



MINING MANAGEMENT PLAN

Grants Lithium Project

Mining Operations

Operator name: Lithium Developments (Grants NT) Pty Ltd
Project name: Grants Lithium Project
Authorisation number: 1021-01 (updated Variation of Authorisation TBA)
MMP reporting year: 2021/2022
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Endorsement:

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Name	EcOz Environmental Consultants Pty Ltd	General Manager Operations Lithium Developments (Grants NT) Pty Ltd	Chief Operating Officer Lithium Developments (Grants NT) Pty Ltd
Signature			

I (**Chief Operating Officer**) declare that to the best of my knowledge the information contained in this mining management plan is true and correct and commit to undertake the works detailed in this plan in accordance with all the relevant Local, Northern Territory and Commonwealth Government legislation.

SIGNATURE:

DATE:

Document History

Rev	Reviewed by	Approved by	Issued to	Date	Comments
1			DPIR	28 June 2019	First MMP issue
2			DITT	1 April 2022	MMP amendment
3			DITT	2 September 2022	MMP amendment – addressing DITT request for additional information

Mining Management Plan Checklist

Y/N	Section	Requirement	Department's Comment
Y	Cover	Has the plan been endorsed by a senior representative of the company?	
Y	Section 1.1	Introduction: Have Operator details been included?	
Y	Section 1.2	Is the company structure described?	
Y	Section 1.3	Are title details included?	
Y	Section 1.7	Is there a project summary and description improvements?	
Y	Section 2.1	Site Conditions: Have all the physical environment conditions for the site and surrounds been identified?	
Y	Section 2.2	Have the current land uses and users and stakeholders been identified?	
Y	Section 2.2.7	Have Community Affairs been described?	
Y	Section 3	Statutory and Non-Statutory Requirements: Has all legislation relevant to the operation and associated permits and approvals been identified? Have all non-statutory obligations been identified and included?	
Y	Section 3.3	Have Aboriginal and heritage sites been identified?	
Y	Section 4	Operational Activities: Have all operational activities relating to mining, processing, exploration and any related activities for the site been addressed in the MMP?	
Y	Section 4.4 Soil and waste characterisation (Appendix D) Waste Rock Management Plan (Appendix K)	Waste Rock Characterisation: Have results of waste rock characterisation been included and discussed? Has a waste characterisation report been included? Does the MMP include a waste rock management plan?	
Y	Section 2.1 and 5.1	Environmental Management: Has the Environmental Management structure and responsibilities been outlined?	
Y	Section 5.2	Has the Environmental Policy been included?	

Y/N	Section	Requirement	Department's Comment
Y	Section 5.3	Has a register of environmental commitments been included? Has a summary of all recommendations from the Environmental Impact Assessment been included and addressed if the project has been formally assessed?	
Y	Section 5.4	Has training and induction been addressed?	
Y	Section 5.5	Is there an Environmental Emergency and response plan?	
Y	Section 5.6 Risk registers at Appendix X	Have all environmental aspects and potential impacts been identified? Has a risk assessment been carried out?	
Y	Section 5.6.3	Have Environmental Management Plans (EMP's) for identified risks been developed and included?	
Y	Section 5.6.3	Do all EMP's include: <ul style="list-style-type: none"> • objectives and targets • management and mitigation strategies • monitoring and measurement • discussion and analysis of results • non-conformances and corrective actions? 	
Y	WMP Appendix N	Water Management: Has a comprehensive description of surface water conditions been included?	
Y	WMP Appendix N	Has a comprehensive groundwater model been described?	
Y	WMP Appendix N	Have information or knowledge gaps been identified and described for water management?	
Y	WMP Appendix N	Are there comprehensive details (including scopes of work) on actions proposed to be taken to respond to any identified information or knowledge gaps?	
Y	WMP Appendix N	Have hazards been identified that could result from activities related to the operation and rank the associated risks of impacts to both surface and groundwater?	
Y	WMP Appendix N	Are all strategies and actions that will be undertaken to manage any risks identified included?	
Y	WMP Appendix N	Has the water monitoring program been detailed?	
Y	WMP Appendix N	Has all monitoring data been included?	
Y	WMP Appendix N	Has an interpretation of data by a suitably qualified person been included?	
Y	WMP Appendix N	Has a discussion of trends over time been detailed?	
NA	New operation	Have details of remedial/corrective strategies and scopes of work been included?	
NA	New operation	Have proposed actions been detailed?	
Y	EMR Appendix E	Incident Reporting: Has a table of all incidents recorded on site been included and discussed?	
Y	Section 8 and MCP Appendix T	Closure Planning: Has a Life of Plan – Unplanned Closure plan been included? Are all disturbances described?	

Y/N	Section	Requirement	Department's Comment
		<p>Are remediation activities that would be required in the event of unplanned closure described?</p> <p>Are activities required to achieve end land use objectives, described?</p>	
Y	Section 8.3 Appendix Z	<p>Does the MMP include a detailed costing of closure activities for the life of plan?</p> <p>Have all past disturbances and those proposed for the next reporting period been identified and included?</p>	
Y	All	<p>Maps and Plans:</p> <p>Maps and plans have scale, scale bar, legend and north point?</p> <p>Datums used are MGA94 or GDA 94 (expressed in decimal degrees) with elevations based on AHD?</p>	

ACRONYMS & ABBREVIATIONS

Acronym Abbreviation	Meaning
%S	Percentage sulfur
AAPA	Aboriginal Areas Protection Authority
AEP	Annual Exceedance Probability
AMD	Acid and metalliferous drainage
ANC	Acid Neutralising Capacity
ANCOLD	Australian National Committee on Large Dams
ASX	Australia Securities Exchange
BCF	Burrell Creek Formation. A geological formation in the Grants pit.
bcm	Bank cubic metres = A volumetric term used to define a cubic metre of rock or material in situ before it is drilled and blasted.
BOM	Bureau of Meteorology
CEC	Cation Exchange Capacity – a measure of soil stability
CPESC	Certified practitioner in erosion and sediment control
CXO	ASX code for Core Lithium (previously Core Exploration)
DENR	Department of Environment and Natural Resources (Northern Territory) – now DEPWS
DEPWS	Department of Environment, Parks and Water Security – formerly DENR
DITT	Department of Industry, Trade and Tourism – formerly DPIR
DMS	Dense media separation
DOEE	Department of the Environment and Energy (Commonwealth)
DPIR	Department of Primary Industry and Resources – now DITT
EAT	Emerson Aggregate Test – soil structural stability test
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EL	Exploration Lease
EMP	Extractive Minerals Permit
EMS	Environmental Management System
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
FY	Financial Year
GARD Guide	Global Acid Rock Drainage Guide
GHG	greenhouse gases
ha	hectare
HSEC	Health, Safety, Environment and Community
IAP2	International Association of Public Participation
IECA	International Erosion Control Association
JORC Code	Joint Ore Reserves Committee Code is the <i>Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves</i> . It establishes standards for public reporting, emphasising principles of transparency and materiality. All companies listed on Australian or New Zealand Stock Exchanges are required to comply with the JORC Code.

Acronym Abbreviation	Meaning
KL	Kilo-litres
L	Litres
Li ₂ O	Lithium oxide (product of mining)
LoM	Life of Mine
m	metre
m ³	cubic metres
mAHD	metres Australian height datum
mASL	metres above sea level
mBGL	metres below ground level
MCP	Mine Closure Plan
ML	Mineral Lease
ML	megalitres
mm	Millimetres
MMA	<i>Mining Management Act</i> (NT)
MMP	Mining Management Plan
MSD	Mine Site Dam (also referred to as C5 dam)
Mt	megatonne (1,000,000 tonnes)
MTA	<i>Mineral Titles Act</i> (NT)
MWD 1	Mine Water Dam 1
MWD 2	Mine Water Dam 2
NAF	Non-acid Forming
NAG	Nat Acid Generation
NAPP	Net acid production potential
NATA	National Association for Testing Authorities
NEPM	National Environmental Protection Measure
NMD	Neutral Mine Drainage
NOI	Notice of Intent
NORM	Naturally Occurring Radioactive Materials
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
OHD	Observation Hill Dam
PAF	Potentially acid forming
PAR	Population at Risk
Pb	Lead
PFS	Pre-Feasibility Study
PSD	Particle size distribution
QA/QC	Quality Assurance/Quality Control
RL	Relative level
ROM	Run of mine
RWD	Raw Water Dam
RWL	Rest water level
s	second

Acronym Abbreviation	Meaning
Se	Selenium
SIA	Social Impact Assessment
SILO	Scientific Information for Land Owners
SIMP	Social Impact Management Plan
SMD	Saline Mine Drainage
SWL	standing water level
TAP	Threat Abatement Plan
TARP	Trigger Action Response Plan
TIS	Traffic Impact Statement
TMM	Total Material Mined
TMP	Tailings Management Plan
TMP	Traffic Management Plan
TOC	Total Organic Carbon – measure of soil nutrients
ToR	Terms of Reference
TPWC Act	<i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)
TSF	Tailings storage facility
WDL	Waste Discharge Licence
WMP	Water Management Plan
WoNS	Weeds of National Significance
WRD	Waste rock dump
WRMP	Waste Rock Management Plan
yr	year

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Appendices

Appendix A Ecology and threatened species reports

Appendix B Surface water modelling reports

Appendix C Groundwater modelling reports

Appendix D Soil and waste characterisation

Appendix E Environmental mining report

Appendix F Social impact assessment

Appendix G Blast management

Appendix H Traffic impact statement

Appendix I Journey management plan

Appendix J AAPA Certificate

Appendix K Waste rock/AMD management plan

Appendix L Waste rock management plan summary report

Appendix M Tailings storage facility and water dams detailed design reports (GHD 2021a)

Appendix N Water management plan

Appendix O Erosion and sediment control plans

Appendix P Water storage facilities – operations, maintenance and surveillance manual (GHD 2021c)

Appendix Q Vegetation clearing procedure

Appendix R Waste discharge licence

Appendix S Tailings storage facility - operations, maintenance and surveillance manual (GHD 2021d)

Appendix T Mine closure plan

Appendix U Stakeholder engagement plan

Appendix V Social impact management plan

Appendix W Emergency response plan

Appendix X Environmental and social risk registers

Appendix Y Storage, transport and handling of dangerous goods

Appendix Z Security calculation

AMENDMENTS

Section 41(3) of the *Mining Management Act*, requires that when an MMP is reviewed and amended under Section 41(1)(a), it is to clearly identify amendments made. The table below identifies the minor amendments made within the document since last submission of the Grants Lithium Project Mining Management Plan (MMP) on the 28 June 2019. All other sections of the document remain unchanged.

Section	Amendment
Cover page	Dates revised
Acronyms and abbreviations	Revised
All maps	Updated with the refined site layout design and pipeline route from Observation Hill Dam (OHD) to raw water dam.
Entire document	Wording revised to reflect current status of the project. Updated department name changes Updated ML(A)32074 to ML32074 Updated Variation of Authorisation (VOA) 1021-01 as approved on 1 April 2020. Application for VOA completed to address inclusion of additional Title (ML32278). Updated Company badging / logo.
1. Introduction	MMP status and purpose updated
1.1 Operator details	Updated address and details of key contacts
1.2 Organisational structure	Updates organisational structure and responsibility
1.3 Title details	Titles and status updated
1.7 Project summary and improvements	Application for Variation of Authorisation submitted with this MMP amendment to include the additional title ML32278.
2. Site conditions	
2.1.1 Climate	Rainfall and temperature data updated 2021 data
2.1.7 Threatened species	Additional context to outcomes of <i>Typhonium praetermissum</i> survey report conducted in March 2019
2.1.8 Weeds	Updated to include September 2021 pre-clearance weed mapping data and weed treatment by Kenbi Rangers
2.2 Socio-economic environment	
2.2.5 Issues raised and current status	Update provided for more recent stakeholder engagement undertaken by True North and details of the established community hotline and email contact.
3. Legal and other obligations	
3.1 Statutory requirements	Updates to requirements under the <i>Water Act</i>
3.2 Non-statutory obligations	Additional best practice guidelines included for mine closure
3.3.1 Sacred sites	Updated details of revised Authority Certificate

Section	Amendment
3.3.2 Heritage and archaeological sites	Updated to include outcome of pre-clearance survey and follow-up archaeological inspection (possible burial site and hearth). Figure updated to include all sites.
4. Operational activities	
4.2 Material volumes	Draft mining schedule updated (Figure 4-1).
4.4 Materials characterisation	Updated details to include reference to the developed Waste Rock Management Plan.
4.6 Mine design	Design figures removed and referred to the GHD detailed designs in appendices
4.6.1 Open pit	Minor updates to lane width for pit design criteria
4.6.3 Waste Rock Dump	Minor updates to remove specifics of lifts as the dumping sequence will follow the mine schedule and environmental requirements.
4.6.4 Tailings storage facility	Updated design details (GHD 2021)
4.6.5 Ore and product stockpiles	Removed Commercial in Confidence
4.6.6 Mine water dams	Updated design details (GHD 2021), slight wording changes to reflect designs
4.6.8 Internal access and haul roads	Slight wording changes for location of weighbridge and wash bay
4.6.9 Stormwater and erosion management	Text updated to reference the progressive ESCPs
4.7.2 Water sources	Updates to include revision of site water balance as the project develops
4.7.3 Infrastructure development	Updated Observation Hill Dam (OHD) and Mine Site (C5) Dam design details (GHD 2021). Removal of figures of borrow area source locations – suitable material to be sourced from Grants open cut and specialised material imported
4.8.1 Land clearing	Minor updates on land clearing (details included in Environmental Mining Report)
4.8.2 Topsoil removal and storage	Minor updates on topsoil removal and storage (details included in Environmental Mining Report)
4.8.3 Borrow area development	Revision of Table 4-10. Estimated construction materials requirements and sources
4.9.4 Dewatering and off-site discharges	Included details of Waste Discharge Licence 248
4.9.5 Mining performance against previous MMP	Updated to reflect current status
4.10.3 Processing performance against previous MMP	Updated to reflect current status
4.12 Exploitation activities	Detail removed – covered in Core Exploration MMP
5. Environmental management	
5.1 Environmental management structure	Referred to section 1.2
5.2 Environmental policy	Policy reviewed and updated
5.3 Environmental commitments	Commitment tables updated to reflect current status
5.6.1 Identification of environmental aspects and impacts	Domains in Table updated

Section	Amendment
5.6.3 Environmental management plans	EMP list updated to include revised and new EMPs
6. Water management plan	WMP revised to include details of SWEL, WDL, water treatment plant (sewage) and irrigation area for current submission.
8. Closure planning	Text updated to include reference to January 2022 submitted Mine Closure Plan and Rehabilitation Management Plan, submitted for approval prior to commencement of operations.
References	Updated
Appendices	Additional reports provided in the appendices that have been developed or finalised since the June 2019 MMP submission.

1 INTRODUCTION

This Grants Lithium Project Mining Management Plan (MMP) has been amended for mining authorisation 1021-01 (application for further variation of authorisation submitted with this MMP), for submission to the Northern Territory Department of Industry, Trade and Tourism (DITT). The purpose of the amendment is to provide updated project information and plans since the June 2019 MMP approval.

Overall, the current authorisation permits the following activities at the Grants Lithium Project:

- Clearing and disturbance of 254 ha of native vegetation
- Life of Mine (LOM) of the Grants open cut pit is 3-4 years
- Development and operation the Grants open-cut pit to a depth of 200m
- Construction and operation of a processing facility
- Extended operations of the processing facility (seven-year period or more) to accommodate processing of ore mined from several nearby ore deposits associated with the Finnis Lithium Project tenements
- Disposal of processing waste in a tailings storage facility (TSF) integrated within a waste rock dump (WRD)
- Surface disposal of waste rock (WRD)
- Construction of water supply dams (mine water dam 1 and 2, raw water dam, Observation Hill Dam (OHD) wall lift and Mine Site (C5) Dam)
- Water supplied from the existing OHD and the proposed Mine Site (C5) Dam
- Mine site (C5) dam, once constructed, will remain in operation for duration of processing activities
- Ancillary infrastructure (pipeline from OHD to RWD)
- Transport of ore in haul trucks from Grants Lithium Project to the Darwin Port via public roads.

The proposal has been subject to assessment under the *Environmental Assessment Act (EA Act)* at the level of an Environmental Impact Statement (EIS). Assessment was completed on 17 June 2019. The MMP formalises the actions and strategies developed through the EIS process that Lithium Developments (Grants NT) will implement to ensure environmental impacts remain within acceptable and sustainable limits during mining operations and post-closure.

1.1 Operator details

Company:	Lithium Developments (Grants NT) Pty Ltd – a 100% owned subsidiary of Core Lithium Ltd.
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Lithium Developments (Grants NT) Pty Ltd is the operator of Grants Lithium Project and are a 100% owned subsidiary of Core Lithium Limited (Core). Core is an Australian Stock Exchange ASX-listed company (ASX: CXO) targeting lithium production through the development of the Finnis Lithium Project, located near Darwin in the Northern Territory. The company holds Exploration Licenses (EL's) over 500 km² of land in the Finnis River region, where it has been actively exploring for lithium since 2016. Core also hold several ELs across the NT and South Australia in areas prospective for copper, zinc, lead and uranium. The Company is currently transitioning from explorer to producer during 2022, at the Grants Lithium Project.

1.2 Organisational structure and responsibility

Table 1-1 and Figure 1-1 outline the health, safety and environment organisational chart for Grants Lithium Project.

Table 1-1. Organisational structure and responsibility

Role	Responsibility
General Manager Operations	Over-arching accountability for compliance with: <ul style="list-style-type: none"> • MMA • MMP authorisation and compliance with the MMP • establishing the Finnis Lithium Project Environmental Management System (EMS) • commitments and conditions associated with the environmental and mining approvals, permits and licences.
Manager Mining	Responsible for compliance with: <ul style="list-style-type: none"> • MMA • MMP authorisation and compliance with the MMP The Manager Mining will be supported in compliance management and monitoring by the Manager Health, Safety and Environment (HSE).
Manager HSE	Key person responsible for: <ul style="list-style-type: none"> • maintaining and implementation of the Finnis Lithium Project EMS • ensuring all commitments and conditions associated with the environmental and mining approvals, permits and licences are adhered too.
Superintendent Environmental	Key person to: <ul style="list-style-type: none"> • provide direct support to the Manager HSE to maintaining the Finnis Lithium Project EMS that addresses all commitments and conditions associated with the environmental and mining approvals, permits and licences. • coordinate and oversee site compliance monitoring • accountable to ensure implementation of EMPs.
Environmental Officer	Key person responsible to: <ul style="list-style-type: none"> • conduct site compliance monitoring programs • provide support to the Superintendent Environmental and Manager HSE • implementation of EMPs
HSE Officer	Key person responsible to: <ul style="list-style-type: none"> • conduct site health, safety and environmental compliance monitoring • provide support to the Superintendent Environmental and Manager HSE
Emergency Services Officers (ESO's)	Key persons responsible to: <ul style="list-style-type: none"> • provide emergency response capacity • implement the emergency response plan • provide support to the HSE Manager

In the event of changes of personnel, the department will be notified in writing and details updated in subsequent amended MMPs.

Lithium Developments (Grants NT) has engaged four primary contractors to design, construct and operate the Grants Lithium Mine:

- Primero (now part of NRW) – Engineering, Procurement and Construction, Front End Engineering Design
- Lucas Total Contract Solutions (LUCAS TCS) – Mining Services
- CSI Mining Services – Crushing
- QUBE – Haulage and Transport.

1.3 Title details

Table 1-2 provides details of the mining interests associated with Grants Lithium Project.

Table 1-2. Mining interests

Title number	Title holder	Expiry date	Area (Ha)	Mine infrastructure / use	Underlying land tenure
ML31726	Lithium Developments (Grants NT) Pty Ltd	17 January 2039	768	Mining and processing infrastructure	Vacant Crown Land (VCL)
ML32074	Lithium Developments (Grants NT) Pty Ltd	17 January 2039	352.9	Ancillary infrastructure (pipeline route)	
ML32278	Lithium Developments (Grants NT) Pty Ltd	17 January 2039	27.8	Proposed Mine Site (C5) Dam	
EMP28651	Lithium Developments Pty Ltd	12 October 2023	25	Borrow pit (historical extractive operation)	

Note: Lithium Developments (Grants NT) Pty Ltd is a 100% owned subsidiary of Core Lithium Limited.

1.4 Project overview

An open cut mining operation will be developed on Mineral Lease (ML) 31726. The project, referred to as Grants Lithium Project, encompasses the following key activities:

- Mining of approximately two (2) million tonnes (Mt) of spodumene (a lithium-bearing ore) using simple drill and blast mining methods.
- Crushing, screening and Dense Media Separation (DMS) processing of ore to increase the lithium concentration in the product from 1.5% to 5.5% Li₂O.
- Establishment of an onsite waste rock dump (WRD) and co-located tailings storage facility (TSF) to accept waste rock and tailings from the mining and processing activities.
- Haulage of the product in road trains along public roads to Darwin Port for export.
- Closure and rehabilitation of the site.

The primary water source for the mining operation is an old mine dam (Observation Hill dam) located 5 km to the south of the mine site on ML32074. To transport water from the dam to the mine site, Lithium Developments (Grants NT) has installed (Q4 2021) a six km long buried water pipeline, which traverses across both ML32074 and ML31726. A secondary water supply dam (MSD or C5) is planned on an ephemeral watercourse that flows through ML31726, immediately to the west of the mine site.

The life of mine (Grants open-cut) is 3-4 years and will employ 200-250 people as a daily drive-in-drive-out operation. There is no requirement for a mine camp.

1.5 Location and regional setting

The Grants Lithium Project mine site is located 90 km by road from Darwin CBD, or 25 km south as the crow flies. The site is accessed off the Cox Peninsula Road, approximately 36 km west of Berry Springs and 15 km south-east of Belyuen community. The site access road is approximately 10 km to the west of the Fog Bay Road turn-off to Dundee Beach and 20 km west of the Litchfield Park Road. Figure 1-2 shows the location of mining interests associated with the project.

The product will be hauled along Cox Peninsula Road, through to the Stuart Highway, along the Stuart Highway to Tiger Brennan Drive and then Berrimah Road, to East Arm Port. Total travel distance to the Port is 94.5 km. Figure 1-3 shows the haul route.

1.5.1 Land-use

The project is located on undeveloped Vacant Crown Land (Section 1 Hundred of Parsons) and is surrounded by this land tenure for seven to eight kilometres in all directions. There are no active industrial sites nearby (including no active mines or extractives quarries) and there is very limited industrial development on the Cox Peninsula. Currently, mining exploration is the main land-use in the project area, and rural living, recreation and tourism are the main land-uses across the peninsula more broadly. The nearest formal residence is located on a freehold parcel of land 10 km to the south of the mine site.

1.5.2 Previous disturbances

Prior to Core's purchase of the EL titles in 2016, the area had a long history of exploration, and mining activity for tin and tantalum, from the late 1800's through to 1925. There are a number of historic mines visible on aerial photography of the tenement. These past activities are evident across the project titles as surface workings, material piles, access tracks, old infrastructure and abandoned pits (at the Hang Gong, Highlands & Carlton deposits) (refer Figure 1-4).

On ML31726 there is an abandoned pit lake approximately 1.5 km south-east of the Grants mine site. There is also evidence of exploration tracks and drill pads across the lease area.

On ML32074 there is the Observation Hill Dam, which has old pipeline and pumping infrastructure present from when it was used as a water supply for mining activities in the area in the 1980's-1990's. There are also a number of small pit lakes and widespread exploration tracks and drill pads across the lease area.

The entire area of EMP28651 has been disturbed by previous extractive operations.

1.5.3 Catchments

The mine site disturbance footprint is located mainly in the West Arm catchment of Darwin Harbour. Darwin Harbour is recognised as a Site of Conservation Significance, with declared beneficial uses and established water quality objectives, to protect social, cultural and environmental values. A small portion of ML31726 and OHD, are located in the Bynoe Harbour catchment.

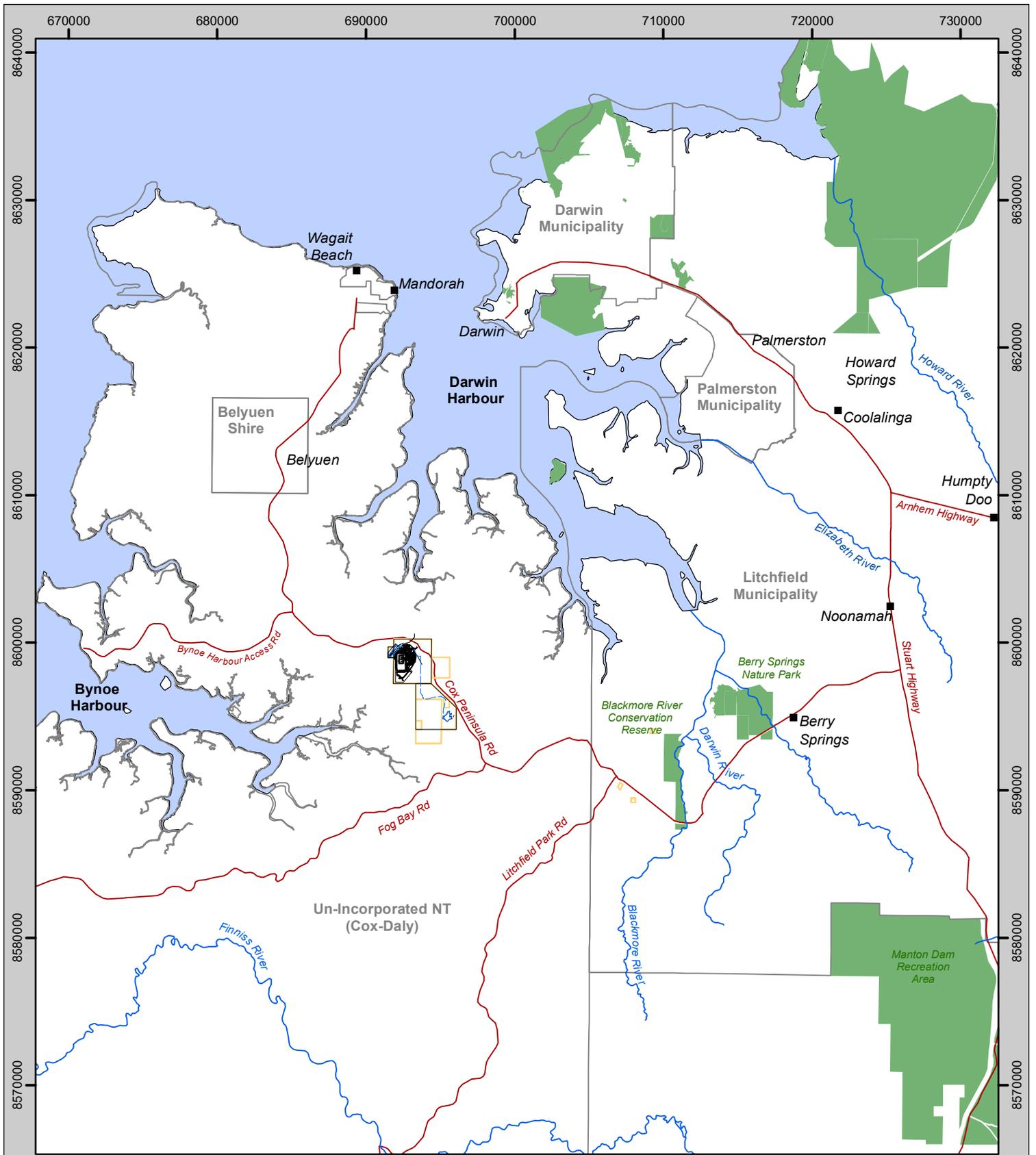
There are no permanent watercourses in the project area, all drainage lines are relatively small and cease to flow early in the Dry season. Surface water flows on the mine site drain north and discharge to the upper branches of West Arm, approximately 1.7 km downstream.

1.5.4 Protected Areas

There are no protected areas in close proximity to the site. The Blackmore River Conservation Reserve and Berry Springs Nature Park are located 32 km and 41 km to the east, and Litchfield National Park is located 42 km to the south.

1.5.5 Local government and services

The project area is not located within the boundaries of any local government area; however, the haul route is along NT Government controlled main roads that pass through the areas of Litchfield, Palmerston and Darwin municipalities. The project area is not serviced by mains power, water or sewage, and the closest police and fire emergency services are located at Humpty Doo (60 km by road). Medical general practitioner services are available in Berry Springs and the closest hospital is the Palmerston Regional Hospital (70 km by road).



Project data	Regional data
Mineral leases	■ Locality
Mineral lease	— Road
Project infrastructure	— Watercourse
Mine site infrastructure	□ Municipality boundary
Water supply infrastructure	■ Conservation reserve

MAP INFORMATION
 Projection: GDA 1994 MGA Zone 52
 Date Saved: 8/03/2022
 Client: Core Exploration
 Author: F Watt (reviewed K Welch)

DATA SOURCE
 Mineral lease: Client
 Roads, watercourses: Geoscience Australia
 Imagery: ESRI basemap (Digital Globe)

Figure 1-2. Map showing location and regional setting of Grants Lithium Project

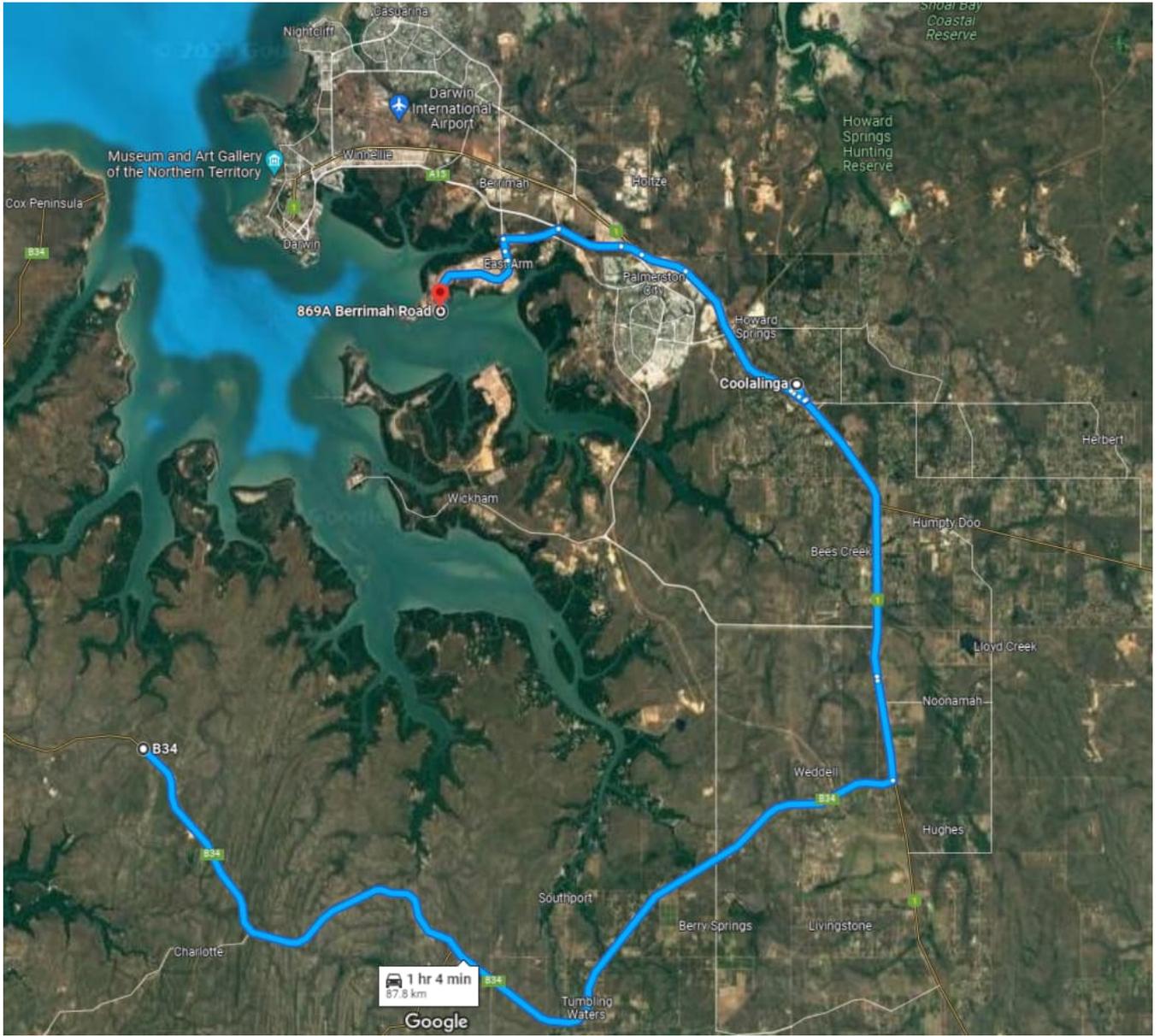
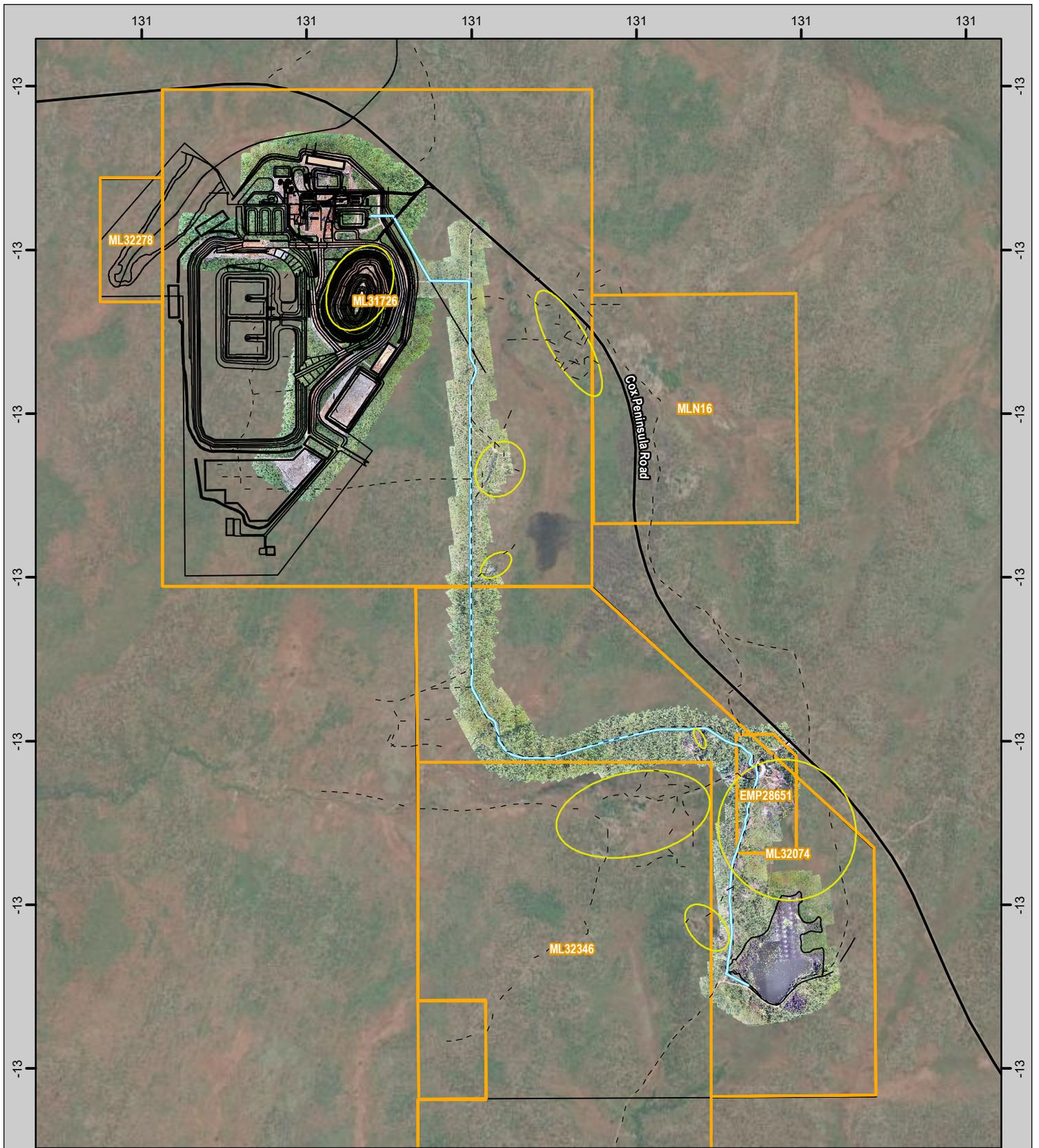


Figure 1-3. Proposed haul route from project area to Darwin Port



Legend

- Mine site components
- - - tracks
- Secondary road
- Historical disturbance area
- Water pipeline
- Mineral lease

0 0.25 0.5 1
Kilometres

MAP INFORMATION
 Projection: GCS GDA 1994
 Date Saved: 7/03/2022
 Client: Core Exploration
 Author: F Watt (reviewed K Welch)

DATA SOURCE
 Project components: Client
 Land unit mapping: DENR
 Imagery: ESRI basemap (Digital Globe)

Figure 1-4. Map of previous mining and exploration activities on titles

1.6 Footprint and site layout

The development envelope within ML31726 is approximately 220 ha. Within ML32074, 9 ha of land will be disturbed to establish OHD as the project water supply and 6 ha of land was disturbed to install a water pipeline. Table 1-3 provides details of the mine site and water supply infrastructure.

Table 1-3. Summary of project footprint components

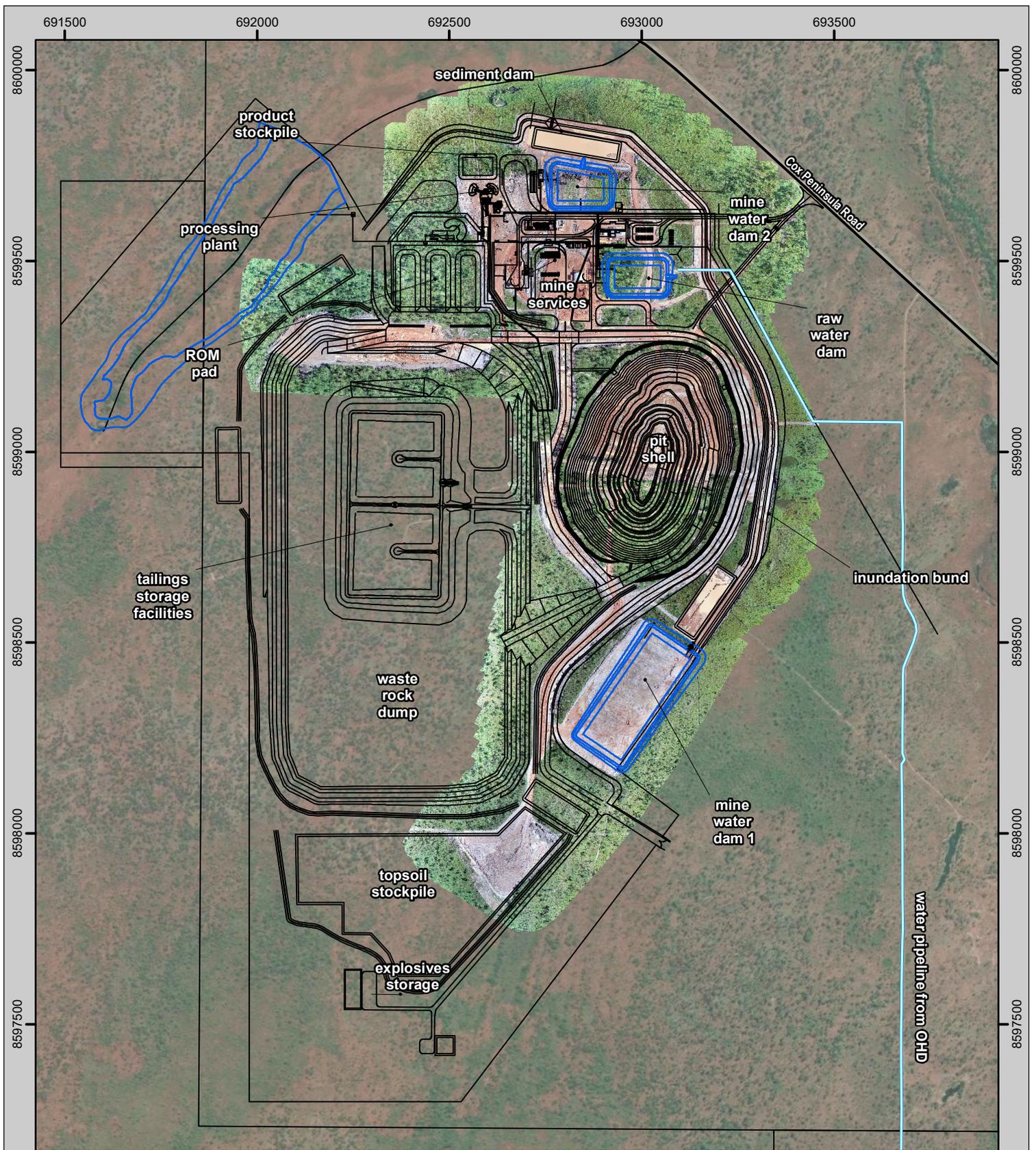
Component	Location	Approximate dimensions (l x w) and/or capacity	Extent (ha)
Mine Site Infrastructure			
Mine pit	ML31726	600m x 405m x 200m	220ha
Waste rock dump		1270m x 700m x 30m(h)	
Run of Mine (ROM) pad		250m x 160m	
Processing plant		140m x 100m	
Topsoil stockpile		2060m x 100m x 1.5m	
Flood bund		2500m x 30m x 3m(h)	
Access roads		2900m x 30m	
Mine Operations Centre		175m x 130m	
Raw water dam RWD		180m x 115m (60ML)	
Mine water dam 1 MWD1		380m x 180m (240ML)	
Mine water dam 2 MWD2		180m x 110m (60 ML)	
Water Supply Infrastructure			
Observation Hill dam	ML32074. Dam wall located at approx. 695400E 8595600N	Area of inundation with wall lift: 700m x 570m; Capacity ~ 628ML	9ha ¹
Water pipeline	ML32074 and ML31726	6km (l) x 10 m (w)	6ha
Mine Site dam	ML31726	Area of inundation: 930m x 230m Capacity = 290ML	19ha
Total area of disturbance			254ha

1.7 Project summary and improvements

Application for Authorisation of the new mining operation on ML31726 targeting the Grants deposit was approved on 1 April 2020 with a Variation of Authorisation 1021-01 granted to Lithium Developments (Grants NT) Pty Ltd on 27 August 2021. An application for Variation of Authorisation has been submitted with this MMP amendment to include the additional title ML32278.

Over the period 2016 to 2021, Core undertook exploration and/or resource definition activities on the underlying Exploration Licence's EL29698 and EL30015. These activities involved the creation of access tracks, drilling activities and installation of groundwater monitoring bores. Positive exploration results from the Grants deposit (located in the north of EL29698), led Core to progress planning the development of Grants Lithium Project. A Pre-Feasibility Study was released publicly in June 2018 and a Definitive Feasibility Study was released in April 2019 and updated in July 2021.

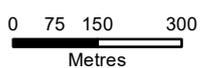
¹ 9ha is the additional area inundated by raising the dam wall. The entire inundation footprint is approximately 40ha.



Legend

- Water pipeline
- Water supply infrastructure
- Mine site components
- Secondary road





0 75 150 300
Metres



EcOz

MAP INFORMATION
 Projection: GDA 1994 MGA Zone 52
 Date Saved: 7/03/2022
 Client: Core Exploration
 Author: DC

DATA SOURCE
 Project components: Client
 Imagery: ESRI basemap (Digital Globe)

Figure 1-5. Map of Grants Lithium project site plan

2 SITE CONDITIONS

This section describes the existing conditions across ML31726 and ML32074 (encompassing EMP28651) that are relevant to assessment and management of environmental, social and cultural impacts and risks. This information is summarised from the baseline studies and environmental impact assessment undertaken for the Environmental Impact Statement (EIS) process completed under the *Environmental Assessment Act*.

2.1 Physical environment

The following baseline studies characterise the physical environmental conditions across the project area:

Ecology and threatened species survey reports (Appendix A)

- Ecological assessment (EcOz, 2017)
- *Typhonium praetermissum* survey (EcOz, 2018)
- *Typhonium praetermissum* survey (EcOz, 2019)
- *Stylidium ensatum* survey (EcOz, 2018a)

Surface water modelling reports (Appendix B)

- Surface water modelling (EnviroConsult Australia, 2018a, b, c) and (EnviroConsult Australia, 2019)

Groundwater modelling reports (Appendix C)

- Groundwater model (Cloud GMS, 2018) and (Cloud GMS, 2019).

Soil and materials (waste) characterisation (EcOz, 2018b) (Appendix D).

The sections below summarised relevant information from these studies.

2.1.1 Climate

The project area lies within the wet-dry tropics. The wet season is typically November to March, and dry season April to October. Figure 2-1 shows average monthly rainfall and evaporation data generated for the project site (coordinates 12°70'S 130°80'E) from the SILO (Scientific Information for Land Owners) database (<https://legacy.longpaddock.qld.gov.au/silo/>) from January 1957 to November 2021. For consistency, the groundwater modelling (CloudGMS 2018 and 2019), hydrological modelling (EnviroConsult 2019) and water balance prepared for the Grants Lithium Project are based on the SILO data extracted for the project area.

Rainfall

The Grants Lithium project area has an average annual rainfall of 1624 mm and the wettest months are typically January and February. Rainfall is highly variable from year to year. The lowest and highest annual rainfall recorded in the SILO are 919 mm (in 1979) and 2,766 mm (in 2011). There is generally little to no rainfall during the months of June, July and August each year.

Evaporation

Average annual potential evaporation is 2,327.3 mm, which exceeds average annual rainfall by 702.5 mm. The highest potential evaporation occurs between September and October, and lowest between February and March. Average monthly rainfall exceeds evaporation in December – March each year.

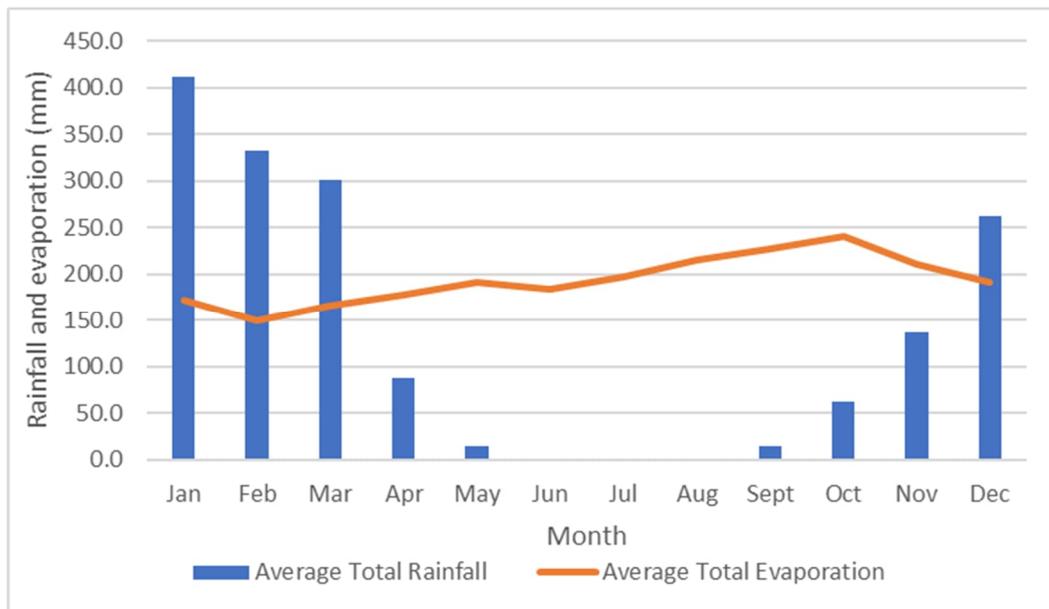


Figure 2-1. Average monthly rainfall and potential evaporation generated for the project site from the SILO database records 1957 to 2021.

Temperatures

Monthly mean maximum temperatures range from 30.6°C (July) to 33.3 °C (October & November). Monthly mean minimum temperatures range from 19.3°C (July) to 25.3 °C (November and December).

Wind direction

Wind direction is predominately from the north through west most of the year (August to March) and particularly during the wet season (September to March). During the dry months (April to July) winds come predominately from the east. The highest mean afternoon (3 pm) wind speeds occur in September (20.9 km/h) and the lowest in June (16.2 km/h). Mean morning (9 am) are highest in June (14.7 km/h) and lowest in November (8.7 km/h). Mean wind speeds are invariably higher in the afternoon than the morning; the highest 9 am mean wind speed is lower than the lowest 3pm mean wind speed.

Cyclones

The region experiences cyclones, typically between the months of December to April. The Timor Sea area of the northern cyclone region, where the project area is located, averages one cyclone per season. Most of the cyclones are below category 2 severity, with more severe cyclones occurring approximately once every two years.

Flooding

Flooding associated with significant rainfall and storm surge events are often associated with cyclones but can also occur independently during extended periods of monsoonal activity during the wet season. Hydrological modelling prepared for the mine site (EnviroConsult, 2018), indicates that a significant rainfall event (1% Annual Exceedance Probability) coinciding with a primary storm surge event in the Darwin Harbour estuary, would inundate large parts of ML31726, with maximum water depths up to one metre. The mine site design includes an inundation bund that will prevent flooding of the operations area during these extreme events.

Bushfires

Data on fire frequency sourced from Northern Australia and Rangelands Fire Information (NAFI) website indicates that fire is a regular occurrence within the project area. The area has burnt 14 to 20 times between 2000 and 2020, indicating a fire frequency of 70 to 100%. This is consistent with surrounding areas of the same Eucalyptus woodland vegetation type, which also burn frequently.

2.1.2 Land units

Land unit mapping available for the Greater Darwin Region (1:25:000 scale) was used as the basis for characterising the landforms and soils that occur in the project area. Each land unit mapped in the project area was ground-truthed as part of the site-based ecological assessment work undertaken for the EIS (EcOz, 2017). The land units that occur across the project area are mapped in Figure 2-2 and described in Table 2-1.

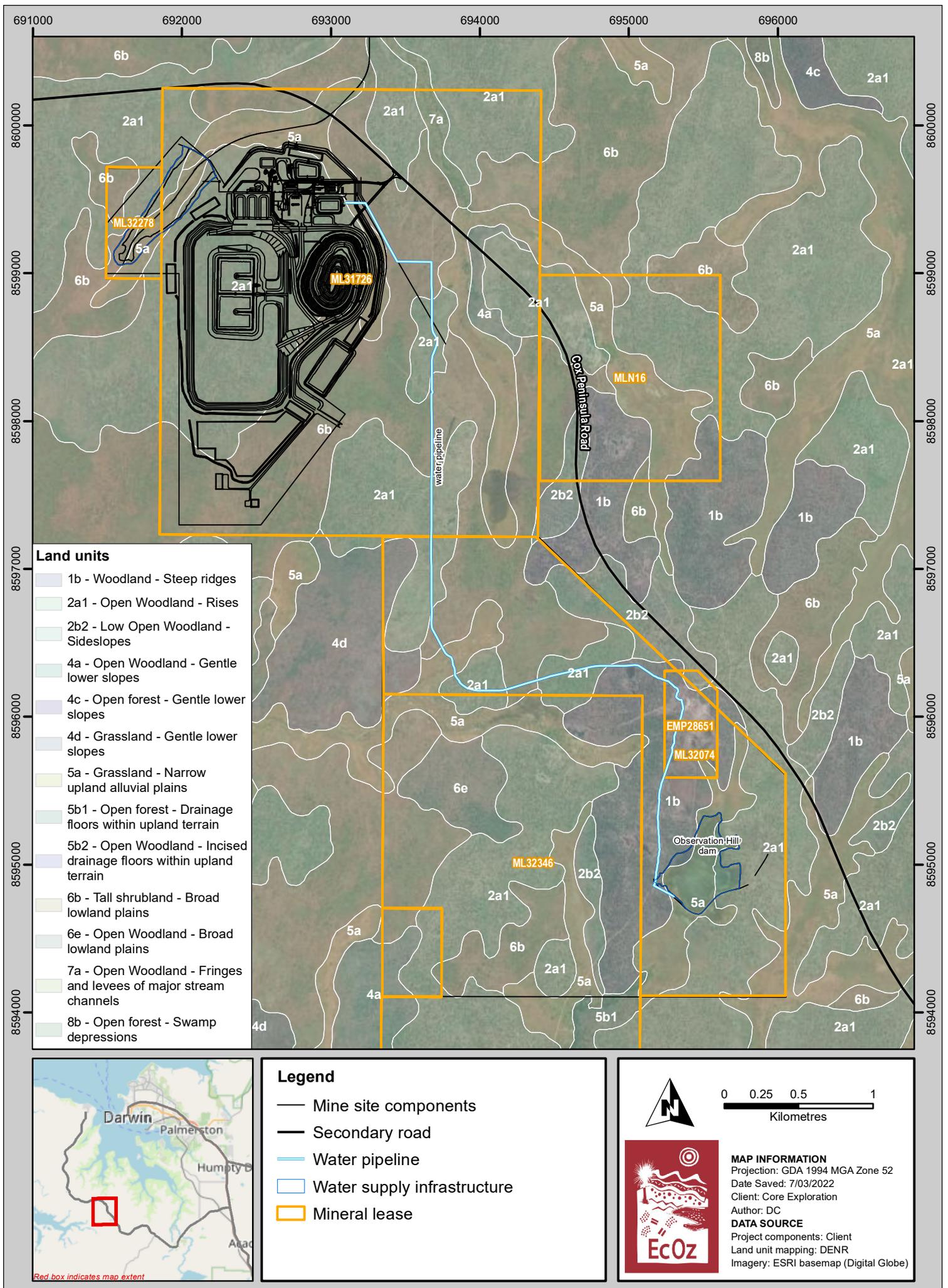


Figure 2-2. Map of land units in the project area

Table 2-1. Land units within ML31726 and ML32074

Land unit	Landform	Gradient	Soil description	Vegetation description	Seasonal waterlogging	Area (ha)			
						Total in ML31726	Total in footprint	Total in ML32074	Total in footprint
1b	Steep ridges	10-40 %	Leptic Rudosol. Stony shallow lithosols, uniformly coarse to medium textured. Very stony and gravelly.	Woodland of <i>Eucalyptus miniata</i> , <i>E. tectifera</i> , <i>Corymbia foelscheana</i> over <i>Sorghum plumosum</i>	Nil to low	-	-	135.5	1.7
2a1	Low rises and associated upper slopes	0.5-4 %	Leptic Rudosol. Gravelly lithosols, usually shallow with some moderately deep occurrences. Loamy sand or sandy loam surface to sandy clay loam subsoil. 20-40% gravels in surface, 30-60% gravels in subsoil	Open woodland of <i>Eucalyptus miniata</i> , <i>E. tetradonta</i> and <i>Corymbia bleeseri</i> over <i>Livistona humilis</i> , <i>Xanthostemon paradoxus</i> and <i>Erythrophleum chlorostachys</i> over open tussock grassland <i>Heteropogon triticeus</i> , <i>Sorghum intrans</i> and <i>Eriachne obtusa</i>	Nil to low level	361.3	181.8	220.3	4.2
6b	Broad drainage floors and creek margins.	<1.5 %	Tenosolic Oxyaquic Hydrosol. Shallow to moderately deep siliceous and earthy sands, minor sandy massive earths. Coarse textured sands to sandy loams. 0-10% gravel in surface, 5-40% gravel in subsoil.	Low open woodland of <i>Grevillia pteridifolia</i> , <i>Melaleuca nervosa</i> +/- <i>Syzygium eucalyptoides</i> subsp. <i>Bleeseri</i> over open shrubland of <i>Petalostigma pubescens</i> , <i>Livistona humilis</i> , <i>Banksia dentata</i> over open tussock grassland of <i>Themeda triandra</i> , <i>Eriachne obtusa</i> and <i>Heteropogon triticeus</i>	Severe level, inundation for extended periods	293.4	33	134.6	0.5
5a	Narrow alluvial plains within upland terrain	<1.0 %	Chromosolic Redoxic Hydrosol. Hardsetting apedal mottled yellow duplex soils. Fine sandy loam or loam overlaying light clay to medium clay subsoil. Minor subsoil ferruginous gravels.	Low isolated trees of <i>Pandanus spiralis</i> , <i>Lophostemon lactifluus</i> and <i>Livistona humilis</i> over tussock grassland of <i>Sorghum stipoides</i> , <i>Eriocaulon spectabile</i> and <i>Melaleuca nervosa</i> . Woodland of <i>Eucalyptus alba</i> over a sparse shrubland of <i>Eucalyptus alba</i> , <i>Lophostemon lactifluus</i> , <i>Pandanus spiralis</i> over tussock grassland of <i>Sorghum plumosum</i> , <i>Germania grandifolia</i> , <i>Lophostemon lactifluus</i>	Severe level, inundation for extended periods	96.8	24	117.5	5.1

Land unit	Landform	Gradient	Soil description	Vegetation description	Seasonal waterlogging	Area (ha)			
						Total in ML31726	Total in footprint	Total in ML32074	Total in footprint
2b2	Sideslopes	2-5%	Brown Kandosol. Shallow gravelly massive earths, minor lithosols. Loamy sand surface over a sandy loam to light sandy loam subsoil. 30-60% gravel throughout	Low Open Woodland to Open Woodland; dominant trees including <i>Eucalyptus miniata</i> , <i>E. tetradonta</i> , <i>Erythrophleum chlorostachys</i> , <i>Eucalyptus clavigera</i> , <i>E. foelscheana</i> , <i>E. tectifera</i> ; sparse understory of <i>Cycas</i> sp. and <i>Livistona humilis</i> ; sparse grass cover.	Moderate to high	Within ML but not within disturbance footprint (<1ha)			
4a	Gentle lower slopes (plains)	0.5-1.5 %	Petroferric Redoxic Hydrosol. Deep mottled grey massive earths with lateritic gravel, occasionally moderately deep, and some moderately deep siliceous sands. Sandy loam to light sandy clay loam surface grading through sandy clay loam to light clay at depth, siliceous sands have a uniform loamy sand profile often over hard laterite. 10-30% ferruginous gravel in subsoil, occasionally cemented to form gravel pan at 80-100cm.	Open Woodland, minor Woodland with medium to dense shrub understory; dominant trees generally <i>Eucalyptus polycarpa</i> with dense patches of <i>Lophostemon lactifluus</i> , minor <i>Eucalyptus papuana</i> , <i>E. miniata</i> ; shrub layer commonly <i>Grevillea pteridifolia</i> in dense patches associated with <i>Melaleuca nervosa</i> , <i>Banksia dentata</i> , <i>Verticordia cunninghamii</i> ; dense grasses including <i>Themeda australis</i> , <i>Eriachne burkittii</i> , <i>Panicum decompositum</i> , <i>Ectrosia leporina</i> , <i>Sorghum stipoideum</i> and sedges.	Moderate to high	Within ML but not within disturbance footprint			
4d	Gentle lower slopes	0.5-1%	Rudosolic Hydrosol. Shallow gravelly lithosols and shallow hardsetting apedal mottled yellow duplex soils. Sandy clay loams and fine sandy loam surface over a sandy clay subsoil. 0-30% gravel throughout.	Grassland with areas of emergent trees and shrubs; grass species are <i>Germania grandiflora</i> , <i>Imperata cylindrica</i> , <i>Heteropogon triticeus</i> , <i>Eriachne</i> sp., <i>Chrysopogon latifolius</i> , <i>Sorghum plumosum</i> , <i>Chrysopogon fallax</i> , <i>Pseudopogonatherum contortus</i> . Emergent trees include <i>Eucalyptus tectifera</i> , <i>E. polycarpa</i> , <i>E. confertiflora</i> , <i>Eugenia bleeseri</i> , <i>Buchanania obovata</i> , <i>Xanthostemon paradoxus</i> , <i>Lophostemon lactifluus</i> ; emergent shrubs include <i>Grevillea dimidiata</i> , <i>Croton arnhemicus</i> , <i>Grevillea decurrens</i> , <i>Livistona humilis</i> ,	Moderate to high	Within ML but not within disturbance footprint (<1ha)			

Land unit	Landform	Gradient	Soil description	Vegetation description	Seasonal waterlogging	Area (ha)			
						Total in ML31726	Total in footprint	Total in ML32074	Total in footprint
				<i>Melaleuca viridiflora</i> , <i>Pandanus sp.</i> , <i>Persoonia falcata</i> .					
7a	Fringes and levees of major channels.	0.5-2 %	Brown Kandosol. Deep hard-setting yellow massive earths. Sandy loam or light sandy clay loam grading to sandy clay loam or light clay.	Variable, Open Woodland; with <i>Eucalyptus miniata</i> , <i>Erythrophleum chlorostachys</i> ; occasionally <i>Melaleuca sp.</i> or <i>Lophostemon sp.</i> Low Woodland with <i>Acacia spp.</i> ; dense grass cover, including <i>Coelorachis rottboellioides</i> , <i>Sorghum plumosum</i> , <i>Themeda australis</i> .	Severe level extended periods	Within ML but not within disturbance footprint			
6e	Broad lowland plains	<1%	Petroferric Redoxic Hydrosol. Moderately deep gravelly yellow massive earths. Sandy loam grading to sandy clay loam. 20-40% ferruginous gravels throughout.	Open Woodland, minor Woodland; <i>Eucalyptus polycarpa</i> with open shrubland of <i>Xanthostemon paradoxus</i> , <i>Terminalia ferdinandiana</i> , <i>Grevillea pteridifolia</i> , <i>Terminalia canescens</i> , <i>Eugenia bleeseri</i> ; dense patches of <i>Melaleuca sp.</i> shrubs; medium grass cover including <i>Themeda australis</i> , <i>Eriachne burkittii</i> , <i>Sorghum plumosum</i> , <i>Schizachyrium fragile</i> , <i>Heteropogon triticeus</i> , <i>Chrysopogon setifolius</i>	Moderate to high	Within ML but not within disturbance footprint (34ha)			
5b1	Drainage floors within upland terrain	<0.5%	Kandosolic Redoxic Hydrosol. Mottled grey massive earths and yellow massive earths. Fine sandy loam, loam or sandy clay loam grading to clay loam or light clay at depth. Frequently 10-70% ferruginous gravel in subsoil.	Open Forest to Woodland occasionally Shrubland; trees includes <i>Lophostemon lactifluus</i> , <i>Eucalyptus papuana</i> , <i>Melaleuca viridiflora</i> ; extensive dense <i>Pandanus spiralis</i> with <i>Grevillea pteridifolia</i> ; grasses include <i>Germania grandiflora</i> , <i>Imperata cylindricus</i> , <i>Coelorachis rottboellioides</i> .	Severe level extended periods	Within ML but not within disturbance footprint			

2.1.3 Topography

The project area broadly comprises lowland plains and rises, intersected by drainage systems and alluvial plains. The land is generally flat with slopes less than 5%, except for a short section of steep ridges traversed by the water pipeline, where slopes may approach 10-40%. The proposed mine site occurs predominately on land characterised as low rises with gravelly well-drained soils (land unit 2a1). A small area of the pit, WRD and inundation bund are located on broad drainage floors (land unit 6b) and the inundation bund and off-site dams occur predominately on narrow upland alluvial plains (land unit 5a). Both land unit 6b and 5a are classified as having a 'severe level of seasonal water logging'.

The proposed Mine Site dam (MSD or C5) and existing Observation Hill dam (OHD) are located on narrow upland alluvial plains (land unit 5a), which are associated with ephemeral drainage lines. The water pipeline corridor traverses mainly low rises with gravelly well-drained soils (land unit 2a1) and broad drainage floors (land unit 6b). Short sections of the route traverse steep ridges (land unit 1b) and narrow upland alluvial plains (land unit 5a).

2.1.4 Topsoil and subsoil

Sampling and analysis of the surface soil characteristics was undertaken for the purposes of:

- Estimating the quantity and quality of the soil resource (topsoil and subsoil).
- Characterising the baseline growth medium attributes and nutrient status.
- Evaluating potential risks associated with salinity, wind erosion and water erosion.

The sampling methods, parameters analysed and results are detailed in the Materials Characterisation Report (EcOz 2018) (Appendix D).

Seventeen soil samples were collected from the two main soil groups that occur within the mine site disturbance footprint; Rudosols and Hydrosols. Sample locations were chosen to provide good spatial coverage of the disturbance footprint and an indication of soil variation along the slope gradient from west to east. The majority of samples (11) were collected from areas of Rudosol soils (land unit 2a1) as this soil type covers more than 73 % of the disturbance footprint. Six samples were collected from Hydrosol soils that occur with land units 5a and 6b.

Table 2-2 summarises the key characteristics of the soils present at the site. Soils are generally naturally poor, marginally acidic with limited water holding capacity, low nutrient levels and susceptibility to slaking, hard setting and erosion when wet. These deficiencies have potential to impact rehabilitation outcomes. Rehabilitation will require incorporation of practices to promote infiltration (e.g. deep ripping, slope length/grade) and establishment of self-sustaining protective groundcover. In order to counteract the effect of acidity, low CEC, high ESP, and potential for slaking ameliorants including organic matter, nutrients and calcium sulfate (gypsum) may be added. Rehabilitation trials will commence in year one of the mining schedule to determine the best practices for application at the site.

Table 2-2. Summary of soil characteristics.

Soil characteristics
Particle size distribution
Soil textures are described as sandy-loams, sandy-clay-loams and gravelly-sands, generally comprised of more than 10 % clay.
Bulk density
Soils have a dominant sand and gravel content and consequently will have bulk densities in the range 1.3 g/cm ³ to 1.7 g/cm ³ . Root growth is restricted when bulk density exceeds 1.6 g/cm ³ , which can affect rehabilitation success.
Water holding capacity
Soil cation exchange capacity (CEC) is low (0.2 meq/100g to 2.4 meq/100g). Soils with a low (< 10 meq/100g) CEC have low water holding capacities and are prone to leaching and nutrient loss. This may need to be offset by maintaining organic matter in the soils.
Nutrients and total organic carbon
All samples had a sulfur concentration below 10 mg/kg, which is below the range of preferred levels for plant growth (10-20 mg/kg). Nitrate (NO ₂ + NO ₃ as N) concentrations (maximum 1.2 mg/kg) and phosphorus concentrations (maximum 13 mg/kg) were below the preferred levels for plant growth (> 10 mg/kg and 20 – 30 mg/kg respectively). One sample had a total organic carbon (TOC) concentration (2 mg/kg) at the preferred level (>2 mg/kg); 12 samples had a total organic carbon concentration between 1 and 2 with 16 having a concentration below 1 mg/kg. Potassium concentrations in all samples are within the desired levels for plant growth. The concentration of the nutrients are expected to fluctuate with soil and weather conditions over very short periods of time.
Salinity
EC of soil samples varies between 0.002 dS/m and 0.025 dS/m, averaging 0.009 dS/m and are considered suitable as a growth medium.
Structural stability
Emerson aggregate test
The Emerson aggregate test (EAT) gives a semi-quantitative assessment of the structural stability of a soil. The site soils fall in the following Emerson classes:
<ul style="list-style-type: none"> • Class 3 - dispersive: 5 % of samples (sandy loams from Land Unit 5a and 2a1): These samples occur in areas where disturbance, if any, will be minimal. • Class 4 - carbonate or gypsum present with slaking but no dispersion upon wetting: 70 % of samples (sandy loam and sandy clay loams: from 2a1 and 6b. • Class 8 - no slaking, no swelling: 25 % of samples (gravelly sands from Land Unit 2a1).
Exchangeable sodium percentage
60 % of the soil samples were classified as sodic, and 46 % were classified as moderately to highly sodic.
Heavy metals
Heavy metal concentrations in the soils are well below the Investigation Levels for Areas of Ecological Significance (ASC NEPM) and with the range of preferred levels for crop/plant growth.

2.1.5 Geology

The area of each geological unit² within ML31726 is shown in Table 2-3. Further description of the geology of Grants deposit is provided in Section 4.3.

² Based on the Australia 1:250,000 Geological Series map for Darwin (SD5204)

Table 2-3. Geological units within the Mineral Lease

Geological unit	Description	Area (ha)
Cz	Sandy and gravelly soils	596
Qa	Gravel, sand silt	125
Pf	Shale, siltstone, phyllite, in places coloured banded; fine to very course sandstone(quartz arenite, sublitharenite), pebble conglomerate; minor graphitic phyllite; quartz-micaschist and gneiss	29

2.1.6 Vegetation

Vegetation that occurs on ML31726 has been surveyed and mapped by EcOz Environmental Consultants (Appendix A). Vegetation community descriptions of areas outside the ML, i.e. the water pipeline and the Observation Hill dam inundation footprint, have been derived from 1: 25,000 scale land unit mapping.

Brief descriptions and areas of each of the vegetation communities that occur within the proposed disturbance footprint are documented in Table 2-1. Mapped vegetation communities on ML31726 are shown in Figure 2-3.

The disturbance footprint is dominated by *Eucalyptus miniata*, *E. tetradonta* and *Corymbia bleeseri* woodland over open tussock grassland. This vegetation type covers 75 % of the footprint. Drainage lines with *Pandanus spiralis*, *Lophostemon lactifluus* and *Livistona humilis* isolated trees over tussock understorey, and a small area of *Eucalyptus alba* woodland comprise 15 % of footprint. The remainder is small patches of shrubland to open woodland areas of *Grevillea pteridifolia* and *Melaleuca nervosa* over open tussock grassland.

Significant and sensitive vegetation

Riparian vegetation (associated with ephemeral streams) and some seasonal wetlands (drainage depressions) occur within the ML's and in areas downstream. Mangroves associated with the upper reaches of West Arm occur approximately 1.7km downstream of ML31726. No riparian, wetland or mangrove communities are located in the disturbance footprint. The location of these vegetation types in relation to the project area is shown in Figure 2-4.

Field surveys recorded a small patch of riparian vegetation in the north-east of ML31726, to the north of Cox Peninsula Rd. The patch occurs on an ephemeral stream and is dominated by *Leptospermum madidum*, *Melaleuca viridiflora* and *Lophostemon lactifluus* (Figure 2-5).

A more dense and continuous riparian rainforest is evident along the watercourses downstream of OHD that flow into Charlotte River, starting from a point around 2 km downstream of the dam wall (Figure 2-4). The communities are supported by stream flows later into the dry season, possibly as a result of groundwater discharge. Whilst stream flows cease later in the dry season, small pools of water have been observed in the area during late dry season surveys. The presence of water into the dry season and rainforest tree species that provide food resources, indicates the watercourses are likely to have some value as a refuge habitat in the late parts of the dry season when access to water is limited in the surrounding areas. The habitat itself is not rare in the region or the specific habitat of a threatened species.

The unnamed ephemeral streams in the upper West Arm catchment on ML31726 and upper Charlotte River catchment on ML32074, support a narrow band of generally sparse riparian vegetation dominated by overhanging *Melaleuca* spp. (refer Figure 2-6). Aquatic surveys undertaken by GHD (2017) found the aquatic habitats are typical of low order watercourses in the NT. These types of habitats are common and do not have any significant value in terms of supporting species that are range restricted or threatened.

Seasonally inundated areas are patchily distributed through the ML's. These areas support sedges and herbs in the ground layer during the wet and early dry season and dry out later in the dry season (refer Figure 2-8). As shown in Figure 2-4, the disturbance footprint avoids the closest semi-permanent pools.

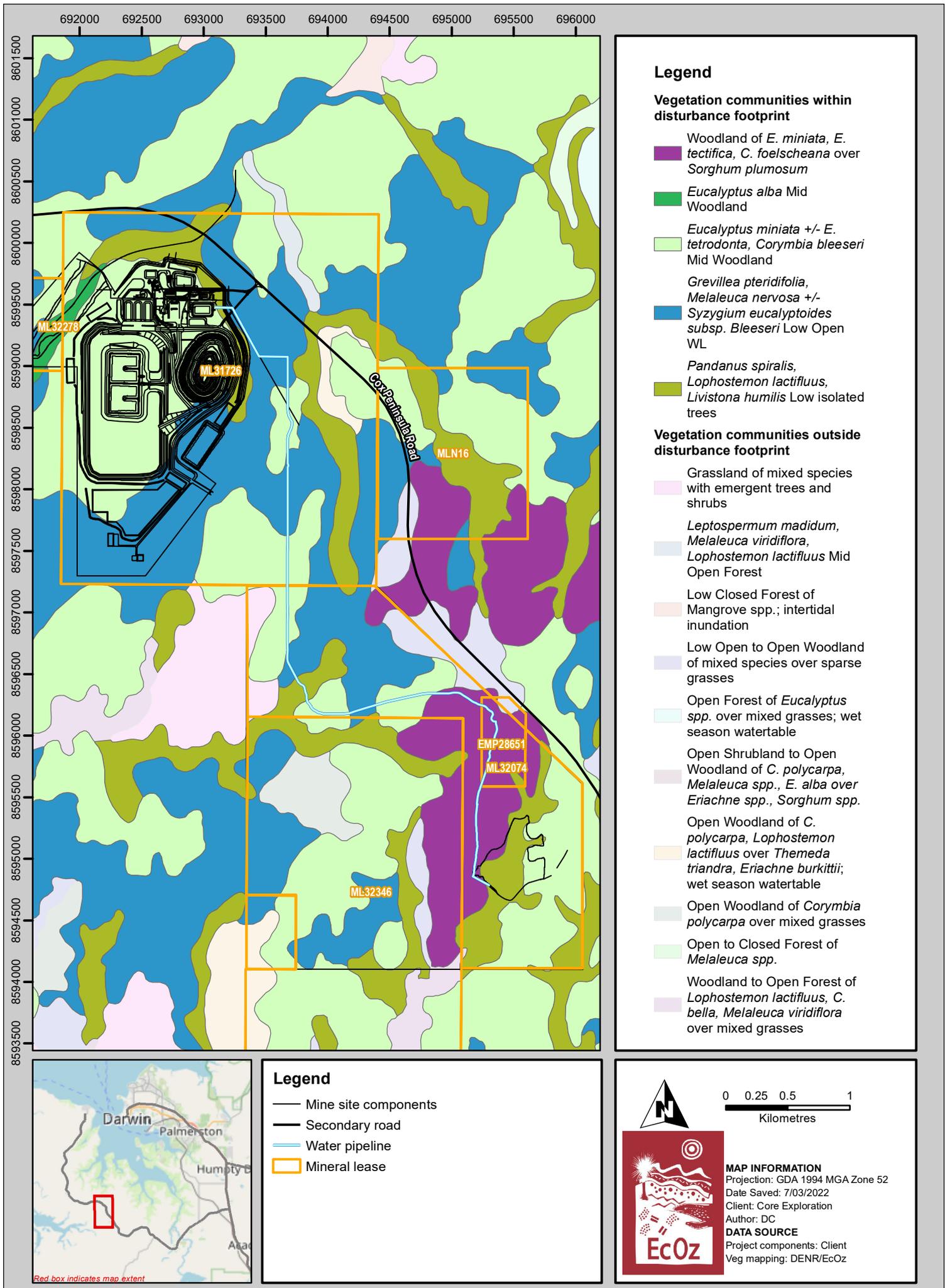
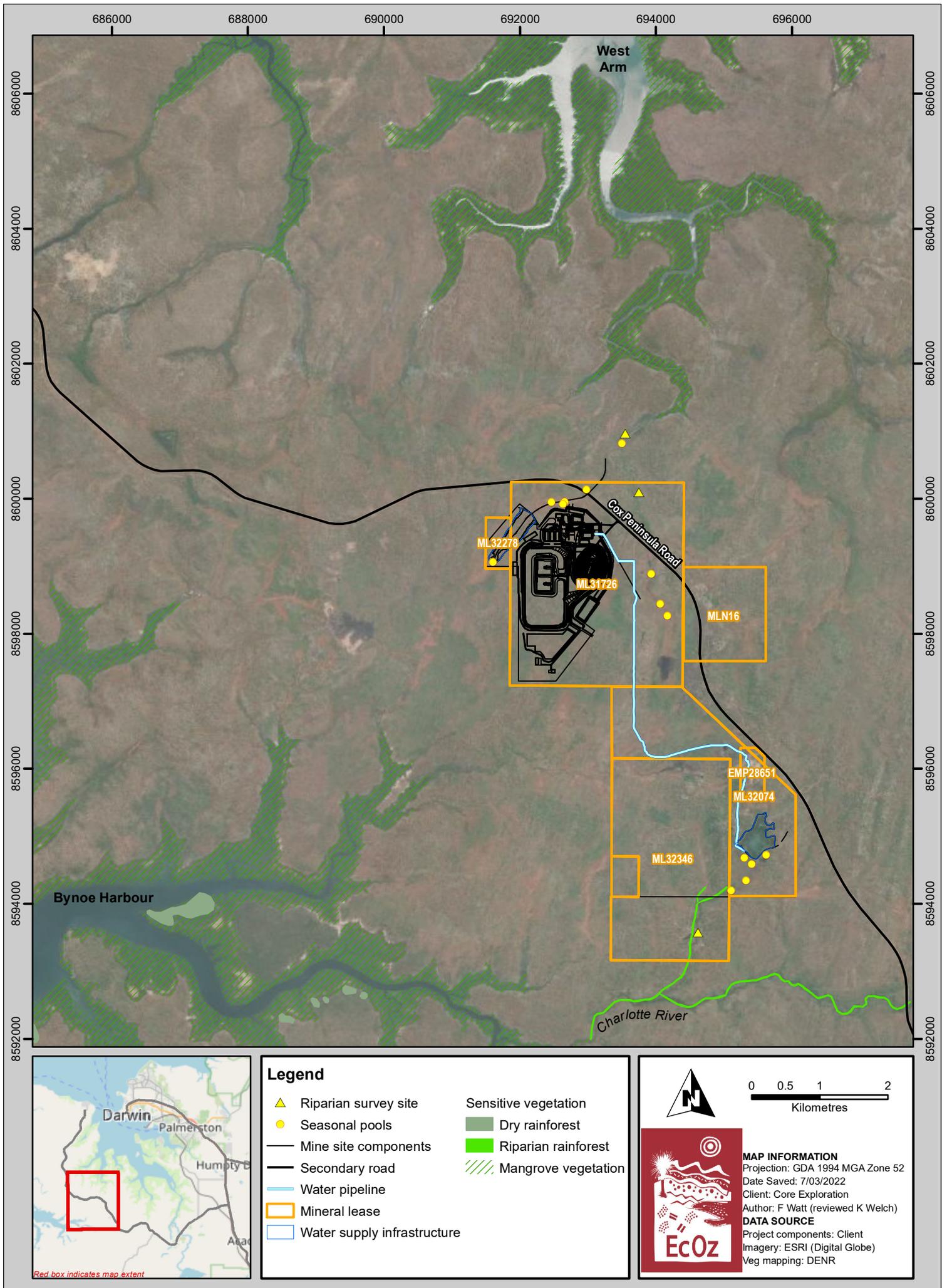


Figure 2-3. Map of vegetation communities within the project area



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\IEZ2022 - Grants Project - ESCP amendment\01 Project Files\Updated maps\MMP Figure 9 Sensitive vegetation community.mxd

Figure 2-4. Map of sensitive vegetation community mapping for the project area and surrounds



Figure 2-5. Photo of riparian vegetation patch within the ML31726



Figure 2-6. Photo of riparian vegetation along ephemeral stream downstream of ML31726



Figure 2-7. Photo of riparian vegetation at site downstream of the Observation Hill dam



Figure 2-8. Photo of a seasonal wetland on ML31726

2.1.7 Threatened species

Initial examination of available threatened species search tools identified eighty-one Commonwealth and/or NT-listed threatened species that occur in the broader region surrounding the project area. To derive a short-list of species that occur, or are likely to occur in the project area, qualified ecologists reviewed the species habitat requirements, known distribution and proximate records. The likelihood of occurrence for each of the short-listed species was then further assessed using the vegetation community mapping, to delineate areas where suitable habitat is likely to be present in the project area. The results of the threatened species assessments are summarised in Table 2-4.

The desktop review process identified two fauna species (Black-footed Tree-rat and Partridge Pigeon) and two flora species (*Typhonium praetermissum* and *Stylidium ensatum*) that required further on-ground assessment. The sections below provide details of the assessment and findings.

Table 2-4. Threatened species with a high or medium likelihood of occurrence in the project area

Initial likelihood	Common name	Group	Status		Comments on habitat suitability and level of assessment required
			Cth	NT	
High	Partridge Pigeon (eastern subspecies) <i>Geophaps smithii smithii</i>	Birds	VU	VU	<ul style="list-style-type: none"> Field-based assessment concluded habitat suitable though sub-optimal due to high fire frequency – may be used for foraging
	Black-footed Tree-rat (Kimberley and mainland NT subspecies) <i>Mesembriomys gouldii gouldii</i>	Mammals	EN	VU	<ul style="list-style-type: none"> Field-based assessment concluded the habitat was suitable albeit sub-optimal due to lack of food tree species.
Medium	Trigger Plant <i>Stylidium ensatum</i>	Plants	EN	EN	<ul style="list-style-type: none"> NT Herbarium mapped suitable habitat, limited to 3 drainage lines that may contain suitable soils that remain wet well into dry season. Field-based assessment completed – species was not detected
	A herb <i>Typhonium praetermissum</i>	Plants	-	VU	<ul style="list-style-type: none"> Recorded from a land unit type within ML. NT Herbarium habitat model identifies potential habitat in project area. Field-based assessment completed - species not detected
	Red Goshawk <i>Erythrotriorchis radiatus</i>	Birds	VU	VU	<ul style="list-style-type: none"> No unique or high value habitat compared to surrounding areas No further assessment required
	Masked Owl (northern subspecies) <i>Tyto novaehollandiae kimberli</i>	Birds	VU	VU	
	Brush-tailed Rabbit Rat <i>Conilurus penicillatus</i>	Mammals	VU	EN	<ul style="list-style-type: none"> Core habitat lacking or limited No further assessment required
	Northern Quoll <i>Dasyurus hallucatus</i>	Mammals	EN	CR	
	Pale Field-rat <i>Rattus tunneyi</i>	Mammals	-	VU	
	Bare-rumped Sheath-tail Bat <i>Saccolaimus saccolaimus (nudicluniatu)</i>	Mammals	VU	NT	<ul style="list-style-type: none"> Few tall trees suitable for roosting; may forage at night over project area No further assessment required
Floodplain Monitor <i>Varanus panoptes</i>	Reptiles	-	VU	<ul style="list-style-type: none"> Medium likelihood due to presence of Cane toads No further assessment required 	

Key: VU – Vulnerable, EN – Endangered, CR – Critically endangered, a dash indicates the species is not listed under that jurisdiction. Cth – Commonwealth, NT – Northern Territory.

Black-footed Tree-rat

Black-footed Tree-rat is listed as Vulnerable under the *Territory Parks and Wildlife Conservation Act* and Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act*. The species has been previously recorded 15 km south-east of the project area in 2000 and is frequently recorded in studies around the Greater Darwin and Litchfield regions. Black-footed Tree-rat has remained relatively abundant in the Darwin Rural area (Price et al. 2005), and, although it has experienced range contraction (Lee et al. 1995), could be expected to occur within the project area if suitable habitat is present.

Field assessment indicates that the habitat within the project area, although potentially suitable for Black-footed Tree-rat, is sub-optimal. *Eucalyptus miniata* +/- *E. tetradonta*, *Corymbia bleeseri* open woodland habitat is the dominant vegetation type across the ML's and the surrounding areas. This vegetation type is utilised by the Black-footed Tree-rat; however, the vegetation communities present in the project area did not contain high densities of *Pandanus* spp. or other flora species that provide suitable food sources (e.g. *Buchanania* spp., *Terminalia* spp.). In addition, there are fewer large, hollow bearing trees within the project area than might be expected in preferred habitat. The high fire frequency within the project area is most likely a key factor that has reduced the suitability of habitat for the species.

The ecological assessment prepared for the EIS process (EcOz 2017) concluded that the Black-footed Tree Rat could occur; however, the habitat is sub-optimal and unlikely to support an important population of the species.

Partridge Pigeon

Partridge Pigeon is listed as Vulnerable under the *Territory Parks and Wildlife Conservation Act* and under the Commonwealth *Environment Protection and Biodiversity Conservation Act*. The species has been previously recorded 6 km south of the project area in similar habitat. The species is largely sedentary but may make small scale (5-10 km) movements in response to seasonal conditions. The species nests in relatively dense ground cover and feeds in open areas that have typically been recently burnt. These areas are principally in lowland *Eucalyptus* forests and woodlands. Partridge Pigeon could occur within any woodland vegetation in the disturbance footprint; however, given the fire history it is expected that if the site were used by this species, it would be for feeding rather than nesting/breeding.

The ecological assessment prepared for the EIS process (EcOz 2017) concluded that the Partridge Pigeon could utilise the area as feeding habitat; however, the area is unlikely to support an important population of the species.

Stylidium ensatum

Stylidium ensatum is a small annual herb listed as Endangered under the *Territory Parks and Wildlife Conservation Act* and the Commonwealth *Environment Protection and Biodiversity Conservation Act*. The project area contains areas mapped by the NT Herbarium as potentially suitable habitat for *Stylidium ensatum*. This species inhabits margins of drainage areas in damp heavy clay or peaty soil, (Cowie & Westaway, 2012), that remain wet well into the dry season. Plants grow in the early dry season and are best able to be detected between June-July when flowering and fruiting occurs. Targeted surveys for the species were undertaken in the project area in June 2018, including in areas downstream of the ML's that could be affected by alteration of surface water flows. The complete survey report is available in Appendix A.

Despite searching in potentially suitable sites at an appropriate time of year, *S. ensatum* was not located. There is a high level of confidence associated with the surveys as the timing and target habitats were identified based on current knowledge of the species ecology, and a known population of the species was visited by the field ecologists on the day of the survey to confirm that the species would likely be detectable. Based on the survey findings, the project is very unlikely to impact *S. ensatum* and no specific mitigation measures are required to protect the species.

Typhonium praetermissum

Typhonium praetermissum is a perennial herb recorded from a small number of locations within the greater Darwin region. The species is listed as Vulnerable under the *Territory Parks and Wildlife Conservation Act*. Habitat modelling for the species prepared by the Northern Territory (NT) Herbarium (detailed in Threatened Species of

the Greater Darwin Region – *Typhonium praetermissum* version 2.0) (DENR 2019), identifies areas of high and moderate likelihood potential habitat within the project area.

Surveys for *T. praetermissum* within the project area were undertaken by EcOz Environmental Consultants during two separate survey events; 24 January 2018 and 13-15 March 2019 (see Appendix A). Prior to both surveys, the emergence of *T. praetermissum* was confirmed by visiting known sub-populations within the Darwin region. The surveys focused on areas modelled as high likelihood habitat, with the intent that if *T. praetermissum* was recorded in this area, this would trigger the need to expand the survey effort into the adjacent moderate likelihood habitat.

Despite searching in potentially suitable sites at an appropriate time of year, *T. praetermissum* was not located. Other *Typhonium* sp. plants were observed during the 2019 survey, the majority within the south-west portion of ML31726. Field identification indicated the plants were unlikely to be *T. praetermissum*. This was confirmed by DNA analysis (EcOz 2019). There is a high level of confidence associated with the surveys as the timing and target habitats were identified based on current knowledge of the species ecology, and a known population of the species was visited by the field ecologists on the day of the survey to confirm that the species would likely be detectable. Based on the survey findings, the project is very unlikely to impact *T. praetermissum* and no specific mitigation measures are required to protect the species.

2.1.8 Weeds

The project area currently has low levels of existing weed infestation; however, Gamba and Mission grasses are key weeds of concern in the region. One listed weed species has been recorded in the project area, Gamba Grass *Andropogon gayanus*, which is a listed Class B/C weed under the *Weed Management Act* and is a Weed of National Significance (WONS).

Weed surveys were conducted by EcOz and the Kenbi Rangers during September 2021 as part of the pre-clearance survey. A total of seven weed species were identified, with four listed as declared or priority weeds (Table 2-4). Most weeds were located in the disturbed areas of the OHD extractive area, along the existing internal access track between OHD and Grants, Grants access road from the Cox Peninsula Hwy, and within the disturbed area of the proposed Grants open-cut pit.

Target weeds within the site have been determined based on WoNS, declared status, regional priority, statutory weed management plans, environmental risk (such as changes to the fire regime and out-competing native species), and feasibility of control.

The Federal Government Threat Abatement Plan (TAP) aims to reduce the impact on biodiversity within northern Australia by identifying five grasses which are highly invasive, pose a high fire risk and reduce species diversity. Two species listed within the *Darwin Regional Weed Strategy (2021-2026)* (Gamba Grass and Perennial Mission Grass) have been observed onsite and are noted within the site target weeds list (Table 2-5).

Table 2-5. Target weeds identified within the Grants disturbance footprint and pipeline route

Common Name	Botanical name	WMA Class	WoNS	Regional Rating [#]	Weed Risk	Management Approach
Gamba Grass*	<i>Andropogon gayanus</i>	B/C	Yes	PWC	Very High	Eradicate outliers. Contain and control infestation.
Perennial Mission Grass	<i>Cenchrus polystachios</i>	B	No	PWC	Very High	Eradicate outliers. Contain and control infestation.
Annual Mission Grass	<i>Cenchrus pedicellatus</i>	-	-	WC	Very High	Prevent further spread.
Hyptis	<i>Mesosphaerum suaveolens</i>	B	No	HBW	High	Prevent spread into clean areas.

* Species is subject to a Statutory Weed Management Plan that must be adhered to

[#] PWE= Priority Weed for Eradication, PWC= Priority Weed for Control, WC= Weed of Concern, HBW= Hygiene and Biosecurity Weed, AW= Alert Weed

Secondary weeds, or environmental weeds, have no legislative control or management obligations. However, while there is no legislative control for these weeds, they will be managed as part of the routing weed management program. These environmental weeds identified include:

- Wild Passionfruit (*Passiflora foetida*)
- Red Natal Grass (*Melinis repens*)
- Stylos (*Stylosanthes sp.*)

Weeds on site will be managed in accordance with the Finnis Lithium Project Weed Management Procedure (2021). This procedure addresses requirements under the NT Weeds Management Act 2001, [Weed Management Plan for Gamba Grass 2020-2030](#) (DEPWS 2020) and The *Darwin Regional Weed Strategy (2021-2026)* (DEPWS 2021).

Lithium Developments (Grants NT) have engaged the Kenbi Rangers to conduct weed control during the 2021-2022 wet season in accordance with the Finnis Lithium Project Weed Management Procedure (2021), including weed treatment as per requirements of the Northern Territory Weed Management Handbook 2018. Further details are included in the Environmental Mining Report (Appendix E).

2.1.9 Pest animals

Cane Toads and feral cats were observed during field surveys of the project area. The drainage lines provide suitable habitat for pigs and there was possible pig disturbance observed across the seasonally inundated areas. The following introduced pest animal species are likely to be present:

- Domestic Pigeon (*Columba livia*)
- Asian House Gecko (*Hemidactylus frenatus*)
- Pig (*Sus scrofa*)
- Dingo (*Canis lupus*)
- Cat (*Felis catus*)
- Black Rat (*Rattus rattus*)
- Cane Toad (*Rhinella marina*).

2.2 Socio-economic environment

The Social Impact Assessment (SIA) report (Appendix F) prepared for the project by True North Strategic Communications (2018) describes the status of the socio-economic environment of surrounding communities and assesses the potential social, cultural and economic impacts associated with the mining operations. A summary is provided below.

2.2.1 Land tenure and use

The project area is located on undeveloped vacant crown land and surrounded by this tenure for 7-8 km in all directions. The nearest community is Belyuen 15 km to the north-west. Berry Springs is located 36 km east of the project area and is on the haul route between the mine site and the port. Darwin and Palmerston are the nearest densely populated areas, with estimated populations in excess of 78,000 and 33,000 respectively (ABS, 2016).

Mineral exploration is the predominant land-use in the area, and rural living, recreation and tourism occur across the Cox Peninsula more broadly. There are several historic mine sites (pits and surface disturbance) visible on aerial photography. The area is unfenced and open to public access along informal tracks. The Darwin Regional Land Use Plan identifies agricultural/grazing as the likely long-term land use within and surrounding the project area. The identified long-term land use of the area is discussed in the Draft Mine Closure Plan.

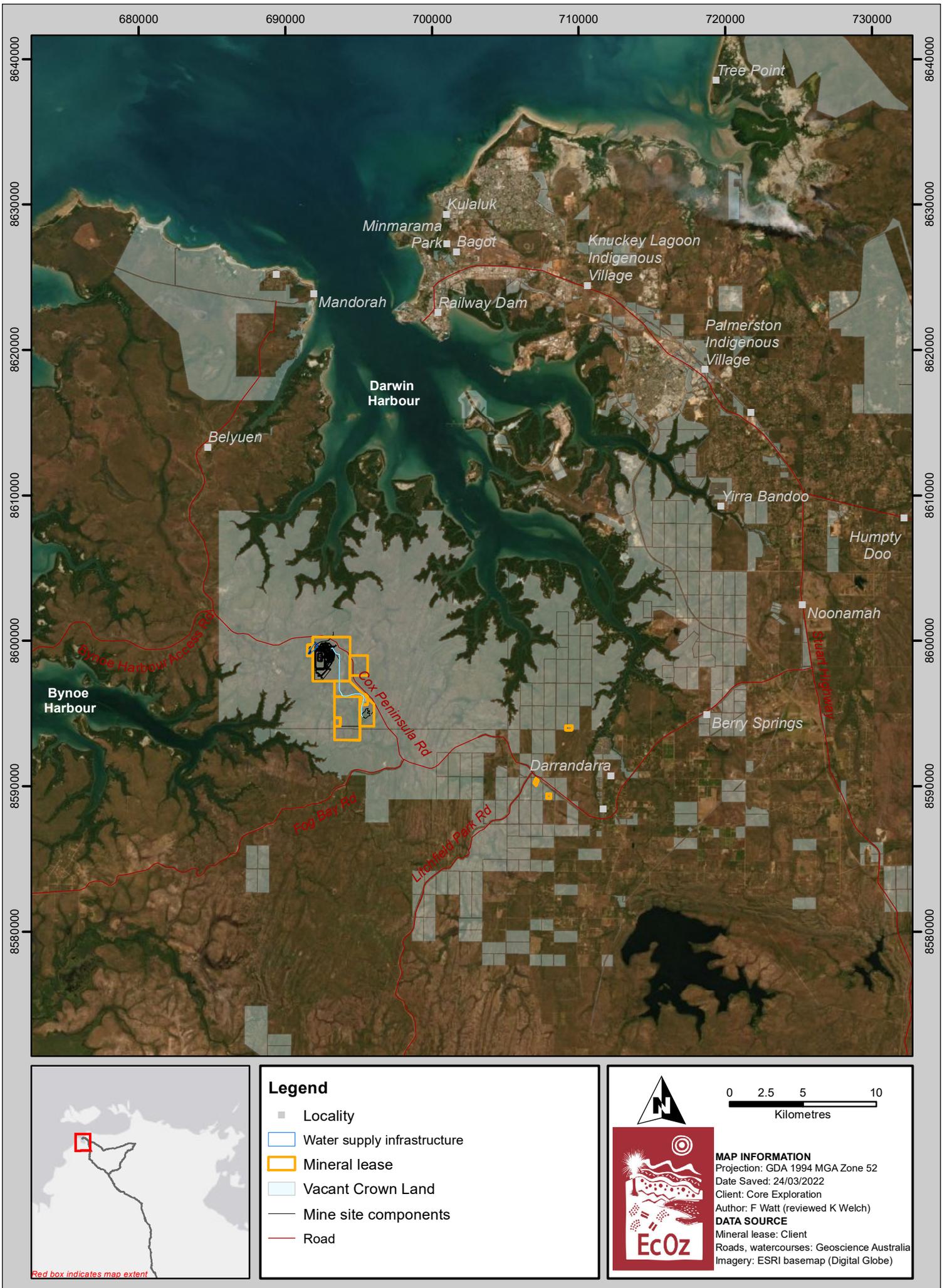
There are no Native Title claims, parks or reserves or other formal land-uses within or near the project area.

2.2.2 Local government

The project area is not located within the boundaries of any local government area; however, much of the haul route is within the Litchfield Local Government Area (Litchfield LGA), with small sections passing through the City of Palmerston LGA (Palmerston LGA) and the Darwin City LGA.

2.2.3 Infrastructure

Cox Peninsula Road will be used as the haul route from the mine site through to the Stuart Highway. The road is a two-way undivided road maintained by the Department of Infrastructure, Planning and Logistics (DIPL). It is used by a mix of traffic including trucks moving cattle from nearby pastoral properties, tourists travelling to and from Litchfield National Park, Territory Wildlife Park and other locations, local fishermen travelling to and from popular fishing spots, school buses and school traffic going to and from Berry Springs Primary School, and locals commuting to and from work. The project area is not connected to mains water, sewage or telecommunication services; the site will be powered by diesel generators and water will be sourced from Observation Hill dam and (to be constructed) Mine Site dam.



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\IEZ2022 - Grants Project - ESCP amendment\01 Project Files\Updated maps\MMP Figure 14 Map showing land tenure and location of communities.mxd

Figure 2-9. Map showing land tenure and location of communities

2.2.4 Identified stakeholders and consultation

Lithium Developments (Grants NT) has engaged local communications experts, True North Strategic Communication (True North) to assist with identifying and engaging key project stakeholders during project planning and development. Early communication commenced with key stakeholders in late 2017, prior to release of the Pre-Feasibility Study. Subsequent communication and consultation activities were undertaken over the period July-September 2018 as part of preparing the Social Impact Assessment (SIA) (see Appendix F) for the proposal, and further meetings were held at Wagait and Belyuen in December 2018. This section provides an overview of the stakeholder engagement undertaken to date and summarises the key findings from the completed consultation reports prepared by True North.

Approach

Using the International Association for Public Participation (IAP2) principles that guide good community engagement (refer Table 2-6), the approach adopted for the Grants Lithium Project proposal is designed to **inform**, **consult** and **involve** stakeholders. The approach is risk-based in that it devotes the greatest communication and consultation effort to stakeholders likely to experience the greatest level of impact – positive or negative – from the project. The approach also seeks to raise awareness of all stakeholders and provide regulators with confidence that all positive and negative impacts are well understood and can be managed through all phases of the project.

Stakeholder identification initially focussed on groups and agencies with a key role in decision-making and regulation of the proposal. The stakeholder list was then broadened to include a wide range of groups, agencies, individuals and the broader public, who may be affected by and/or have an interest in the proposal. During the mining operations phase, Lithium Developments (Grants NT) will focus on keeping the community informed about the proposed operations and associated impacts and opportunities. Targeted stakeholder consultation will occur in relation to finalisation of key management plans i.e. mine closure plan, traffic management plan

Table 2-6. International Association of Public Participation Engagement Spectrum

Level of engagement	Promise to the public
Inform	We will keep you informed.
Consult	We will listen to your concerns, keep you informed, and provide feedback on how stakeholder's input influenced the decision.
Involve	We will work with you to ensure your concerns are reflected in the alternatives developed and provide feedback on how the public's input influenced the decision.
Collaborate	We will look to you for advice, ideas and solutions and incorporate those into the decisions as much as possible
Empower	We will implement what you decide.

Targeted engagement with key decision-makers and regulatory stakeholders

Early stakeholder engagement activities in November 2017 focussed on targeted contact with key stakeholders to provide them with information about the proposal. The targeted stakeholder groups were:

- Department of Primary Industry and Resources, Minister for Primary Industry and Resources.
- Local elected representatives
- Local government including City of Palmerston and Litchfield Council
- Local industry associations including the Chamber of Commerce and the Minerals Council
- Non-government organisations, including environmental groups.

Stakeholders were provided with a fact sheet, a one-on-one briefing and email updates. When initial contact was made, the project planning was in the very early stages; a Mineral Lease had yet to be applied for and some key decisions were yet to be made in relation to the level of ore processing that would take place on-site. Subsequently

details about some aspects of the project were uncertain and stakeholders were presented with the range of options being considered by Lithium Developments (Grants NT).

During these early consultations, the stakeholders that were engaged were generally supportive of the project and appreciative of the advanced notification of the proposal before it was made public. The key themes raised were summarised into five categories shown in Figure 2-10.

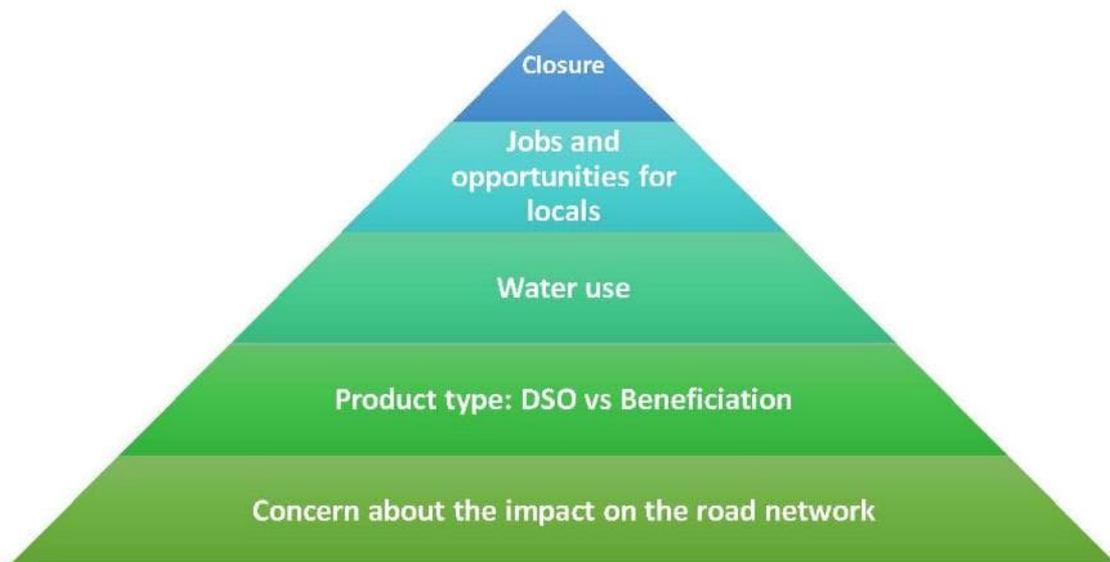


Figure 2-10. Key themes raised by stakeholders in early consultation – November 2017

Project briefings and updates

A further communication and engagement program was run over July, August and September 2018 in Darwin, Palmerston, Litchfield and the Berry Springs area, prior to submission of the Draft EIS in November 2018. The program was designed to update previously contacted stakeholders, and to reach out to a wider range of organisations that could be directly affected by or have a specific interest in the proposal, and the local community more broadly. The communication and engagement program included:

- An email sent out to stakeholders with a fact sheet outlining the project, information on the consultation process and an invitation to participate (either with an offer of a briefing and/or invitation for a formal SIA interview).
- 18 face-to-face briefings.
- 13 SIA interviews.
- An information stall at the Berry Springs Market on 26 August to reach local community members. The factsheet, maps and product samples were available at the stall to assist with informing members of the community about the project. Approximately 25-30 people engaged with Lithium Developments (Grants NT) or True North staff with another 25 people passing the stall and taking a fact sheet. It is estimated a further 30 people passed by without engaging at all.

Social Impact Assessment interviews

The EIS ToR require a balanced summary of the social and economic value and potential impacts of the proposal. To address this requirement, a SIA was prepared by True North, a key component of which was formal stakeholder interviews. The goal of the interviews was to gain an understanding of likely, actual and perceived social impacts of the project and to seek input to the development of measures to manage and reduce impacts to an acceptable level. Thirteen formal SIA interviews were conducted independent of Lithium Developments (Grants NT), with only True North staff in attendance. This independence is important to the SIA process, as it allows stakeholders to talk more freely about impacts and concerns. Organisations interviewed are listed in Table 2-7.

Table 2-7. Organisations interviewed by True North for social impact assessment

NT Government	Local Government
Department of Tourism and Culture Department of Infrastructure, Planning and Logistics Department of Education	Litchfield Council City of Palmerston Wagait Shire Council
Community and environment groups	Industry groups
Berry Springs Primary School Environment Centre NT Amateur Fishing Association	Chamber of Commerce NT Industry Capability Network
Essential services	Indigenous groups
St John Ambulance	Larrakia Development Corporation

2.2.5 Issues raised and current status

The feedback received from stakeholders and the community on the project was varied, but overall True North staff felt that most stakeholders were optimistic about the project and could see that it has potential to bring positive benefits to the Berry Springs area. Six themes were clearly captured in stakeholder feedback, and are listed in priority order in Table 2-8 with details of actions taken to address the issue and the status.

Table 2-8. Issues raised by stakeholders, actions and status

<p>Issue raised (in order of priority)</p>	<p>Actions and current status</p>
<p>Blasting and road closures There was interest and some concern about the closure of Cox Peninsula Road and the timing of this with a broad range of stakeholders potentially impacted by delays and disruptions (residents, tourists, fishermen)</p>	<ul style="list-style-type: none"> • During mining operations, the Cox Peninsula road will remain open to traffic as usual, excepting for approximate 15-minute windows every two to four days when a short section of the road will be closed to ensure public safety, whilst blasting. • Blasting that requires the road to be closed will only occur during daylight hours Monday-Friday; not on weekends and not on public holidays. • Nominal blasting times are 13:00pm to 13:15pm and 17:00 to 17:15pm, which are outside of peak traffic times. • Lithium Developments (Grants NT) has prepared a Blast Management Plan (see Appendix G) that documents the site blast management requirements and details of all the relevant management plans, processes and operational procedures that will be put in place to ensure public safety and minimise inconvenience to road users. • In relation to road closures and traffic management, the framework details the proposed Road Closure Plan, key aspects of which are: <ul style="list-style-type: none"> • Procedures for notification of affected parties, specifically the communities of Belyuen and Wagait Beach will be notified of road closure times, two days prior. • An authorised traffic management company will be contracted to manage each road closure in accordance with DIPL requirements, including placement of signage and traffic controllers. • A protocol for allowing the passage of emergency vehicles.
<p>Road safety Concern regarding heavy vehicle traffic on Cox Peninsula Road and the potential impact to the Berry Springs community and residential properties with direct access to this road.</p>	<ul style="list-style-type: none"> • Lithium Developments (Grants NT) has been engaging directly with the Department of Infrastructure, Planning and Logistics (DIPL) to ensure we understand the requirements that will apply to use of the Cox Peninsula Road as a haul route. • Traffic Impact Statement (Appendix H) assesses safety risks and provides details of road signage requirements, management of road closures for blasting and provisions for pavement condition inspections and corrective maintenance. • Haulage contractor QUBE, has drafted a Journey Management Plan (Appendix I), which details risk mitigation strategies for every stage of the journey between the mine site and the port. The plan addresses the safety requirements that will be applied at every intersection along the route and through high traffic areas. • Trucks will be speed limited to 80 km/hr through intersections and the Berry Springs township, and further limited to 40km/hr through the Berry Springs school precinct (20km/hr below the signed speed limit). • Truck speeds will be monitored through the use of In-vehicle Management Systems that track speed, fatigue and driver behaviour in real time. The school will be 'geofenced' in the IVMS to a restricted speed, which will result in automatic notification to QUBE headquarters if speed limits are exceeded. • Lithium Developments (Grants NT) have engaged directly with the Principal of Berry Springs Primary School making a commitment that truck movements will be restricted past the school during drop-off and pick-up times (7:45 to 8:45am and 2:30 to 3:30pm).

Issue raised (in order of priority)	Actions and current status
<p>Jobs and opportunities for locals</p> <p>Most people were pleased about the jobs on offer and that only a few would be FIFO. Many locals were keen to stay informed about job opportunities on the project.</p>	<ul style="list-style-type: none"> • Lithium Developments (Grants NT) has planned the project as daily drive-in-drive-out operation with no allowance for a mine camp. • The following actions will be undertaken by Lithium Developments (Grants NT) to maximise local opportunities (see section 2.2.7). • Recruitment and procurement processes prioritising the local market. • Package and promote tenders to suit local capacity where feasible. • Ongoing communication with the community and stakeholders to manage local content expectations • Work with local job providers. • Good communication about jobs available on the project.
<p>Water use</p> <p>Most people were satisfied that groundwater was not going to be used as the project water source. There is a heightened community awareness about groundwater in the region due to restrictions on Berry Springs dolostone aquifer.</p>	<ul style="list-style-type: none"> • The EIS provided details of the project water sourcing plans and clarified that the groundwater beneath the project area is not connected with the Berry Springs dolostone aquifer. • Project water supply to be sourced from existing Observation Hill Dam and a new dam constructed on an ephemeral watercourse near the mine site. • Lithium Developments (Grants NT) has engaged with Water Resources in relation to development of the surface water supplies in the project area. No specific concerns were raised through the EIS process. • New water licencing requirements under the <i>Water Act</i> may apply to the project in future; however, will not apply during the current MMP reporting period due to the MMP being submitted during the <i>grandfather period</i> which finishes 30 June 2019. • The current water management system, maximises re-use of water dewatered from the pit and tailings.
<p>Closure planning</p> <p>Many people asked about closure of the mine with some being concerned about the pit not being backfilled. People understood that a closure plan would be developed and some were interested in seeing the detail of this.</p>	<ul style="list-style-type: none"> • Lithium Developments (Grants NT) engaged a consultant to assess the feasibility of backfilling the pit (Innicon, 2019). • Based on the cost estimates provided, backfilling the pit is not considered a feasible option for the project. • An assessment of the benefits, risks and costs associated with mine closure options (1 – No Backfill; 2- Backfill) was undertaken as part of the EIS process. • The comparison indicates that the backfilling option is unlikely to result in significantly improved environmental benefits, mainly because there will be a deficit of material, which will result in a pit lake being present on-site in perpetuity, regardless of the option that is adopted. • The waste characterisation and water modelling work prepared for Grants Lithium Project, indicate there are no significant sources of contaminants and/or pathways for release of contaminants to surface water or groundwater. • A Draft Mine Closure Plan was released for public comment with the Draft EIS and Crown Lands have been contacted in relation to the closure objectives for the site. • Subject to effective implementation of the Mine Closure Plan, the proposed closure option for Grants Lithium Project is consistent with the principles of ESD. There is no indication of likely future contamination or water quality issues that could significantly impact amenity and use of the surrounding areas and downstream waterways. The risk assessment will be validated by ongoing waste characterisation for the duration of mining operations (refer Waste Rock Management Plan) and water quality monitoring (refer Water Management Plan).

Issue raised (in order of priority)	Actions and current status
<p>Mining process</p> <p>People were interested in the lithium and how it is mined. People were generally pleased to learn that no chemicals will be used. Local community members were interested in the transportation of the product past their homes.</p>	<ul style="list-style-type: none"> • The EIS provided further detail in relation to mining process and the additives used in the DMS process. • The product that will be produced on site is a spodumene concentrate containing 5.5% lithium oxide (Li₂O). • Spodumene concentrate material does not have any specific hazardous characteristics or handling requirements. • Comments received from members of the public on the Draft EIS indicated concern about the use of ferrosilicon. • Those comments referenced safety data sheets for ferrosilicon products used in metal casting applications, which differ profoundly from those associated with DMS processing. • Safety data sheets for ferrosilicon used in DMS processing were provided with the Supplementary EIS. • The additive is not classified as a Dangerous Good under the criteria of the <i>Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail</i>. • The product is classified as a hazardous substance under <i>Work Health and Safety Regulations</i> and has specific requirements for storage and handling for protection of workplace health and safety.
<p>Environmental impacts</p> <p>There was some interest in the environmental impacts of the project and how these would be managed and mitigated, with some people keen to see detail following the release of the EIS.</p>	<ul style="list-style-type: none"> • The Draft EIS was released for public comment for a period of six weeks. • Seven submissions were received from members of the public. Submissions for also received from Environment Centre NT, Berry Springs Primary School and Wagait Shire Council. • All submissions were responded to in the Supplement, which will be published on the NT EPA website in June 2019.

More recent community engagement undertaken by True North was undertaken as follows.

Quarterly community updates are sent to stakeholders and community contacts via email. Following engagement with stakeholders and community during the planning phases of the project, an initial update was sent on 1 October 2021. This was followed by an update later in October announcing the start of the project. Updates provided information on:

- the project activities
- proposed dates for key milestones
- employment contact details
- the community hotline contact details.

The next update is planned for February/March and will include an update on the BP33 project, information on local and Indigenous employment and contracts, key dates and any updates on progress and upcoming works.

The project updates are sent via email to 120+ stakeholders and emailed to the three local councils, the local member for Daly, local shops, Berry Springs Primary School, a number of community groups and representatives for inclusion in their newsletters and distribution via local noticeboards and social media.

Lithium Developments (Grants NT) will continue to engage with stakeholder groups and the community and provide updates and information as the project progresses, in line with the stakeholder engagement plan.

Lithium Developments (Grants NT) has established a procedure to receive, assess, respond to and action community and stakeholder complaints or grievances about the Finniss Lithium Project. The Finniss Lithium community phone hotline and email is established, monitored and complaints/queries responded within the next business day.

2.2.6 Workforce description and demography

The project will employ between 200 and 250 personnel. The workforce composition:

- Management/Supervision/Professionals – 21 %
- Contractors (Mining, Processing and Haulage) - 61 %
- Trades – 18 %.

The workforce is expected to comprise mainly of residents of Darwin, Palmerston or surrounding areas. There is no on-site accommodation camp as part of the project; workers will be expected to travel to/from site for each shift. The travel time from Darwin/Palmerston to the site is around one hour.

Belyuen is the closest community to the project area. Lithium Developments (Grants NT) has committed to working with indigenous employment and training providers to maximise opportunities for employment of people from Belyuen and the broader region. The short mine life means that opportunities will be greatest for those people with pre-existing skills sets and prior experience in construction/mining.

Where skill requirements and/or lack of available personnel necessitates fly-in/fly-out arrangements for a portion of the workforce, the project would use existing commercial accommodation in the region. As the operational workforce is relatively small, the project will not result in additional demand for accommodation that cannot be met by existing service providers.

2.2.7 Community affairs

Opportunities for community benefits from the project were identified as part of the SIA process (True North, 2018a). Table 2-9 details the actions that will be undertaken by Lithium Developments (Grants NT) to maximise local community benefits, targets/performance indicators that will be used to measure social performance and monitoring/reporting processes. The framework for managing and minimising impacts to local communities is provided in section 5.

Table 2-9. Community benefits plan

Opportunity	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
Local communities benefit through distribution of sponsorship funds.	Maximise benefits to the local community	<ul style="list-style-type: none"> Establish a sponsorship budget. Prepare a sponsorship plan, prioritising projects that benefit community groups and young people in the project's local area. Identify sponsorship objectives in conjunction with the community. 	Lithium Developments (Grants NT) recognised as actively contributing to the local community.	Produce annual reports outlining sponsorship expenditure, with a short summary of what was achieved.	NA	Annual reporting against objectives for communities /groups as a result of sponsorship.
Local businesses benefit from winning contracts.	Maximise local content. Build the capacity of local small businesses.	<ul style="list-style-type: none"> Recruitment and procurement processes prioritising the local market. Package and promote tenders to suit local capacity and prepare businesses for competitiveness and standards required by Lithium Developments (Grants NT). Proactive identification of local business with the capability to work on the project. Agreements with contractors to specify local service and supply requirements. 	<ul style="list-style-type: none"> Business and industry satisfied with the number and value of contracts awarded locally. Positive feedback about the level of local content. 	Monitoring of feedback from business and industry on level of local content.	Meetings with job service providers to investigate and address issues.	Progress reports to stakeholders. Report against indicators including the number and value of local contracts awarded.
Boost to direct and indirect local employment, through jobs on the project or throughout the local supply chain.	Maximise the recruitment and retention of local workers, both directly and with contractors	<ul style="list-style-type: none"> Recruitment and procurement processes prioritising the local market. Package and promote tenders to suit local capacity. Ongoing communication with the community and stakeholders to manage local content expectations Work with local job providers. Good communication about jobs available on the project. 	Number and total value of local contracts and jobs awarded in line with industry/community expectations.	Monitoring of feedback from business and industry on level of local employment and local contracts awarded.	NA	Progress reports to stakeholders. Report against indicators including the number and value of local contracts awarded and local job figures for the project.
Local economies stimulated through payments to workers, contractors and local companies.	Local economic growth through contracts and increased discretionary expenditure.	<ul style="list-style-type: none"> Recruitment and procurement processes prioritising the local market. Package and promote tenders to suit local capacity where feasible. 	Local industry satisfied with action taken to increase local participation.	Monitoring of feedback from business and industry on level of local content.	Communicate progress against objectives.	Progress reports to stakeholders. Report against indicators including the number and value of local contracts awarded

Opportunity	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
						and the amount and proportion of expenditure in the local economy.
Employment opportunities for local Indigenous people	Maximise Indigenous employment on the project, direct and with contractors.	<ul style="list-style-type: none"> • Work with Indigenous employment and training providers. • Provide support to contractors to employ and train local Indigenous people. • Liaise with other large projects about the opportunities to transition staff, e.g. as Inpex winds down. 	Number of Indigenous jobs awarded in line with Government and community expectations.	Feedback from Government, Indigenous stakeholders and the community on the level of Indigenous employment on the project.	Meet with Indigenous employment and training providers.	Progress reports to stakeholders. Report against indicators including Indigenous employment figures.

3 LEGAL AND OTHER OBLIGATIONS

This section outlines the legal and other obligations applicable to managing and minimising environmental impacts from Grants Lithium Project.

3.1 Statutory requirements

Applicable legislation permits and licences that may be required for the project are listed in Table 3-1.

Table 3-1. Applicable legislation and required approvals/permits/licences

Legislation	Regulation/approval	Project relevance
Mining Activities		
<i>Mineral Titles Act (MT Act)</i>	Mineral Lease	The Department of Industry, Trade and Tourism oversees the approval and regulation of mining activities. Under the <i>MTA</i> , Lithium Developments (Grants NT) has been granted ML31726 and EMP28651. An application has been submitted for ML32074, which encompasses Observation Hill dam and the water pipeline route.
<i>Mining Management Act (MM Act)</i>	Mining Authorisation	The mining authorisation is the key regulatory instrument used by the NT Government for approval and compliance monitoring of mining operations in the NT. This MMP will form the basis for the application for mining authorisation.
Weeds		
<i>Weed Management Act</i>	Not applicable	Occupiers of land (including mine sites) have an obligation to ensure listed weeds are not introduced or spread. A baseline weed survey has been undertaken across the project area and weed management is addressed in the MMP.
Land and Soils		
<i>Soil Conservation and Land Utilisation Act</i>	NA	This Act provides for the prevention of soil erosion, and for the conservation and reclamation of soil, and requires Erosion and Sediment Control Plans (ESCPs) for development projects. An ESCP is included as part of this MMP.
Water		
<i>Water Act</i>	Permit to construct or alter works Licence to take or use surface water or groundwater	At the time of the MMP submission (30 June 2019), no permit to construct or licence to extract water was required. However, since then, changes to the <i>Water Act</i> apply and Lithium Developments (Grants NT) has gained a SWEL for OHD and is in the process of obtaining approval for a permit to construct MSD and subsequent SWEL for MSD.

Legislation	Regulation/approval	Project relevance
<i>Water Act</i>	Waste Discharge Licence (WDL)	Any off-site discharge from operational areas to a watercourse would require a WDL. The site water balance model indicates that controlled discharge of water from the site will be required in December to March each year. Discharge requirements, management and monitoring are addressed in the Water Management Plan, which forms part of this MMP. A WDL is required prior to discharge from site to a watercourse.
<i>Public and Environmental Health Act</i>	Wastewater works design approval	Approvals will be required for onsite wastewater management systems that accept black and greywater from ablutions. These approvals are obtained from Department of Health.
Roads		
<i>Control of Roads Act</i>	Permit to Work in NTG Road Reserve	Works to upgrade the mine site intersection will be within the road reserve. Permits will be obtained prior to commencement of works.
<i>Control of Roads Act</i>	Road closure approvals and signage	Temporary road closures will be required on the Cox Peninsula Road on every 2-4 days for approximately 15 minutes whilst blasting. Approvals for road closures will be obtained from DIPL.
Native Title and Heritage		
<i>Native Title Act (NT Act)</i>		ML applications are required to undergo an advertising period pursuant to section 29 of the <i>NT Act</i> . Lithium Developments (Grants NT)'s application for ML31726 has been through this advertising period.
<i>Aboriginal Sacred Sites Act</i>	Authority Certificate	An Authority Certificate has been granted to Lithium Developments (Grants NT) over the areas covered by ML31726, ML32074 and EMP28651, for activities authorised under the <i>Mining Management Act</i> . There are no Aboriginal Sacred Sites identified on the certificates.
<i>Heritage Act</i>	Work Approval	There are no sites on the NT Heritage Register within the project area. There is an Aboriginal archaeological site located on the ML, but outside of the disturbance footprint. All Aboriginal and Macassan sites are protected under the Act. If previously unrecorded sites are uncovered by the project activities a Works Approval may be required from the NT Heritage Branch.
Other		
<i>Work Health and Safety (National Uniform Legislation) Act</i>	Risk Management Plan (RMP)	Mine sites in the NT must not permit any mining activity or a related mining activity to be carried out unless the mine operator has given to the regulator an RMP for the mine site that has been certified in accordance with regulation 614.
<i>Dangerous Goods Act & Regulations</i>	Explosive Permits	The storage and transport of explosives requires an approval to be obtained from Worksafe NT. Explosives will be stored in a magazine to be constructed at the mine site. An Explosives Business Licences will be obtained.

Legislation	Regulation/approval	Project relevance
<i>National Greenhouse and Energy Reporting Act (NGER Act)</i>	GHG reporting	Corporations must to register and report if they emit greenhouse gases (GHG), produce energy, or consume energy at or above specified quantities in a given financial year. The project may trigger the reporting thresholds in the first year of operations due to the combined emissions from land clearing and construction activities.
<i>Building Act</i>	Building Permit Occupancy Permit	The mine site is located within the Darwin Building Control Area. Building and occupancy permits will be required.

3.2 Non-statutory obligations

Mine planning and design have considered the following standards, guidelines and codes of practice relevant to avoiding or minimising environmental and social impacts.

Mining best-practice guidelines

- *A Guide to Leading Practice Sustainable Development in Mining* (Australian Centre for Sustainable Mining Practices, 2011)

Waste characterisation/Acid Mine Drainage

- *Global Acid Rock Drainage Guide* (International Network for Acid Prevention, 2014)
- *Environmental Assessment Guidelines on Acid and Metalliferous Drainage* (NT EPA, 2013)
- *Preventing Acid and Metalliferous Drainage – Leading Practice Sustainable Development Program for the Mining Industry* (Department of Foreign Affairs and Trade 2016a)

Storm-water management, erosion and sediment control

- *Best Practice Erosion and Sediment Control* (International Erosion Control Association, 2008)

Noise and dust

- *Airborne Contaminants, Noise and Vibration – Leading Practice Sustainable Development Program for the Mining Industry* (Department of Foreign Affairs and Trade, 2009)

Tailings management

- *Tailings Management – Leading Practice Sustainable Development Program for the Mining Industry* (Department of Foreign Affairs and Trade 2016b)
- *Australian National Committee on Large Dams (ANCOLD) “Guidelines on Tailings Dams”* (ANCOLD, 2012)

Water management

- *Water Stewardship – Leading Practice Sustainable Development Program for the Mining Industry* (Department of Foreign Affairs and Trade 2016c)
- *Water Accounting Framework for the Australian Minerals Industry* (Minerals Council of Australia, 2014).

Storage and handling of hazardous substances and dangerous goods

- *Australian Dangerous Goods Code 7.6*
- *AS1940:2017 The Storage and Handling of Flammable and Combustible Liquids* (Standards Australia, 2017)

Mine closure planning

- *Mine Rehabilitation – Leading Practice Sustainable Development Program for the Mining Industry* (Department of Foreign Affairs and Trade 2016d)

- *Mine Closure – Leading Practice Sustainable Development Program for the Mining Industry* (Department of Foreign Affairs and Trade 2016)
- ICM 2019. *Integrated Mine Closure, Good Practice Guide, 2ND Edition*. International Council on Mining and Metals.
- Young, R.; Manero, A.; Miller, B.; Kragt, M.; Standish, R. & Boggs, G. (2019). *A framework for developing mine-site completion criteria in Western Australia*. The Western Australian Biodiversity Science Institute, Perth, Australia.

3.3 Sacred, archaeological and heritage sites

Details of sacred, heritage and archaeological sites within the project area are outlined below.

3.3.1 Sacred sites

An Authority Certificate has been granted to Lithium Developments (Grants NT) over the areas covered by ML31726, MLN16, EL29698 and EL30015, for activities authorised under the *Mining Management Act*. There is one Aboriginal Sacred Site within the subject land, within a Restricted Work Area (RWA). This RWA not within the Grants Project area disturbance footprint (see Appendix J).

3.3.2 Heritage and archaeological sites

A search of the NT Heritage Register found a record of an archaeological site, listed as ‘site 5’, in the north-west corner of ML31726. The site is an artefact scatter, of moderate site significance, identified during an archaeological survey of the proposed optical fibre route through the area. As the site is outside of the project disturbance footprint, no specific management measures are proposed. There is a low likelihood of occurrence of archaeological sites across the ML and NT Heritage Branch do not require archaeological surveys to be undertaken.

A preclearing survey was undertaken during late September 2021 initiated by Lithium Developments (Grants NT) prior to land disturbance commencing. This was a due diligence walk over land conducted by EcOz Environmental Consultants and Kenbi Ranger Cultural monitors to detect any further environmental or cultural issues. Two points of interest were identified:

- a potential burial site - a raised mound at the base of a tree, approximately 5-6 foot in length and 1 foot height, and appears to have rocks placed on top
- a distinct rock placement near Good Hope mine.

Follow-up discussions occurred with the Heritage Branch and archaeologist, Silvano Jung (Ellengowan Enterprises) conducted a site visit during October 2021 to document both sites and provide recommendations.

The grave site was identified as “possibly” a grave site. The grave does not correspond to Larrakia mortuary practices. The site’s orientation to the east, may reflect an Islamic origin (Ellengowan Enterprises 2021). The rock placement located near Good Hope mine has two upright stones at either end, which is more consistent with a cooking pit, or hearth, almost certainly associated the adjacent 20th Century mining camp.

NT Heritage Branch have provided the locations of two historic tin mine sites; referred to as Good Hope Mine and Newsham’s Claim. Neither site is protected under the *NT Heritage Act*; however, the NT Heritage Branch has provided advice that disturbance of these sites should be avoided if possible. These sites are located on ML31726 and are close to the water pipeline route, which follows existing tracks that would have been used to access these mine sites. Lithium Developments (Grants NT) does not propose any activities that would disturb these sites.

Table 3-2. Heritage and archaeological sites

Site name	Description	Recommendations
Possible grave site	Due east at 90°. Low line of stone and gravel of appropriate dimensions for inhumation	Avoid – barricade the site. The site should be excavated in the future to determine if it is in fact a gravesite and if so, who may lie there. A study of the historical records is warranted before any ground disturbance is conducted.
Hearth	45° two upright stones at the end of the oblong and large stone on northern boundary. Extensive carbonisation on inner stone surfaces. Located at Good Hope Mine.	Avoid - barricade the site during construction of the pipeline
Site 5	Artefact scatter, of moderate site significance	Protected - avoid
Good Hope Mine	Historic tin mine site	Not protected - avoid if possible
Newsham's Claim	Historic tin mine site	Not protected - avoid if possible

4 OPERATIONAL ACTIVITIES

This section details the construction and operational activities associated with Grants Lithium Project. Details of activities proposed over the life of mine are provided.

4.1 Mineral resource

The Mineral Resource Estimate for Grants deposit is 2.03 million tonnes (Mt) of ore, containing approximately 1.5% concentration by weight of lithium oxide (Li₂O).

4.2 Material volumes

The ore to waste ratio for the Grants deposit is 1:17.7. Estimates of the quantities of waste and ore to be mined from the pit are provided in Table 4-1.

Table 4-1. Quantity of material mined over the life of mine

Material	Volume (bcm)	Wet metric tonnes
Waste mined	13,887,008	36,224,625
Ore mined	782,978	2,152,238
Total	14,669,986	39,171,158

4.3 Mine geology

The Grants deposit is a near vertical pegmatite. A geological cross-section of the deposit is shown in Figure 4-1. Geological logging of drill core and RC chips from the Grants deposit drilling program indicates there are 10 geological rock-type domains of homogenous character that occur in the proposed pit shell. The types are described in Table 4-2.

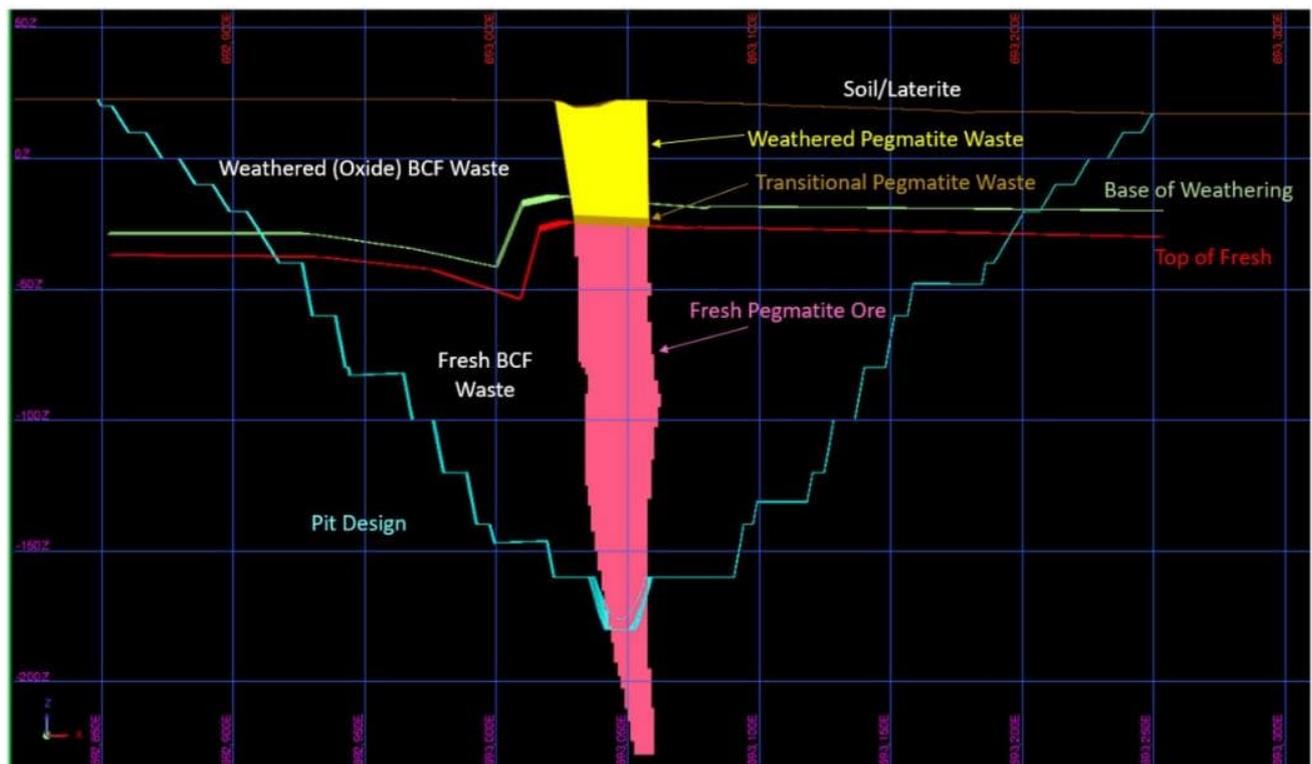


Figure 4-1. Cross-section of Grants Lithium Project ore resource

Table 4-2. Summary of the rock types and indicated volumes within the pit shell

Weathering Category	Lithology			
	Soil/Laterite	Phyllite	Quartz veins	Pegmatite
Surface zone (1-2 m thick)	Thin soil or laterite. Complete destruction and alteration of primary mineralogy and textures. Variable distribution geographically. Usually red/brown in colour.	NA	NA	NA
Weathered (Oxide) Zone (30-60 m thick)	NA	Almost complete destruction of primary mineralogy and textures. Dominated by fine clay and altered mica. Usually orange/brown in colour.	White quartz with minor haematite staining.	Complete destruction and alteration of primary mineralogy and textures. Dominated by white clay and quartz fragments. Generally soft or rarely silcreted.
Transitional Zone (1-20 m thick)	NA	Original mineralogy and textures identifiable with minor iron staining present. Usually light grey to brown in colour.	White quartz with minor haematite staining.	Predominately hard and competent with primary mineralogy clearly visible. Alteration of minerals to clay along grain boundaries.
Fresh Zone	NA	Fine grain, dark grey, thinly laminated siltstones and minor fine sandstone metamorphosed to phyllite. Usually very finely micaceous with zones of abundant fine garnets.	White quartz with minor sulphides.	Very hard and coarse grained white to grey/green in colour. Mineralogy dominated by clear to grey quartz, white feldspar, pale green spodumene and minor clear to brown muscovite.

4.4 Material characteristics

4.4.1 Waste rock

A phased program of mine waste characterisation has commenced consistent with the *GARD Guide* (INAP, 2014). During the project development phase, sampling and laboratory testing of waste rock, and collection and analysis of water samples has been undertaken. The material characterisation report (Appendix D) provides details of waste rock sampling program methods, results and summaries of relevant baseline ground water quality information from the Water Management Plan.

The drill core database for Grants deposit indicates that geological domains exhibit a high degree of homogeneity, and based on geological characteristics, have an inherently low likelihood of PAF being present. To validate this assessment, 156 samples from within the Grants pit shell were collected and analysed progressively as part of the exploration-drilling program undertaken over 2016-2018. Samples were chosen to provide representation of the variability within each weathering zone/lithology encountered, with numbers of samples taken from each zone based on the relative contribution to the total waste rock volumes (as indicated in Table 4-2) and the inherent

likelihood of Potentially Acid Forming (PAF) material i.e. based on material type and weathering. The red lines on Figure 4-2 depict drill holes from which samples were collected for waste characterisation, from the hole collar at the surface, down to the deepest point from which a sample was collected. The holes are drilled on an angle from the outer edges of the pit shell towards the mineral resource, which is vertical and runs along a north-south axis through the centre of the pit. The holes have not been labelled on the image as it is difficult to clearly illustrate these 3D data in 2D format; however, Lithium Developments (Grants NT) would be happy to provide on-screen 3D presentation to the relevant NT EPA and/or Department of Industry, Trade and Tourism staff if required.

The number of samples taken from each lithology/weathering profile is summarised in Table 4-3. The greatest number of samples were weathered and fresh phyllite, which together comprise nearly 80% of the pit shell. The weathered phyllite is a geological domain unlikely to be classified as PAF; however, because it comprises almost 50% of the waste rock volume and will be the main source of construction materials, a proportionally larger number of samples were taken to account for natural variability in physical and geochemical characteristics. Fresh phyllite and quartz veins are the geological domains at Grants with an increased likelihood of PAF³ characteristics and therefore a larger number of samples were collected from these rock types in proportion to the material volumes present.

Table 4-3. Number of samples from each lithology/weathering profile submitted for characterisation

Material Type	Weathered	Transitional	Fresh	Total
Soil	2	-	-	2
Laterite	11	-	-	11
Clay	7	-	-	7
Pegmatite	4	1	2	7
Phyllite	58	15	44	117
Quartz/ Phyllite and Quartz	6	-	2	8
Sandstone	2	1	1	4
Grand Total	90	17	49	156

Samples were analysed for the parameters in Table 4-4 below. Australian Laboratory Services (ALS), a National Association of Testing Authorities (NATA) accredited facility, performed the laboratory tests.

Table 4-4. Parameters analysed for sub-surface materials characterisation

Parameter	Relevance
Sulfur - Total as S	AMD screening
pH	AMD screening
Electrical Conductivity	AMD screening; saline drainage
Emerson Aggregate Test	Dispersive or sodic materials
Exchangeable Cations	Dispersive or sodic materials
Leachable metals	Metalliferous drainage
Soluble metals	Metalliferous drainage
Acid Neutralising Capacity (ANC)	Acidic drainage
Net Acid Production Potential (NAPP)	Acidic drainage
Net Acid Generation (NAG)	Acidic drainage
Naturally occurring radioactive material (NORM)	Radioactive materials

³ Preliminary waste characterisation laboratory analyses suggested there is little sulfur present in the material, which is typical of the sedimentary environment in which it was deposited – rapid deposition inhibits sea-floor sulfur precipitation. The scarcity of pyrite in geological logging of drill core and reverse circulation (RC) drilling chips also supports this contention.

Testing for Naturally Occurring Radioactive Materials (NORMS) was undertaken using a RadEye B20 – ER contamination meter (17 kEv – 3 MeV). (SN32215 Calibration expiry 1/12/2018) by a registered NT Radiation Advisor (Accreditation Number 10/00054A). NORM testing was undertaken on 82 samples from individual lithology and weathering profiles, and 13 drill cores.

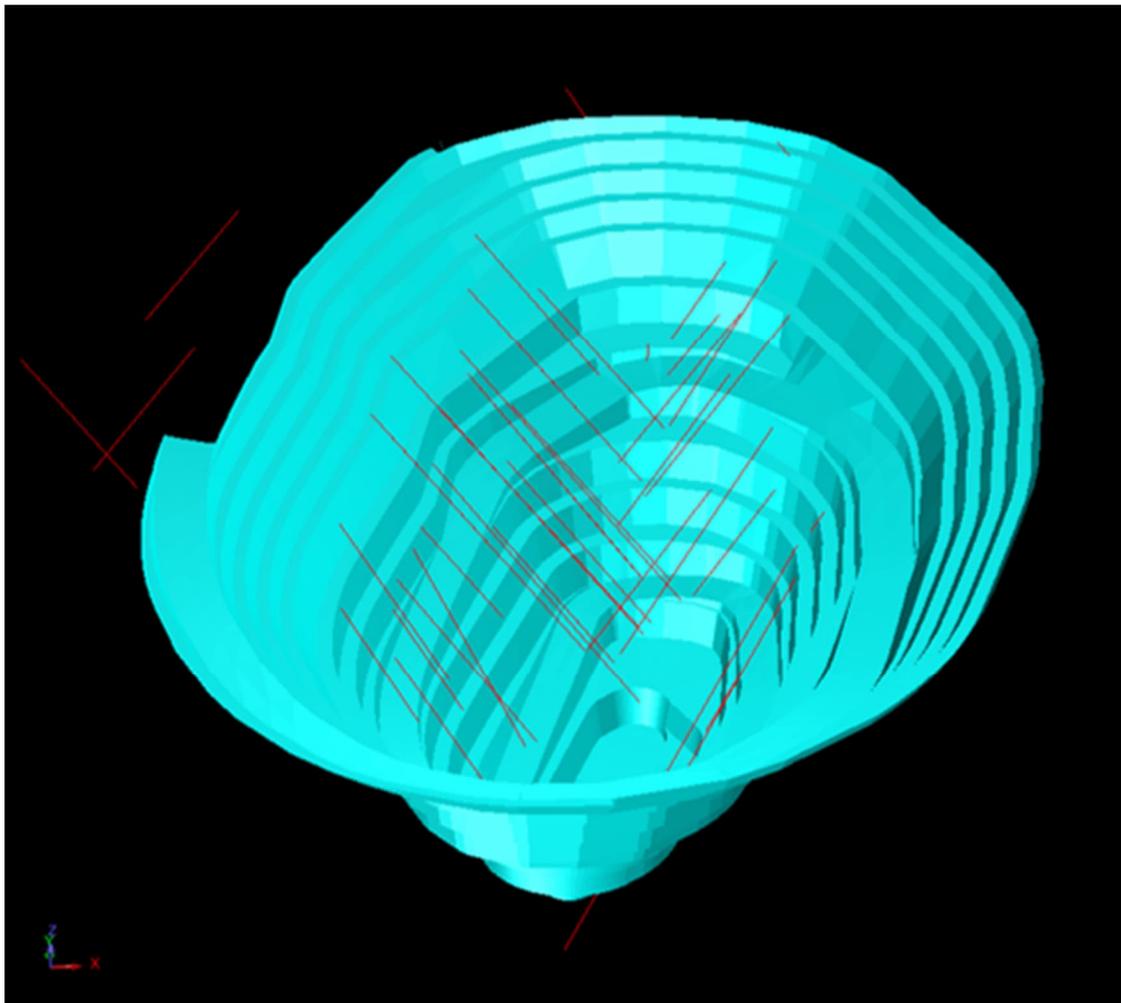


Figure 4-2. Location of drill holes for waste characterisation sampling

Table 4-5 summarises the waste rock characteristics in relation to physical stability, and potential risks associated with acid, metalliferous and saline drainage, and the occurrence of NORM's.

Table 4-5. Summary of waste rock characteristics

Sodic or dispersive potential
<p>33% of samples spread across the pit shell and at varying depths, were classified non-sodic but potentially dispersive. These samples have an Emerson Class Number 3, which indicates that remoulding (at moisture content near optimum for compaction) may cause dispersion. A high portion of the samples were from the highly to moderately weathered phyllite, with the highest occurrences in the eastern portion of the pit shell from surface to 5m depth and from 8-54m depth across the whole pit shell. Where this material occurs in the shallow parts of the pit it is a potential source of construction materials and therefore further detailed geotechnical testing and assessment is required to characterise physical stability. Material from the deeper parts of the pit shell will be placed in the centre of the WRD and therefore dispersive characteristics in these materials is not of management concern.</p>
Acid drainage potential
<p>Analysis of the % sulfur data for all 156 samples, reveals 16 samples, or 10% of the total samples, have concentrations in excess of the 0.05% S trigger value. All of the samples were from depths > 50 m below surface level with the majority coming from deeper than 100 m below surface. All samples with a sulfur concentration > 0.10 % S (7 samples) were from downhole depths greater than 100 m. Subsequent classification of samples based on NAPP and NAGpH (pHOX) indicate the presence of PAF material in one sample and an uncertain result (potentially PAF) for two further samples. These samples are fresh hard rock phyllite.</p> <p>Overall the waste rocks are considered materials with low AMD potential primarily due to the absence/scarcity of sulfur, which is typical of the sedimentary environment in which it was deposited. Waste rocks that classify as PAF will be limited in volume; they are not confined to a specific area and will be excavated with NAF materials and placed in the waste rock dump surrounded and underlain by materials that have sufficient Acid Neutralising Capacity to offset any potential acid generation.</p>
Metalliferous drainage potential
<p>126 samples were analysed for soluble metal concentrations. Some samples have detectable but very low concentrations of As, Mn, Se and Zn whilst Cd, Cr, Co, Cu, Pb, Ni, V and Hg. All below their limits of reporting.</p> <p>Ten of these samples with Total Sulfur concentrations >0.05 %S were submitted for determination of leachable metals. The leachates contained As (1 sample at 0.2 mg/L), Ba (ten samples at between 0.2 mg/L and 0.3 mg/L), Cu (one sample at 0.1 mg/L), Zn (ten samples at between 0.1 mg/L and 0.4 mg/L) and Mn (ten samples at between 0.2 mg/L and 11.9 mg/L averaging 2.4 mg/L). Be, B, Cd, Cr, Co, Pb, Ni, Se, V and Hg were absent in leachates.</p> <p>Waste rocks may leach metals; however, concentrations will be low. This finding is corroborated by baseline surface and ground water monitoring which indicates:</p> <ul style="list-style-type: none"> • Groundwater contains elevated concentrations of As (0.009 mg/L and 0.166mg/L) and Fe. Most other metals i.e. Al, Cd, Cr, Cu, Pb, Ni, Se, Zn and Hg are generally absent except for a few minor detections at very low concentrations. • Surface water contains Al (between 0.01 mg/L and 0.08 mg/L) and As (between <0.001 mg/L and 0.007 mg/L) whilst metals such as Cd, Cr, Cu, Pb, Ni, Se, Zn, Sn and Hg are below their limits of reporting.
Saline drainage potential
<p>All had very low electrical conductivity (0.004 dS/m - 0.280 dS/m) and are considered low saline and highly unlikely to produce saline drainage.</p>
Naturally Occurring Radioactive Material
<p>NORM testing was undertaken on 82 samples from individual lithology and weathering profiles, plus 13 drill cores. All samples were equal to or below background levels and do not warrant any further radiological investigations.</p>

4.4.2 Product

Two fresh pegmatite (ore) samples were analysed as part of the waste characterisation; sulfur concentrations are shown in Table 4-6. The sulfur concentrations are below the waste characterisation guidelines in both samples. Concentration of soluble metals was below detection limits, except for manganese, which was present at a concentration of 0.3 mg/kg in both samples.

Table 4-6. Sulfur concentrations of ore samples

Hole	Sample ID	Depth	Lithology	Weathering	pH	Sulfur – total as S (LECO)
FRC151	FRC151-191	191	Pegmatite	FR	9.3	0.02
FRC151	FRC151-208	208	Pegmatite	FR	9.7	<0.01

4.4.3 Rejects and tailings

The DMS process will produce coarse rejects (DMS floats) and tailings. The coarse rejects will comprise rocks with diameter 0.5 mm to 6.3mm. The tailings will comprise fine grained silty sands, the processing additive ferrosilicon and flocculants used to thicken the tailings.

Based on the preliminary geochemical characterisation results for the fresh pegmatite ore, the rejects and tailings material have low AMD/NMD potential. The rejects will contain lithium in concentrations that may be recoverable by future flotation processing and therefore will be stockpiled in designated areas within the WRD. The tailings will report to the TSF, which incorporates a low permeability foundation to minimise seepage but does not require an engineered cover due to the low AMD risk. Further geochemical characterisation of tailings and rejects will be undertaken prior to commencement of mining, to determine any specific storage requirements to be reflected in the Tailings Management Plan and Waste Rock Management Plan.

4.4.4 Knowledge gaps

The geological characteristics of the ore deposit indicate an inherently low risk of AMD/NMD/SMD. The sample analysis undertaken to date has been deemed adequate to demonstrate that the waste rock, rejects and tailings do not pose a significant risk to the environment. To increase confidence in the materials characterisation and inform detailed landform design parameters and waste management strategies, the following further testing and analysis will be undertaken:

- Geochemical and leachate testing of rejects and tailings from the pilot plant trials.
- Routine operational waste characterisation over the life of mine.

Based on feedback received from the NT EPA and Department of Industry, Trade and Tourism, the scope of the analyses undertaken to characterise the waste materials will be expanded to include:

- Full suite of metals and metalloids, including lithium, tantalum and tin
- Processing additives and breakdown products
- Collection of QA/QC samples.

Materials characterisation will be undertaken and reported in accordance with the *GARD Guide*.

A Waste Rock (AMD) Management Plan (Appendix K) was developed in 2019 prior to mining, as recommended by NT EPA as an outcome of the EIS. Static test results indicate a low potential for ARD, however the potential for NMD to occur from the WRD requires further testing. Kinetic testing will commence during 2022.

4.5 Schedule

The mine is designed as a 1 MT per annum operation with mine life, associated with extraction of 2.03 Mt of ore, is expected to be three years. Closure and rehabilitation works will commence on completion of mining and will continue for a number of months after the last shipment of ore. The project phases are outlined in Table 4-7.

Table 4-7. Indicative Grants Lithium Project phases

Phase	Pre-strip & construction	Mining and processing	Processing Only	Rehabilitation & Closure	Post-closure
Activities	Removal of oxide waste and oxidised pegmatite waste. Construction of site infrastructure and processing facilities.	Mining of the pegmatite ore body and adjacent 'fresh' waste, and processing/ transport of product to Darwin Port	Mining in open pit is complete. Continued processing and transport of product to Darwin Port	Rehabilitation and mine closure activities undertaken in accordance with Mine Closure Plan	On-going monitoring of the mine site until rehabilitation completion criteria are achieved and the site is relinquished.

4.6 Mine design

Design details for key site components are summarised in the sections below.

4.6.1 Open pit

The pit will occupy a surface area of 24 ha and will be approximately 200 m deep. The optimised pit shell will comprise three separate design sectors where characteristics of the rock types encountered (weathered, transitional and fresh pegmatite) dictate different wall heights and batter configurations in order to achieve pit wall stability.

The pit will have a 25 m wide dual lane access ramp from surface down to 130 m below ground level, where it will reduce to a single lane (19 m wide) for the remaining depth to the pit floor. The bench width of 6m in the weathered rock is applicable to sections of the pit where the rock is de-coupled by a haul road.

4.6.2 Inundation bund

An inundation bund will be constructed around the eastern and northern extent of the mine site. The purpose of the bund is to prevent inundation of the mine site during the wet season. The design parameter for the flood diversion bund is 1% Annual Exceedance Probability (AEP), which is the flood height that has a 1% chance of being equalled or exceeded in any given year.

The location of the bund has been selected outside of the calculated zone of instability around the pit shell, with the intent that post-closure, the bund will function as an abandonment bund to make the site safe and secure. The bund will be constructed from low permeability clay material excavated from the pit.

4.6.3 Waste rock dump (WRD)

The WRD is located immediately to the west of the open pit on gently undulating ground. The location minimises haul distance and does not interfere with any surface watercourses. The TSF is integrated within the WRD landform. This design concept has the benefit of minimising the mine site footprint. A single integrated landform remaining on-site in perpetuity post-closure.

The WRD has a design capacity of 14.3 million bcm, which provides for 3% spare capacity. The WRD will accept all waste rock material and coarse rejects from the crushing/screening process. Waste characterisation studies (refer section 4.4) indicate limited potential for production of acid, saline or metalliferous drainage (AMD) and therefore the design does not include low permeability foundation or containment cells, excepting for beneath the TSF. The processing rejects are coarse and do not pose an AMD risk, therefore will be co-disposed in a designated area with the WRD.

The WRD will be constructed in lifts to a final height of approximately 30 m. The dump sequence is dynamic and will progress in consideration of environmental constraints, equipment availability, material type availability and mine scheduling. The typical lift height will be 10m – and lower lift heights may be required from time to time.

Other design considerations include:

- Angle of Repose: 37 degrees
- Berm width: 10m
- Overall Slope Angle: 22 to 25 degrees.

As each lift is completed, berms will be used to control run-off and manage erosion in the interim landform. Here practical, the WRD may be progressed with a 20m tip head in locations such as the inner core of the WRD and where waste is classified as NAF.

The proposed closure strategy for the WRD is to reshape to a domed top with target overall slope of 20 degrees. A final cover layer will be constructed consisting of a growth medium (stockpiled topsoil) and rock mulch. The growth medium will be re-seeded with local species, and ameliorated as required. As the waste rock and tailings are of low risk of geochemical instability, it is not expected that there will be a need to restrict percolation through the landform, and therefore a low permeability barrier has not been included in the cover design. The design is intended to provide a structure that will be geotechnically stable in perpetuity, and effectively blend with the natural landscape in the surrounding area.

The WRD design and closure concept prepared by TME Mine Consulting is illustrated in Figure 4-3.

The WRD construction, scheduling and rehabilitation has been detailed in the Grants Lithium Project Waste Rock Management Plan Summary Report, developed by Obelix Mining Pty Ltd, prepared for Core Lithium, July 2021 (Appendix L).

4.6.4 Tailings storage facility

TSF design details documented here are extracted from the design report prepared by GHD (2021a). The complete report is provided at Appendix M. The TSF basis of design is summarised in Table 4-8.

The TSF will consist of retaining embankments constructed from pit overburden / waste rock, to minimise waste footprints and provide cost effective waste management. The TSF will consist of two cells (Cell 1 to the north and Cell 2 to the south), to allow flexibility and efficiency in deposition cycling, as well as the opportunity to stage construction of the cells.

The overall footprint of the TSF will be approximately 15 ha, with a maximum height of approximately 9 m. The TSF has been sized to store the proposed 30 months of tailings production. The TSF location will be within the overall footprint of the Waste Rock Dump (WRD), to minimise the site's mine waste storage footprint.

Due to the low AMD risk, the design has been structured to maximise drainage, without a need for minimising oxidation of the tailings. The TSF storage area will be appropriately treated to provide a low permeability barrier, which, along with the underdrainage system, will allow effective management of any risk of groundwater mounding.

TSF embankments have been designed as zoned earthfill structures, with materials sourced from the pit overburden. The embankments will primarily consist of weathered rockfill, with a low permeability, select earthfill zone on the upstream side constructed out of residual soil. Geotechnical investigations and testing indicate that there is sufficient material available on-site for use in dam construction, and foundation conditions are suitable (refer Section 4.8.3).

The proposed closure strategy for the TSF consists of covering the TSF surface area with waste rock, incorporating the TSF within the overall WRD landform. TSF embankments will be inherently stable through significant buttressing with waste rock, and tailings deposition will be managed through operations to allow covering with waste rock upon closure. See Appendix M Tailings Storage Facility and Water Dams (GHD 2021a), Appendix C – Detailed Design Drawings (12547525-C001 to C009) for all issues for construction TSF drawings.

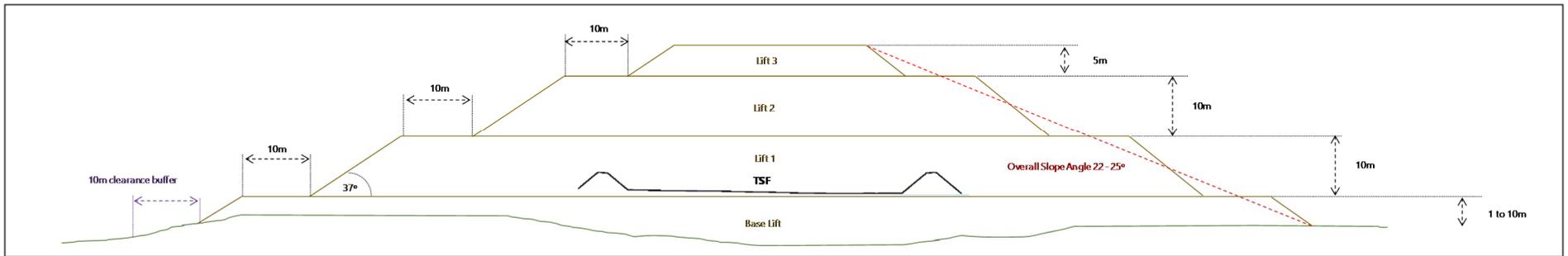


Figure 4-3. Proposed waste rock dump as-built design

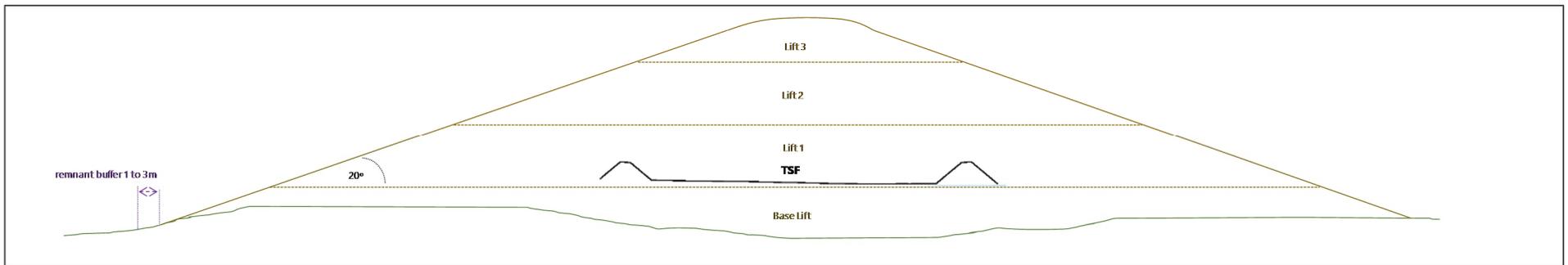


Figure 4-4. Proposed waste rock dump closure concept

Table 4-8. TSF basis of design. Source: GHD (2021a).

Item	Value	Unit	Source / Comments
Tailings production			
Tailings production	580,000	tonnes (total)	Mass balance provided by Lithium Developments (Grants NT) during preliminary design. LOM schedule provided by Lithium Developments (Grants NT) during preliminary design.
AMD potential	Very low risk		Soil and waste characterisation report (EcOz, 2018b)
Saline drainage potential	Very low risk		Soil and waste characterisation report (EcOz, 2018b)
Processing operations	21 / 365	h/day	Processing concept technical study
Tailings parameters			
Geotechnical Classification	Silty Sand		Geotechnical testing
Slurry solids content	51%		Supplied by Lithium Developments (Grants NT) during preliminary design.
Total Tailings Volume (LOM)	415,000	m ³	LOM schedule / assumed settled density
Tailings Storage Facility			
Type	Turkey's Nest		To suit topographic conditions and operational / closure strategy
Foundation / lining	Low permeability in-situ material treated & compacted		Low AMD risk therefore no geomembrane liner required Clayey materials from pit overburden will be used if in-situ material not appropriate
Capacity	528,000	m ³	Allows for LOM schedule plus flood storage / freeboard requirements, plus contingency
Footprint	15	Ha	Footprint restricted by overall WRD footprint Maximise footprint allowance to reduce rate of rise
Construction material source	Pit overburden		Geotechnical investigations / waste classification
Water management			
Spillway Type	Overtopping embankment broad-crested weir		To suit the storage impoundment type
Spillway design flood capacity	1:1,000	AEP	Dam Failure Consequence Category of 'Significant' (ANCOLD 2012)
Design storage allowance	1:100 72-hour	AEP	Environmental Spill Consequence Category of 'Low' (ANCOLD 2012)
Dry freeboard requirements	1:10 wave run-up	AEP	Dam Failure Consequence Category of 'Significant' (ANCOLD 2012)
Decant structure	Central precast concrete towers with submersible pumps		GHD assessed, allow max drainage of tailings
Decant pumps	30	L/s	Allow for max predicted pump back requirements based on the water balance 2 x pumps have max capacity of 60 L/s
	5.2	ML/day	
Underdrains	Slotted panel drains (Megaflor 300) to sump for recovery		Allow maximum consolidation and drainage of tailings. To promote improved strength and long-term stability of the material to suit the closure plan.

Item	Value	Unit	Source / Comments
Closure			
TSF Cover	Waste rock cover Growth medium and rock mulch Water shedding		EIS (EcOz, 2018a) GHD assessed based on INAP (2017) guidelines, climate No low permeability layer required due to assumed benign tailings Two cells allow for staged closure
TSF Rehabilitation	Above ground, stable landform Cover to be revegetated with native species TSF will be fully enclosed by overall WRD		Accepted industry practice for low AMD risk waste Final landform to be geotechnically/geochemically stable and non-erodible

4.6.5 Ore and product stockpiles

The ROM pad is located immediately to the north of the WRD. Pad dimensions are 250 m by 160 m. The pad will be constructed from competent waste rock, to create a raised flat surface.

Spodumene concentrate (product) will be stockpiled on a concrete drainage pad immediately to the north of the processing plant to allow for some dewatered of the product prior to shipping. Rejects (floats from the DMS circuit) will be stockpiled on a concrete drainage pad immediately adjacent to the processing plant and will be taken to the WRD via a front-end loader and truck. Drainage from the pad will be returned to MWD 2 for re-use in the processing circuit.

4.6.6 Mine Water Dams

Mine Water Dam 1 (MWD1) is a turkey's nest dam located to the south of the pit. The dam has a 240 ML storage capacity, allowing for predicted storage of pit inflows (groundwater and rainfall runoff) without environmental release during the dry season. MWD 1 will be used for dust-suppression. The site water balance indicates that releases of excess water from MWD1 will be required during the wet season.

Potential sources of contamination in MWD 1 will be fine sediments, hydrocarbons from vehicle fuel/oil leaks and explosive residues. Groundwater monitoring undertaken to date also indicates that when compared to the background surface water characteristics of the receiving environment, the groundwater dewatered from the pit may contain elevated levels of arsenic, phosphorous and lithium. The Water Management Plan (Appendix N) provides further detail in relation to the water quality characteristics and management of water discharges from MWD 1.

Mine Water Dam 2 (MWD2) located north of the mine administration area has a capacity of 60 ML. MWD 2 may be used for the following:

- Storage of TSF return water (decant water) for recycling back through processing plant.
- Additional storage of pit inflows, in the event of variations from the modelled scenarios.
- Temporary storage of wet season run-off from the TSF, to assist in water and tailings management.

The dam has been designed as a no release dam, with stored water pumped to the processing circuit for reuse. Potential contaminants present in MWD 2 will be sediments, which will be removed by treatment with flocculants.

Dams will consist of a full perimeter embankment, with materials for construction won from within the storage areas (cut / fill balance). Embankments will be built primarily out of homogenous, low permeability, primarily fine-grained residual material. A low permeability basal liner will also be constructed, either utilising in-situ material or imported from pit overburden materials as required. Rip-rap erosion protection will be placed on the upstream face, with a rock fill source to be confirmed. The downstream face will consist of a weathered rock fill layer, won from within the storage area.

Embankment batter slopes have been conservatively designed at 2.5H:1V. These were chosen for the following reasons:

- All embankments are less than 10 m in height, and should therefore have low risk of instability with relatively conservative batter slopes of 2.5:1
- Conservative assumptions for material quantities is considered appropriate at this stage.

Table 4-9. Mine water dams basis of design (GHD 2021a)

Item	Value	Unit	Source / Comments
Mine Water Dam 1			
Type	Off-stream above-ground paddock impoundment		To suit topographic conditions and operational requirements
Foundation / lining	Low permeability in-situ material treated & compacted		Low AMD risk therefore no geomembrane liner required Will likely need protective earthfill layer for desiccation management
Capacity	230	ML	Modelled pit groundwater inflows No release requirement during Dry season
Footprint	6.9	Ha	Footprint restricted by adjacent infrastructure
Construction material source	Within storage area (cut / fill balance)		Cut / fill balance will maximise capacity Needs to be constructed prior to the pit development Locally won materials expected to be suitable for low height embankment with conservative batter slopes
Mine Water Dam 2			
Type	Off-stream above-ground paddock impoundment		To suit topographic conditions and operational requirements
Foundation / lining	Low permeability in-situ material treated & compacted		Low AMD risk therefore no geomembrane liner required Will likely need protective earthfill layer for desiccation management
Capacity	60	ML	Contingency storage for TSF and / or pit water Sized based on topographic constraints No release requirement during Dry season
Footprint	2.1	Ha	Footprint restricted by adjacent infrastructure
Construction material source	Within storage area (cut / fill balance)		Cut / fill balance will maximise capacity Locally won materials expected to be suitable for low height embankment with conservative batter slopes
Raw Water Dam			
Type	Off-stream above-ground paddock impoundment		To suit topographic conditions and operational requirements
Foundation / lining	2.0-mm HDPE liner		Geomembrane included at Lithium Developments (Grants NT)'s request
Capacity	60	ML	Contingency storage for TSF and / or pit water Sized based on topographic constraints No release requirement during Dry season
Footprint	2.1	Ha	Footprint restricted by adjacent infrastructure

Item	Value	Unit	Source / Comments
Construction material source	Within storage area (cut / fill balance) HDPE liner imported from off-site		Cut / fill balance will maximise capacity Locally won materials expected to be suitable for low height embankment with conservative batter slopes
Water management (all facilities)			
Spillway Type	Overtopping embankment broad-crested weir		To suit the storage impoundment type
Spillway design flood capacity	1:1,000	AEP	Dam Failure Consequence Category of 'Significant' (ANCOLD 2012)
Design storage allowance	1:100 72-hour	AEP	Environmental Spill Consequence Category of 'Low' (ANCOLD 2012)
Dry freeboard requirements	1:10 wave run-up	AEP	Dam Failure Consequence Category of 'Significant' (ANCOLD 2012)
Inlet	HDPE pipe, above ground		MWD1 - pumped from pit MWD2 - pumped from TSF or pit RWD - pumped from Observation Hill Dam or C5 Dam.
Outlet	HDPE pipe trenched into natural ground		Floating pontoon with pump
Mine Site Dam (C5)			
Type	Valley impoundment		On unnamed ephemeral stream to the northwest of site infrastructure
Foundation / lining	None required		Clean surface water storage Cut-off trench constructed to approved low permeability foundations
Capacity	290	ML	Based on hydrology studies Limited by topography May be increased if required through storage excavation / changes to spillway dimensions
Footprint	20	Ha	Footprint restricted by topography / dam height
Construction material source	Overburden from pit development		Prefeasibility study and initial waste classification indicate material will be suitable for use Cut materials from spillway excavation to be used if suitable
Spillway Type	Broad-crested weir / channel cut into natural ground		Left abutment against embankment fill, requiring erosion protection,
Spillway design flood capacity	1:1,000	AEP	Dam Failure Consequence Category of 'Significant' (ANCOLD 2012)
Dry freeboard requirements	1:10 wind event	AEP	Dam Failure Consequence Category of 'Significant' (ANCOLD 2012)
Inlet	None required		Intended to capture natural run-off.
Outlet	Floating outlet pipe with downstream valve and in-line pump		To be pumped back to Raw Water Dam Downstream valve with in-line pump to allow environmental / 'First Flush' flows.

Each dam will include a floating outlet structure, with a pipe either submerged under the embankment or placed on top of the embankment and a valve on the downstream end. This valve will allow water to either be pumped with an in-line pump, or (in the case of MWD 1), released to the environment by gravity when downstream mixing conditions allow (under a Waste Discharge Licence). MWD 1 will have the provision to be equipped with a dust suppression standpipe.

MWDs have been classified as 'Significant' Consequence Category dams. This is a conservative assumption, primarily based on the environmental impact of a dam failure. Emergency spillways for the dams are designed for a 0.1% AEP event.

See Appendix M Tailings Storage Facility and Water Dams (GHD 2021a), Appendix C – Detailed Design Drawings (12547525-C010 to C016) for all issues for construction MWD1 and MWD2 drawings.

4.6.7 Explosives compound

The explosives compound is located in the south-west corner of ML31726 to achieve adequate safety separation distance from the mine administration area. The compound design will comply with Australian Standard *AS2187 Explosives – Storage, transport and use*, which includes requirements for perimeter man-proof fencing and access restrictions, signage and surveillance monitoring, minimum separation distances between materials storages and construction of earth bunds around magazines. Pursuant to the *NT Dangerous Goods Regulations*, Lithium Developments (Grants NT) will apply for an explosives business licence, which will licence the storage facility and handling of explosives on the mine site.

4.6.8 Internal access and haul roads

There will be a single, dual lane access/haul road constructed from the Cox Peninsula Road into the mine security and access point (approximately 500 m). The intersection design will include a slip lane and signage to provide for safe entry-exit from the public road. There will be a weighbridge and wheel wash located in an accessible location on site for ore concentrate quad road trains prior to exiting site.

The internal access road follows the route of an existing exploration access track and crosses a broad drainage area where the road will be raised with culvert drains to allow water to pass underneath and provide all-weather access. The road will provide access for light and heavy vehicle traffic and is engineered to be capable of supporting the 95 tonne quad-road-trains.

From the mine security and access point, road trains will travel along the northern internal haul route to a road-train load out loop located alongside the product pad. Internal roads will provide vehicle access between the pit, ROM pad, WRD, processing plant and mine administration area.

4.6.9 Stormwater and erosion management

Internal drains and sediment dams will be constructed to capture and treat stormwater that falls directly onto the mine site. Design criteria for the site drainage and sediment dams is provided in the Erosion and Sedimentation Control Plan (ESCP). The Water Management Plan provides for monitoring of water quality in the dams, proposed discharge criteria and contingency measures in the event that criteria for release cannot be achieved i.e. treatment with flocculants.

A Primary ESCP has been prepared for the mine site by a CPESC. This ESCP has been prepared to provide a best-practice framework for implementation of effective erosion and sediment control over the life of mine. Erosion and sediment control recommendations and designs provided are consistent with the International Erosion Control Association. Best Practice Erosion and Sediment Control (IECA 2008). This plan has been used to inform preparation of Progressive ESCP's that provide detailed site-specific controls relevant to the current operational phase and level of erosion risk (i.e. wet/dry season). Two progressive ESCPs have been developed to date, the first was for the initial stages of project construction during 2021. The second progressive ESCP has been prepared for the ongoing construction works during 2022 and for the transition into operations phase. All ESCPs are certified by a CPESC and are provided in Appendix O.

4.6.10 Mine administration area

The mine administration area is located 300 m north-west of the pit, near the processing plant. The Lithium Developments (Grants NT) controlled area has provisions for equipment laydown area, LV car parking and wash-down facilities, site office, emergency facilities and services. The Contractor controlled area includes a HV workshop and wash-down facilities, refuelling station and contractor offices.

Potable water will be supplied from the RWD through a treatment plant. Water for ablutions and other facilities will be supplied from the RWD.

Power requirements will be met by diesel-powered generators. Three 110,000 l aboveground banded fuel tanks will supply diesel fuel.

Sewage will be managed by connection to an on-site wastewater management system that will provide for secondary treatment of wastewater. Treated wastewater will be irrigated to an on-site disposal area. An indicative location for the disposal area has been chosen to the north of the site access road, subject to a Land Capability Assessment and approval by Department of Health.

4.7 Water Use and supply

4.7.1 Demand

Predicted daily water demand for the mine site is 2,018 kl/day (Table 4-10). This volume represents the greatest anticipated daily water requirement and is a conservative estimate in that dry season dust suppression volumes have been applied throughout the year. This conservative approach is considered appropriate as it provides for contingency when developing a reliable and sustainable water supply for the life of mine.

Table 4-10. Predicted project water requirements

Use	Volume (kl/day)
Dust suppression (pit)	600
Dust suppression (Haulage)	120
Dust suppression (WRD)	300
Dust Management Standpipe (losses)	40
Mine operation control facilities	8
Processing	950
Total	2,018

4.7.2 Water sources

Water sources for the mine will comprise:

- Groundwater/rainfall in-flows to the pit.
- Surface water pumped from Observation Hill dam (OHD) and Mine Site dam (MSD).
- Water pumped from the old mine pits across the lease area, subject to water quality testing and confirmation of no potential for exposure of PAF materials in pit walls.

Groundwater and surface water models developed for the mine site have been used to forecast monthly in-flows to the pit over the mine life. Model outputs are provided in the Water Management Plan section of this MMP. The volume of water dewatered from the pit is forecast to increase rapidly over the first 12 months of mining activities, to peak at approximately 78ML per month in month 13 of the mining schedule. Pit inflows will be dewatered to MWD 1, which will be the primary water source used for dust suppression.

A monthly water balance was developed for the life of mine in accordance with the *Minerals Council of Australia Water Accounting Framework*. The model was used to determine the requirements of the water supply and storage system, and any requirements for discharge of water during the wet season. The modelling methods and results are reported in full in the Water Management Plan, including a schematic of the site water balance model, and a water balance input-output statement.

Predicted make-up water volumes to be pumped from the dams, range from around 30 ML/month in the first month of mining when groundwater inflows are minimal, to less than 1 ML per month during the peak of the wet season (Jan/Feb). After month two, the average volume of make-up water required per month is 1.5 ML.

The water balance will be updated as the project develops and will be submitted to the NT Mines Department with future WMP revisions.

4.7.3 Infrastructure development

A Water Storage Facilities (WSF's) Operations, Maintenance and Surveillance (OMS) manual (GHD 2021c) has been developed for the operation of the MWD1, MWD2, RWD, MSD (C5) and OHD (Appendix P). The purpose of the manual is to define and describe:

- Information of each WSF
- Operating and maintenance procedure
- Reservoir and spillway operations
- Dam safety and surveillance
- Responsibility, accountability and reporting.

To establish the water supply for the project, works will be undertaken to raise the OHD wall and bring the dam wall construction in line with ANCOLD design criteria. The MSD will be established by building a dam wall across an ephemeral drainage line. Pumping infrastructure and a pipeline will be installed to transport water to the mine site. The sections below provide details of the design and construction of the project water supply infrastructure.

Observation Hill Dam

OHD is an existing valley dam located 5 km south-south-east of the mine site on ML32074. The dam was built by a previous operator that mined tin and tantalum in the 1980's. The current dam spillway height is 30mAHD and the modelled capacity of the dam is 364 ML.

To ensure water security for the project in the event of lower-than-average rainfall years, the existing dam wall will be raised by 1.5 m (to 31.5mAHD), which will increase the dam storage capacity by approximately 260 ML.

The raise to the OHD includes a new saddle dam, located northeast of the main embankment. The saddle dam is above the Top Water Level (TWL), i.e. above the new spillway level. This presents an opportunity to construct a relatively low cost new spillway into natural ground.

Observation Hill Dams raise wall detailed design drawings will be finalised by GHD prior to wall lift construction commencing. Design specifications are summarised in Table 4-11. Designs have been derived according to the dam consequence categories assessed by civil engineers in accordance with the ANCOLD guidelines (ANCOLD, 2012).

An additional nine hectares of land within ML32074 will be inundated when the dam fills to capacity. The vegetation within the footprint is Eucalyptus woodland.

Table 4-11. Observation Hill Dam summary of basis of design (GHD 2021b)

Criteria description	Design value	Reference
Embankment design		
Facility type	Existing valley impoundment	Existing facility
Embankment configuration	Zoned earthfill dam with filter	GHD proposed
Foundation / Lining	None required	GHD proposed
Raise design	1.4 m downstream raise	GHD proposed to meet storage requirements
Storage capacity	620,000 m ³	Based on hydrology studies (EnviroConsult, 2018)
Crest level	RL 32.9 m	GHD proposed to meet storage requirements
Embankment height (max)	11.2 m	GHD measured
Batter slopes	Downstream: 4H:1V Upstream: 3H:1V	GHD proposed
Crest width	6 m	GHD proposed
Facility footprint	25.7 ha	GHD measured
Construction material source	General fill sourced from the Grants Mine site with specialised material to be imported externally Zone 1 (low permeability) and general fill won from open pit excavations Zone 2 (filter) material imported from quarry	As discussed with Lithium Developments (Grants NT)
Stability		
Static long-term	FoS greater than 1.5	ANCOLD (2019)
Static short-term	FoS greater than 1.3	ANCOLD (2019)
Post-seismic	FoS greater than 1.0	ANCOLD (2019)
Operating basis earthquake (OBE)	1 in 475 AEP PGA = 0.03g	ANCOLD (2019) & Geoscience Australia (2021)
Safety evaluation earthquake (SEE)	1 in 1000 AEP PGA = 0.039g	ANCOLD (2019) & Geoscience Australia (2021)
Water management		
Spillway arrangement	Open channel spillway	GHD proposed
Invert level	RL 31.5 m.	GHD proposed
Catchment	116 Ha	GHD measured
Spillway design flood capacity	1% AEP	Dam Failure Consequence Category of 'Very Low' (ANCOLD 2012)
Dry freeboard requirements	10% wave run-up	Dam Failure Consequence Category of 'Very Low' (ANCOLD 2012)
Outlet pipeline	HDPE pumped pipeline (designed by others)	As discussed with Lithium Developments (Grants NT)

Mine Site Dam

The MSD has been designed as a contingency surface water storage, with a 280ML capacity. The dam is designed to feed the RWD when required, and release to the environment during the Wet season if necessary. Water management structures required at the MSD include:

- Spillway, designed for a 0.1% AEP flood event
- Outlet structure, allowing for pump back or environmental release.

The MSD spillway would be cut into natural ground, located adjacent to the right abutment of the proposed embankment. The spillway is designed as a trapezoidal channel with a base slope of 1%.

Due to the topographic constraints, the left abutment of the spillway will be in fill where it passes the embankment to save on a larger spillway cut. This will require cement grouted rip-rap along with heavy grade geofabric (Bidim A64 or equivalent) for erosion protection.

See Appendix M Tailings Storage Facility and Water Dams (GHD 2021a), Appendix C – Detailed Design Drawings (12547525-C030 to C032) for all issues for construction MSD (C5) drawings.

Table 4-12. Mine site (C5) dam spillway design parameters (GHD 2021a)

Item	Design value
Design outflow	44 m ³ /s
Base Width	20 m
Invert level	RL 15.8 m
Crest level	RL 17.8 m
Invert rip-rap thickness	0.4 m
Total freeboard (Crest – Invert)	2 m
Design flood depth	1.20 m
1:10 wave run-up freeboard	0.5 m
Channel slope	1%

It is proposed that the outlet for the MSD would be an anchored floating intake fed by gravity to a downstream control valve, allowing for pump back to the process plant or environmental release by gravity flow. This arrangement may also provide a means to allow ‘first flush’ flows through the dam if required. Details of the outlet structure will be confirmed during the detailed design phase.

Water pipeline

A water pipeline was constructed in Q4 2021 between the OHD and the mine site. The pipeline is constructed of polyethylene plastic and is buried to a sufficient depth to provide for protection from bushfire. The pipeline corridor is approximately six kilometres and traverses Vacant Crown Land within ML32074 and ML31726. The corridor is 10 m wide along an unsealed access track, which will be used for inspection and maintenance. The pipeline route is shown on Figure 1-4.

Raw Water Dam

A Raw Water Dam will be constructed adjacent to the process plant to store water pumped from the off-site water supply dams. The RWD will have a capacity of 60 ML and will be a turkey’s nest style structure. The dam will provide make-up water for the processing circuit, potable and non-potable supply to the mine facilities and will be equipped with a dust suppression stand-pipe.

See Appendix M Tailings Storage Facility and Water Dams (GHD 2021a), Appendix C – Detailed Design Drawings (12547525-C017 to C020) for all issues for construction RWD drawings.

4.8 Pre-strip and construction activities

The pre-strip and construction phase will occur during months one to five of the project schedule. The key activities are described in the sections below.

4.8.1 Land clearing

The mine footprint will be cleared at commencement of the current reporting period. Approximately 220 ha of land will be cleared on ML31726 to prepare for construction of the mine site. A six kilometre long by 10 m wide corridor (6 ha) of land will be cleared across ML31726 and ML32074 to establish the water pipeline construction corridor. Vegetation removal has been staged to limit clearing with the aim to mitigate ESC issues during wet season works.

A Vegetation Clearing Procedure (Appendix Q) was developed and implemented for clearing activities. Vegetation is bulldozed and pushed into windrows/stockpiles within cleared areas. Vegetation debris is either mulched or burnt as soon as practicable to minimise channelling and concentration of run-off or stockpiled for later use in progressive rehabilitation areas. The mine site falls within the Northern Fire Protection Zone and a Permit to Burn will be obtained prior to conducting any burns on the site.

Erosion and sediment control structures are installed prior to the commencement of the first wet season (2021 – 2022) and maintained throughout, in accordance with the primary ESCP, and the progressive ESCP developed for stage 1 construction (Appendix O).

4.8.2 Topsoil removal and storage

The top 20 cm of topsoil will be removed and stockpiled to the south of the WRD in the designated topsoil storage area. To facilitate development of the storage areas, additional cleared areas are temporarily used for topsoil stockpiling. Controls that will be implemented to maintain the structural integrity and seed bank viability in the stored soils are described in the ESCP and the Mine Closure Plan. These controls include minimising topsoil stockpile height to 1.5m and stabilising the external batter of the topsoil bund with hydro mulch, grass cover and jute matting. Subsoil will be stockpiled to 3m.

4.8.3 Borrow area development

Geotechnical investigation of the site undertaken by GHD (2021a) (refer section 5 of Appendix M) confirmed that most of the construction materials can be sourced from pit overburden material and/or in-situ materials within the project footprint. High quality rockfill will be sourced from existing borrow areas on ML32074 (subject to geotechnical testing) and sand filter material required for construction of the OHD wall raise will be imported from a commercial sand quarry.

Possible sources of rockfill material have been identified in previously disturbed areas on ML32074). However, it is likely the majority of suitable competent and benign material will be sourced from Grants pit and specialised material imported. Although not investigated with either a test pit or borehole, visual observations of an existing excavation, which has filled with water, expected to be an old quarry, appears to have competent rock. Subject to confirmation of material suitability, these areas may be developed as borrow areas.

Details of construction material requirements and sources are provided in Table 4-13.

Separate to the work undertaken by GHD, materials requirements for civil works have been estimated at 425,000 m³. 3.5 million cubic metres of waste material will be mined from the pit in the first five months of the project schedule. This volume of material is sufficient to meet the project materials requirements.

Table 4-13. Estimated construction materials requirements and sources

Works*	Material Description	Estimated Quantity (m³)	Material source
TSF	Zone 1 Low permeability earthfill core	61,207	Pit overburden material and potential borrow areas from inside the TSF footprint
	Zone 3 Weathered earth and rockfill	300,121	Pit overburden material and potential borrow areas from inside the TSF footprint
	Zone 4 High quality, screened rockfill for erosion protection and decant filter rock	22,471	Pit overburden if available, or previously disturbed local borrow areas close to OHD on ML32074
	Wearing course – Well graded gravel	2,420	Select zone 3 gravelly material sourced from project footprint in ML31726
Roads, drainage and pads*	Zone 1 Low permeability earthfill core	425,000	Pit overburden material
	Coarse, poorly graded gravels	25,500	Previously disturbed material from local borrow areas on EMP28051 or from Grants open pit
Mine Water Dam 1	Zone 1 Low permeability earthfill core	90,887	Won from cut for dam excavation on ML31726 or from open pit
	Zone 3 Weathered earth and rockfill	30,252	Won from cut for dam excavation on ML31726 or from open pit
	Zone 4 High quality, screened rockfill for erosion protection	9,247	Previously disturbed local borrow areas or from open pit
	Wearing course – Well graded gravel	1,201	Select zone 3 gravelly material sourced from project footprint in ML31726
Mine Water Dam 2	Zone 1 Low permeability earthfill core	36,189	Won from cut for dam excavation on ML31726 or from open pit
	Zone 3 Weathered earth and rockfill	5,921	Won from cut for dam excavation on ML31726 or from open pit
	Zone 4 High quality, screened rockfill	4,329	Previously disturbed local borrow areas or from open pit
	Wearing course – Well graded gravel	665	Select zone 3 gravelly material sourced from project footprint in ML31726
Raw Water Dam	Zone 1 Low permeability earthfill	59,692	Won from cut for dam excavation
	Liner – 2mm HDPE	13,173	Procured and imported to site
	Zone 3 Weathered earth and rockfill	3,160	Weathered material won from mine waste rock or dam excavation
	Zone 4 High quality, screened rockfill for erosion protection	1,578	High quality screened rockfill from mine waste rock or imported
	Wearing course – Well graded gravel	452	Select zone 3 gravelly material sourced from project footprint in ML31726
Mine Site (C5) Dam	Zone 1 Low permeability earthfill core	28,899	Won from cut for dam excavation
	Zone 3 Weathered earth and rockfill	1,964	Weathered material won from mine waste rock or dam excavation
	Zone 4 High quality, screened rockfill for erosion protection	3,109	High quality screened rockfill from mine waste rock

Works*	Material Description	Estimated Quantity (m ³)	Material source
	Wearing course – Well graded gravel	590	Select zone 3 gravelly material
OHD wall	Zone 1 Low permeability earthfill core	8,338	Won from the open pit
	Zone 1A General earth fill	61,354	Won from the Grants open pit
	Zone 2A Fine sand filter	8,595	Imported from an offsite quarry
	Zone 2B Coarse sand filter	357	Imported from an offsite quarry
	Zone 4 Fresh rockfill with minimal fines for erosion protection	9,093	Won from the Grants open pit
	Wearing coarse - well graded gravel material	1,800	Either won from the open pit or sourced locally from the OHD site

* Estimates prepared by GHD (2021a), excepting for roads/drainage/pad requirements prepared by others.

4.8.4 Construction staging

As overburden material is excavated from the pit shell, materials meeting the specifications for use in site construction will be sent to temporary stockpiles located close to each works area and/or directly to the WRD annulus.

Civil works, establishment of borrow areas, construction of the RWD and installation of the OHD pumping infrastructure and water pipeline, will all occur early in the project schedule to establish site access and a water supply for site amenities and dust suppression.

The TSF, dams and water storages will be constructed using civil earthworks equipment, to the specifications provided in GHD (2019). The TSF may incorporate construction with the mining fleet if considered feasible. MWD1 will be constructed prior to significant development of the pit, in order for the storage to be in place once groundwater inflows commence. The TSF and MWD2 will be constructed in conjunction with the first stage of pit development, prior to mining of ore and associated concentrate production.

The OHD wall raise and MSD will be constructed during 2022/2023.

4.9 Mining activities

4.9.1 Mining method

Drilling and blasting mining methods will be used to remove the overburden and ore. Blasting is scheduled to occur every two to four days. Two excavators will be utilised in backhoe mode to remove the overburden, then a single excavator will continue once the ore has been intercepted. The excavators will load material into 100 t class dump trucks, which will be used to transport mined material to the surface.

A section of the Cox Peninsula Road lies within the blast safety exclusion zone and therefore will need to be closed to traffic for short periods of time (~15 minutes). A Blast Management Plan (Appendix G) has been developed which includes a procedure for managing road closures. These procedures will be subject to separate review and approval by DIPL.

4.9.2 Life of mine schedule

Appendix L outlines the scheduled material movements each month over the life of mine.

4.9.3 Waste rock management

Waste rock characteristics are summarised in section 4.4.1. The waste rock geochemistry in the Grants open pit is largely NAF, producing circum-neutral pH leachate with low salinity and low metals concentrations. A portion of the weathered phyllite overburden material, mainly within the top 50 m of the pit, has potential for dispersion (erosion). There is some uncertainty in relation to the volumes of material with AMD/NMD potential that will be encountered in the deeper parts of the pit. The work undertaken to date indicates that materials with AMD/NMD potential are likely to comprise a relatively small proportion of the total waste rock volumes and are not restricted to any specific zone within the pit.

A Waste Rock Management Plan (WRMP) (Appendix K) was prepared prior to commencement of mining and will be subject to on-going review over the life of mine. The objective of the WRMP will be to ensure the effective characterisation, placement and configuration of waste rock within the WRD, to meet the closure objective, of a safe, stable, non-polluting and erosion resistant landform that supports self-sustaining native vegetation comparable to that of surrounding ecosystems, in perpetuity. The WRMP will address:

- Design criteria and QA/QC requirements for as constructed landforms.
- Operational management objectives linked to closure objectives for the WRD/TSF landform.
- Program for ongoing testing and classification of waste rock and rejects using static and kinetic test methods to increase confidence in waste characterisation.
- Site-specific classification criteria and management strategies for materials with dispersive characteristics and/or AMD/NMD potential.
- A materials balance and placement plan, subject to regular review, demonstrating how problematic waste materials will be managed over the remaining life of mine.
- Procedures for recording waste rock types, tonnages and placement in the evolving WRD landform.
- A sampling program to verify appropriate placement of problematic waste materials.
- A Trigger Action Response Plan including:
 - Performance indicators (triggers) for monitoring the performance of the WRD/TSF landform during construction.
 - Contingency management actions that will be implemented to ensure the WRD/TSF landform remains on a trajectory towards the closure criteria.
 - Monitoring and evaluation.

The overarching approach to waste rock management at the mine site is summarised below.

The WRD will be constructed by end dumping of waste materials as they are mined from the pit. On-going material sampling and analysis will be undertaken to determine waste rock physical and chemical characteristics prior to dumping. This approach will allow for selective placement and configuration of potentially problematic materials, and wherever possible, avoid the need for double handling. A waste rock sampling strategy has been incorporated into the WRMP as the primary source of information used to inform waste rock placement and management over the life of mine.

The base lift of the WRD and TSF basal liner will be constructed of in-situ material and/or weathered waste rock from the near surface zone of the pit, which will be compacted to form a sufficiently low permeability base. The base will be elevated above natural surface drainage lines. Material selection will be informed by geotechnical assessment and seepage modelling, to ensure design criteria are achieved.

The outer annulus of the WRD will be constructed from competent NAF waste rock materials mined over the first 12 months of the mining schedule. The materials characterisation work undertaken to date indicates that the weathered waste rock, which comprises the bulk of materials mined in the first 12 months, has negligible AMD/NMD potential but approximately one-third of the waste may have potential for dispersion (erosion). Waste rock to be placed on the outer surface of the WRD, where long-term resistance to erosion is required,

will be subject to geotechnical assessment prior to placement. Routine waste sampling and analysis will identify sodic and dispersive materials, which will then be selectively placed within the centre of the WRD.

Whilst the risk associated with AMD is low, the approach to waste rock management at the mine site will align with the Australian Government *Guidelines for preventing acid and metalliferous drainage* (DIIS 2016). Routine waste sampling and analysis will be used to identify PAF or potentially high solute load (NMD risk) waste materials. The risk of encountering these materials during the first 12 months of the mining schedule is negligible but increases after that as higher volumes of fresh waste are mined. Any PAF or NMD risk materials encountered during mining will be selectively placed towards the centre of the WRD. The materials will be encapsulated with benign (NAF) waste material, which based on the waste characterisation work undertaken to date, will be available either from the fresh waste rock inventory and/or from the weathered waste rock stockpiled in the WRD annulus.

The WRMP will include a monitoring program that involves continuous recording of the tonnages and physical and geochemical characteristics of different waste rock types and their locations in the evolving WRD. AMD data for both waste rock and tailings acquired as part of the ongoing mining operations will be imported into the waste block model, which will be regularly reviewed to ensure that the WRMP is able to accommodate any significant changes (positive or negative) to the site's AMD risk profile.

The Mine Closure Plan is workable based on the current site AMD risk profile. If additional operational characterisation indicates a change in risk-profile, this will trigger review of the Mine Closure Plan to re-assess the feasibility and long-term viability of the closure strategies proposed for the site. In the event that the volumes of PAF material encountered late in the mining schedule are significantly greater than anticipated and Lithium Developments (Grants NT) is unable to effectively manage these wastes by selective placement and encapsulation within the WRD, alternative treatment/disposal options will be developed in consultation with Department of Industry, Trade and Tourism and submitted as an MMP amendment.

4.9.4 Dewatering and off-site discharges

Volumes of groundwater and rainfall entering the mine pit were estimated using the groundwater and surface water models developed for the mine site. Figure 4-5 shows the expected total volumes per month over the life of mine.

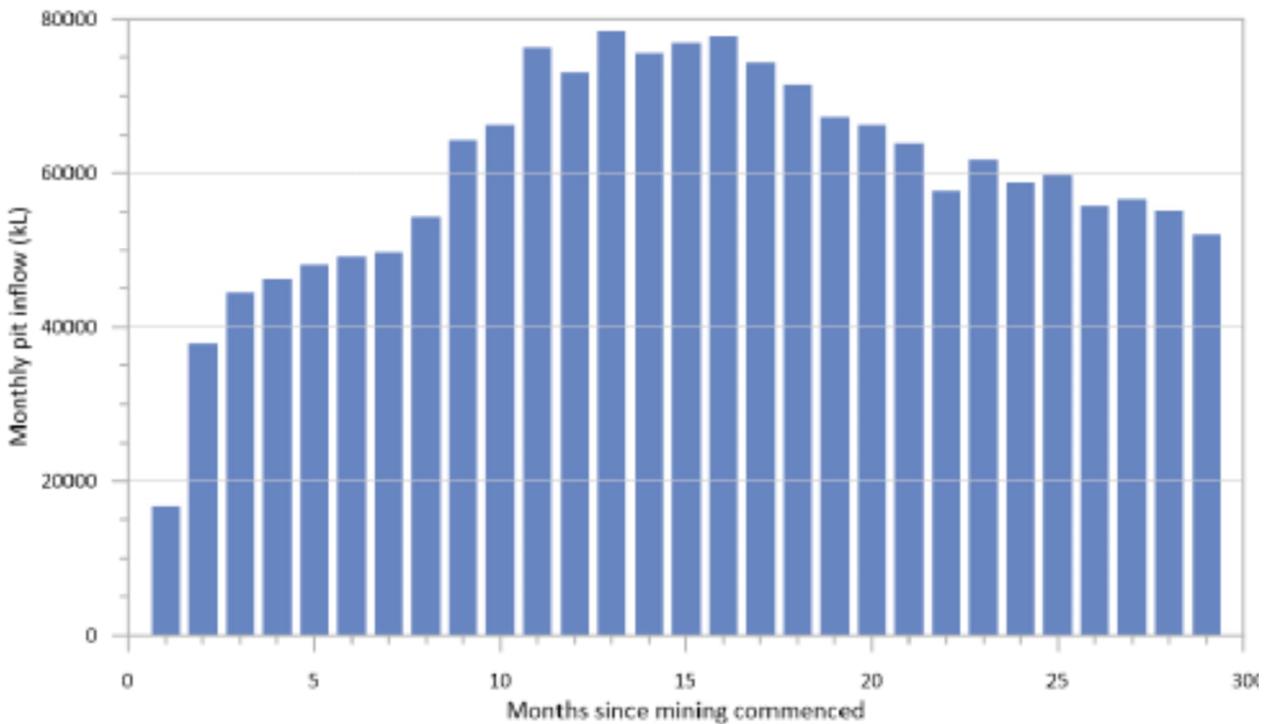


Figure 4-5. Predicted pit in-flows (kL/month) during life of mine

The pit will be dewatered to MWD 1 via sumps. MWD 1 has been designed with sufficient capacity to accept and store water for use in dust suppression. During the wet season months of November to March each year, there will be water excess to the mine requirements due to increased accumulation of rainfall/groundwater in the pit and reduced water demand for dust suppression. Controlled discharge from MWD 1 will be required.

The Water Management Plan provides details of the predicted discharge water volumes, quality and treatment strategies. Discharge water quality will be managed to meet the Water Quality Objectives for the Darwin Harbour Region (NRETAS 2010) at the ML boundary, except for where the background surface water concentrations are already exceeding the objective (i.e. NOx and aluminium). Where there is no objective (i.e. lithium and iron), site-specific objectives will be derived from the baseline surface water quality monitoring. Ecotoxicology studies will be undertaken to establish a site-specific trigger for lithium.

The discharge of water from the mine site will require a Waste Discharge Licence (WDL) under the *Water Act*. Lithium Developments (Grants NT) have obtained a WDL, licence number 248 (Appendix R), commencing 25 July 2022, valid for a period of 3 years. WDL248 allows controlled discharge of wastewater from MWD1 through authorised discharge point (DP1) and into an unnamed ephemeral stream that feeds into West Arm, Darwin Harbour in accordance with licence conditions.

4.9.5 Mining performance against previous MMP

Not applicable as no mining of ore occurred during the previous MMP reporting period.

4.10 Processing activities

4.10.1 Treatment and ore processing operations

There are two stages of ore processing proposed; crushing and primary screening, and DMS processing to produce a concentrate (5.5% Li₂O). The high-level process flow is summarised in Figure 4-6.

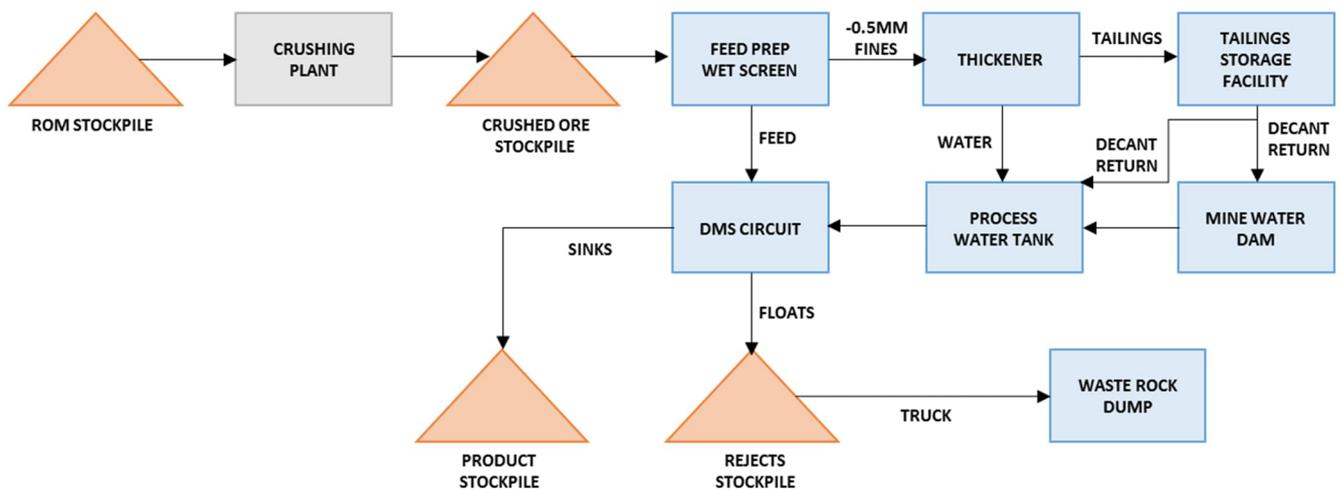


Figure 4-6. Processing block flow diagram

Throughput

The project is expected to process 1 Mtpa of ore through the crushing and screening plant.

Crushing and screening

The ROM material will be crushed and screened to achieve the required product specification. The ROM handling and primary crushing/screening component of the operation will be undertaken by mining contractor, Lucas Total Contract Solutions.

The crushing circuit will comprise a grizzly rock screen and hopper feeding a jaw crusher, followed by screening and two stage (secondary and tertiary) cone crushing. The crushed ore will be stockpiled on the ROM pad (crushed ore stockpile) prior to loading into feed preparation for the DMS processing circuit.

Dense media separation

DMS processing involves taking the crushed ore and separating the material into two streams – a ‘sink’ and ‘float’ – using a water-based circuit. The crushed ore product is wet screened to remove fines. The wet screening process uses vibration to allow material smaller than the screen aperture size to fall through (sent to tailings) and the larger material to be separated out as feedstock for the processing circuit.

The feedstock is mixed with a small quantity of dense medium slurry, which is a suspension of ferrosilicon and water, close to the density of the Spodumene. The material is then fed through the DMS system by conveyor belt and pumps into a cyclone and a series of panels and screens that separate the heavy particles (sinks) from the lighter particles (floats). The circuit produces a concentrated product stream, which is stockpiled adjacent to the ROM pad, and two separate waste streams – fines (tailings) and coarse rejects.

Tailings are pumped to a thickener where flocculant is added to separate the slurry into an underflow component (tailings approximately 50% solids) and overflow component of process water that is returned back to the processing circuit. The thickened tailings slurry is then pumped to the TSF.

Reagent and chemical requirements

The DMS process circuit is a water-based circuit that requires the addition of a ‘ferrosilicon’ heavy medium to achieve separation of the product. The tailings thickener will require addition of flocculant. The characteristics of these additives and potential environmental risks are considered below.

Ferrosilicon is an alloy of iron and silicon (FeSi) that is supplied under a range of product labels. A product/supplier is yet to be chosen; however, review of various Material Safety Data Sheets available for ferrosilicon products sold in Australia indicates that the material is not considered a Dangerous Good under the criteria of the *Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail*. The product is classified as a hazardous substance under *Work Health and Safety Regulations* and therefore has specific requirements for storage and handling for protection of workplace health and safety.

Ferrosilicon will be stored in bulk bags in a covered bulk storage area. Personal Protective Equipment is required to minimise exposure risk to workers associated with inhalation of dust. Under conditions of normal use, the product is not indicated to pose a risk to the environment. The product is insoluble and therefore not expected to leach from the TSF.

Flocculants used in tailings thickeners are inorganic polymer additives that facilitate the agglomeration of tailings particles. The use of flocculant as a tailings thickener poses limited risk to the aquatic environment downstream of the mine site because the thickener is a contained system and the thickened tailings are stored in the TSF.

Prior to commencement of mining, further tailings characterisation work will be undertaken to inform detailed design and operation of the TSF. This further work will include analysis for additives and associated breakdown components. These will also be added to the water quality monitoring program described in the Water Management Plan.

Water requirements

Operation of the DMS processing plant will require 950 kL of water per day. The primary water source for processing will be MWD 2, which will store TSF decant and, if applicable, stormwater drainage from pads and laydown areas. Make-up water will be supplied from the RWD, which is filled from the off-site OHD and MSD.

The DMS processing facility re-uses water at a number of points within the circuit. An operational efficiencies statement was prepared for the current water management system design and is provided in the mine site water balance component of the Water Management Plan. The statement indicates re-use efficiency of 39 %.

4.10.2 Tailings disposal

Tailings will be thickened at the process plant and pumped to the TSF through a tailings slurry pipeline. A perimeter loop deposition style will be used during the operation phase of the TSF, to increase tailings drying time, density and strength. Only one cell would be operational at any one time.

The residue is to be pumped as a slurry at 51% solids and discharged sub-aerially into the two cells from HDPE pipelines placed along the upstream edges of the embankment crests, through spigot offtakes at nominal 50 m centres. A rotational cycle of (nominally) two weeks deposition in each cell (50/50 split), placing an approximate 0.18 m thick layer of tailings evenly at each rotation, gives each cell a drying time of about one month at any one deposition point.

The TSF will feature centrally located decant water return structures, along with a system of underdrains, to facilitate drainage of the tailings and further promote consolidation of the material. The TSF decant water will be returned to the process plant for re-use. Wet season run-off will either be stored at the TSF or pumped to the external Mine Water Dam 2 (MWD2) for future process / evaporation.

A detailed Tailings Management Plan (Appendix S) has been developed to document all elements associated with the deposition and storage of tailings within the dam. The TMP is critical to the effective operation of the facility. The purpose of the TMP is to:

- Provide a management framework that allows for the TSF design intent to be met
- Uphold environmental standards in terms of water quality and discharge
- Provide a stable landform and maximise the tailings storage capacity of the facility
- Provide direction to allow the proposed closure strategy to be effectively realised.

4.10.3 Processing performance against previous MMP

Not applicable as no processing occurred during the previous MMP reporting period.

4.11 Transport

Product haulage to Darwin Port is anticipated to commence in Q4 2022 and will increase to 20,000 tonnes per month for the life of the mine.

Product will be hauled from the mine site to Darwin Port in quad road trains, operated by haulage contractor QUBE. The haul route is along Cox Peninsula Road, through to the Stuart Highway, Tiger Brennan Drive and then Berrimah Road (refer Figure 1-2). Total travel distance to the Port is 94.5 km.

Trucks will take three hours to make the round trip to the port and will operate for 24 hours per day, 7 days per week. The anticipated truck movements along the transport route are up to 10 return trips per day (or 20 passes along any given section of the route).

The transport route is along sealed roads owned by NT Government and managed by Department of Infrastructure, Planning and Logistics (DIPL). A 100 m long slip lane at the intersection of Cox Peninsula Road and the mine site access road to provide for safe entry/exit.

A Traffic Impact Statement (Appendix H) provides details of traffic increases, road signage requirements and management of road closures for blasting.

A Pavement Condition Report will be submitted to DIPL prior to commencement of haulage. Lithium Developments (Grants NT) commits to repairing any damage to the road pavement that is attributable to the project.

4.12 Exploration activities

Core exploration will be undertaking additional exploration and resource definition drilling within the ML(s) during the coming reporting period. Exploration activities within the underlying EL(s) are detailed in the Core Exploration MMP.

5 ENVIRONMENTAL MANAGEMENT

This section of the MMP provides details of how potential environmental impacts and risks will be identified and managed through the operational phase of Grants Lithium Project.

5.1 Environmental management structure

Lithium Developments (Grants NT) will maintain over-arching responsibility for complying with the MMP and the conditions of all approvals, permits and licences issued for the project. Lithium Developments (Grants NT) may delegate environmental responsibilities to key contractors i.e. processing or haulage contractors. All contractors will be required to provide their own management plans and procedures that align with this MMP and associated EMP's. Lithium Developments (Grants NT) will monitor contractor environmental performance and will maintain responsibility for reporting to external regulatory agencies.

The Grants Lithium Project organisation structure and responsibilities are outlined in section 1.2.

5.2 Environmental policy

An Environmental Policy has been established to communicate the company's commitment to understanding and managing environmental and social impacts and risks associated with its proposed activities. This policy will guide the development of the EMS, processes, plans and procedures for the Grants Lithium Project. A copy of the Environmental Policy is provided below.

CL-HSE-POL-005 Environmental Policy

Core Lithium is committed to ensuring a safe and healthy workplace for our employees and contractors whilst working towards minimising our potential impact on the environment.

Core Lithium will operate in compliance with all relevant environmental legislation and will strive use environmental best practices in all sections of its operations.

Our Environmental Stewardship culture will be based on:

- A Strong and sustained commitment to Environmental Management by all levels of management.
- Strategic and rigorous planning to achieve commitment at all levels.
- Having an environmentally sustainable aware culture, where responsibility is assigned and understood.
- Being an environmentally responsible neighbour in our community.
- Conserving natural resources by reusing and recycling:
- Using, in our operations, processes that do not adversely affect the environment.
- Ensuring the responsible use of energy throughout the organisation.
- Participating in efforts to improve environmental protection and understanding.
- Taking steps to improve environmental performance continually:
- Working with contractors who promote sound environmental practices; and
- Enhancing awareness among our employees, contractors, and users – educating and motivating them to act in an environmentally responsible manner.

This policy will be supported by appropriate Procedures and Trigger Action Response Plans, including a Sustainability and Community Management Standard. This Standard will mitigate and minimise Core Lithium's environmental impact wherever practicable.

Name: Blair Duncan
Position: Chief Operating Officer

Signature: 
Date: 14/02/2022

5.3 Environmental commitments

Lithium Developments (Grants NT) is committed to ongoing review of the environmental impacts and risks associated with the development and operation of Grants Lithium Project with the objective that all risks are identified, managed and subject to continuous review throughout the mining operation and post-closure. To achieve this objective Lithium Developments (Grants NT) has made a range of commitments through the EIS process and in this MMP. The NT EPA has also provided their recommendations, following completion of the EIA process, in relation to actions required to avoid significant or unacceptable environmental impacts and risks. The sections below document all commitments and recommendations, cross-reference the section in this MMP where addressed and provide a current assessment of performance against the commitment.

5.3.1 Commitments contained in the EIS and MMP

Table 5-1 provides a single list of commitments made through the EIS process and in this MMP.

Table 5-1. Environmental management commitments

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
Compliance	1	In the event that the proposal is amended to the extent that the environmental significance of impacts may increase, Lithium Developments (Grants NT) will refer the proposed changes to NT EPA.	EIS	N/A
	2	Lithium Developments (Grants NT) will apply for a mining authorisation pursuant to the <i>Mining Management Act</i> and will comply with all conditions of the authorisation.	EIS	Complete, Variation of Authorisation (VOA) 1021-01
	3	The Mining Management Plan submitted for authorisation will include an updated environmental risk assessment that re-assesses risks to environmental values associated with the final mine site design and operational plans.	EIS	Risks will be regularly reviewed, and management plans updated in accordance with the procedures described in Section 5 of this MMP.
	4	Lithium Developments (Grants NT) will implement all commitments made through the EIS process and obtain and comply with the conditions of all approvals, permits and licences required by the NT regulatory system.	EIS	Ongoing
	5	Lithium Developments (Grants NT) will prepare the following management plans referred to in the EIS to the satisfaction of the relevant regulatory agencies: Mining Management Plan, Traffic Management Plan, Emergency Response Plan, Mine Risk Management Plan and an Employee Code of Conduct.	EIS	MMP submitted 28 June 2019 includes <ul style="list-style-type: none"> • Journey Management Plan • Draft Emergency Response Plan The following management plans were submitted prior to commencement of operations; <ul style="list-style-type: none"> • Waste Rock/AMD Management Plan v1 November 2019

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
				<ul style="list-style-type: none"> Storage, Transport and Handling of Dangerous Goods Water Management Plan v4 June 2021 Stakeholder Engagement Plan June 2021 Grants Stage 1 Progressive ESCP July 2021 Grants Tailings Management Plan – Operations, Maintenance and Surveillance Manual (GHD2021d). Mine Closure Plan v3 January 2022 Rehabilitation Management Plan v1 January 2022
	6	Lithium Developments (Grants NT) will apply for permits to construct the dams pursuant to the Water Act as required under the recent legislative changes.	EIS	<p>No permit to alter waterway required under <i>the Water Act</i> for OHD raised wall.</p> <p>A surface water extraction licence (Licence number 8151018) has been granted under section 45 of the <i>Water Act</i>, commencing 1 December 2021, and expiring April 2025. The SWEL has a maximum water entitlement of 620 ML/yr with staging conditions.</p> <p>A permit to construct Mine Site (C5) Dam is proposed to be undertaken during 2022.</p>
	7	A wastewater works design approval will be obtained from Department of Health for the onsite wastewater (sewerage) management system.	EIS	<p>A site and soil evaluation (SSE) for Grants Project wastewater management system (WMS) was completed December 2021 and issues to the approved supplier of the WMS (Remote Water Treatment Services).</p> <p>The WMS complies with the NT <i>Building Act</i> 1993 and has been approved by the Building Advisory services (BAS). Installation will be undertaken in accordance with approved standards. The WMS will be installed within the next 6 months. Current septic generated onsite in temporary ablutions is pumped out and disposed of by a licenced waste contractor, VGT.</p>
Materials characterisation	8	Geotechnical testing and investigation of proposed construction and cover materials will be undertaken, to confirm material characteristics, treatment requirements and final landform designs.	EIS	Refer to Appendix M
	9	Geochemical classification and leachate testing of tailings will be undertaken from the next stage of the pilot plant, to confirm assumptions of negligible AMD risk. The results will be used to inform detailed TSF designs and preparation of a Tailings Management Plan.	EIS MMP Section 4.4.3	<p>Grants Tailings Management Plan – Operations, Maintenance and Surveillance (OMS) Manual, (GHD2021d), has been developed and submitted to DITT, January 2022 (see Appendix S).</p> <p>Testing is required specifically on tailings to verify low risk of AMD. This will occur on commencement of processing activities (planned future activity 2022/23).</p>
	10	On-going materials characterisation and monitoring of pit and decant water quality will be undertaken throughout operations to confirm assumptions of negligible AMD risk.	EIS MMP Section 4.9.3	Ongoing in accordance with Waste Rock/AMD Management Plan v1 November 2019 (Appendix K).

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
Dams and water storages	11	The TSF, dams and water storages will be designed, constructed and operated in accordance with ANCOLD guidelines. An Operations, Maintenance and Surveillance (OMS) Manual will be prepared for the TSF and water storage dams, in accordance with ANCOLD (2003), detailing specific requirements and frequency of dam monitoring.	EIS MMP Section 4.6.4 & 4.7.3	Grants Tailings Management Plan – Operations, Maintenance and Surveillance (OMS) Manual, (GHD 2021d), has been developed and submitted to DITT, January 2022 (Appendix S). Water Storage Facilities Operations, Maintenance and Surveillance Manual Report (GHD 2021c) final December 2021 (Appendix P) Tailings Storage Facility and Water Dams Detailed Design Report (GHD 2021a) final December 2021 (Appendix M) Observation Hill Dam Raise Detailed Design Report Final to be issued prior to construction during 2022.
Water management	12	Water supply dams will be sized based on the minimum requirements to provide a reliable and sustainable supply of water for the project.	EIS	Completed. Tailings Storage Facility and Water Dams Detailed Design Draft Report (GHD 2021a) final December 2021 Observation Hill Dam Raise Detailed Design Report Final to be issued prior to construction.
	13	The site water management system will be designed to maximise water efficiency and reuse so that extraction of make-up water from off-site dams is minimised.	EIS	Tailings Storage Facility and Water Dams Detailed Design Draft Report (GHD 2021a) final December 2021 Observation Hill Dam Raise Detailed Design Report Final to be issued prior to construction.
	14	The Water Management Plan (WMP) submitted with the EIS will be subject to independent review. The review findings and a summary of subsequent changes made to the plan will be made publically available with the supplementary EIS.	EIS	Complete. WMP subject to independent review during 2019. The WMP has been revised several times to address review comments as part of the EIS process, NT EPA recommendations and further updated prior to the commencement of works. A complete review history is provided in the document (Appendix N).
	15	Lithium Developments (Grants NT) will apply for a Waste Discharge Licence pursuant to the <i>Water Act</i> and will comply with all licence conditions.	EIS MMP WMP Section 11 & 12	Waste Discharge Licence obtained (Appendix R)
	16	Additional groundwater monitoring bores will be installed around the mine site in April 2019, as detailed in the WMP.	EIS MMP WMP Section 10	12 monitoring bores have been installed across the project area. Six of these bores were installed in May/June 2017 and a further six bores were installed in September 2020. Two of the 2017 bores (GWB06 and GWB10) were decommissioned during the September 2020 drilling program due to contamination and/or not meeting construction standards. GWB10 was replaced with GWB10b. Details of the bore locations are provided in the WMP.
	17	Baseline monitoring of surface water and groundwater will continue over the 2018-2019 wet season and trigger values will be updated in the Water Management Plan submitted with the MMP.	EIS MMP WMP Section 10	Completed. Water Management Plan v4 June 2021 revised to include all baseline monitoring data and site-specific guideline values derived.

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
	18	A licence to extract surface water from dams will be applied for as required under the <i>Water Act</i> .	EIS	A surface water extraction licence for OHD (Licence number 8151018) has been granted under section 45 of the Water Act, commencing 1 December 2021, and expiring April 2025. A SWEL application for the Mine Site (C5) Dam will be submitted following approval for a permit to construct or alter works under section 41 of the <i>Water Act</i> .
	19	An updated WMP will be submitted prior to commencement of operations incorporating baseline data from additional monitoring bores, revised assessments of discharge and pit lake water quality risks, operational monitoring requirements (based on detailed design) and a Trigger Action Response Plan (TARP) for managing water quality impacts and risks. The plan will address the requirements of NT EPA Recommendations 5, 7 and 9 as detailed in Table 5-2.	WMP Section 11 & 12	Water Management Plan v4 June 2021 revised and submitted prior to construction to include all baseline data, predicted pit water quality and discharge data. A standalone Active Discharge Management Procedure (LD-ENV-PRO-008) is currently in development and will be submitted once the WDL has been issued and prior to discharges occurring. The plan will include a TARP. A TARP is detailed in the TSF OMS manual (GHD 2021d) and WSF OHD OMS manual (GHD 2021c) (See Appendix S and Appendix P respectively).
Emissions	20	Lithium Developments (Grants NT) will maintain records to allow for calculation of Greenhouse Gas Emissions and will report emissions in accordance with the requirements of the <i>National Greenhouse and Energy Report Act</i> if the reporting trigger is exceeded.	EIS	Planned future activity. Assessment of emissions to be undertaken at the end first year of operations.
Road-use	21	Lithium Developments (Grants NT) will continue to engage with DIPL in relation to use and maintenance of the road and will apply for all requirements permits and approvals.	EIS	Commenced. Journey Management Plan and Blast Management Framework previously submitted with the previous MMP; document commitments made through EIS process. Plans will be finalised to the satisfaction of DIPL and Department of Industry, Trade and Tourism. All permits and approvals will be in place prior to commencement of blasting and haulage activities.
	22	Lithium Developments (Grants NT) will comply with all conditions imposed to ensure safety and minimise inconvenience to other road users.	EIS	Management plans will be updated to reflect conditions of approvals.
	23	Lithium Developments (Grants NT) will undertake a road condition survey prior to commencement of activities and submit to DIPL.	EIS	Planned future activity. To be completed immediately prior to commencement of road use by project traffic and reported to DIPL/Department of Industry, Trade and Tourism.
	24	Any damage caused by mine operations and transport vehicles is to be repaired at Lithium Developments (Grants NT)'s cost.	EIS	Commitment to be enacted as required and to satisfaction of DIPL.
	25	Haul trucks will be speed limited to 40km/hr through the school precinct (20km/hr below the signed speed limit).	EIS MMP Journey Mgmt Plan	Requirement specified in Journey Management Plan prepared by haulage contractor QUBE. Plan will be finalised prior to the commencement of haulage activities.

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
	26	Truck movements will be restricted past the school during drop-off and pick-up times - 7:45 to 8:45 am and 2:30 to 3:30pm.	EIS MMP Journey Mgmt Plan	Requirement specified in Journey Management Plan prepared by haulage contractor QUBE. Plan will be finalised prior to the commencement of haulage activities.
	27	Trucks will be fitted with an In-Vehicle Management System, which will result in automatic notification to QUBE headquarters if speed limits are exceeded around the school or anywhere along the haul route.	EIS MMP Journey Mgmt Plan	Requirement specified in Journey Management Plan prepared by haulage contractor QUBE. Plan will be finalised prior to the commencement of haulage activities.
	28	Road closure for blasting will be confined to approximately 15-minute windows two to four times per week.	EIS MMP Journey Mgmt Plan	Requirement specified in Journey Management Plan prepared by haulage contractor QUBE. Plan will be finalised prior to the commencement of haulage activities.
	29	Lithium Developments (Grants NT) will continue to take stakeholder advice in relation to road closure windows for blasting that will minimise impacts to road users. Nominal closure times will be 13:00pm to 13:15pm and 17:00 to 17:15pm.	EIS MMP Blast Mgmt Framework	Blast Management Plan finalised in consultation with key stakeholders prior to commencement of any blasting.
	30	Lithium Developments (Grants NT) will further develop and implement the Blast Management Framework submitted with the EIS.	EIS MMP Blast Mgmt Framework	Blast Management Framework finalised in consultation with key stakeholders prior to commencement of any blasting.
	31	A protocol will be put in place to allow for passage of emergency vehicles during road closures.	EIS MMP Blast Mgmt Framework	See Blast Management Plan (Appendix G). Road Closure Plans and procedures for passage of emergency vehicles will be to the satisfaction of DIPL and will be communicated to NTPFES as required by DIPL.
	32	An authorised traffic management company will be contracted to manage each road closure in accordance with DIPL requirements, including placement of signage and traffic controllers.	EIS MMP Blast Mgmt Framework	Planned future activity. Draft Blast Management Plan states this requirement. Refer page 12.
Flora and Fauna	33	The opportunity to reconfigure the site infrastructure to increase the separation distance from temporary pools that occur on the north-western boundary of the mine site, will be considered in the next design iteration.	EIS	Complete. Most recent update of design avoids temporary pools.
Sacred sites protection	34	Lithium Developments (Grants NT) will obtain an Authority Certificate under the <i>Aboriginal Sacred Sites Act</i> prior to commencing works on site and will comply with all conditions.	EIS MMP Section 3.3.1	An Authority Certificate covers ML31726, MNL16, EL29698 and EL30015ML32074. An Authority Certificate was amended in September 2019 to cover the proposed MSD inundation footprint.
	35	Lithium Developments (Grants NT) will continue to engage with stakeholders, in accordance with the procedures outlined in the Social Impact Management	EIS	Ongoing. Lithium Developments (Grants NT) will continue to meet with key stakeholders in accordance with the procedures outlined in the Social Impact Management Plan, to ensure that negative impacts

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
Community, local contracts and jobs		Plan, to ensure that negative impacts to the community are minimised and opportunities for employment and local contracts are maximised.		to the community are minimised and opportunities for employment and local contracts are maximised. A Stakeholder Engagement Plan was developed in June 2021 prior to commencement of works. The SIMP (2019) is currently in review and will be issued within Q2 2022.
	36	Lithium Developments (Grants NT) will publicise email and phone contact details for the community to contact the mine management team in the event of any issues or concerns. A complaints register and procedure will be established and maintained.	EIS	Lithium Developments (Grants NT) has established and publicised a dedicated community hotline number and email address contact for the Finniss Lithium Project prior to commencement of works. Lithium Developments (Grants NT) has implemented a grievance management procedure, including protocols, response times and an escalation flow chart. All enquiries are recorded in a database and a monthly report is prepared. Complaints are reported annually in the EMR to the Department of Industry, Trade and Tourism.
	37	All issues raised in the Social Impact Management Plan (SIMP) will be addressed in other appropriate management plans where relevant. The SIMP will be updated prior to commencement of works on site to reflect the details of other management plans.	EIS MMP SIMP	Ongoing. The following management plans have been prepared to address key community issues/concerns: <ul style="list-style-type: none"> • Blasting Management Framework • Journey Management Plan • Water Management Plan • Mine Closure Plan • Community Benefits Plan (refer Table 2-8 of this MMP). The SIMP (2019) is currently in review and will be issued within Q2 2022.
	38	Lithium Developments (Grants NT) will work with Indigenous employment and training providers to maximise Indigenous employment opportunities.	EIS MMP Section 2.2.7 SIMP	Commenced. Approach detailed in Community Benefits Plan (refer Table 2-8 of this MMP).
	39	Recruitment and procurement processes prioritise the local market. Lithium Developments (Grants NT) to work with business groups to identify local capacity and capabilities before packaging tenders. Good communication on opportunities and expected standards.	EIS MMP Section 2.2.7 SIMP	Commenced. Approach detailed in Community Benefits Plan (refer Table 2-8 of this MMP). Current (January 2022) statistics of local employment are: <ul style="list-style-type: none"> • The Lithium Developments Grants NT Operation permanent staff has employment of 85%+ local from the NT and Darwin area • Lithium Developments (Grants NT) business partners state 70%+ local employment (January 2022), this refers to personnel who are on the NT and Darwin area.
	40	Lithium Developments (Grants NT) will identify opportunities to invest in community development and support, infrastructure, sport and education and scholarships.	EIS MMP Section 2.2.7 SIMP	Planned future activity. Approach detailed in Community Benefits Plan (refer Table 2-8 of this MMP).

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
	41	Lithium Developments (Grants NT) will prepare policies for employees covering the behaviour of staff, contractors and sub-contractors to address all issues raised in the SIMP. This includes issues such as respecting all sacred and cultural sites, acceptable workplace practices and general standards of behaviour.	EIS MMP Section 2.2.7 SIMP	A Lithium Developments (Grants NT) Code of Conduct has been established prior to commencement of works. Site inductions are used to communicate expectations.
	42	Lithium Developments (Grants NT) will make relevant environmental monitoring results and reports available on its website, in accordance with DPIP's mining authorisation requirements.	EIS MMP Section 2.2.7 SIMP	Lithium Developments (Grants NT) will make relevant environmental monitoring results and reports available on its website, in accordance with mining authorisation 1021-01 requirements
	43	Lithium Developments (Grants NT) will maintain good communication and engagement with the community through the following: <ul style="list-style-type: none"> - community updates on the project, distributed by email to key stakeholders and placed on local community noticeboards - posting regular updates and community reports on a project page of the company's website - ongoing liaison with key stakeholders such as Berry Springs Primary School and the Berry Springs community - holding site visits/open days for the local community - conducting annual satisfaction surveys with key stakeholders - establishing and maintaining a well-publicised complaints hotline and email - open and honest communication of any incidents in breach of these commitments. 	EIS MMP Section 2.2.7 SIMP and Stakeholder Engagement Plan (2021)	Ongoing. Lithium Developments (Grants NT) will continue to engage with stakeholder groups and the community and provide updates and information as the project progresses in accordance with the Stakeholder Engagement Plan (2021) and SIMP.
Mine closure	44	Draft closure objectives identified in the Mine Closure Plan (including pit lake water quality objectives) will be finalised based on stakeholder feedback from the EIS and MMP process.	EIS MMP Mine Closure Plan	Ongoing. Draft objectives to be further refined in consultation with Department of Industry, Trade and Tourism and key stakeholders. NT Crown Lands (the land owner) was contacted; however, had no comment. The Mine Closure Plan was updated (v3 January 2022) and submitted for approval prior to commencement of operations. Closure objectives to be finalised in the updated Mine Closure Plan submitted at the end of year one of the mining operations.

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
	45	The Mine Closure Plan will be updated with final landform and drainage designs. The final designs will be informed by geotechnical test work to demonstrate long-term geotechnical stability of the final landforms. Final designs will be to the satisfaction of DPIR.	EIS MMP Section 8 Mine Closure Plan	Detailed Designs -TSF and Water Dams (GHD, 2021) Issues for construction September 2021 included in Appendix D of the Mine Closure Plan (v3 January 2022) All site layout detailed designs (GPA 2021) issued for construction Q4 2021 A further revision of the Mine Closure Plan will be submitted at the end of year one of the mining operations, incorporating final mine designs, revised closure objectives, outcomes of rehabilitation trials and addressing NT EPA recommendations from the EIS process.
	46	Further studies and monitoring will be undertaken to address uncertainties with respect to the long-term water quality and hydrological conditions of the pit lake post-closure.	EIS WMP Mine Closure Plan	Ongoing. Water Management Plan v4 June 2021 revised and submitted prior to construction, includes outcomes of further studies and monitoring to address uncertainties with respect to the long-term water quality and hydrological conditions of the pit lake post-closure. This includes outcomes of modelled pit inflows, predicted pit water quality, monitoring of pit water quality and groundwater bores and ecotoxicity assessment. Results of the long-term geochemical characterisation kinetic leach columns, currently being undertaken at BP33 will also provide an indicative seepage water quality from the Grants WRD post-closure. The Mine Closure Plan (v3 January 2022) outlines a post-closure pit lake monitoring program (section 10.2.1). Lithium Developments (Grants NT) are committed to refining the pit lake water quality monitoring program in response to the results of monitoring activities undertaken during operations. An external audit of the pit lake water quality monitoring program and model, by a suitably qualified and experienced auditor, will be submitted to DITT for approval prior to cessation of mining activities at the site. A further revision of the Mine Closure Plan will be submitted at the end of year one of the mining operations, providing updated predictions of pit lake water quality, over timeframes commensurate with the level of risk associated with increasing contaminant concentrations over time.
	47	The closure risk assessment will be reviewed and submitted with an updated Mine Closure Plan at the end of year one of the mining operations.	MMP Section 8	Planned future activity. To be completed in year one of the mining operations. Risks will be assessed with a greater level of certainty based on the final (as constructed) designs for each closure domain and the results of further analysis of potential future sources of environmental issues i.e. waste rock dump erosion rates, TSF seepage, pit lake water quality. The Mine Closure Plan includes a revised closure risk assessment (Appendix C of the MCP).

Aspect/Issue	Ref	Commitment	Source	Performance Against Commitment
	48	Rehabilitation trials will be undertaken during operations to determine soil treatments and supplementary planting requirements to maximise rehabilitation outcomes.	EIS MMP Mine Closure Plan	Planned future activity. To be completed in year one of the mining operations and reported in the updated Mine Closure Plan. Rehabilitation Management Plan (v1 January 2022) outlines a rehabilitation strategy that incorporates rehabilitation trials, soil preparation and supplementary planting requirements to maximise rehabilitation outcomes.
Early unexpected closure	49	In the event of early unexpected closure, Lithium Developments (Grants NT) will notify the Department of Industry, Trade and Tourism and will comply with directions to ensure the mine site is safe and stable.	EIS MMP Mine Closure Plan	Activity to be undertaken if required. Requirement specified in Mine Closure Plan.
Other	50	Lithium Developments (Grants NT) will establish a bushfire first response capacity on site and will obtain permits prior to any burns.	EIS	In progress. Lithium Developments (Grants NT) has developed an Emergency Response Plan that outlines details of emergency response team (ERT). The ERT will be first response to bushfires. Lithium Developments (Grants NT) has recruited two Emergency Service Officers (ESOs) and an ERT will be established during 2022. A Prescribed Burn Procedure (LD-ENV-PRO-003) has been developed for the Finnis Lithium Project and outlines permit requirements for prescribed burning activities.
	51	Lithium Developments (Grants NT) will endeavour to prevent the creation of mosquito breeding habitat by reducing the instances of shallow pooling water around the site. With regard to informing workers of the risks of biting mosquitos and bite prevention, information will be provided in site inductions, which will be completed by all staff and contractors.	EIS	Ongoing during site activities. Risks associated with mosquitos and bite prevention has been incorporated into the site induction. Site inspections include the assessment of water holding/pooling areas to ensure prevention of mosquito breeding habitat.

5.3.2 Recommendations resulting from formal environmental assessment

The Grants Lithium Project has undergone environmental impact assessment under the NT *Environmental Assessment Act* at the level of Environmental Impact Statement (EIS). The recommendations contained in the NT EPA Assessment Report 89 are documented in Table 5-2.

The table provides details of where the recommendation is addressed in this MMP, the 'status' of works undertaken to date and commitments to undertaking further work to address the recommendation. The wording of many of the recommendations relate to the content of approvals and decisions under the control of Department of Industry, Trade and Tourism, which is outside of the control of Lithium Developments (Grants NT).

Table 5-2. Recommendations from EIS assessment report

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
1	That the Proponent ensures that the Grants Lithium Project is implemented in accordance with all environmental commitments and safeguards: <ul style="list-style-type: none"> a) identified in the final Environmental Impact Statement for the Grants Lithium Project b) recommended in this Assessment Report 89 c) to the satisfaction of the relevant regulator The NT EPA considers that all safeguards and mitigation measures outlined in the EIS are binding commitments made by the Proponent.	All	1	All safeguards and mitigation measures from the EIS have been captured in the MMP.
2	That the Proponent provides written notice in advance to the Northern Territory Environment Protection Authority and the Responsible Minister if it alters the Grants Lithium Project and/or commitments, safeguards or mitigation measures in the Environmental Impact Statement in such a manner that the environmental significance of the action may have changed, in accordance with clause 14A of the Environmental Assessment Administrative Procedures.	NA	4	Requirement noted.
3	That approvals and decisions for the Proposal have conditions that, to the satisfaction of the relevant regulator, ensure all water supply pipeline and access track construction activities, including the removal of vegetation and subsequent rehabilitation, are conducted in a manner that does not cause a material change to the shape, volume, speed and flow direction of any waterway or cause an alteration to the stability of any bed or banks of a waterway.	ESCP (Appendix O)	NA	The pipeline and access track from the OHD crosses several minor drainages. Specific erosion and sediment controls including silt fencing, mitre drains and cross banks have been installed along the pipeline route, designed and constructed in accordance with the guidance provided in the Stage 1 Progressive ESCP. Lithium Developments (Grants NT) will investigate the feasibility of undertaking rehabilitation during the dry season of the erosion caused by historical earthworks at the pipeline floodplain crossing.

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
4	<p>The Proponent must ensure the design, construction and ongoing operation of water dams is in accordance with ANCOLD guidelines. Compliance with ANCOLD guidelines must be monitored and reported by an independent engineer with appropriate qualifications and experience. The appointment of the independent engineer should be endorsed by the relevant regulator. A report on compliance with the ANCOLD guidelines should be provided to the relevant regulator and placed on the websites of (as applicable) the Proponent, the Operator and the relevant regulator.</p>	<p>TSF and Water Dams Detailed Design Report (Appendix M) TSF OMS Manual (Appendix S) Water Storage Facilities OMS (Appendix P)</p>	11	<p>Final designs for TSF and dams prepared by GHD (2021) are in accordance with ANCOLD Guidelines. Surveillance requirements, frequency and instrumentation requirements (compliant with ANCOLD, 2003) are addressed in the design reports and OMS Manual</p> <p>Water Storage Facilities Operations, Maintenance and Surveillance Manual Report (GHD 2021c) final issued December 2021</p> <p>Detailed Designs -TSF and Water Dams (GHD, 2021) Issues for construction September 2021.</p> <p>Tailings Storage Facility and Water Dams Detailed Design Report (GHD 2021a) final issued December 2021</p> <p>Observation Hill Dam Raise Detailed Design Report Final to be issued prior to construction.</p> <p>Lithium Developments (Grants NT) has committed to making relevant monitoring results and reports publicly available in accordance with the mining authorisation.</p>
5	<p>That approvals and decisions for the Proposal have conditions that require the Proponent to update the Water Management Plan (WMP) to the satisfaction of the relevant regulator prior to mining.</p>	WMP (Appendix N)	19	<p>Complete.</p> <p>Water Management Plan v4 June 2021 revised and submitted prior to construction.</p>

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	<p>The Plan should:</p> <p>a) include a framework identifying the location, timing, methods and parameters for the collection of groundwater and surface water hydrology information - establish additional shallow groundwater monitoring sites near ephemeral drainage lines and creeks potentially impacted by groundwater drawdown and TSF seepage. The Water Resources Division, Department of Environment and Natural Resources, should be consulted in determining appropriate bore locations. Once sufficient monitoring data has been obtained, the adequacy of the location of each bore to meet its monitoring objective should be assessed. If the stated objective is not met, additional bores should be installed</p>	<p>WMP Section 11</p>	<p>15-19</p>	<p>Section 11 of the WMP provides details of the monitoring program. 12 monitoring bores have been installed across the project area. Six of these bores were installed in May/June 2017 and a further six bores were installed in September 2020. Two of the 2017 bores (GWB06 and GWB10) were decommissioned during the September 2020 drilling program due to contamination and/or not meeting construction standards. GWB10 was replaced with GWB10b. All existing monitoring bores used in baseline monitoring will be retained and monitored except for GWB01, which is located within the mine pit and has been decommissioned and GWB03, which will be decommissioned prior to establishment of the WRD/TSF. Water Management Plan v4 June 2021 revised and submitted prior to construction to incorporate all new monitoring information.</p>
	<p>b) establish comprehensive and robust groundwater and surface water hydrology baseline datasets capturing seasonal variability prior to mining</p>	<p>WMP Section 6 & 7</p>	<p>19</p>	<p>Baseline surface water sampling commenced in February 2017 and has been undertaken monthly whilst sites are flowing – generally December/January to March/April. Baseline groundwater quality monitoring has been undertaken for the project since June 2017. Baseline groundwater sampling commenced at six bores in June 2017 and sampling of a further six bores installed in September 2020. Two of the 2017 bores (GWB06 and GWB10) were decommissioned during the September 2020 drilling program, GWB10 was replaced with GWB10b. Water Management Plan v4 June 2021 revised and submitted prior to construction to incorporate all new monitoring information.</p>
	<p>c) incorporate measures to monitor impacts on surface water conditions (volumes, flows and quality) across the site and downstream of the site</p>	<p>WMP Section 11</p>	<p>19</p>	<p>Surface water hydrological conditions have been modelled and are summarised in Section 4 of the WMP. The results of which indicate a low risk of impacts to downstream flow regimes. Monitoring of surface water flows will occur where required to capture information on flow conditions for compliance with the (future) Waste Discharge Licence.</p>
	<p>d) incorporate measures to monitor and assess density driven outflow from the pit lake on surrounding groundwater quality</p>	<p>Mine Closure Plan Section 10.2.1</p>	<p>46</p>	<p>The Mine Closure Plan (Appendix T), includes details of a post-closure pit lake monitoring program. Groundwater seepage is expected to be relatively low as the aquifer has a low hydraulic conductivity. As such, both surcharge, through-flow and density-driven outflow is expected to be minimal. Furthermore, density-driven seepage is highly unlikely given the low TDS values that the pit lake is expected to reach; 210 µS/cm in 2090 (CloudGMS</p>

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
				2019). Refinement of the pit lake water balance predictions during operations will be used to validate modelling and confirm the suitability of the closure criteria establish for the pit lake water quality.
	e) actively and continually seek to improve knowledge of aquifers and groundwater tables, and surface water flows affected by the Proposal and incorporate these into the groundwater and surface water models at least biannually	WMP Section 10	19	Surface water and groundwater monitoring program detailed in the WMP. Water Management Plan (v4 June 2021) revised and submitted prior to construction to incorporate all new monitoring information.
	f) provide details on how water will be effectively managed during proposed operations, including minimising water consumption, maximising water reuse and minimising waste water	WMP Appendix A Water Balance	19	Details of water consumption and re-use are provided in the site water balance, which will be updated with final design and operational details prior to commencement of processing on site.
	g) report all water monitoring data with an assessment of the impacts on groundwater and surface water hydrology in a Water Management Report to be provided to the relevant regulator within six months of commencement of construction and on an agreed reporting period thereafter	WMP	19	Lithium Developments (Grants NT) will report all monitoring results to the NT Mines Department in accordance with the mining authorisation. The revised WMP submitted prior to commencement of operations, will include reporting requirements agreed with Department of Industry, Trade and Tourism. Reporting requirements will align with those required for annual MMP reporting and the reporting required for the WDL once established.
	h) report water use performance in relation to targets, and any change to targets in a Water Management Report to stakeholders be updated at least annually	WMP	19	Planned future activity. Water use targets to be established within the WMP prior to commencement of operations. Lithium Developments (Grants NT) will report all monitoring results to the NT Mines Department and publicly where relevant, in accordance with the mining authorisation.
	Public disclosure of the Water Management Plan and Water Management Report should be provided on the websites of (as applicable) the Proponent, the Operator and relevant regulatory authorities.	WMP	42	Lithium Developments (Grants NT) has committed to making relevant monitoring results and reports publicly available in accordance with the mining authorisation. All baseline studies and plans submitted with the previous MMP were made publicly available for comment through the EIS process.
6	That approvals and decisions for the Proposal have conditions that require the Proponent to develop an Acid and Metalliferous Drainage Management Plan to the satisfaction of the relevant regulator prior to mining that: a) is prepared in accordance with leading practice AMD management recommended in the Australian	Waste Rock/AMD Management Plan (Appendix K)	9 and 10	Waste Rock/AMD Management Plan (v1 November 2019) has been developed prior to commencement of mining. The Waste Rock/AMD Management Plan address validation of the AMD potential of mined materials, ongoing sampling and management actions for PAF materials/AMD if detected.

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	<p>Government guidelines for preventing acid and metalliferous drainage</p> <p>b) incorporates all commitments made by the Proponent in the Environmental Impact Statement for further materials characterisation, with methods, scope, frequency and guidelines to be confirmed with the relevant regulator</p> <p>c) includes further assessment of AMD potential of mined materials and processing wastes, and testing for a full suite of metals and metalloids, including those elements subject to historic and proposed mining in the area (e.g. lithium, tantalum and tin), to identify the contaminants of concern for regular testing and monitoring</p> <p>d) includes a program for ongoing testing and classification of waste rock and tailings (solids, leachates and decant water) to inform appropriate management strategies</p> <p>e) includes mechanisms for adaptive management of PAF materials and AMD, if detected, in accordance with the NT EPA Guidance on Adaptive Management (NT EPA 2018d)</p> <p>f) requires the Proponent to develop and implement an action plan to manage AMD, if detected, to the satisfaction of the relevant regulator</p> <p>g) includes identification and quantification of suitable capping/encapsulation material to meet the Closure Objectives.</p> <p>Results of all investigations are to be reported to the relevant regulator for assessment on an agreed regular basis. Where AMD is found in waste rock or tailings in significant quantities, such material is to be returned to the pit at the end of mining.</p>			<p>The plan is consistent with the Australian Government guidelines for: Preventing AMD and Mine Closure.</p> <p>Progressive sampling and analysis of waste materials will be undertaken in accordance with the GARD Guide.</p> <p>The Waste Rock/AMD Management Plan will be subject to ongoing review over the life of mine.</p> <p>The Trigger Action Response Plan (TARP) provided in the Waste Rock/AMD Management Plan provides details of the quantities of AMD that would trigger a requirement to return material to the pit.</p>
7	<p>That approvals and decisions for the Proposal have conditions that require the Proponent to:</p> <p>a) contain all mine-affected water within the mine site until monitoring and treatment indicates that controlled discharges, if necessary, can occur without adverse impacts</p>	<p>WMP Section 7.4 Discharges Section 10 Monitoring</p>	15-19	<p>A WDL application was submitted to DEPWS in October 2021 for and is yet to be finalised. An Active Discharge Management Procedure (LD-ENV-PRO-008) is in development to meet WDL conditions and water quality criteria prior to discharges occurring. Water Management Plan (v4 June 2021) includes developed site-specific guideline values. Baseline monitoring data and the results of ecotoxicity testing were used to derive these guideline values.</p>

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	<ul style="list-style-type: none"> b) apply for a Waste Discharge Licence under the Water Act 1992 should discharge occur from the mineral lease c) ensure that water quality meets discharge criteria as agreed through the Mining Management Plan, or the Waste Discharge Licence if one is required d) develop as part of the Water Management Plan seasonal, site-specific surface water quality trigger values (wet/dry seasons as a minimum) appropriate to maintain 95% level of protection of the receiving aquatic ecosystem e) undertake an assessment of the need for water treatment within water management and sediment dams, using water treatment trials. The assessment must clearly identify any water treatment additives required, their breakdown products and their potential to contaminate the environment. Polyacrylamide flocculants with more than 0.05% of the neuro-toxin acrylamide monomer should be avoided f) include any water treatment additives and their breakdown products, as determined in the above assessment, in the surface water monitoring program as part of the Water Management Plan g) demonstrate that discharge water quality can be effectively managed to ensure the activity does not adversely affect the receiving environment in terms of the declared beneficial uses and water quality objectives. 			<p>Baseline groundwater quality data was used to predict the discharge water quality characteristics to inform further assessment of treatment requirements. Baseline sampling indicates that groundwater de-watered from the pit may naturally contain elevated concentrations of Arsenic, Total Phosphorous, Iron and Lithium when compared to the surrounding surface water receiving environment.</p> <p>Water Management Plan (v4 June 2021) includes details of water treatment options and mine water discharge strategy options (section 12.1) and dilution factors that would be required to reduce those concentrations to meet the assessment criteria.</p>
8	That approvals and decisions for the Proposal have conditions that require the Proponent to:			
	a) include acceptable water quality requirements for any groundwater or mine affected water used for dust suppression	WMP	NA	Requirement addressed in the WMP. The quality of water used from MWD1 for dust suppression must meet the irrigation water quality trigger values as outlined in Chapter 4 Primary industries of the ANZECC (2000) guidelines.
	b) assess for and treat any soil contamination on the mine site consistent with the <i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> prior to mine closure	Mine Closure Plan	NA	Requirement addressed in Mine Closure Plan Table 8.6 and section 9.2.5.
9	That approvals and decisions for the Proposal have conditions that require the Proponent to include in the	WMP	19	The WMP provides a comprehensive assessment of potential impacts to water and addresses the most significant

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	Water Management Plan (referred to in Recommendation 5):			environmental risks associated with the proposed mining operation. Section 12 of the plan identify key knowledge gaps, plans to address those gaps and details of the proposed future updates to the WMP.
	a) investigation of a full suite of metals and metalloids in groundwater, including those subject to historic and proposed mining in the area (e.g. lithium, tantalum and tin), to establish a baseline for groundwater monitoring	WMP Section 10	NA	Complete
	b) a robust groundwater monitoring program that can quantify the extent and quality of any seepage from the proposed mine site	WMP Section 10	NA	The monitoring program in the WMP includes monthly monitoring at 12 groundwater bores. The program provides a robust quantification of groundwater impacts.
	c) appropriate trigger values based on robust pre-mining groundwater quality baseline data	WMP Section 10	19	Water Management Plan (v4 June 2021) updated prior to commencement of mining, provides site specific guideline values based on groundwater baseline data collected from 12 monitoring bores.
	d) an assessment of chemicals added during processing, including an assessment of their behaviour and breakdown products in tailings, and their potential to contaminate the environment	WMP	19	Planned future activity. Further assessment to be undertaken as part of processing plant trials. Results to be summarised in the WMP.
	e) inclusion of applicable processing chemicals and their breakdown products, as determined through the above assessment, in the groundwater monitoring program	WMP Section 11	19	Requirement for inclusion of potential contaminants of concern in the operational water quality monitoring program is noted in Section 11. Parameters to be included will be informed by the assessment referred to above.
	f) contingency measures in the event that trigger values are exceeded	WMP Section 10	19	For each key risk identified through the risk assessment process, Section 10 of the WMP includes targets and performance indicators (triggers) and contingency measures.
	g) a requirement that if monitoring confirms that seepage from the TSF is a potential source of contamination to groundwater and surface waterways after closure, the Proponent must install a low-permeability cover on the TSF to reduce rainfall infiltration rates into the landform or return the tailings to the pit void	WMP Section 9	19	As above
	h) a requirement for an independent external audit of the groundwater quality monitoring program by a suitably qualified and experienced auditor after two years of tailings deposition and then annually. The appointment of the auditor is to be endorsed by the relevant regulator and the auditor is to report to the relevant regulator	WMP	NA	Lithium Developments (Grants NT) will comply with requirements for independent review of documentation in accordance with the mining authorisation issued by the Department of Industry, Trade and Tourism.

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	i) a program for on-going monitoring and any necessary remedial action post-mining operations and closure to the time of relinquishment of the mineral lease	Mine Closure Plan	NA	The Mine Closure Plan (v3 January 2022), identifies closure monitoring and maintenance requirements. The post-closure monitoring program will be finalised prior to cessation of operations to reflect the updated risk profile for the site based on operational monitoring programs.
	All water quality monitoring data, trigger values, audit reports and an assessment of any impacts should be made publicly available in the Water Management Reports on the websites of (as applicable) the Proponent, the Operator and relevant regulatory authorities.	WMP	42	Lithium Developments (Grants NT) has committed to making relevant monitoring results and reports publicly available in accordance with the mining authorisation.
10	That approvals and decisions for the Proposal have conditions that require the Proponent to design all water holding structures with the potential to contain poor quality water to include a low permeability base	TSF and Dams Detailed Design Report (Appendix M)	NA	Detailed designs issued for construction for the TSF and MWD's prepared by GHD (2021a) include a low permeability foundation.
11	That approvals and decisions for the Proposal have conditions that require the Proponent to include in the Mine Closure Plan:	Mine Closure Plan	44-48	An updated Mine Closure Plan will be submitted at the end of year one of the mining operations.
	a) closure criteria that require pit lake water quality to meet site specific trigger values for surface water at 95% aquatic ecosystem level of protection (ANZG 2018)	Mine Closure Plan	44	As the pit lake will be filled by groundwater and modelling indicates the landform will act as a groundwater sink with no release to surface water, the 95% trigger values for surface water are unlikely to be appropriate or achievable. Appropriate risk-based closure criteria for the pit lake water quality will be established by the end of year one of the mining operations suitable for end land use, in consultation with NT Mines Department.
	b) a robust monitoring program designed to validate and update modelling and determine whether or not the trajectory for pit water quality indicates closure criteria for the final pit lake can be met	WMP	19 46	Water Management Plan (v4 June 2021) has been revised prior to the commencement of operations to include a robust monitoring program designed to validate and update modelling and determine whether or not the trajectory for pit water quality indicates closure criteria for the final pit lake can be met. Mine Closure Plan (v3 January 2022) includes pit lake post-closure monitoring. Refinement of the pit lake water balance predictions during operations will be used to validate modelling and confirm the suitability of the closure criteria establish for the pit lake water quality.
	c) an assessment of the impact of density driven outflow of pit lake water on surrounding groundwater quality if backfilling of the pit void is not undertaken	WMP	19 46	Planned future activity. The Mine Closure Plan (v3 January 2022), includes details of a post-closure pit lake monitoring program. Groundwater seepage is expected to be relatively low as the aquifer has a low hydraulic conductivity. As such, both surcharge, through-flow and density-driven outflow is expected

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
				to be minimal. Furthermore, density-driven seepage is highly unlikely given the low TDS values that the pit lake is expected to reach; 210 µS/cm in 2090 (CloudGMS 2019). Refinement of the pit lake water balance predictions during operations will be used to validate modelling and confirm the suitability of the closure criteria establish for the pit lake water quality.
	d) a contingency plan outlining trigger levels for actions, specific responses and mitigation measures, and consequences for rehabilitation and closure activities	Mine Closure Plan	44-48	A Rehabilitation Management Plan has been developed (see Appendix A of the MCP). The plan includes rehabilitation objectives, with performance criteria and corrective actions. The updated Mine Closure Plan submitted at the end of year one of the mining operations will include a Trigger Action Response Plan (TARP).
	e) a requirement for an independent external audit of the pit lake water quality monitoring program and model by a suitably qualified and experienced auditor prior to relinquishment. The appointment of the auditor is to be endorsed by the relevant regulator. The auditor is to assess if closure criteria can be met at closure and post-closure. The auditor is to report to the relevant regulator	Mine Closure Plan	NA	Lithium Developments (Grants NT) will comply with requirements for independent review of documentation in accordance with the mining authorisation 1021-01.
	The water quality monitoring program and reports should be made publicly available on the websites of (as applicable) the Proponent, the Operator and relevant regulatory authorities.	Mine Closure Plan / WMP	42	Lithium Developments (Grants NT) has committed to making relevant monitoring results and reports publicly available in accordance with the requirements of permits, licences and mining authorisation 1021-01.
12	<p>The design, construction, management and closure of the integrated waste rock dump/tailings storage facility should be overseen by an appropriately qualified and experienced independent technical expert to provide:</p> <p>a) objective and independent expert review to the relevant regulator:</p> <ol style="list-style-type: none"> i. on the suitability of the site selected for the integrated waste rock dump/tailings storage facility including review of alternative sites and assessment of comparative risks ii. on the adequacy of the waste rock dump/tailings storage facility design to ensure long-term containment of tailings/residues or leachate from the waste rock dump 	MMP Section 4.6.3 and 4.6.4 TSF and Dams Detailed Design Report	NA	<p>GHD has prepared the detailed designs of the integrated WRD/TSF.</p> <p>Lithium Developments (Grants NT) will comply with requirements for independent review of documentation in accordance with the current mining authorisation.</p> <p>Lithium Developments (Grants NT) has committed to making relevant reports publicly available in accordance with the mining authorisation 1021-01.</p>

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	<ul style="list-style-type: none"> iii. on the proposed performance monitoring program for the waste storages including potential seepage and leachates from the storage facilities iv. on decommissioning and final rehabilitation to minimise long-term risks and consequences to the environment, community, future land use and visual amenity from the waste storages b) regular inspections, auditing and reporting to the relevant regulator to ensure construction, management and closure is in accordance with the endorsed design and design objectives c) an independent assessment of the Proposal's management of tailings and residues, including performance monitoring results in an annual report to the relevant regulator and the Proponent d) an independent assessment of the quality assurance and quality control methods, procedures and tests used to verify that the technical specification is met in the course of construction e) assurance that the integrated waste rock dump/tailings storage facility, if left to remain as landforms in perpetuity, are constructed and rehabilitated to a suitable standard to achieve the Closure Objectives. f) The reports will be provided on the websites of (as applicable) the Proponent, the Operator and the relevant regulator. 			

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
13	<p>The Proponent should:</p> <ul style="list-style-type: none"> a) ensure the community is actively engaged in the decision-making process when determining blasting times, minimise the frequency and duration of any road closures, and use all reasonable efforts to restrict road closures to avoid peak traffic times to the satisfaction of the Department of Infrastructure, Planning and Logistics b) avoid blasting road closures on weekends, public holidays and peak traffic times c) implement best blasting practice to avoid impacts to public infrastructure and minimise the generation of dust, noise, vibration and fume emissions d) implement best blasting practice to avoid impacts to public infrastructure and minimise the generation of dust, noise, vibration and fume emissions e) operate a suitable system to enable members of the public to receive up to date information on the proposed blasting schedule and associated road closures f) prepare and implement a Blast Management Plan and a Road Closure Management Plan for review and approval by the Department of Infrastructure, Planning and Logistics g) conduct periodic reviews of Blast Management Plan to evaluate performance and identify corrective action, if required h) install road signage to notify road users of blasting activities to the satisfaction of Department of Infrastructure, Planning and Logistics i) ensure protocols are in place to allow for passage of emergency vehicles during road closures 	Blast Management Plan	28-32	<p>Requirements are addressed in the Blast Management Plan. The framework has been prior to commencement of blasting activities to the satisfaction of the Department of Industry, Trade and Tourism and DIPL.</p> <p>Lithium Developments (Grants NT) has developed a Stakeholder Engagement Plan (Appendix U) and remains committed to engaging with the community and DIPL in finalising its management practices.</p>
14	<p>The Proponent should restrict road train haulage past the Berry Springs Primary School to outside of the hours of 07:45am to 08:45am and 2:30pm to 3:30pm on school days unless otherwise approved in writing by the Department of Infrastructure, Planning and Logistics in consultation with Berry Springs Primary School</p>	Journey Management Plan	25-26	<p>Lithium Developments (Grants NT) has engaged closely with Berry Springs School and has made a commitment to this restriction. The Journey Management Plan prepared by QUBE references time and speed restrictions for travel past Berry Springs School.</p>

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
15	<p>The Proponent must:</p> <p>a) develop and implement a Community and Stakeholder Engagement Plan prior to commencement of construction providing for:</p> <ul style="list-style-type: none"> i. information on recruitment to maximise local employment opportunities and to manage impacts on demand for local workers ii. demonstration that Aboriginal people, and particularly the Belyuen community, are aware of opportunities for employment and participation, and potential risks associated with mine activities impacting traditional enjoyment of cultural activities in the area iii. publication of a community complaints telephone contact number and email to allow community members to contact the Proponent in the event of any issues or concerns iv. development and implementation of a complaints management procedure that requires complaints to be recorded, investigated and abatement measures to be carried out if required, for handling community complaints and grievances for the duration of the Proposal. Noise related complaints should be reported to the Department of Industry, Trade and Tourism v. ensuring the community is informed of planned blasting times well in advance vi. effective ongoing stakeholder engagement and consultation on agreed post-mining closure, rehabilitation, land uses and access 	<p>MMP Sections 2.2.4, 2.2.5, 2.2.6 & 2.2.7</p> <p>Stakeholder Engagement Plan (Appendix U)</p>	35	<p>Lithium Developments (Grants NT) has developed a Stakeholder Engagement Plan (June 2021) and has undertaken stakeholder engagement throughout the planning and commencement of operations phase to date.</p> <p>Lithium Developments (Grants NT) has committed to ongoing meetings with key stakeholders in accordance with the procedures outlined in the Social Impact Management Plan.</p>
	<p>The Proponent must:</p> <p>b) Update the Social Impact Management Plan (SIMP) prior to the commencement of construction for approval by the relevant regulator and then update it regularly during construction and operation. The Social Impact Management Plan is to be informed by details of the matters outlined in the Blast Management Plan, Road Closure Management Plan and Community and Stakeholder Engagement Management Plan listed above</p>	SIMP (Appendix V)	37	<p>The SIMP will be updated prior to commencement of operational activities including blasting, road closures and haulage of ore. The revision will reflect the outcomes of further assessment and engagement undertaken in finalising project design and operational details.</p>

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	The Proponent must: c) Publish a social impact management report prior to commencement of construction and then annually during operation of the Proposal. The report is to detail the effectiveness of the Social Impact Management Plan measures to manage the social impacts of the proposal. The Proponent is to make these reports publicly available on their website	SIMP	35	Lithium Developments (Grants NT) has ongoing stakeholder engagement commitments. The SIMP includes a commitment to reporting to the community and board on against social indicators in a simple format. The most appropriate format for reporting will be determined in consultation with stakeholders and Department of Industry, Trade and Tourism.
16	Closure of the Proposal should satisfy the following Closure Objectives for post-mining land use:	Mine Closure Plan (Appendix T)	44-48	The Mine Closure Plan and Rehabilitation Management Plan states these objectives and provides a works program for achieving them. Lithium Developments (Grants NT) has committed to finalising the plan to the satisfaction of Department of Industry, Trade and Tourism during the first year of mining operations.
	a) be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/non-contaminating and capable of sustaining an agreed post-mining land use			
	b) ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner			
	Unless the Proponent can demonstrate to the relevant regulator and the NT EPA that retaining the final pit void would allow the above Closure Objectives to be achieved, the pit must be backfilled before relinquishment of the mineral lease. Should expansion of mining in the region, by this or other proponents, be approved in the future then backfilling pits with suitable mine waste materials should be mandated by government	Mine Closure Plan	44-48	The materials characterisation work, hydrological and groundwater modelling undertaken to date indicate the closure objectives can be achieved, whilst retaining the pit as a pit lake on closure. The requirement for data and model validation and addressing information gaps in relation to longer term water quality is acknowledged. These gaps will be addressed to some extent in the updated Mine Closure Plan submitted at the end of year one of the mining operations, with further validation occurring over the life of mine.
17	The Mine Closure Plan should be finalised and approved by the DPIR with advice from the NT EPA prior to mining commencing. The final Mine Closure Plan must: a) meet the Closure Objectives b) be of a standard equivalent to or better than the minimum standard specified in the Western Australian Guidelines for Preparing Mine Closure Plans (DMP & EPA 2015) and include a system of quality assurance/quality control c) address decommissioning (including full removal) of the Mine Site Dam at the end of the 3 to 4 year life of mine, and rehabilitation and revegetation of the Mine Site Dam footprint to a condition similar to its pre-construction condition, to protect hydrological process and ecological values. A plan for decommissioning the	Mine Closure Plan	44-48	The Mine Closure Plan was updated and submitted January 2022 for approval prior to the commencement of operations. The MCP will be finalised over the first year of mining operations, taking into account the final mine design and operations plan, negotiated closure objectives, operational water quality and materials characterisation datasets and the results of rehabilitation trials.

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	<p>Mine Site Dam is to be developed as part of the Mine Closure Plan, including management of sedimentation, rehabilitation and revegetation.</p> <p>d) address all aspects of rehabilitation and mine closure, including post- mining land use and rehabilitation objectives as agreed with stakeholders, landform designs, schedules for progressive rehabilitation, completion criteria and monitoring of rehabilitation success</p> <p>e) include site-specific closure criteria taking into account external threats, physical conditions of the site, species composition, structural diversity and ecosystem functionality of the revegetation, external exchanges and landscape integrity, and an overall condition of the final landform and rehabilitated ecosystems that is similar to the pre-mining condition</p> <p>f) manage declared weeds and exotic plants with high fuel loads until closure criteria are met, consider weed status and fire resistance of revegetated areas in closure criteria and manage fire until the majority of the woody revegetation is likely to survive the typical fire regime for the region</p> <p>g) include plans and a schedule for post-construction progressive rehabilitation of all areas of the water pipeline corridor and any other disturbed areas that would no longer be required</p> <p>h) include details of the rehabilitation trials and investigations that would inform appropriate landform covers and target ecosystems for all areas to be rehabilitated, including waste landforms and disturbed areas on rises, drainage systems and alluvial plains. The Mine Closure Plan should be updated in consideration of trial results when available</p> <p>i) provide for ongoing monitoring and maintenance of the site post-mining, in accordance with an approved monitoring and maintenance program that includes a trajectory to achieving closure criteria, until closure criteria are achieved and the site has been relinquished</p> <p>j) include details of reporting requirements to the relevant regulator on the performance of progressive</p>			

Number	Recommendation	MMP Section	Commitment # from Table 25	Status
	<p>rehabilitation works to inform decision-making to ensure successful post-mining rehabilitation</p> <p>k) include provisions for independent external audits by suitably qualified and experienced auditors professionals of the development and implementation of the plan at least annually following commencement of operations, at closure and prior to relinquishment of the mineral lease</p> <p>l) include investigation of the long-term settling process of tailings and waste rock to inform construction of appropriate landform covers</p> <p>m) require independent periodic external audits by suitably qualified and experienced auditors of any pit backfilling activities including the backfill design, geotechnical information, placement, compaction, drainage and settlement of material layers and placement of any PAF material below the minimum lowest expected groundwater level.</p>			

5.4 Environmental training and induction

All new site personnel, contractors, and unaccompanied visitors will attend a site induction program, which will include an environmental awareness component. The induction will include an explanation environmental policy and requirements of management plans, including this MMP. Each person will be made aware of and have an understanding of their obligations and duties, and all personnel will receive training of a type and level of detail that is appropriate for the environmental aspects of their role. Inductions will include the health, safety, environment and community risks and management requirements associated with the project and the project area. Induction and training activities will be reviewed regularly to ensure they contain the most up-to-date information and procedures.

Pre-start meetings each day will be used to communicate current and emerging environmental issues at the site and ensure that personnel maintain awareness of how these must be managed, monitored and reported.

Scheduled regular toolbox meetings will be used to provide more detailed training on specific environmental aspects, such as storage and handling of hazardous substances, dust control, water-use efficiency, incident response and reporting.

Personnel requiring job or task-specific environmental training are identified below:

- Land clearing, pipeline and civil works contractors.
- Personnel responsible for management of water storages, water treatment and discharges.
- Personnel responsible for monitoring and sampling of waste rock characteristics and appropriate placement within the WRD.
- Personnel with environmental compliance monitoring and reporting obligations.

Records of all training will be maintained in accordance with the site EMS and available for inspection by Department of Industry, Trade and Tourism staff when required.

5.5 Environmental emergency preparedness and response

Environmental emergency preparedness and response will be managed in accordance with the site Emergency Response Plan (Appendix W). The plan will be updated with relevant operational controls and contacts prior to commencement of each phase of work at the site. The plan will be subject to regular review and update to align with the activities occurring at the site at the time, for example, during the site clearing phase, the emergency response plan will focus on risks associated with starting bushfires, spill clean-up etc. and responding to these emergencies prior to a full response capability being present on the site.

5.6 Implementation, monitoring and review

5.6.1 Identification of environmental aspects and impacts

A 'whole-of-project impact analysis and risk assessment' has been undertaken for the construction/operations phase and closure phase. Each project component (aspect) that could be a source of environmental impact during the construction/operations phase was identified. For the closure phase, the closure domains in the Mine Closure Plan were used as aspects. The list of project aspects adopted to assess the impacts and risks across each phase is provided in Table 5-3.

Table 5-3. List of project aspects used in impact and risk assessment

Construction and operation aspects	Closure aspects (domains)
Site clearing and preparation	All domains
Construction of mine site infrastructure	All domains
Water supply and use	Water storages and drainage network
Mining and ore processing	Pit void, ROM pad and stockpiles, WRD
Waste rock, rejects and tailings disposal	WRD and TSF
Haulage of ore to Darwin Port	Support infrastructure
Storage and handling of hazardous materials	Support infrastructure
Non-ore waste management	All domains
Transport of equipment and workforce to/from site	Support infrastructure
Power generation and use	Support infrastructure
Workforce	-

5.6.2 Risk assessment

For each project component, events/incidents that could cause impacts to environmental values (receptors) were identified. Potential direct and indirect impacts were then identified by considering cause and effect pathways for impacts to each environmental factor. The severity of each potential impact was assessed using the following criteria:

- Scale (extent)
- Intensity
- Duration and frequency.

Categories used to rate the severity of impacts are shown in Table 5-4. Impact identification and analysis was informed by the project details provided in the MMP and the various baseline studies undertaken at the site.

Table 5-4. Categories used to assess the severity of potential impacts

More Severe → Less Severe			
Scale			
Widespread Impact occurs across the broader Cox Peninsula region and/or extends to the marine waters of West Arm or Bynoe Harbour.	Regional Impact occurs over a larger area than the Mineral Lease/s and/or extends to the catchment outlets at West Arm or Charlotte River.	Localised Impact is confined within the boundaries of Mineral Lease/s or in the ephemeral watercourses downstream.	Limited Impact occurs only within the direct disturbance footprint or in the short-section of the ephemeral watercourse between the mine site and sub-catchment outlet.
Intensity			
High Impact alters the integrity of environmental values.	Moderate Impact compromises the integrity of environmental values.	Low Impact alters the quality, abundance or distribution of environmental values without compromising their ecological integrity.	Very Low Impact does not noticeably alter the quality, distribution or abundance of environmental values.
Timing, duration and frequency			
Permanent Impact that is permanent; values will never recover.	Long-term Impact that is felt for many years post-closure.	Medium-term Impact that is felt during operations and for some months post-closure.	Short-term Impact that is felt during the mining operations phase only.

The principles of qualitative risk management described in *AS/NZS 31000:2009 Risk Management – Principles and Guidelines* were used to set-up a framework for assessing which environmental impacts are potentially significant. The environmental risk assessment methodology that has been applied in this MMP is described below. Social impacts and opportunities were assessed separately to environmental impacts because they require slightly different assessment criteria that incorporate community/stakeholder perceptions and also provide for the assessment of opportunities. The approach and methods used to assess social impacts and opportunities are detailed in.

For each potential environmental impact identified by the project team, the risk assessment considered the likelihood of the impact occurring and then the worst-possible consequence to the NT EPA's defined environmental objectives. The consequence assessment was informed both by the outcomes of the impact severity analysis described in the previous section, and the importance/sensitivity of environmental values. The likelihood and consequence categories adopted in the environmental risk assessment are provided in Table 5-4 and Table 5-5. The likelihood and consequence ratings were combined to derive an overall risk rating using the matrix in Table 5-6.

Inherent risk

For each potential impact, an *inherent risk rating* was assigned by ranking the likelihood and consequence of the impact in the absence of any specific mitigation or management (i.e. it is a worst-case scenario). The inherent risk rating considered the project location and design, existing environmental conditions, impact sources and pathways, and the presence/absence of important and/or sensitive values and receptors.

Risk evaluation

Each inherent risk rating was evaluated with reference to the risk level and target action matrix in Table 5-8 to determine the level of mitigation and management attention required. Generally, the higher the inherent risk

rating, the less tolerable/acceptable the risk is likely to be to stakeholders and regulators, and the greater the requirement for avoidance, mitigation and management.

Residual risk

Once all practicable mitigation and management measures were defined, each impact was re-assessed to assign a *residual risk rating*. The residual rating assigned to each impact reflects the level of risk that the project poses to the environment (assuming effective implementation of the mitigation and management measures).

Level of certainty

For each potential impact, any information gaps/uncertainties that preclude reliable assessment of risks, as well as any uncertainty about the effectiveness of proposed controls were identified. Each risk rating was assigned a level of certainty using the categories in Table 5-5.

Table 5-5. Likelihood categories adopted in risk assessment

Likelihood category	Description
Almost certain	The event/impact will occur or is expected to occur. The impact occurs regularly in association with similar projects and/or in similar environments.
Likely	The impact will probably occur in most circumstance but there is some uncertainty about the likelihood. The impact has occurred on more than one occasion in association with similar projects and/or in similar environments.
Possible	The impact could occur in some circumstances. The impact has occurred infrequently on similar projects and/or in similar environments.
Unlikely	The impact is not expected to occur. The impact occurs very infrequently on similar projects and/or in similar environments.
Rare	The impact is very unlikely to occur. The impact has not occurred on similar projects and/or in similar environments.

Table 5-6. Consequence categories adopted in risk assessment

Consequence or severity of Impacts	Score	Terrestrial Flora and Fauna	Terrestrial Environmental Quality	Inland Water Environmental Quality	Hydrological processes	Social, Economic and Cultural Surrounds	Community Health and Safety
<p>Severe A Severe impact has two or more of the following characteristics:</p> <p>Widespread = Impact occurs across the broader Cox Peninsula region and/or extends to the marine waters of West Arm or Bynoe Harbour.</p> <p>High Intensity = Impact alters the integrity of environmental values.</p> <p>Permanent = Impact is permanent - values will never recover.</p>	5	Widespread impacts to terrestrial flora and fauna that permanently alter biodiversity and/or ecological integrity.	Widespread soil disturbance, erosion or contamination that irreversibly alters the integrity of environmental values that rely on good soil quality.	Permanent major exceedance of water quality criteria for beneficial uses in the marine receiving waters of West Arm or Bynoe Harbour.	<p>Catchment wide reduction in surface water flow volumes and/or timing of flows/discharges that permanently alters the ecological health, land-uses and/or amenity.</p> <p>Drawdown of groundwater in a regional scale aquifer that permanently alters ecological health, land-uses and/or amenity.</p>	<p>Permanent impact that is felt by the majority of the regional population.</p> <p>Unauthorised destruction of Aboriginal Sacred Sites and/or sites of national heritage significance.</p>	<p>One or more fatalities.</p> <p>More than 1 people injured with permanent disabilities.</p>
<p>Major A Major impact has two or more of the following characteristics:</p> <p>Regional = Impact occurs over a larger area than the Mineral Lease/s and/or extends to the catchment outlets to West Arm or Charlotte River.</p> <p>Moderate to High Intensity = Impact compromises the integrity of environmental values.</p> <p>Long-term = Impact that is felt for many years post-closure.</p>	4	Regional scale impacts to terrestrial flora and fauna that compromise biodiversity and/or ecological integrity for many years post-closure.	Regional scale soil disturbance, erosion or contamination that compromises environmental values that rely on good soil quality.	Major exceedance of water quality criteria for beneficial uses at the catchment outlets to West Arm or Charlotte River, that continues for many years post-closure.	<p>Reduction in surface water flow volumes, groundwater levels and/or timing of flows/discharges that compromises ecological health, land-uses and/or amenity for many years post-closure.</p> <p>Drawdown of groundwater in a regional scale aquifer that compromises ecological health, land-uses and/or amenity for many years post-closure.</p>	<p>Long-term impact that is felt by some of the regional population. Impact is felt for many years post-closure.</p> <p>Unauthorised damage/desecration of Aboriginal Sacred Sites and/or sites of regional heritage significance such that site integrity is lost.</p>	<p>No fatalities.</p> <p>One injury with permanent disability.</p> <p>More than 10 injuries requiring hospitalisation.</p>
<p>Moderate A Moderate impact has two or more of the following characteristics:</p> <p>Localised = Impact to environmental values within boundaries of Mineral Lease/s or in the ephemeral watercourses downstream of the sub-catchment outlet.</p> <p>Low Intensity = Impact alters the quality, abundance or distribution of environmental values without compromising ecological integrity.</p> <p>Medium term = Impact that is felt during operations and for some months post-closure.</p>	3	Localised impact to flora and fauna that alters the quality, abundance or distribution but with no measurable impact to biodiversity and/or ecological integrity.	Localised soil disturbance, erosion or contamination that alters soil characteristics but with no measurable impact to environmental values that rely on good soil quality.	Minor sustained exceedances of water quality criteria for beneficial uses in the ephemeral water courses downstream, that occurs throughout operations but ceases within months post-closure.	<p>Localised reduction in surface water flow volumes, and/or timing of flows/discharges with no impact on ecological health, land-uses and/or amenity.</p> <p>Localised drawdown of groundwater throughout operations that recovers rapidly post-closure.</p>	<p>Medium term impact that is felt by a small number of people during mining operations. Impact ceases within months post-closure.</p> <p>Unauthorised entry to a Restricted Works established for protection of Aboriginal Sacred Sites but with no physical impact to the site.</p> <p>Unauthorised damage to protected archaeological heritage sites assigned a Moderate level of significance such that site integrity is lost.</p>	<p>No fatalities.</p> <p>No permanent disability.</p> <p>5-10 injuries requiring hospitalisation.</p>
<p>Minor A Minor impact has two or more of the following characteristics:</p> <p>Limited = Impact occurs within the immediate disturbance footprint only or in the short-section of ephemeral watercourse between the mine site and sub-catchment outlet</p> <p>Very Low Intensity = Impact does not noticeably alter the quality, distribution or abundance of environmental values.</p> <p>Short-term = Impact that is felt during the mining operations phase only.</p>	2	Limited impact to flora and fauna that does not noticeably alter environmental values.	Short-term and/or limited soil disturbance, erosion or contamination that is reversible without significant remedial works.	Minor temporary exceedances of water quality criteria for beneficial uses at the mine site discharge points and immediate sub-catchment area.	<p>Limited reduction in surface water flow volumes, groundwater levels and/or timing of flows/discharges in the immediate sub-catchment area with no impact on ecological health, land-uses and/or amenity.</p> <p>Limited drawdown of groundwater throughout operations that recovers rapidly once operations cease.</p>	<p>Short-term disruption/ nuisance that is felt by a small number of people. Impact is felt during the mining operations phase only and ceases immediately.</p> <p>Unauthorised damage to protected archaeological heritage sites assigned a Low level of significance.</p>	<p>No fatalities.</p> <p>No permanent disability.</p> <p>Less than 5 injuries requiring hospitalisation.</p>
<p>Insignificant</p> <p>No noticeable/measurable impact to values</p>	1	No measurable impact to terrestrial flora and fauna	No measurable soil disturbance, erosion or contamination	No measurable exceedance of pre-development water quality conditions.	No measurable change to hydrological regimes	<p>No noticeable impact to stakeholder and/or community values.</p> <p>No impact to Aboriginal Sacred Sites and/or heritage sites.</p>	<p>No fatalities.</p> <p>No permanent disability.</p> <p>No injuries requiring hospitalisation.</p>

Table 5-7. Risk matrix adopted in risk assessment

			CONSEQUENCE				
			1	2	3	4	5
			Insignificant	Minor	Moderate	Major	Severe
LIKELIHOOD	5	Almost Certain	Medium	Medium	High	Very High	Very High
	4	Likely	Medium	Medium	High	Very High	Very High
	3	Possible	Low	Medium	Medium	High	Very High
	2	Unlikely	Low	Low	Medium	Medium	High
	1	Rare	Low	Low	Low	Medium	High

Table 5-8. Risk level and target action matrix used to evaluate risks

Risk level	Target action
Very High	Risk is unacceptable. Specific action plans required to reduce risk to an acceptable level. Director/CEO level management attention required.
High	Risk is generally unacceptable without action. Specific action plans required to reduce risk to 'as low as reasonably practicable' (ALARP). Senior management attention required.
Medium	Risk is generally acceptable. Proactive action is required to reduce risk to ALARP. Requires routine monitoring and adaptive management in accordance with Environmental Management Plan (EMP). Line management attention is required.
Low	Risk is acceptable. Management by routine policies and procedures.

Table 5-9. Level of certainty categories used to evaluate reliability of risk assessment

Level of certainty	Description
Low	Risk rating is based on professional opinion. Limitations in baseline data/info mean some assumptions are made, which introduces a level of uncertainty. Effectiveness of proposed controls and/or the likelihood of implementation cannot be reliably assessed at this point in time. A substantial amount of further work is required to adequately assess and treat risk prior to commencement of mining.
Medium	Risk rating is based on similar conditions being observed previously on a similar project and/or in a similar environment. Baseline data/information has some gaps that are considered minor, and the general consensus is that the results of further work are unlikely to significantly alter the risk rating. Proposed controls are proven to be effective; however, some further work is required to provide details of implementation prior to commencement of mining.
High	Risk rating is based on testing, modelling or experiments. Baseline data/info is complete and an appropriate level of analysis has been undertaken. Proposed controls were recommended by technical studies and are well developed. Minimal further work is required to adequately assess treat risk prior to commencement of mining.

Mitigation and management

Measures to avoid, mitigate and manage impacts were identified, focussing on impacts with an inherent risk level of medium or above. Impacts with a Low level of inherent risk were considered for further mitigation where routine controls would further contribute to risk minimisation. Suitable controls were generally identified with reference to mining best-practice guidelines, as well as from the past experience of the mining engineers and other technical experts engaged to work on the project.

Measures were applied with the goal of reducing all risks to 'as low as reasonably practicable' (ALARP). ALARP is considered to be the point at which the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained.

Risk Registers

The risk registers compiled for each project phase document for each potential impact:

- Assumptions made in assessing the risk
- Inherent (unmitigated) risk
- Summary of controls (with reference to more detailed management plans included in the MMP)
- Residual risk
- Potential for cumulative impacts
- The level of certainty assigned to the risk rating.

The construction/operations phase risk registers are provided at Appendix X. The risk register will be subject to review on completion of the detailed mine site design and prior to commencement of each key project stage i.e. land clearing, earthworks, construction and operations. A revised risk register will be submitted to Department of Industry, Trade and Tourism annually for the coming reporting period.

The closure phase risk register is provided in the Mine Closure Plan submitted with this MMP. The closure risk assessment will be reviewed and submitted with an updated Mine Closure Plan at the end of year one of the mining operations. At this point risks can be assessed with a greater level of certainty based on the final (as constructed) designs for each closure domain and the results of further analysis of potential future sources of environmental issues i.e. waste rock dump erosion rates, TSF seepage, pit lake water quality.

Risk profile

The distribution of inherent and residual risk ratings for each phase of the project is summarised in Table 5-10 and Table 5-11. The residual risk ratings are show in **bold** and the inherent risk ratings are shown in *(brackets)* for reference. Management plans have been prepared to address the higher risk aspects.

Overall, the risk assessment indicates that the potential impacts associated with the project pose a low to moderate risk to environmental, social and cultural values.

There are high residual risks associated with weeds and erosion during the construction and operations phase. The high risk associated with weeds is due to the area having a relatively low level of current weed infestation, past experience on other mining/extractive sites indicating weeds are difficult to control and the requirement to import some sand material for construction of the dam walls. The high risk associated with erosion is a precautionary interim risk rating that is expected to reduce following finalisation of the WRD design and associated erosion modelling.

During rehabilitation and closure there is a high risk of landform instability and erosion, which is addressed in the Mine Closure Plan. These risks are not expected to be unacceptable, but rather the high-risk rating indicates that further assessment and mitigation of risk is required following final WRD design and erosion modelling.

Table 5-10. Construction and operations phase environmental risk summary

Environmental Factor	Low	Medium	High	Very High	Totals	Impacts with a high residual risk
Terrestrial flora & fauna	13 (10)	2 (4)	2 (3)	0 (0)	17	Weed introduction and spread
Terrestrial environmental quality	4 (2)	2 (2)	1 (3)	0 (0)	7	Erosion of WRD outer face.
Hydrological processes	6 (3)	3 (6)	0 (0)	0 (0)	9	None
Inland water quality	10 (5)	4 (6)	0 (3)	0 (0)	14	None
Social, economic & cultural	13 (7)	2 (6)	0 (2)	0 (0)	15	None
Air quality and GHG	1 (0)	2 (2)	0 (1)	0 (0)	0 (0)	None

Table 5-11. Closure phase environmental risk summary

Environmental Factor	Low	Medium	High	Very High	Totals	Impacts with a high residual risk
Terrestrial flora & fauna	3 (3)	3 (0)	0 (3)	0 (0)	6	None
Terrestrial environmental quality	3 (2)	1 (0)	3 (5)	0 (0)	7	Landform instability and erosion
Hydrological processes	3 (3)	3 (3)	0 (0)	0 (0)	6	None
Inland water quality	9 (3)	2 (7)	0 (1)	0 (0)	11	None
Social, economic & cultural	8 (0)	3 (7)	0 (3)	0 (1)	11	None
Air Quality and GHG	2 (0)	0 (2)	0 (0)	0 (0)	2	None

5.6.3 Environmental Management Plans

EMP's have been prepared to provide a framework for managing, monitoring and minimising the most significant environmental impacts and risks identified through the risk assessment process. The following primary EMP's are provided with this MMP:

- Flora/Fauna, Weeds and Pest Management Plan (Table 5-12)
- Land and Soils Management Plan (Table 5-13)
- Water Management Plan (refer Appendix N)
- Social Impact Management Plan (refer Appendix V)

Potential impacts with a low inherent risk rating will be managed in accordance with routine operational procedures as part of the project EMS. These procedures are referenced in the risk registers and will be made available for review upon request.

Where a higher level of operational detail is required to address identified risks to environmental or social values, or in response to a specific regulatory requirement (i.e. MMP Guidelines and/or NT EPA Recommendations), the EMP's cross-reference other plans/procedures as listed below:

- Waste Rock/AMD Management Plan (Appendix K)
- Tailings Management Plan (Appendix S)
- Storage, Transport and Handling of Dangerous Goods (Appendix Y)
- Journey Management Plan - draft (Appendix I) – to be finalised prior to commencement of haul operations between the mine site and Port
- Blast Management Plan – (Appendix G)
- Emergency Response Plan - draft (Appendix W) – to be revised during 2022
- Mine Closure Plan and Rehabilitation Management Plan (Appendix T) – to be updated and issued to the Department of Industry, Trade and Tourism at end of year one of mining operations).
- Stakeholder Engagement Plan (Appendix U).

Flora, Fauna, Weed and Pest Management Plan

This management plan establishes a framework for managing risks to terrestrial flora and fauna associated with the construction and operation of Grants Lithium Project. The plan aims to ensure that activities are undertaken in a manner that protects the NT’s flora and fauna so that biological diversity and ecological integrity area maintained. This plan was submitted for regulatory review as part of the EIS process and will be integrated within project EMS prior to commencement of operations, as an overarching management plan supported by operational procedures. The Vegetation Clearing Procedure (Appendix Q), is a key supporting document to this plan.

Table 5-12. Flora, fauna, weed and pest management plan

Value	Potential impact	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
Native vegetation & habitats (Eucalyptus woodland and broad drainages)	Reduced regional habitat due to land clearing	Restrict land clearing to the minimum required for the project	Delineate area to be cleared as per Vegetation Clearing Procedure Develop and adhere to a land clearing schedule Clear and stockpile vegetation as per Vegetation Clearing Procedure Remove (by burning, mulching and/or use for rehabilitation) stockpiled vegetation as soon as practicable	No vegetation clearance or ground disturbance outside of the approved footprint	Weekly inspection (using a GPS) during vegetation clearing to ensure no clearing outside of flagged area	Investigate why excessive clearing occurred and update procedures as necessary, and/or implement rehabilitation plan for over-cleared area	Site Inspection Register
		Reinstate cleared land to similar condition that the site was previously	Remove and store topsoil as per the Vegetation Clearing Procedure and ESCP Implement erosion control of top-soil stockpile as per ESCP Undertake rehabilitation as per Mine Closure Plan	Regeneration of self-sustaining native vegetation similar to that which was on the site previously	Monitoring of vegetation as detailed in the Mine Closure Plan: Transitional vegetation monitoring conducted annually following reinstatement of topsoil Final vegetation assessment once there are no rehabilitation risk areas identified in the	Maintain rehabilitation monitoring database Implement corrective actions as detailed in Mine Closure Plan Review monitoring measures and effectiveness of rehabilitation	Annual Rehabilitation Report

Value	Potential impact	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
					transitional vegetation surveys	actions every five years as per the Mine Closure Plan	
Native vegetation & habitats (Eucalyptus woodland and broad drainages)	Reduced habitat quality due to smothering of plants with dust	Minimise the generation of project-related dust	Undertake dust suppression using water carts and the application of polymer products Supply sufficient water for dust management Stabilise cleared areas as per ESCP Cover all vehicles transporting materials that may produce dust	No signs of project-related dust beyond Mining Lease (ML)	Visual monitoring of dust beyond ML boundary Monitoring of water supply for dust management Monitoring of stockpiles as per ESCP	Undertake additional dust management if dust is visible	Site Inspection Register
Native vegetation & habitats (Eucalyptus woodland and broad drainages)	Reduced habitat quality and mortality of individuals due to bushfire	Minimise the impact of bushfires caused by project activities	Burn stockpiled vegetation as soon as practicable and with a permit, as per Vegetation Clearing Procedure Maintain spot fire response capability (i.e. water truck, and fire extinguishers fitted in all vehicles and machinery) to prevent fires from spreading Establish firebreaks around all laydown, stockpile and central work areas Develop bushfire response procedures within site Emergency Management Plans	No bushfires attributable to project activities escape the ML	Weekly check that fire-fighting equipment is in order during dry season	Investigate cause of fire and update procedures as necessary	Report fires that cross ML boundary to Bushfires NT Site Inspection Register
Native vegetation & habitats	Reduced habitat quality due to the introduction of weeds	Minimise the potential for introduction and spread of weeds	Source off-site materials from sites that have been declared weed-free	No new weed species introduced into the project area	Monthly surveying for the presence of weeds, focussing on:	Review weed hygiene measures	Weed and Pest Monitoring & Control Log

Value	Potential impact	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
(Eucalyptus woodland and broad drainages)			<p>Survey disturbance area for weeds prior to commencement of construction and control/eradicate existing infestations</p> <p>Clean, check and certify all earth-moving equipment and vehicles as weed-free before entering site (during pre-strip and construction phase)</p> <p>Install wash bay facilities and maintain wash-down logs</p> <p>Make available information on potential weeds to assist staff with identification and response</p>	No increase in weed infestations from baseline conditions	<p>Areas to be disturbed that are in the vicinity of any weed occurrence</p> <p>Stockpiles</p> <p>Areas that have soil, sand or gravel introduced</p> <p>Access tracks</p> <p>Watercourses, particularly after floods</p>	Implement weed controls appropriate to the species detected	Weeds of National Significance to be reported to DEPWS
Native vegetation & habitats (Eucalyptus woodland and broad drainages)	Reduced regional habitat due to land inundation of dam footprints	Restrict land inundation to the minimum required for the project	Design dam sizes based on the minimum requirement to achieve a sustainable water supply for the project	No inundation outside of the approved footprint	Mapping of inundation footprint	Update site details in MMP to reflect as constructed footprints	Any increases in project footprint recorded in future updates of MMP
Riparian vegetation	Reduced regional riparian habitat due to reduction in flow volumes downstream of dams	Restrict water extraction to the minimum required for the project.	<p>Size dam based on the minimum requirement to achieve a reliable and sustainable water supply for the project</p> <p>Maximise water re-use on site</p>	No significant deviation from water extraction volumes used in modelling of flow reductions	<p>Modelling of reduction in flow based on as-built dams</p> <p>Monitoring of water extraction from dams</p> <p>Monitoring of operational efficiencies.</p>	Re-assess risk to riparian communities if reduction in flow greater than forecast.	Report in accordance with conditions of extraction permits
Native fauna	Mortality of individuals due to	Minimise potential for introduction of new pest species	Source off-site materials from sites that have been declared pest-free	No new pest species identified within the project area	Incidental observations of new	Review hygiene measures	Weed and Pest Monitoring & Control Log

Value	Potential impact	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
(no threatened species present)	introduction of pest animals	(i.e. feral ants and mosquitoes)	Clean and check all earth-moving equipment and material loads for pest species before entering site (details to be entered into a register)		pest species in the project area	Response and control in consultation with DPIR	Report incursions to Department of Industry, Trade and Tourism
Native fauna (no threatened species present)	Mortality of individuals due to proliferation of pest animals	Minimise potential for proliferation of existing pest species	Store waste in designated covered bins Remove waste regularly from site by a licensed contractor	No noticeable increase in the presence of pest or vermin	Incidental observations of pest and vermin attracted to the project area	Implement control if required Review waste management measures	Weed and Pest Monitoring & Control Log
In addition to the impacts presented above, terrestrial flora and fauna could be impacted by reduced soil quality, and/or water quality and availability. Management measures to minimise those potential impacts are discussed in related management plans.							

Land and Soils Management Plan

This management plan establishes a framework for managing risks to land and soils associated with the construction and operation of Grants Lithium Project. The plan aims to ensure that activities are undertaken in a manner that *maintains the quality of land and soils so that environmental values are protected*. This plan was submitted for review as part of the EIS process and will be integrated within project EMS prior to commencement of operations, as an overarching management plan supported by operational procedures. The primary Erosion and Sediment Control Plan and progressive ESCPs (Appendix O) are key supporting documents to this plan.

Table 5-13. Land and soils management plan

Value	Potential impact	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
Soil quality	Contamination caused by mishandling and/or inappropriate storage of fuels	No contamination of soil by fuels	Surround storage areas for fuels and oils with an impervious bund that contains 120 % of the largest container stored in the bund, as per AS1940 Refuel vehicles within bunded areas Make available spill containment equipment kits at the works area that are adequately-sized to manage the volume of fuels that could be spilled	No signs of significant spill outside of bunded area No leaks from equipment	Regular inspection of site for signs of spills Weekly check that spill containment equipment kits are in order	Investigate cause of spill and update procedures as necessary Remediate contaminated site	Site Inspection Register
Soil quality	Contamination caused by Acid Mine Drainage (AMD) from WRD/TSF	No contamination of soil by AMD	Implement ongoing waste and tailings characterisation monitoring Any identified PAF material to be placed in centre of WRD Design TSF with lining of low permeability material that will minimise infiltration and release of contaminants	No significant impacts on downstream water quality based on assessment using criteria in Water Quality Monitoring Plan No visible signs of AMD	On-going operational waste and tailings characterisation to confirm material characteristics Water quality monitoring in accordance with Water Management Plan Visual monitoring of and drainage from the WRD	Capture and treat contaminated drainage Approach and methods to be approved by Department of Industry, Trade and Tourism through update to MMP	Any major exceedance of water quality criteria to be reported to Department of Industry, Trade and Tourism Monitoring results reported in annual reports to Department of Industry,

Value	Potential impact	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
							Trade and Tourism
Soil structure and seedbank	Loss of soil structure and seedbank due to inappropriate topsoil removal and storage	Minimise loss of soil structure and seedbank due to inappropriate topsoil removal and storage	Remove and store topsoil as per Vegetation Clearing Procedure Implement controls to maintain structural integrity of stockpile as per ESCP Commence rehabilitation of the WRD annulus as soon as possible	Topsoil stockpiles managed in accordance with ESCP	Inspection of stockpile height and batter slopes Monitor stockpile for erosion as per ESCP Monitor vegetation growth by natural regeneration in rehabilitation trials	Implement corrective actions as detailed in Mine Closure Plan	Site Inspection Register Annual rehabilitation monitoring report
Soil structure	Loss of soil and altered landform due to erosion of disturbed areas	Minimise erosion of cleared areas	Undertake construction in the Dry season Implement the ESCP re stabilisation measures of cleared areas Design culverts and sediment dams in accordance with specifications in the ESCP	Controls in place in accordance with ESCP Effectiveness of controls is maintained No signs of significant erosion of stockpiles or work area	End-of-Dry season inspection of all drainage and erosion and sediment controls to identify any issues or maintenance requirements Inspection of erosion and sediment controls on a weekly basis during operation, within 24 hours of expected rainfall, and as soon as practicable following significant rainfall events (i.e. > 10 mm).	Maintain controls and remove captured sediment as needed to ensure capacity Review ESC measures and develop site-specific Progressive ESCPs Engage CPESC advice for significant erosion	Site Inspection Register
Soil structure	Loss of soil due to run-off from WRD annulus	Minimise erosion of WRD	Construct the WRD annulus from competent waste material Place dispersive waste in the centre of the WRD Rehabilitate the WRD annulus in year 1	No signs of significant erosion of WRD	Geotechnical testing to define materials characteristics, sources and treatments for WRD construction and rehabilitation Monitor initial rehabilitation success as per Mine Closure Plan	Implement corrective actions as detailed in Mine Closure Plan	Site Inspection Register Annual rehabilitation monitoring report
Soil structure	Loss of soil due to alteration of surface water flow paths due to construction of water pipeline	Minimise erosion on pipeline footprint	Clear, stockpile and remove vegetation as per Vegetation Clearing Procedure	No signs of significant erosion along pipeline footprint	Weekly inspection of vegetation and soil stockpiles during construction, with focus on erosion controls detailed in ESCP	Investigate cause of erosion and update procedures as	Site Inspection Register

Value	Potential impact	Objective / outcome	Management provisions	Targets / performance indicators	Monitoring	Response	Reporting & Record-keeping
			Remove and store topsoil as per the Vegetation Clearing Procedure and ESCP Implement erosion controls as per ESCP			necessary as per ESCP	
Soil structure	Erosion of downstream stream banks when dams overflow	Minimise erosion of stream banks downstream of dam walls and spillways	Implement the erosion and sediment controls that accompany the construction engineering drawings for the dam walls and spillways Design dam walls and spillways to ANCOLD guidelines	No signs of significant erosion of stream banks downstream of dam walls and spillways	Regular inspection of downstream stream bank integrity	Investigate cause of instability and address by engineering controls as required	Site Inspection Register

5.7 Key environmental activities for the oncoming period

All activities described are key environmental activities for the oncoming period when the project moves from construction into operations. The project EMS (in development) will support implementation of this MMP and ongoing review and continuous improvement in the approach to environmental management implemented at the site.

6 WATER MANAGEMENT PLAN

The Water Management Plan (WMP) has been developed as a stand-alone document that was subject to independent review as part of the EIS process and has subsequently been updated to address key issues raised in the NT EPA recommendations provided in Assessment Report 89. Details of information gaps and works planned to address these gaps and the NT EPA recommendations are provided in Section 12 of the WMP. The WMP was further revised in June 2021 prior to the commencement of works. The WMP has been amended for submission with this MMP amendment to include details of the acquired surface water extraction licence (SWEL) for OHD and waste discharge licence (WDL) application (see Appendix N).

7 INCIDENT REPORTING

The project EMS will include an incident/complaints management and reporting procedure. The procedure will cover:

- Incident classification and risk assessment
- Reporting of identified hazards, accidents/incidents and system failures
- Determining the true cause
- Checklists for investigations
- Corrective actions
- Preventative actions
- Review of corrective and preventative actions
- Reporting to statutory authorities
- Management of complaints.

A register will be maintained which will include details about the incident/complaint, how it occurred, where and when it occurred, physical actions taken to rectify, remediate or rehabilitate, and operational actions to address the future management of incidents of this type.

Any serious environmental incidents/breaches will be reported to the Department of Industry, Trade and Tourism within 24 hours. All other incidents/complaints will be recorded in the register and reported to the Department of Industry, Trade and Tourism in each annual Environmental Mining Report.

8 CLOSURE PLANNING

A Mine Closure Plan (MCP) for Grants Lithium Project is provided at Appendix T. The plan was reviewed and submitted for approval in January 2022 prior to the commencement of operations. The plan is structured in accordance with the *WA Guidelines for Preparing Mine Closure Plans* and references the following leading-practice guidelines:

- ANCOLD 2012. *Guidelines on Tailings Dams: Planning, design, construction, operation and closure*. Australian National Committee on Large Dams.
- Department of Foreign Affairs and Trade (2016) *Mine Rehabilitation - Leading Practice Sustainable Development Program for the Mining Industry*. Available at: <https://archive.industry.gov.au/resource/Documents/LPSPDP/LPSPDP-MineRehabilitationHandbook.pdf>
- Department of Foreign Affairs and Trade (2016) *Mine Closure - Leading Practice Sustainable Development Program for the Mining Industry*. Available at: <https://archive.industry.gov.au/resource/Documents/LPSPDP/LPSPDP-MineRehabilitationHandbook.pdf>
- ICMM 2019. *Integrated Mine Closure, Good Practice Guide, 2ND Edition*. International Council on Mining and Metals.
- Young, R.; Manero, A.; Miller, B.; Kragt, M.; Standish, R. & Boggs, G. (2019). *A framework for developing mine-site completion criteria in Western Australia*. The Western Australian Biodiversity Science Institute, Perth, Australia.

8.1 Life of plan – unplanned closure

Temporary suspension and unforeseen closure are addressed in the MCP, Section 9.6. The remediation activities that would be required in the event of unplanned closure at any time during this reporting period will be the same as those detailed in the closure works program (section 9.3 of the MCP) for closure at the end of mine life.

8.2 Security estimates

The Department of Industry, Trade and Tourism 'Security Calculation Tool' has been used to determine the security estimates for Grants Lithium Project. Security calculations have been based on the total disturbance footprint for the project.

9 REFERENCES

- Australian Centre for Sustainable Mining Practices (2011). *A Guide to Leading Practice Sustainable Development in Mining*, [online] Available at: <https://archive.industry.gov.au/resource/Documents/LPSDP/guideLPSD.pdf> [Accessed 5 Sept 2018].
- ANCOLD (2012). *Guidelines on the Consequence Categories for Dams*, Australian National Committee on Large Dams Incorporated, October 2012.
- ANCOLD (2003). *Guidelines on Dam Safety Management*, Australian National Committee on Large Dams Incorporated, Australia, August 2003.
- Cloud GMS (2018). *Development of a Groundwater Model for the Grants Lithium Project*, Report prepared for Core Exploration Limited, September 2018.
- Cloud GMS (2019). *Grants Lithium Project Groundwater Model Addendum Report*. Report prepared for Core Exploration Limited, April 2019.
- Cowie, I. and Westaway, J. (2012). *Threatened species of the Northern Territory - Stylidium ensatum*. Northern Territory Department of Environment and Natural Resources. [online] Available at: https://nt.gov.au/__data/assets/pdf_file/0009/208494/stylidium-ensatum.pdf.
- Cowie, I. and Westaway, J. (2012). *Threatened species of the Northern Territory - Typhonium praetermissum*. Northern Territory Department of Environment and Natural Resources. [online] Available at: https://nt.gov.au/__data/assets/pdf_file/0017/208502/typhonium-praetermissum.pdf
- Department of Environment, Parks and Water Security (2021) Darwin Regional Weeds Strategy 2021-2026, [online] Available at: <https://www.bing.com/search?form=MOZLBR&pc=MOZD&q=Department+of+Environment%2C+Parks+and+Water+Security+%282021%29+Darwin+Regional+Weeds+Strategy+2021-2026>
- Department of Foreign Affairs and Trade (2009) *Airborne Contaminants, Noise and Vibration - Leading Practice Sustainable Development Program for the Mining Industry*, [online] Available at: https://archive.industry.gov.au/resource/Documents/LPSDP/AirborneContaminantsNoiseVibrationHandbook_web.pdf [Accessed 5 Sept 2018].
- Department of Foreign Affairs and Trade (2016a) *Preventing Acid and Metalliferous Drainage - Leading Practice Sustainable Development Program for the Mining Industry*. [online] Available at: <https://archive.industry.gov.au/resource/Documents/LPSDP/LPSDP-AcidHandbook.pdf> [Accessed 5 Sept 2018].
- Department of Foreign Affairs and Trade (2016b) *Tailings Management - Leading Practice Sustainable Development Program for the Mining Industry*. [online] Available at: <https://archive.industry.gov.au/resource/Documents/LPSDP/LPSDP-TailingsHandbook.pdf> [Accessed 5 Sept 2018].
- Department of Foreign Affairs and Trade (2016c) *Water Stewardship - Leading Practice Sustainable Development Program for the Mining Industry*. [online] Available at: <https://archive.industry.gov.au/resource/Documents/LPSDP/LPSDP-WaterHandbook.pdf> [Accessed 5 Sept 2018].
- Department of Foreign Affairs and Trade (2016d) *Mine Rehabilitation - Leading Practice Sustainable Development Program for the Mining Industry*. [online] Available at: <https://archive.industry.gov.au/resource/Documents/LPSDP/LPSDP-MineRehabilitationHandbook.pdf> [Accessed 5 Sept 2018].
- Department of Foreign Affairs and Trade (2016e) *Mine Closure - Leading Practice Sustainable Development Program for the Mining Industry*. [online] Available at: <https://archive.industry.gov.au/resource/Documents/LPSDP/LPSDP-MineClosureCompletionHandbook.pdf> [Accessed 5 Sept 2018].
- Department of Mines and Petroleum and Environment Protection Authority (2015). *WA Guidelines for Preparing Mine Closure Plans* [online] Available at: <http://www.dmp.wa.gov.au/Documents/Environment/ENV-MEB-121.pdf> [Accessed 5 Sept 2018].
- EcOz (2017) *Ecological assessment report Grants Project*. Unpublished report prepared for Core Exploration, November 2017.

- EcOz (2018a) *Styloidium ensatum* survey report. Unpublished report prepared for Core Exploration, September 2018.
- EcOz (2018b) *Soil and Waste Characterisation Grants Lithium Project*. Unpublished report prepared for Core Exploration, October 2018.
- EcOz (2019) *Typhonium praetermissum* survey report. Unpublished report prepared for Core Lithium, April 2019.
- Ellengowan Enterprises (2021) Grants and Good Hope Mines – Small Scale Archaeological Assessment Report. Prepared for EcOz Environmental Consultants on behalf of Core Lithium, October 2021 [unpublished].
- EnviroConsult (2019a). Grants Lithium Project – Preliminary Mine Site Water Balance. Prepared for Core EnviroConsult Australia (2018a) *Existing hydrological condition and hydrology model calibration*. Unpublished report prepared for Core Exploration, August 2018.
- EnviroConsult Australia (2018b) *Mining Lease 31726 and Observation Hill Dam Water Balance*. Unpublished report prepared for Core Exploration, August 2018.
- EnviroConsult Australia (2018c) *Mining Lease 31726 Flood Inundation Study*. Unpublished report prepared for Core Exploration, August 2018.
- EnviroConsult Australia (2019) *Supplementary Report - Surface water modelling*. Unpublished report prepared for Core Exploration, November 2017.
- Flanagan Consulting Group (2019) *Grants Mine: Traffic Impact Statement*. Prepared for Core Lithium, March 2019.
- GHD (2021a) *Grants Lithium Project – Tailings Storage Facility and Water Dams – Detailed Design Report*. Prepared for Core Lithium, December 2021.
- GHD (2021b) *Observation Hill Dam Raise – Detailed Design Report*. Prepared for Core Lithium, December 2021.
- GHD (2021c) *Water Storage Facilities – Operations, Maintenance and Surveillance Manual*. Prepared for Core Lithium, December 2021.
- GHD (2021d) *Tailings Storage Facility – Operations, Maintenance and Surveillance Manual*. Prepared for Core Lithium, December 2021.
- Innicon (2019) Grant's Pit Sterilisation Report. Prepared for Core Lithium Ltd. March 2019.
- International Erosion Control Association (2008), Best Practice Erosion and Sediment Control, International Erosion Control Association.
- International Network for Acid Prevention (2014). Global Acid Rock Drainage Guide, [online] Available at: http://www.gardguide.com/index.php?title=Main_Page [Accessed 5 Sept 2018].
- International Network for Acid Prevention (2014). Global Acid Rock Drainage Guide, [online] Available at: www.gardguide.com [Accessed 5 Sept 2018].
- Lee A.K. (1995) *The Action Plan for Australian rodents*. Pp. 62. Australian Nature Conservation Agency: Canberra.
- EnviroConsult (2019b) *Core Exploration Cox Peninsula – Supplementary Report – Surface water modelling*. Prepared for Core Lithium, March 2019.
- Minerals Council of Australia (2014). Water Accounting framework for the Australian Minerals Industry, [online] Available at: <http://www.minerals.org.au/water-accounting-framework-australian-minerals-industry> [Accessed 5 Sept 2018].
- National Transport Commission (2018) *Australian Dangerous Goods Code 7.6*, [online] Available at: https://infrastructure.gov.au/transport/australia/dangerous/dg_code_7e.aspx [Accessed 5 Sept 2018].
- NT EPA (2013) *Environmental Assessment Guidelines on Acid and Metalliferous Drainage*, [online] Available at: https://ntepa.nt.gov.au/__data/assets/pdf_file/0011/287426/guideline_assessment_acid_metalliferous_drainage.pdf [Accessed 5 Sept 2018].
- Price, O., Rankmore, B., Milne, D.J., Brock, C., Tynan, C., Kean, L. and Roger, L. (2005). Regional patterns of mammal abundance and their relationships to landscape variables in eucalypt woodlands near Darwin, northern Australia. *Wildlife Research* 32, 435-446.
- QUBE (2019) *Grants Lithium Project – Journey Management Plan*. Prepared for Core Lithium, March 2019.

Read, J and Stacey, P (eds) (2009). Guidelines for open pit slope design. CRC Press.
SRK Consulting (2018) *Geotechnical slope design recommendations*. [unpublished].
Standards Australia (2017) *Australian Standard 1940: The Storage and Handling of Flammable and Combustible Liquids*. SAI Global.

Appendix A Ecology and threatened species reports

Appendix B Surface water modelling reports

Appendix C Groundwater modelling reports

Appendix D Soil and waste characterisation

Appendix E Environmental mining report

Appendix F Social impact assessment

Appendix G Blast management plan

Appendix H Traffic impact statement

Appendix I Journey management plan

Appendix J AAPA Certificate

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Appendix K Waste rock/AMD management plan

Appendix L Waste rock management plan summary report

Appendix M Tailings storage facility and water dams detailed design reports (GHD 2021a)

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Appendix N Water management plan

Appendix O Erosion and sediment control plans

Appendix P Water storage facilities – operations, maintenance and surveillance manual (GHD 2021c)

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Appendix Q Vegetation clearing procedure

Appendix R Waste discharge licence

Appendix S Tailings storage facility - operations, maintenance and surveillance manual (GHD 2021d)

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Appendix T Mine closure plan

Appendix U Stakeholder engagement plan

Appendix V Social impact management plan

Appendix W Emergency response plan

Appendix X Environmental and social risk registers

Appendix Y Storage, transport and handling of dangerous goods

Appendix Z Security calculation

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