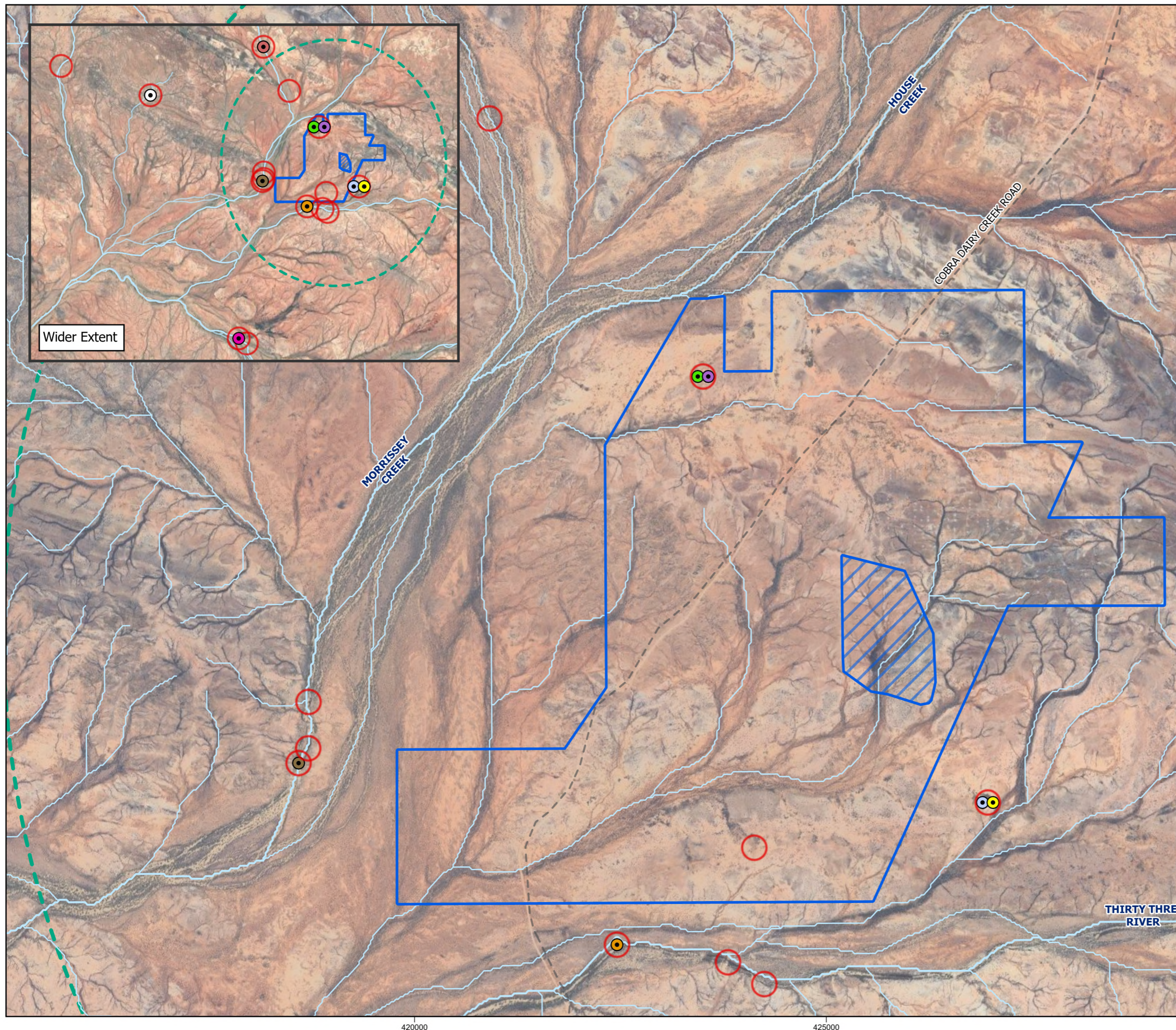
The Thirty-Three River was the only local site supporting fish species, with a single species present: the spangled perch (*Leiopotherapon unicolor*), Australia's most widespread freshwater fish (Biologic, 2025). At a regional scale, the Gascoyne River supports a rich vertebrate fauna assemblage, hosting five species of freshwater fish (including the P2 golden gudgeon (*Hypseleotris aurea*)), flat-shelled turtle and numerous waterbirds (Biologic, 2025). No threatened aquatic fauna species were recorded within the aquatic ecology survey area.

Table 8-1: Significant Invertebrate Taxa recorded in the Survey Area (Biologic, 2025)

Group	Taxon	Summary of Information	Within Development Envelope	Significance
Hyporheic Fauna	<i>Atopobathynella</i> `sp. Biologic-PBAT077`	<ul style="list-style-type: none"> First record of this operational taxonomic unit (OTU) 	Outside	Potential SRE (Data Deficient)
	<i>Bathynellidae</i> `sp. Biologic-BATH036`	<ul style="list-style-type: none"> First record of this OTU 	Outside	Potential SRE (Data Deficient)
	<i>Bathynellidae</i> `sp. Biologic-BATH037`	<ul style="list-style-type: none"> First record of this OTU 	Outside	Potential SRE (Data Deficient)
	<i>Canthocamptidae</i> `sp. Biologic-HARPO98`	<ul style="list-style-type: none"> <i>Copepoda</i> family Potential new record 	Outside	Potential SRE (Data Deficient)
Aquatic Invertebrate	<i>Ozestheria</i> `sp. Biologic-BRAN003`	<ul style="list-style-type: none"> This survey constitutes the first record of this OTU Further morphological and molecular work may find it to be more widespread 	Outside	First record of this OTU
	<i>Ozestheria</i> cf. <i>packardi</i> lineage Q	<ul style="list-style-type: none"> This survey constitutes the first record of this lineage in the Gascoyne Region Previously only genetic material for this species came from New South Wales 	Inside	First record in area
	<i>Cyprididae</i> `sp. Biologic-OSTR133`	<ul style="list-style-type: none"> This survey constitutes the first record of this OTU Further morphological and molecular work may find it to be more widespread 	Outside	First record of this OTU
	<i>Triops</i> `sp. Biologic-TRIO004`	<ul style="list-style-type: none"> This survey constitutes the first record of this OTU Further morphological and molecular work may find it to be more widespread 	Inside	First record of this OTU
	<i>Triops</i> `sp. Biologic-TRIO005`	<ul style="list-style-type: none"> This survey constitutes the first record of this OTU Further morphological and molecular work may find it to be more widespread 	Outside	First record of this OTU

Delta Lithium

Figure 8-6:
Aquatic Fauna and Invertebrates
in the Survey Area



- Roads
- Watercourse Lines
- ▨ Exclusion Zone
- ▭ Development Envelope
- Aquatic Fauna Sampling Sites
- Yinnetharra Project Aquatic Ecology Survey Area

Hyporheic Significant Fauna

- Atopobathynella 'sp. Biologic-PBAT077'
- Bathynellidae 'sp. Biologic-BATH036'
- Bathynellidae 'sp. Biologic-BATH037'
- Canthocamptidae 'sp. Biologic-HARP098'

Macroinvertebrate Significant Fauna

- Cyprididae 'sp. Biologic-OSTR133'
- Ozestheria cf. packardii lineage Q
- Ozestheria 'sp. Biologic-BRAN003'
- Triops 'sp. Biologic-TRIO005'
- Triops 'sp. Biologic-TRIO004'

Data sources

Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



Kilometres
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8.4 Potential Environmental Impacts

8.4.1 Direct Impacts

Potential direct impacts on surface water that might result from the Project include:

- Changes in frequency, magnitude, velocity or duration of flows in local watercourses.
- Occurrence of backwater effects or localised ponding as a result of flow obstruction by Project infrastructure.
- Clearing, trampling, obstruction or other mechanical disturbance of drainage lines or adjacent riparian areas.

The 20%, 10% and 1% AEP design storm events and the Probable Maximum Precipitation (PMP) event¹⁰ were simulated using the TUFLOW model package to assess risk to Development Envelope and inform the identification of surface water management measures and closure design of the Project (Worley, 2025). Storm durations up to 72 hours were simulated to ensure critical durations in all the main flow paths are identified (Worley, 2025).

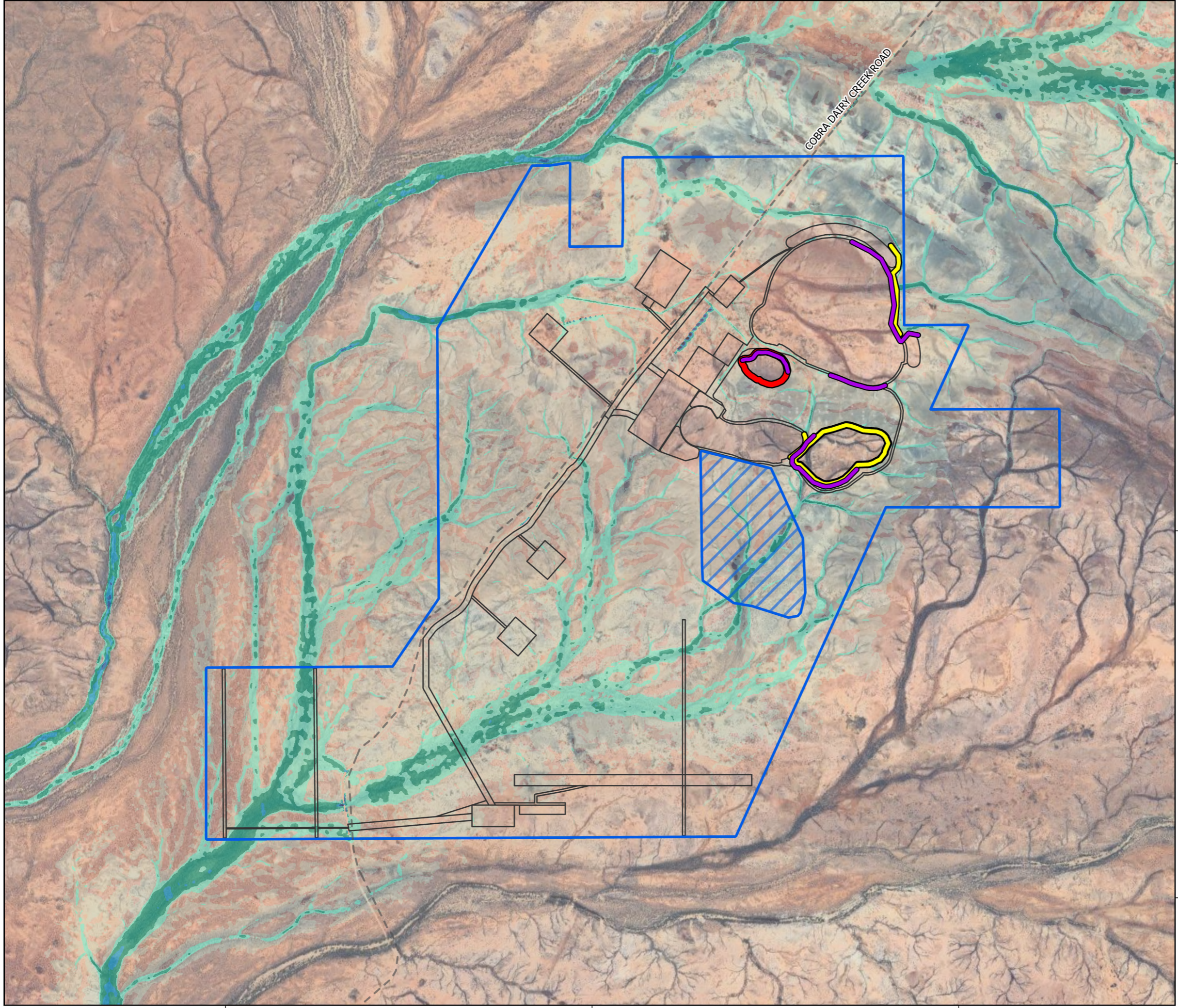
Surface water modelling predicts that floodwater from Five Mile Creek, Morrissey Creek and Thirty-Three River will not impact the Development Envelope for 20%, 10% and 1% AEP events (Worley, 2025). Modelling results suggest the proposed mine development would result in only minor changes in peak flows, flow volumes, flood depths and velocities in the Development Envelope and surround (Worley, 2025). Figure 8-7 shows the estimated operational flood depth for the 1% AEP event, with modelled water depths up to 0.5 m within the Development Envelope (Worley, 2025). Similar results were observed for the 10% AEP event, with modelled water depths adjacent to the flood levees at integrated waste landform and waste rock landform up to 0.2 m (Figure 8-8) (Worley, 2025). For larger events, the Development Envelope may be impacted by westerly and southerly flows from minor tributaries of Morrissey Creek and Thirty-Three River, respectively (Worley, 2025). The Development Envelope will not be affected by regional flooding or flooding of the Gascoyne River (Worley, 2025).

There are some areas with minor increases and reductions in peak flood depth across the Development Envelope, however most of change is less than ± 0.2 m on average for both 10% and 1% AEP event, which is minor (Figure 8-7 and Figure 8-8) (Worley, 2025). Peak 1% (Figure 8-4 and Figure 8-9) and 10% AEP velocities (Figure 8-5 and Figure 8-10) across the Development Envelope are less than 2 m/s under both baseline and

¹⁰ PMP is defined as 'the theoretical greatest depth of precipitation that is physically possible over a particular catchment' (World Meteorological Organisation, 2009)

operational conditions (Worley, 2025), and therefore the Project development poses no significant risk of increased scour, erosion and sediment loads to downstream receptors.

File: 2026 02 23 - Part IV - Yinetharra Referral (Rev B)





Delta Lithium

Figure 8-7: 1% AEP Operational Flood Depth

- Roads
 - Closure Levee
 - Operational Levee
 - Rock Armour
 - Exclusion Zone
 - Development Envelope
 - Indicative Site Layout
- | Depth (m) |
|-------------|
| < 0.05 |
| 0.05 - 0.20 |
| 0.20 - 0.50 |
| 0.50 - 1.00 |
| 1.00 - 1.50 |
| 1.50 - 2.00 |
| 2.00 - 3.00 |
| >3.00 |

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Flood Depth: Worley, Yinetharra Lithium Project. Hydrology Assessment (18/03/2025)
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>

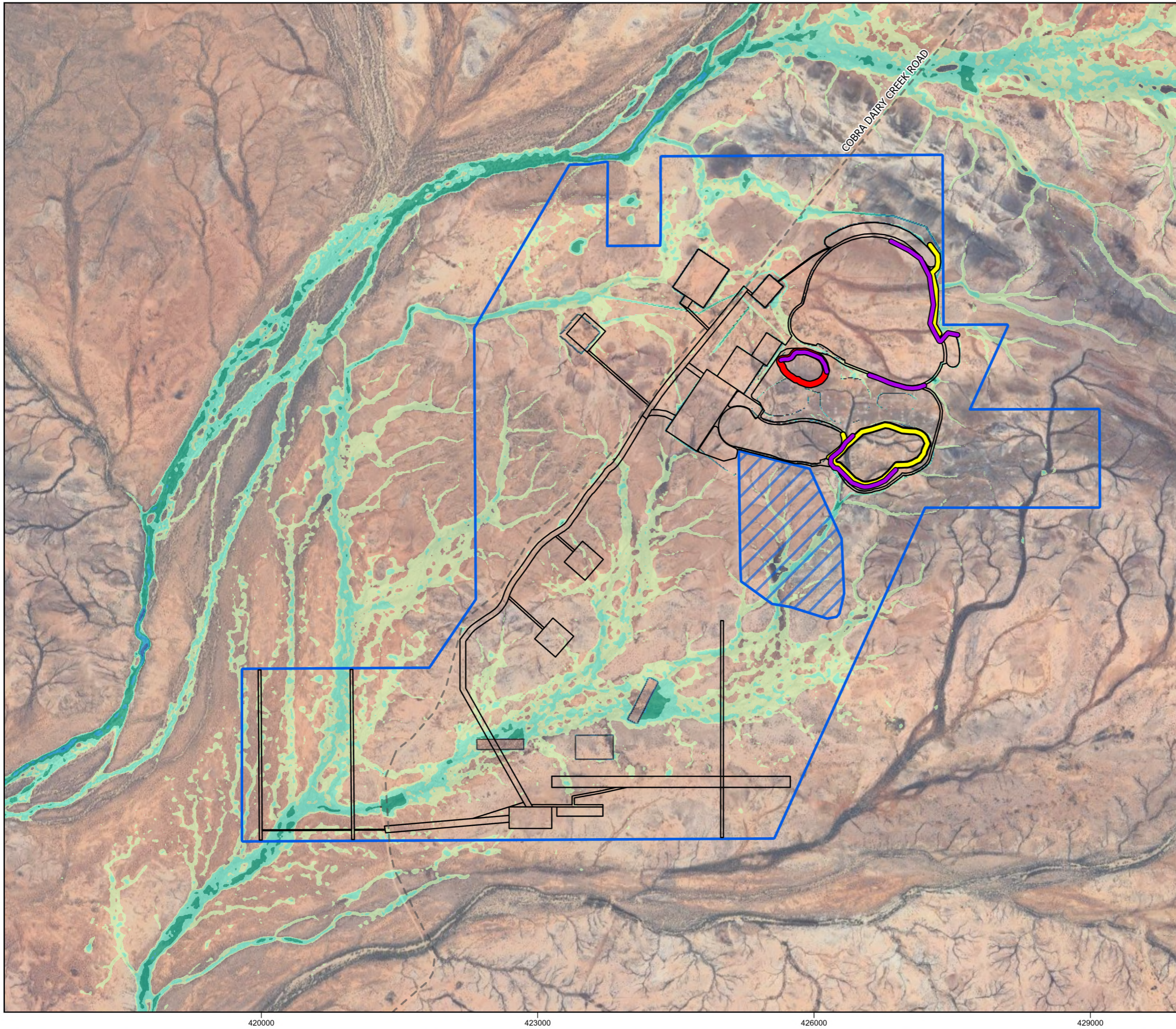


 0 1 2
 Kilometers
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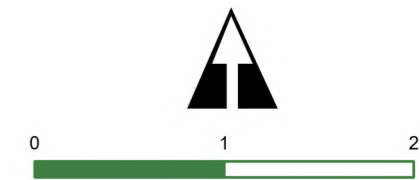


Delta Lithium

Figure 8-8: 10% AEP Operational Flood Depth

- Roads
 - Rock Armour
 - Operational Levee
 - Closure Levee
 - Indicative Site Layout
 - ▨ Exclusion Zone
 - Development Envelope
- | Depth (m) |
|-------------|
| < 0.05 |
| 0.05 - 0.20 |
| 0.20 - 0.50 |
| 0.50 - 1.00 |
| 1.00 - 1.50 |
| 1.50 - 2.00 |
| 2.00 - 3.00 |
| >3.00 |

Data sources
 Tenement: DMIRS Data and Software Centre
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Flood Depth: Worley, Yinetharra Lithium Project. Hydrology Assessment (18/03/2025)
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
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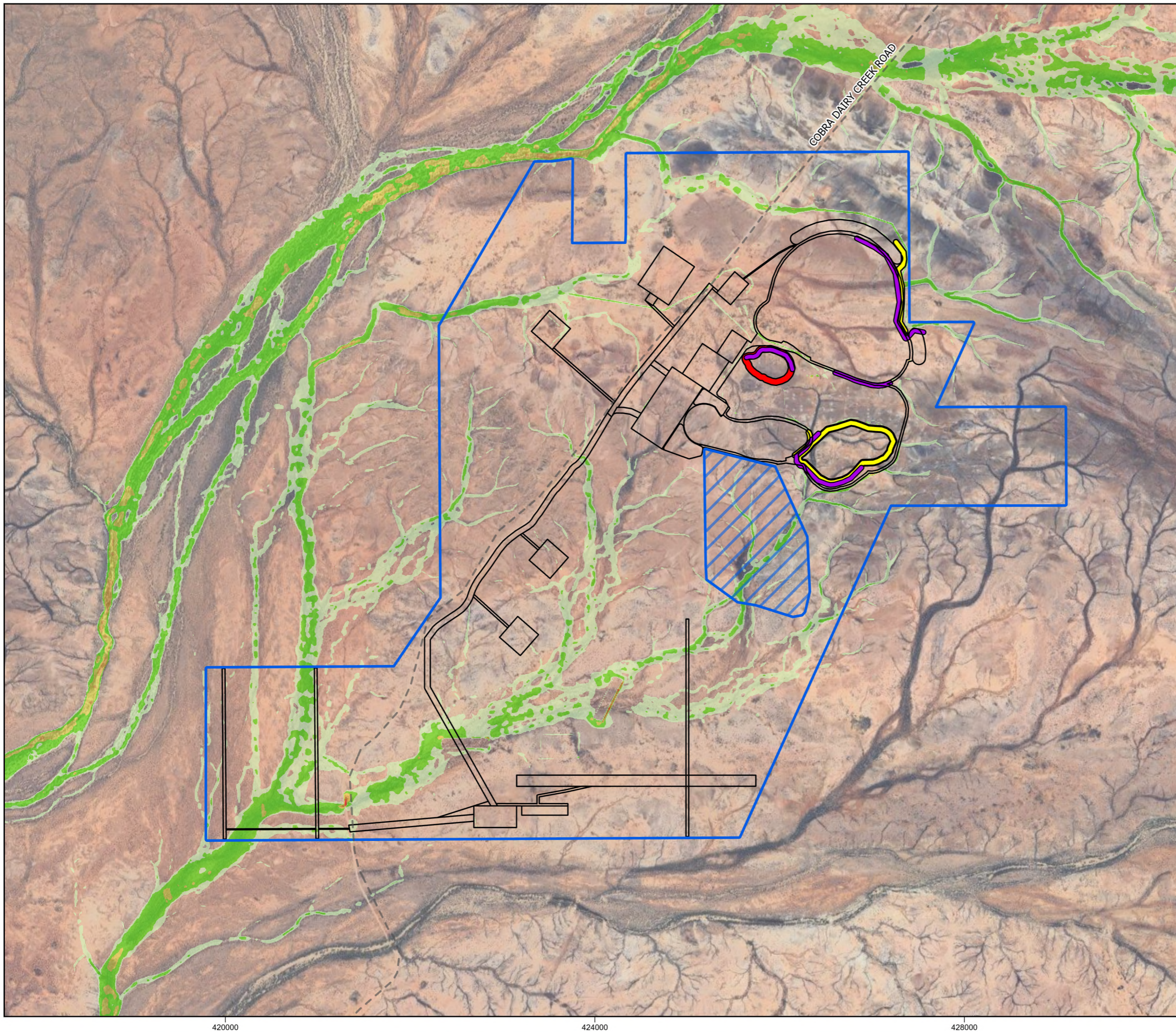


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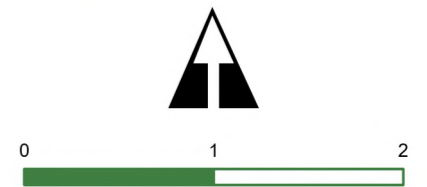
Delta Lithium

Figure 8-9:
1% AEP Operational Flood Velocity



- | | |
|--------------------------|--------------------|
| --- Roads | Velocity (m/s) |
| █ Rock Armour | <math>< 0.2</math> |
| █ Operational Levee | 0.20 - 0.50 |
| █ Closure Levee | 0.50 - 1.0 |
| █ Exclusion Zone | 1.0 - 1.5 |
| ▭ Indicative Site Layout | 1.5 - 2.0 |
| ▭ Development Envelope | 2.0 - 3.0 |
| | > 3 |

Data sources
 Tenement: DMIRS Data and Software Centre
 Flood Velocity: Worley, Yinetharra Lithium Project. Hydrology Assessment (18/03/2025)
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



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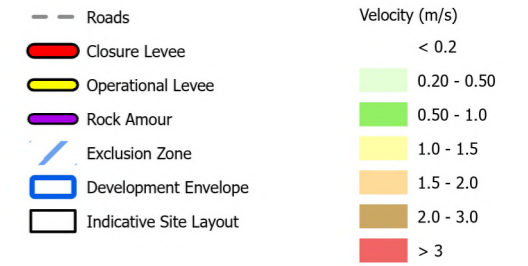
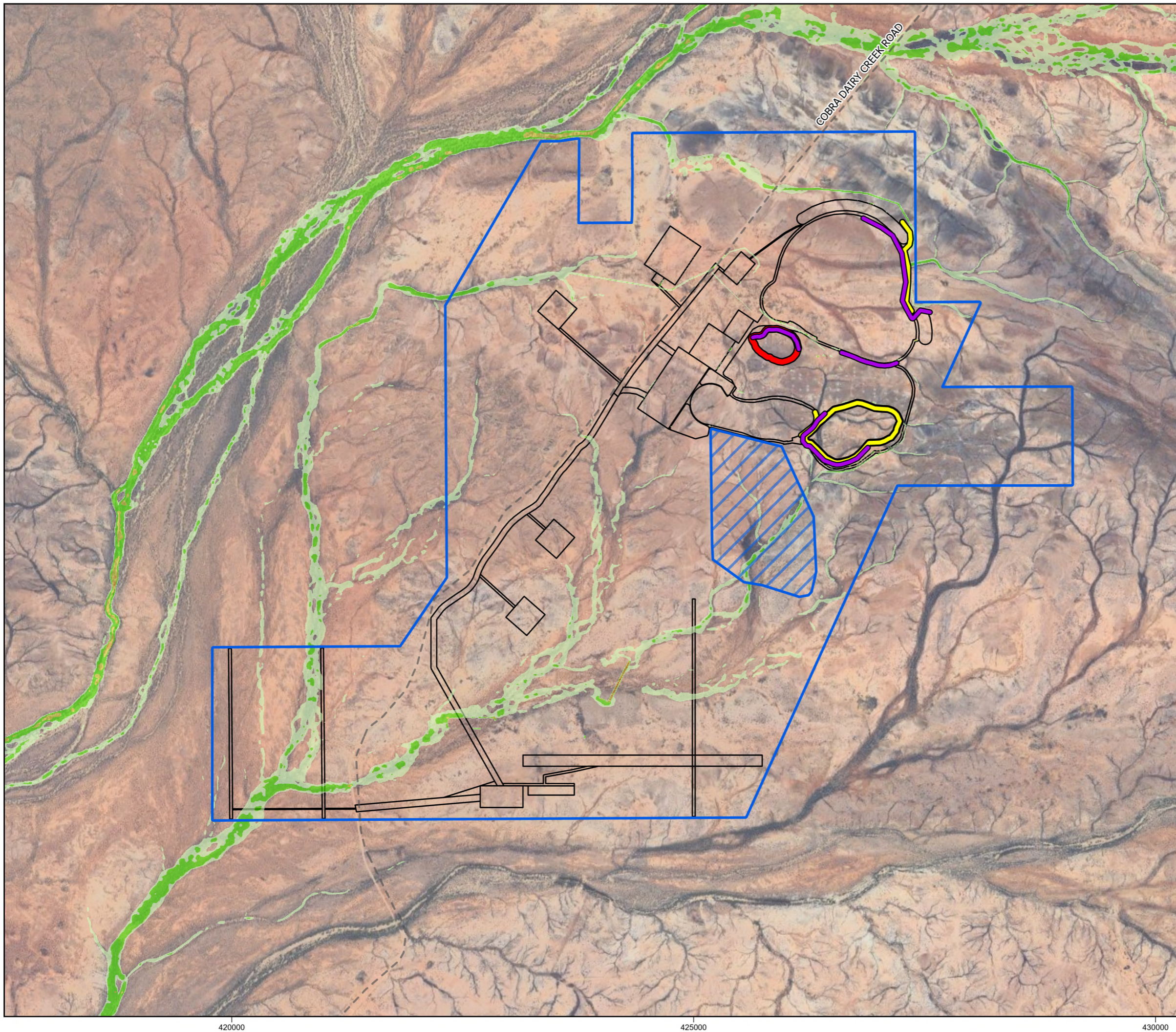


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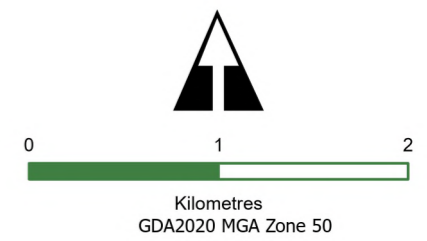
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Figure 8-10:
10% AEP Operational Flood Velocity



Data sources
 Tenement: DMIRS Data and Software Centre
 Flood Velocity: Worley, Yinetharra Lithium Project. Hydrology Assessment (18/03/2025)
 ESRI Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
 Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
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8.4.2 Indirect Impacts

Potential indirect impacts on surface water that might result from the Project include:

- Reduction in surface water quality as a result of sediment mobilisation or release of turbid water from disturbed areas or stockpiled materials.
- Contamination of surface water by dissolved salts, metals or nutrients in seepage or runoff from stockpiled materials or mineral wastes.
- Contamination of surface water as a result of spills of fuels or other chemicals used in mine and mineral processing operations.
- Introduction or spread of pest species (both plants and animals) to aquatic habitats.

8.4.3 Mitigation

This section describes mitigation measures that have been applied during preliminary design of the Project, and mitigation measures that will be applied during detailed design, construction and operations, to reduce the impact on surface water regimes and quality.

The following measures have or will be implemented to avoid potential impacts to surface water regimes and quality:

- The proposed Project infrastructure within the Indicative Site Layout has been sited outside the 1% AEP flood zones of major tributaries of the Gascoyne River (Morrissey Creek, Thirty-Three River) and on a catchment divide.
- The Indicative Disturbance Footprint does not encroach on significant creek line habitats or associated riparian zones. Traffic movements associated with the Project will be excluded from riparian areas and claypans to minimise disturbance of aquatic habitats.

The following measures will be implemented during detailed design and construction to minimise potential impacts to surface water regimes and quality:

- Creek diversions, flood levees and road waterway crossings will be installed to prevent ponding and protect proposed Project infrastructure from flooding.
- Stormwater drainage systems will be developed to separate clean runoff from undisturbed catchments and runoff from disturbed areas. Diversion and / or flood levees will also be constructed to prevent clean water entering disturbed areas.
- Direct rainfall-runoff on disturbed areas will be directed to sedimentation ponds to remove suspended sediment prior to release to the environment.

- Perimeter levees will be installed around the integrated waste landform, waste rock landform and topsoil stockpiles to contain runoff and suspended sediment. Perimeter levees will be combined with diversion levees where possible.
- The tailings storage cells will be designed, constructed and operated in accordance with guidelines and regulatory requirements of DMPE.

The following measures will be implemented during operations to minimise potential impacts to surface water regimes and quality:

- Storage, handling, reporting, monitoring and clean-up of reagents, hydrocarbons and other pollutants will be undertaken in accordance with standard safety and management practices and regulatory requirements. Any spills will be recorded and cleaned up as soon as practicable to mitigate ongoing pollution.
- A weed management plan will be developed and implemented to ensure effective ongoing weed management.
- A vegetation health monitoring program will be implemented to ensure no significant impacts to significant vegetation or aquatic habitats during Project construction and operation.
- A water monitoring program (including water flows and water quality) will be implemented to ensure no significant impacts to surface water during Project construction and operation.

The following measures will be implemented:

- The integrated waste landform, waste rock landform and mine pits will be rehabilitated, and other mine infrastructure will be removed to reinstate pre-development topographic conditions across the Development Envelope.
- Flood levees and placement of rock protection on levees and on the toe of the integrated waste landform and waste rock landforms to protect from scour and erosion and minimise hydrological changes post-closure.

8.5 Predicted Outcome

The surface water study shows the proposed Project development is expected to result in only minor changes in peak flows, flow volumes, flood depths and velocities. With the implementation of mitigation measures, the Project will maintain the hydrological regimes and quality of surface water in the Development Envelope and surrounds by avoiding and minimising impacts to existing hydrology and surface water quality.

The Project meets the EPA Objective for inland waters (surface water).

9 SOCIAL SURROUNDINGS – ABORIGINAL HERITAGE

9.1 EPA Objectives

Under the EP Act, the concept of ‘social surroundings’ includes aesthetic, cultural, economic and other social attributes, such as environmental amenity. EPA includes both tangible and intangible cultural values in its consideration of potential impacts on Aboriginal culture and heritage. Cultural values include (but may not be limited to) spiritual, aesthetic, scientific, social or historic values of places, objects and landscapes. For the purposes of impact assessment under Part IV of the EP Act, social surroundings may require consideration if physical or biological effects caused by a proposed development have the potential to significantly affect or be affected by culturally important attributes.

The EPA objective for the factor Social Surroundings is:

“To protect social surroundings from significant harm”.

9.2 Relevant Policy and Guidance

Laws and regulations relevant to the consideration of social surroundings (Aboriginal Heritage) include:

- *Aboriginal Heritage Act 1972*
- *Heritage of Western Australia Act 1990 (WA)*
- *Environmental Protection Act 1986*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)*
- *Environment Protection Biodiversity Conservation Act 1999*

Guidelines relevant to the consideration of social surroundings (Aboriginal Heritage) include:

- *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS, 2013)
- *Environmental Factor Guideline - Social Surroundings* (EPA, 2023a)
- *Statement of Environmental Principles, Factors, Objectives and Aims of EIA* (EPA, 2023b)
- *Technical Guidance: Environmental impact assessment of Social Surroundings – Aboriginal cultural heritage* (EPA, 2023a)
- *Aboriginal Heritage Act 1972 Guidelines* (DPLH, 2023)

9.3 Receiving Environment

The Development Envelope lies within traditional lands of the Yinggarda People (represented by the Yinggarda Aboriginal Corporation) and lands of the Burringurrah/Milly Milly Wajarri Yamaji People (represented by the Wajarri Yamaji Aboriginal Corporation RNTBC) (Figure 9-1). Non-exclusive Native Title of the Yinggarda, Baiyungu and Thalanyji People has been recognised via the Gnulli, Gnulli #2 and Gnulli #3 Native Title Determination (WCD2019/016, 17 December 2019), which covers approximately 71,354 km² in the Murchison and Gascoyne River Basins (DPIRD, 2021) (Figure 9-1). Non-exclusive Native Title of the Wajarri Yamatji People has also been recognised via the Wajarri Yamatji Part A Native Title Determination (WCD2017/007, 19 October 2017), which covers approximately 68,741 km² in the Murchison region (National Native Title Tribunal, 2026) (Figure 9-1). Eight heritage surveys have been completed across the Development Envelope since 2017, in addition to regional surveys of the wider tenement package (Echoes Cultural Heritage Management, 2024a, 2024b; Trace Archaeology & Ecology, 2023a, 2023b; Trace Enterprises, 2025; Waru Consulting Pty Ltd, 2024a, 2024b; Yamatji Marlpa Aboriginal Corporation, 2017). These surveys have identified numerous Aboriginal heritage sites and cultural landscapes. These surveys covered the Development Envelope and surrounding areas (Figure 9-2) and were undertaken to a Site Avoidance standard with full participation of Yinggarda Cultural Consultants and Wajarri Yamaji Cultural Consultants.

A total of 113 Aboriginal heritage sites were identified from the surveys. Of the 113 Aboriginal sites identified, 44 are located within or partially intersect the Indicative Disturbance Footprint, and 69 of them are located outside of the Indicative Disturbance Footprint. The locations of these Aboriginal sites within the Indicative Disturbance Footprint are shown in Figure 9-3 below. Their cultural significance is yet to be fully assessed, and site identification surveys will be undertaken to determine their importance.

Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People

Yinnetharra Lithium Project

COBRA DAIRY CREEK ROAD

Wajarri Yamatji Part A

Delta Lithium

Figure 9-1:
Native Title Determination Area

- Roads
- Development Envelope
- Native Title Claim**
 - Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People
 - Wajarri Yamatji Part A

Data sources
Tenement: DMIRS Data and Software Centre
ESRI Basemap: Esri, Geoscience Australia, NASA, NGA, USGS
Native title: National Native Title Tribunal (NTD_Register_Nat_shp) January 2025
Roads/Localities: GEODATA (2006): GEODATA TOPO 250K Series 3 (Shape file format) dataset.
<http://pid.geoscience.gov.au/dataset/ga/64058>



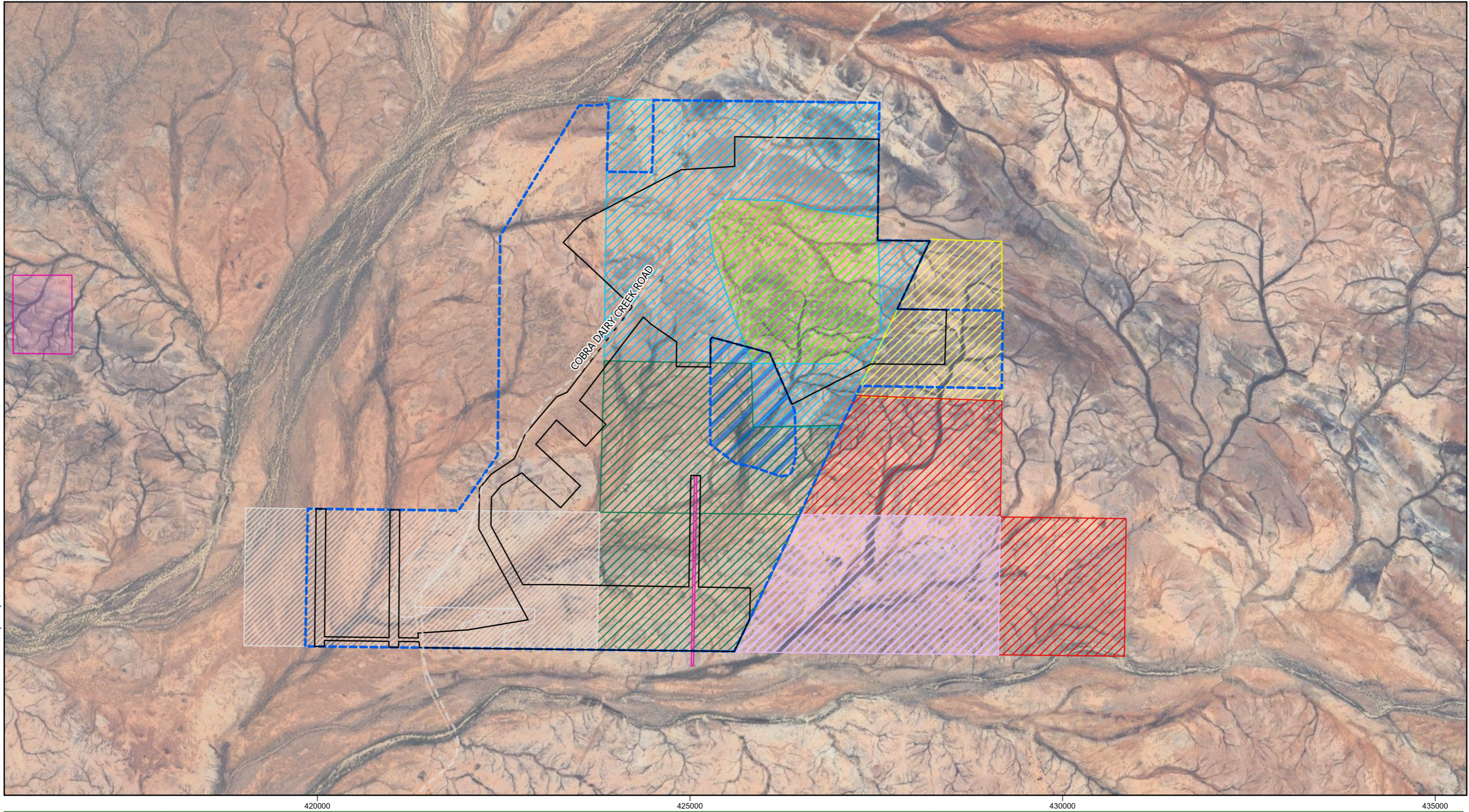
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Figure 9-2:
Aboriginal Heritage Survey Effort

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> Roads Development Envelope Exclusion Zone Indicative Disturbance Footprint | <p>Heritage Surveys</p> <ul style="list-style-type: none"> Yamatji (June 2017) Trace Archaeology and Ecology Yinggarda (July 2023) Trace Archaeology and Ecology Wajarri Yamatji (July 2023) | <ul style="list-style-type: none"> Waru Consulting (May 2024) Waru Consulting (June 2024) Echoes CHM (June 2024) Echoes CHM (Oct. 2024) Trace Enterprises (Aug. 2025) |
|---|---|---|

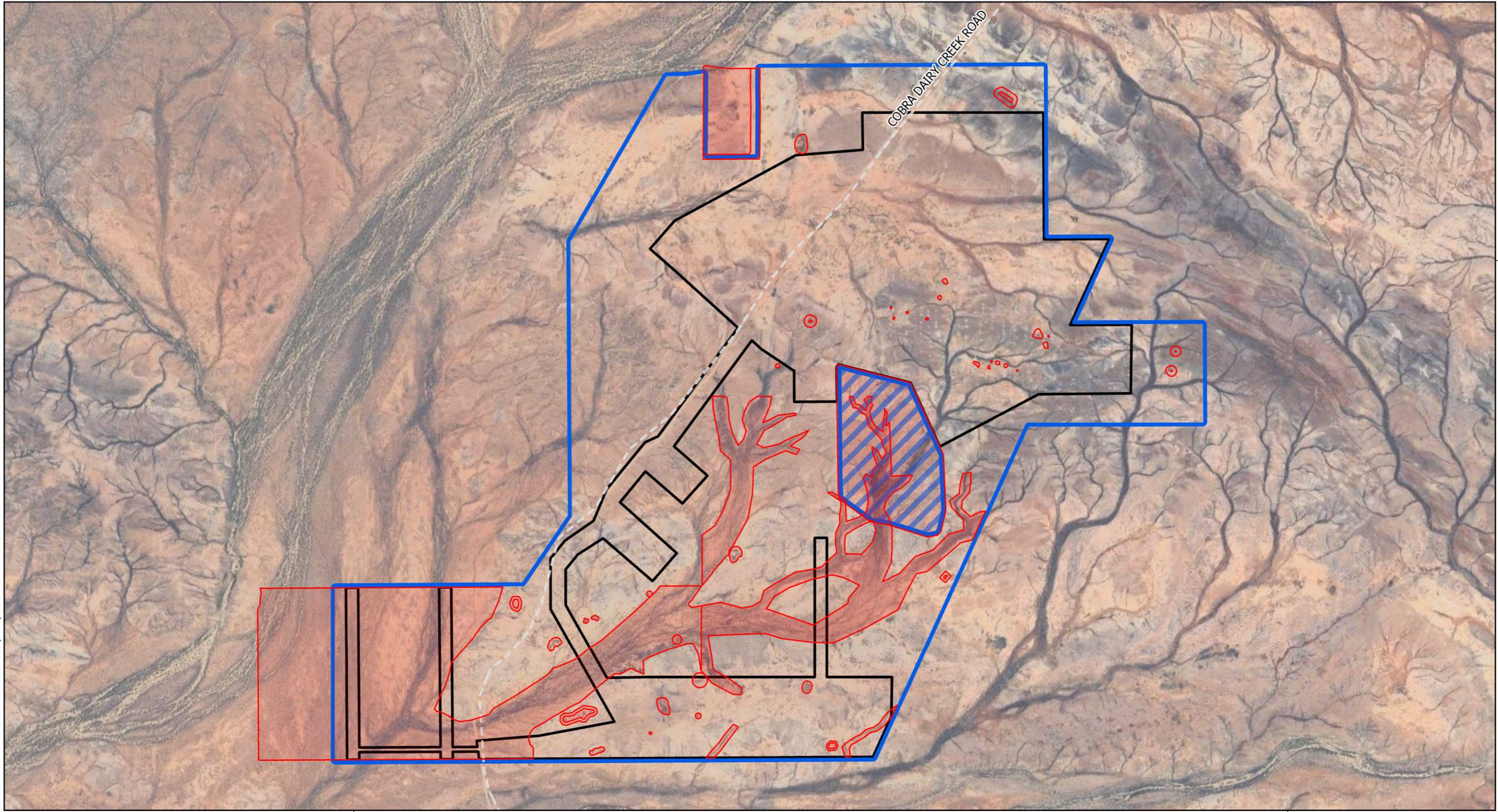
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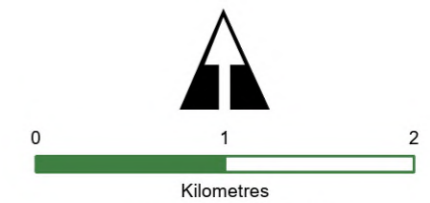


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 Figure 9-3:
 Aboriginal Heritage within the
 Development Envelope

- Roads
- Heritage Sites
- Exclusion Zone
- Development Envelope
- Indicative Disturbance Footprint



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9.4 Potential Environmental Impacts

9.4.1 Direct Impacts

The possible direct impacts to Aboriginal heritage by the Project will include disturbance to Aboriginal sites within the meaning of the *Aboriginal Heritage Act 1972* due to:

- Land clearing and proposed mining activities within planned disturbance footprint.
- Accidental disturbance of Aboriginal heritage sites outside of approved disturbance footprint, including within designated buffer zones.
- Alteration of surface water hydrology or water quality could adversely impact the values of water features of cultural significance to the Yinggarda People.

The Development Envelope that intersects with the Wajarri Yamatji country is associated with underground mining areas, and surface disturbance and direct impact are not expected.

9.4.2 Indirect Impacts

Potential indirect impacts to Aboriginal heritage from the implementation of Project include changes to surface water hydrology or water quality. However, these impacts are primarily relevant to the Surface Water environmental factor rather than Aboriginal heritage. Indirect impacts on Surface Water have been addressed Section 8.4.2.

9.4.3 Mitigation

Mitigation and management actions relating to Aboriginal heritage sites and values are listed below:

- The Indicative Disturbance Footprint has been designed to avoid impacts sites of cultural significance as far as practicable. This includes an exclusion zone in the middle of the Development Envelope, south of the waste rock landform.
- Aboriginal archaeological and ethnographic significance assessment shall be undertaken within the Indicative Disturbance Footprint to confirm the significance of identified Aboriginal heritage sites. The significance assessment surveys shall be undertaken with sufficient lead time prior to planned commencement of land disturbance to seek approval to disturb any sites within the Indicative Disturbance Footprint. Recognised representatives of Yinggarda people, Wajarri Yamaji people, and Archaeological and Ethnographic consultants will be used to support the surveys.

- Aboriginal sites and cultural significant sites as agreed with represented Native Title Groups that are not proposed to be disturbed will be demarcated with signage to prevent accidental disturbance. Demarcation shall be established prior to land clearing and maintained throughout operations.
- The Cultural Heritage Management Plan includes ongoing management activities, which include dust and vibration monitoring and regular inspections during construction activities.
- A ground disturbance permit procedure will be implemented to minimise the risk of unplanned or unauthorised clearing.

Consents shall be sought under section 18 of the *Aboriginal Heritage Act 1972* for disturbance of Aboriginal sites within the Indicative Disturbance Footprint that are expected to be impacted. Consultation has commenced with Yinggarda People regarding the application to disturb sites. Although there is no surface disturbance is expected within the Wajarri Yamaji country, engagement with Wajarri Yamaji people will be continued as part of the general stakeholder engagement.

In addition to the mitigation measures described above, ESM will develop a Cultural Heritage Management Plan to ensure impacts to Aboriginal heritage values within the Development Envelope will be minimised. This plan will be developed in consultation with the Traditional Owners.

9.5 Predicted Outcome

The Development Envelope has been developed taking into consideration the issues and concerns raised by Traditional Owners. ESM is committed to avoiding Aboriginal sites where possible and has designed the Indicative Disturbance Footprint with the intent of minimising interference with cultural and heritage values as far as practicable.

The Project is expected to meet the EPA objective to protect Aboriginal heritage from significant impact. Any potential impacts to Aboriginal heritage will be managed through stakeholder consultation, engagement with other regulators, or under the *Aboriginal Heritage Act 1972*.

10 GREENHOUSE GAS EMISSIONS

10.1 EPA Objectives

The EPA objective for the factor Greenhouse Gas Emissions (GHG) is:

“To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change”.

10.2 Relevant Policy and Guidance

Laws and regulations relevant to the consideration of GHG include:

- *National Greenhouse and Energy Reporting Act 2007* and associated technical guidelines
- *National Greenhouse and Energy Reporting Regulations 2008*
- *National Greenhouse and Energy Reporting (Measurement) Determination 2008*

Guidelines relevant to the consideration of GHG include:

- *Statement of Environmental Principles, Factors, Objectives and Aims of EIA* (EPA, 2023b)
- *Environmental Factor Guideline: Greenhouse Gas Emissions* (EPA, 2024a)
- *Western Australian Climate Policy* (Government of Western Australia, 2020)

10.3 Receiving Environment

The emission of GHG in one location contributes to the cumulative quantity of GHG in the global atmosphere. The receiving environment of GHG emissions from the Project is therefore the global atmosphere, although the scope of the EPA’s obligations is the State of Western Australia.

The receiving environmental context is the emissions and policies relating to GHG management at the federal and state level.

Australia contributes approximately 1.2% of global GHG emissions, which was 432.6 Mt carbon dioxide equivalent (CO₂-e) in 2022 (EPA, 2024a). Under the Paris Agreement, Australia has committed to reduce GHG emissions by 43% below 2005 levels by 2030 (EPA, 2024a). Furthermore, the *Intergovernmental Panel on Climate Change* (IPCC)’s *Sixth Assessment Report* (AR6) requires global emissions to peak no later than 2025 followed by rapid, deep and sustained reduction in all sectors to limit the impacts of climate change to a less extreme ‘1.5°C’ (EPA, 2024a).

Western Australia contributed 89.4 Mt CO₂-e in 2022 – 2023 (DCCEEW, 2025). This was approximately 19.7% of Australia’s emissions in 2022 – 2023, and an increase in Western Australia’s total emissions compared to 2021 – 2022 (DCCEEW, 2025). The *Western Australia Climate Policy* (Government of Western Australia, 2020) commits to actions to achieve the target of net zero emissions by 2050. The policy also recognises that reduction of greenhouse gas emissions must occur to mitigate potential impacts from climate change including extreme weather events, rising sea levels, changes to climate and loss of habitats.

The EPA *Environmental Factor Guideline: Greenhouse Gas Emissions* (EPA, 2024a) identifies that proposals which expect to emit more than 100,000 tpa CO₂-e of Scope 1 emissions would be assessed for this environmental factor.

10.4 Potential Environmental Impacts

Potential greenhouse gas emissions sources from the Project activities have been identified, and these include:

- Sources of Scope 1 GHG emissions:
 - Diesel consumption by the power station
 - Diesel consumption by the mining fleet, support equipment and other vehicles
 - Diesel consumption by road trains hauling product to port, and
 - Land clearing
- Scope 3 emissions:
 - Indirect greenhouse gas emissions that occur as a result of the Project’s activities but originate from sources not owned or controlled by the Proponent. For this Project, these are primarily associated with processing of sold products.

10.4.1 Greenhouse Gas Emissions Estimates

The Project has a proposed life of mine (LOM) of 9 to 11 years, providing flexibility to accommodate operational planning. The GHG emissions assessment was based on an 11-year LOM scenario; however, the range of 9 – 11 years does not materially change the assumptions behind the estimates. Accordingly, the emissions estimates presented remain valid for the Project’s anticipated LOM.

A GHG assessment for the Project has been completed by Greenbase (2025). This assessment estimated how much GHG the Project will emit and its contribution to State and national emissions totals. Key findings of this assessment are summarised below.

The estimated average annual Scope 1 GHG emissions are 99,537 t CO₂-e during operations (Table 10-1). While this is slightly below the 100,000 tpa CO₂-e threshold, the construction year (i.e. Year 0) and the first four years

of operation (i.e. Year 1 – Year 4) are expected to exceed it, with Year 2 peaking at 145,445 tpa CO₂-e (Table 10-1). This assumption is a conservative scenario, which based on all electricity and fuel requirements being met by diesel use, requiring approximately 33,962 kL of diesel use per year, and full land clearing of the surface disturbance footprint (exclude underground mining areas) (i.e. 1,612 ha) (Greenbase, 2025).

Another scenario was modelled, which assumes 25% of the energy source will be from solar energy. Under this scenario, the estimated average annual Scope 1 GHG emissions drop to 81,088 t CO₂-e during operations (Table 10-2) (Greenbase, 2025). In this case, the construction year and the first four years of operation exceed 100,000 t CO₂-e, with Year 2 peaking at 126,996 tpa CO₂-e (Table 10-2).

There are no Scope 2 emissions expected in the Project as the required electricity will be generated from an onsite power station rather than purchased from an electricity grid (Greenbase, 2025).

The estimated Scope 3 emissions from the Project is 6,590,163 t CO₂-e over 12 years period (i.e. 1 year construction plus 11 years of operation), with an annual average approximately 599,105 tCO₂-e during the operational phase (Greenbase, 2025).

Table 10-1: Scope 1 Emissions Base Scenario: Land Clearing of the Indicative Disturbance Footprint and Diesel Generator Only (Greenbase, 2025)

Scope 1 Emissions (t CO ₂ -e)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Total
Land Clearing (1,612 ha)	107,932												107,932
Diesel Onsite	10,921	138,829	138,829	122,400	113,193	85,874	76,118	76,560	76,041	75,639	75,024	74,036	1,063,462
Diesel Offsite: Product Haulage		5,315	6,616	6,453	6,440	3,839	2,256	3,423	3,167	2,793	1,774	284	42,362
Total Scope 1 Emissions	118,854	144,144	145,445	128,853	119,633	89,712	78,375	79,983	79,208	78,432	76,798	74,320	1,213,756
<i>Scope 1 Average (Operational Phase: Year 1-11):</i>													99,537

Table 10-2: Scope 1 Emissions with 25% Renewables Scenario: Land Clearing of the Indicative Disturbance Footprint and Diesel Generator and Solar Farm (Greenbase, 2025)

Scope 1 Emissions (t CO ₂ -e)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Total
Land Clearing (1,612 ha)	107,932												107,932
Diesel Onsite	10,921	120,380	120,380	103,951	94,744	67,425	57,670	58,111	57,592	57,190	56,575	55,587	860,527
Diesel Offsite: Product Haulage		5,315	6,616	6,453	6,440	3,839	2,256	3,423	3,167	2,793	1,774	284	42,362
Total Scope 1 Emissions	118,854	125,695	126,996	110,404	101,184	71,264	59,926	61,534	60,759	59,984	58,349	55,871	1,010,821
<i>Scope 1 Average (Operational Phase: Year 1-11):</i>													81,088

10.4.2 Greenhouse Gas Benchmarking Assessment

A GHG benchmarking assessment was undertaken to compare the Project's emissions performance with similar lithium mining operations in Western Australia using publicly available data. The analysis focused on emissions intensity per tonne of lithium ore produced and electricity generation.

Results show the Project has the second highest Scope 1 emission intensity for lithium ore production (Table 10-3), behind the Mt. Marion Lithium Project in the Goldfield region. However, the Project has the lowest Scope 1 emissions intensity on electricity generation by incorporating 25% renewable energy in its power supply (Table 10-3). This benchmarking assessment indicates the Project's emission is within the industry's current average GHG intensity.

Table 10-3: Benchmarking Against Comparable Lithium Mines in Western Australia (Greenbase, 2025)

Project	Region	Scope 1 Emission Intensity – Lithium Ore Production (t CO ₂ -e/t ore)	Scope 1 Emission Intensity – Electricity Generation (t CO ₂ -e / MWh)
Yinnetharra Lithium Project (This Project)	Gascoyne Region of WA	0.01845	With Diesel Only: 0.702 With 25% Renewables: 0.527
Greenbushes Lithium Operation	Southwest Region of WA	0.01241	N/A
Mt. Marion Lithium Project	Goldfields Region of WA	0.01852	0.5983
Pilgangoora Operation	Pilbara Region of WA	0.01440	0.697
Wodgina Operations	Pilbara Region of WA	0.01733	0.6055

10.4.3 Mitigation

The Proponent is committed to ensuring that the Project avoids and minimises its GHG emissions and is consistent with the State's aspiration of achieving net zero emissions by 2050. Mitigation measures include:

- Optimise design of the processing infrastructure to reduce electrical demand (Scope 1 emissions).
- Seeking to use alternative fuel source for power plant if feasible (e.g. from diesel to LNG) (Scope 1 emissions).
- Aim for at least 25% renewables for the power supply of the Project (Scope 1 emissions).
- Develop indicative GHG emissions targets for each 5-year period of operations.
- ESM will measure and report performance against these targets each year in a publicly available report.
- ESM will develop a Greenhouse Gas Management Plan and review every five years.

The Proponent will also pursue further GHG mitigation strategies throughout detailed design, construction, and operations, including:

- Establishing the power plant contract with regular review and targets to decrease GHG emissions throughout the contract period.
- Consideration of emissions reduction strategy and measurable targets in appointment of contractors.
- Seeking to use renewable electric or green hydrogen powered heavy vehicles, or in vehicles for transport of concentrate, when suitable technology becomes financially viable.
- Undertake progressive rehabilitation where practicable, to facilitate carbon uptake by revegetation.

10.5 Predicted Outcome

The Project design, combined with the proposed mitigation measures, will support the Proponent's commitment to achieving net zero GHG emissions by 2050. Accordingly, the Proponent considers that the Project can be managed to meet the EPA's objective to minimise the risk of environmental harm associated with climate change by reducing GHG emissions as practicable.

11 HOLISTIC IMPACT ASSESSMENT

The preceding sections assessed potential impacts to environmental values separately. Nevertheless, it is recognised that there are inherent links between environmental factors. This section discusses connections and interactions between environmental factors and how these may influence the potential impacts.

The Project is in a relatively remote location, with no known sensitive human receptors within 14 km radius of the Development Envelope. While substantial amounts of Aboriginal heritage sites (i.e. 44 Aboriginal heritage sites) have been identified within the Indicative Disturbance Footprint, it has been designed to avoid Aboriginal cultural landscape. The Project can be implemented without significant impacts to air quality, human health or social surroundings.

Greenhouse gas emissions will be reduced by optimising the processing infrastructure design to reduce electrical demand and seek to utilise renewable (solar) power generation and / or alternative fuel source.

The Project occurs within a landscape that is typical of the region and broadly representative of its environmental characteristics. The receiving terrestrial environmental values (flora, vegetation, landform, fauna, terrestrial environmental quality) have relatively low significance. The highest significance terrestrial environmental value within the Development Envelope is terrestrial fauna (i.e. Southern Whiteface – Vulnerable under EPBC Act and BC Act). The Indicative Disturbance Footprint avoids and minimises direct impacts to the significant terrestrial fauna and associated habitats as much as practicable. The Project can be implemented without significant impacts to landforms, terrestrial environmental quality, flora and vegetation, or terrestrial fauna.

Surface water diversions and control structures will be required around the open pit, other mining landforms and infrastructure, to mitigate the risk of erosion, flooding, and contamination of clean stormwater. The surface water control structures will be designed to minimise disturbance to local and regional flows as much as practical.

Potential contamination risks to groundwater quality are primarily at the processing plant area and mining landforms. Hydraulic gradient within the Development Envelope is low, and limited network of water-bearing fractures within the fractured rock aquifer. These suggest the potential contaminant migration beyond the Development Envelope are likely to be low. Therefore, groundwater contamination from the Project is not a significant risk to GDV or other groundwater associated environmental receptors. Risk of discharge and contamination will be managed through the approvals required under the EP Act Part V and Mining Act.

Groundwater abstraction is required to provide water source for the Project, and the water will be used in mining operations. The proposed borefield is expected to draw water from the Gascoyne tributary paleochannel aquifer. The locations of the proposed borefield avoids the calcrete areas within the paeochannel aquifers where

stygo fauna PEC may occur, reducing ecological risk. Monitoring of groundwater quality and standing water levels will be undertaken throughout operations to ensure the groundwater level and quality will not be significantly impacted by the proposed Project activities.

The Project can be implemented without significant impacts to inland waters (groundwater and surface water). Risk of groundwater abstraction will be managed through the approvals required under RIWI Act and Mining Act.

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APPENDIX 1. Yinnetharra Lithium Project - Detailed Flora and Vegetation Survey (Stantec, 2024c)

APPENDIX 2. Yinnetharra Project - Baseline Soil Assessment (Mine Earth, 2025)

APPENDIX 3. Yinnetharra Lithium Project Subterranean Fauna Study:
Malinda Prospect (Bestiolas Consulting, 2024)

APPENDIX 4. Yinnetharra Detailed Terrestrial Vertebrate Fauna and Short-range Endemic Invertebrate Fauna Survey (Stantec, 2024b)

APPENDIX 5. Targeted Yinnietharra Rock-dragon Survey and Species Distribution Model (Stantec, 2024a)

APPENDIX 6. Southern Whiteface and Grey Falcon Survey – Yinnetharra Lithium Project Area (Terrestrial Ecosystems, 2026)

APPENDIX 7. Yinnetharra Lithium Project - Static Tailings Characterisation Malinda Deposit (MBS Environmental, 2025a)

APPENDIX 8. Yinnetharra Lithium Project- Static Waste Rock and Low-Grade Ore Characterisation - Malinda Deposit (MBS Environmental, 2025b)

APPENDIX 9. Yinnetharra Lithium Project – Baseline Hydrology Study
(Advisian, 2023)

APPENDIX 10. Yinnetharra Lithium Project Hydrology Assessment
(Worley, 2025)

APPENDIX 11. Yinnetharra Lithium Project – Expanded Water Source Options Study (Rockwater, 2024)

APPENDIX 12. Yinnetharra Project - Aquatic Ecology Assessment
(Biologic, 2025)

APPENDIX 13. Yinnetharra Lithium Project- Greenhouse Gas Assessment
Summary Report (Greenbase, 2025)



APPENDIX 14. Stakeholder Register – Not for Public Submission