MINING MANAGEMENT PLAN
Finniss Lithium Project
BP33 Underground Mine
Mining Operations

Operator name:	Lithium Developments (Grants NT) Pty Ltd
Project name:	Finniss Lithium Project – BP33 Underground Mine
Authorisation number:	To be advised
MMP reporting period:	2022 to 2026
Date:	6 October 2022
Document distribution list:	Department of Industry, Tourism and Trade

DOCUMENT HISTORY

Rev	Reviewed by	Approved by	Issued to	Comment	Date
1	Lithium Developments (Grants NT) Pty Ltd.	Lithium Developments (Grants NT) Pty Ltd: Blair Duncan	Department of Industry, Tourism and Trade (DITT)	First issue of MMP	11 May 2022
2	Lithium Developments (Grants NT) Pty Ltd.	Lithium Developments (Grants NT) Pty Ltd: Blair Duncan	DITT	Second issue of MMP to address DITT request for additional information (DITT file reference 36:DITT2022/00121-0001~0005)	6 October 2022

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ACRONYMS & ABBREVIATIONS

Acronym Abbreviation	Meaning
%S	Percentage sulfur (a term used in geochemical characterisation of rock material)
AAPA	Aboriginal Areas Protection Authority (body responsible for Aboriginal sacred sites protection)
AEP	Annual Exceedance Probability
AMD	Acid and metalliferous drainage or Acid rock drainage
ANC	Acid Neutralising Capacity (a term used in geochemical characterisation of rock material)
ANCOLD	Australian National Committee on Large Dams
ANZG	Australian and New Zealand Guidelines for Fresh and Marine Water Quality
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
CPESC	Certified practitioner in erosion and sediment control
CSM	Conceptual site model
CXO	ASX code for Core Lithium (previously Core Exploration)
DMS	Dense media separation
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EL	Exploration Lease
EMP	Extractive Minerals Permit
EMP28651	Extractive Minerals Permit 28651 – tenement held by Core
EMR	Environmental Mining Report
EMS	Environmental Management System
EP Act	Environmental Protection Act (2019) (NT)
EPBC Act	Environment Protection and Biodiversity Conservation Act (1999) (Commonwealth)
ESCP	Erosion and Sediment Control Plan
GARD Guide	Global Acid Rock Drainage Guide– international best-practice guide to ARD prevention and management
GDE	Groundwater dependent ecosystems
ha	hectare
HSE	Health, Safety and Environment
IECA	International Erosion Control Association
JORC Code	Joint Ore Reserves Committee Code is the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves*. 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.
kL	Kilo-litres
L	Litres
Li_20	Lithium oxide (product of mining)
LoM	Life of Mine
m	metre

Acronym Abbreviation	Meaning
m^3	cubic metres
mAHD	metres Australian height datum
mBGL	metres below ground level
MCP	Mine Closure Plan
ML	Mineral Lease
ML	megalitre
mm	Millimetres
MMA	*Mining Management Act* (NT)
MMP	Mining Management Plan (regulatory requirement under Mining Management Act)
MNES	Matters of National Environmental Significance
MOC	Mine operations compound
MRE	Mineral Resource Estimate
MSD	Mine Settling Dam
Mt	megatonne (1,000,000 tonnes)
MTA	*Mineral Titles Act* (NT)
NAF	Non-acid Forming (a term used in geochemical characterisation of rock material)
NAG	Nat Acid Generation (a term used in mine waste rock characterisation)
NAPP	Net acid production potential
NATA	National Association for Testing Authorities
NGER Act	National Greenhouse and Energy Reporting Act
NMD	Neutral Mine Drainage (metalliferous drainage produced under neutral conditions)
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
NTG	Northern Territory Government
OHD	Observation Hill Dam– historical man-made dam used as water source for mining activities
PAF	Potentially acid forming (a term used in geochemical characterisation of rock material)
PAF-LC	Potentially acid forming – low capacity (a term used in geochemical characterisation of rock material)
PCoC	Potential contaminants of concern
QA/QC	Quality Assurance/Quality Control
RL	Relative level
ROM	Run of mine - pad where mined materials are stockpiled for processing
RWD	Raw Water Dam
s	second
SER	Supplementary Environmental Report
SIA	Social Impact Assessment
SILO	Scientific Information for Landowners– a climate database maintained by Qld Government
SIMP	Social Impact Management Plan
SLOS	Sub level open stope (mining method)
SD	Saline Drainage
SSGV	Site specific guideline value
SWL	standing water level

Acronym Abbreviation	Meaning
TARP	Trigger Action Response Plan
TIS	Traffic Impact Statement
TMP	Tailings Management Plan
ToR	Terms of Reference
TPWC Act	*Territory Parks and Wildlife Conservation Act* (Northern Territory)
VCL	Vacant Crown Land
WDL	Waste Discharge Licence
WMP	Water Management Plan
WRD	Waste rock dump
yr	year

1 APPLICATION FOR AUTHORISATION

1.1 Operator details

Table 1-1. Operator details

Company:	Lithium Developments (Grants NT) Pty Ltd – a 100% owned subsidiary of Core Lithium Ltd.
ABN:	70 622 047 232
Web page	www.corelithium.com.au
Phone	08 8317 1700
Email	info@corelithium.com.au
Postal address:	PO Box 6028 Halifax Street South Australia 5000
Street address:	Level 1, 366 King William Street Adelaide, South Australia 5000

1.2 Title details

ML32046 and MLN16 is the proposed site for the BP33 underground and associated surface infrastructure (refer to Figure 2-4). ML32074 is the ancillary ML allowing activities (water pipeline and haul road) between BP33 and Grants (refer to Figure 2-2).

Table 1-2. Mineral title details

Title number	Title holder	Expiry Date	Area (Ha)	Mine infrastructure / use	Underlying land tenure
ML32346	Lithium Developments (Grants NT) Pty Ltd	12/01/2046	494.9	Mining infrastructure	Vacant Crown Land (VCL)
MLN16	Lithium Developments Pty Ltd	04/03/2026	194	Mining infrastructure	
ML32074	Lithium Developments (Grants NT) Pty Ltd	17/01/2039	352.9	Ancillary infrastructure (internal haul road)	

Note: Lithium Developments Pty Ltd is a 100% owned subsidiary of Core Lithium.

1.3 Project details

Table 1-3. Application for authorisation

Y	**New Authorisation** Section 36(1) *Mining Management Act 2001* *		**Variation of Authorisation** Section 38(1) *Mining Management Act 2021*	**Auth**

Project Name	Finniss Lithium Project - BP33 underground mine (BP33)
Location and Access Details	**Mine site name:** BP33 **Location:** The BP33 project is located 2.5 km south-west of the Cox Peninsula Road, approximately 33 km west (by road) of the Berry Springs Township. The location, mineral titles and surrounding land tenure is shown on Figure 2-2. BP33 is located approximately 3.5 km south-east of the Grants site (part of the Finniss Lithium Project). **Site access:** The site is accessed from the Cox Peninsula Road via the existing Observation Hill Dam (OHD) road. **Nearest towns:** Berry Springs is the closest Township. The nearest community is Belyuen located approximately 22km NW of the BP33 project (approximately 28km by road). Belyuen is a small community of about 190 people.
Target Commodity Details	Spodumene a source of lithium.

1.4 Declaration

I hereby declare that:

the information provided in this Mining Management Plan is correct, and

accept that failure to supply the information required may delay assessment for authorisation under the *Mining Management Act 2001*

Chief Operating Officer **Name (please print)** **Date**

2 PROJECT SUMMARY

Lithium Developments (Grants NT) Pty Ltd, here-in referred to as Lithium Developments, propose to construct and operate an underground lithium mine (referred to as BP33) on Mineral Leases (ML) ML32346 and MLN16 located on the Cox Peninsula approximately 27 km south of Darwin (directly) (See Figure 2-1 and Figure 2-2).

BP33 is part of the broader Finniss Lithium Project, which comprises of the approved Grants open pit lithium mine and processing facility, and several other areas prospective for lithium (in addition to the BP33 resource). Lithium Developments currently hold Mining Authorisation (MA) 1020-01 pursuant to the *Mining Management Act* for open pit mining and processing of the Grants ore resource on Mineral Lease (ML) 31726. The processing requirements of the BP33 ore resource have previously been assessed by the Northern Territory Environmental Protection Authority (NT EPA) as part of the Grants Lithium Project Environmental Impact Statement (EIS) and therefore are not part of this MMP.

The project will involve underground mining of ore and trucking to the Grants processing plant via a 7.5 km purpose-built haul road.

A referral for BP33 Underground Mine was submitted to the NT EPA during April 2020 (See Appendix A). The NT EPA decided in September 2020 that the proposed BP33 requires assessment under the Environmental Protection Act (EP Act). A Supplementary Environmental Report (SER) was submitted during November 2021 (See Appendix B) for assessment and approved by the Minister on 26 April 2022 (See Appendix C).

This MMP supports an Application for Authorisation (section 1) of a new mining operation on ML32346 and MLN16 targeting the BP33 deposit.

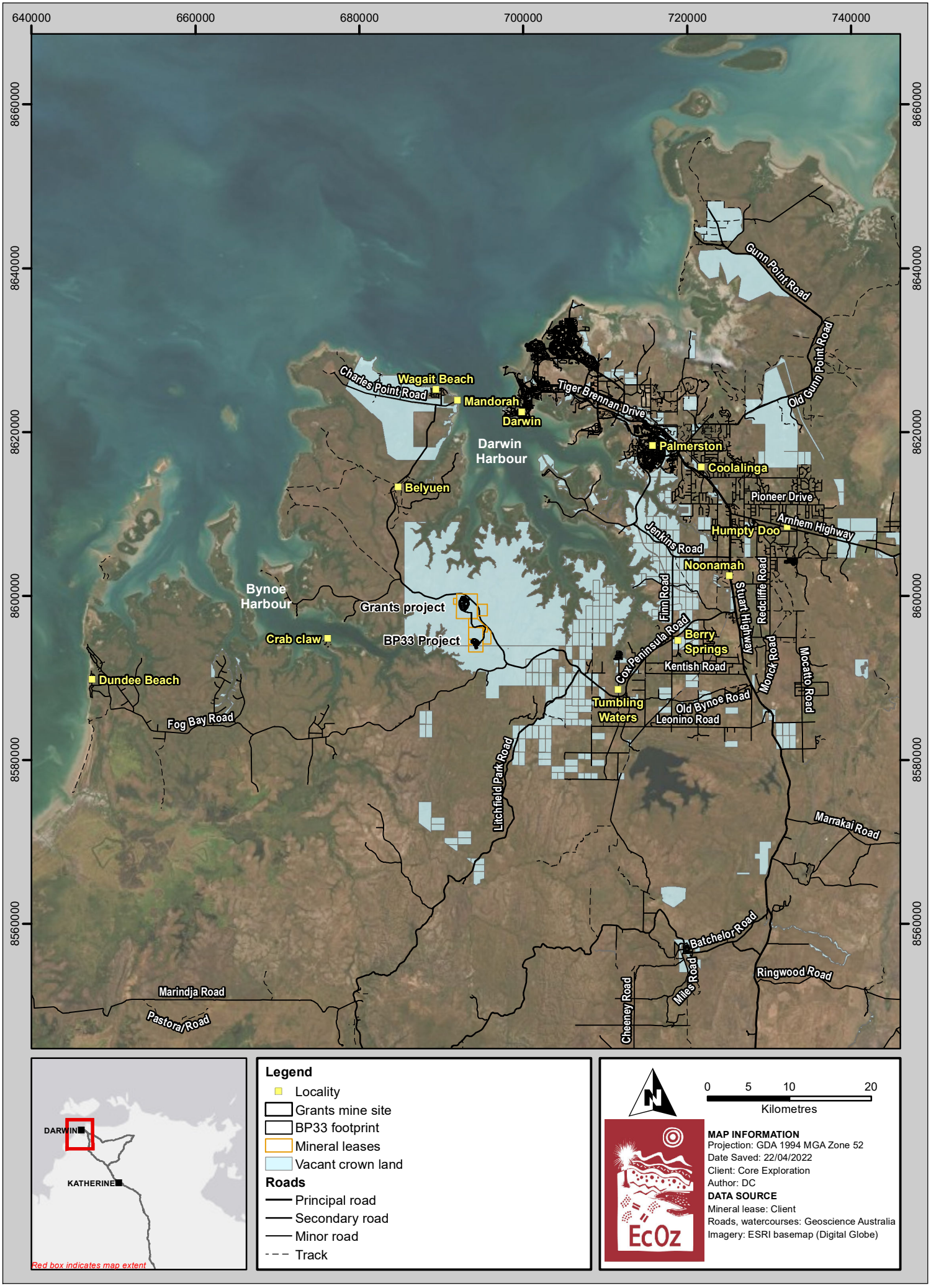

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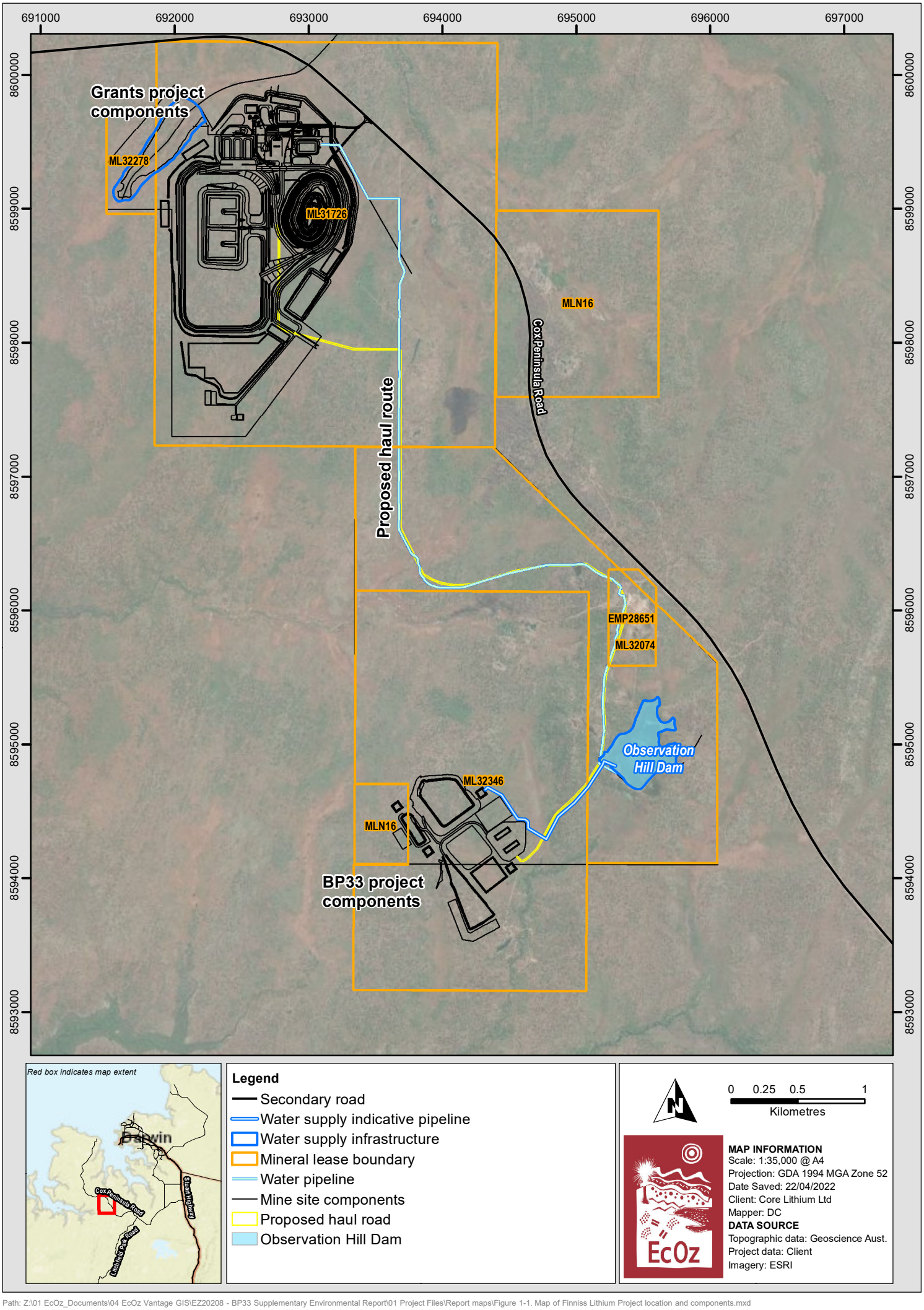
Figure 2-1. Map of BP33 Project location, surrounding land tenure and proximity to communities



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ20208 - BP33 Supplementary Environmental Report\01 Project Files\Report maps\Figure 1-1. Map of Finniss Lithium Project location and components.mxd

Figure 2-2. Map of Finniss Lithium Project location, mineral titles and project components

2.1 Overview

Key aspects of the BP33 Project life of mine (LOM) are summarised in Table 2-1.

Table 2-1. Overview of project

Aspect	Element	Details / description	References
Required Approval	Approval is sought for the following mining activities:	• Construction of site infrastructure, including a contractor's area (storage and maintenance), internal access roads and drainage infrastructure, water storages and Run of Mine (RoM) pad. • Excavation of a box-cut portal to an approximate depth of 60-70 m to remove weathered waste rock and provide a stable foundation for construction of an underground portal. • Construction of a 450 m long decline from the base of the box-cut to the top of the spodumene and progressive construction of a further 1.7 km of decline over the mine life to connect lower levels of the underground mine. • Establishment of two onsite waste rock dumps (WRDs) for temporary storage of oxide waste rock from the box-cut (WRD1) and transitional/fresh waste rock from the underground (WRD2) prior to backfilling the material to the box-cut and underground. • Underground mining of the resource to a depth of 320m over ten production levels using sublevel open stope (SLOS) with pillar support; drill and blast mining methods over a LOM of approximately four years. • Transport of the mined ore approximately 7.3 km along a dedicated internal haul road (to be constructed) to the Grants processing plant. • Source water from Observation Hill Dam (OHD).	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B)
Footprint	Development envelope	88ha (mine site footprint located within ML32346 and MLN16)	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B) NTEPA Environmental Approval (EP2020/001-001) (Appendix C)
	Haul road	12.5ha (7.3km from BP33 to Grants processing facility, 13m wide corridor)	
	Water pipeline	0.4ha (pipeline corridor from OHD to mine)	
	Total	100.9ha ((maximum approved extent of native vegetation clearing as stipulated in BP33 SER NTEPA Draft Environmental Approval (EP2020/001-001))	
Schedule	Resource exploration campaign	At the BP33 Deposit there has been several periods of exploration activity. During the 1990's Greenbushes undertook regional exploration that included several shallow RC holes at BP33 in 1995. Liontown followed up with a few deeper RC holes in 2016 that specifically targeted the host pegmatite at depth in the search for economic lithium mineralisation. Finally, drilling by Core Lithium Ltd at BP33 since 2016 has contributed assay and geological data from RC and diamond drilling. The BP33 drill hole database used for the current Mineral Resource Estimate (MRE) contains a total of 81 holes for 15,368.6m of drilling. Comprising 59 RC holes and 22 DD holes.	Finniss Project Exploration Management Plan (Core Lithium 2019)
	Construction phase	6 months for construction – proposed commencement date is Q4 2022 Key construction infrastructure: • Mine operations compound / contractor's area	BP33 Referral (Appendix A)

Aspect	Element	Details / description	References
		• Box-cut • WRD1 (temporary storage of predominantly oxide material from the box-cut) • Topsoil stockpiles • Water pipeline construction • Haul road construction	BP33 Supplementary Environmental Report – Main report (Appendix B) Mine Design Reports Mine Lakes Consulting (2022) Finniss Lithium Project BP33 Underground Mine, Mine Closure Plan (Appendix E) – adopted by the Company
	Operations phase	44 months for operations Key mining infrastructure: • Underground • WRD2 (temporary storge of transitional and fresh material from the underground) • ROM Pad • Water storage dams (RWD and MSD) Processing will occur at the Grants processing facility and product transported to the Darwin Port in haulage trucks (assessed in Grants EIS and detailed in Grants MMP).	
	Closure phase	5 months of reinstatement works plus ongoing monitoring until requirements for relinquishment of lease are met. BP33 Closure criteria is outlines in Table 14 of the BP33 MCP (Appendix E). The rehabilitation to be undertaken to release the security will include the backfill of all waste into mine voids and underground. The objective is to achieve a safe, stable, non-polluting and non-contaminating site that does not cause material or significant environmental harm and is able to sustain the post mining land use detailed in section 6 of the MCP.	
	Total life of mine (LOM)	55 months	
	Operating hours	24hrs/day, 7 days/week	
Mining	Target resource	The resource target at BP33 is pegmatite, a granite type rock containing spodumene ($LiAlSi_2O_6$), which is a source of lithium.	Mine Design Reports (OreWin 2019 and 2020)
	Methods	Underground; sublevel open stope (SLOS) with pillar support; drill and blast	
Processing	Not applicable	Ore will be transported to the Grants processing facility. Environmental impacts associated with ore processing were addressed in the Grants Lithium Project EIS and are not further considered.	N/A
Waste Rock Management	Geochemical characteristics	Outcome of static testing: Low risk of Acid Rock Drainage (ARD); potential risk of metals/metalloids leaching under neutral conditions (Neutral Mine Drainage) to be managed. Outcome of Kinetic leach column testing: Kinetic leach column testing confirmed the non-acid forming (NAF) classification of the Oxide, Transition and Fresh waste rock samples tested during this study, demonstrating that this excess alkalinity can be delivered at a rate to match or exceed the rate of acid generation, ensuring neutral pH conditions will be maintained under both oxidising and saturated conditions (EGi 2022). Results from leach column testing suggest that while acidic drainage from wastes stored in WRD at the BP33 project or following backfilling of mine voids is unlikely, there is potential for water in contact with these materials to contain	Geochemical characterisation reports (EGi 2020, 2021 and 2022a, 2022b) (Appendix F)

Aspect	Element	Details / description	References
		elevated concentrations of a number of metals/metalloids (arsenic, copper, lead and zinc, and possibly aluminium) relative to local surface and groundwaters (EGi 2022b) Runoff from the WRDs is to be collected in runoff/seepage ponds and water quality monitored. If metals are elevated above the ANZG (2018) or site-specific guideline values (SSGV's), the water is to be managed on-site i.e., pumped to MSD for dilution/treatment as required.	
	Waste rock dump 1 (WRD1)	WRD1 will temporarily store weathered waste rock material from box cut, prior to being reclaimed for backfill of the box-cut	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B)
	Waste rock dump 2 (WRD2)	WRD2 will temporarily store transitional and fresh waste rock material from the underground mine, prior to being reclaimed for backfill	
Water Management	Demand	~2.62ML/day for haul route and underground dust suppression and ablutions/facility operations.	BP33 underground mine water management plan (EcOz 2022) – adopted by the Company (Appendix G)

	Sources	• Observation Hill Dam – 403ML over LOM (5.6%)
		• Underground mine dewatering (ML over LOM):
		  ○ Groundwater inflows – 6,359ML (88%)
		  ○ Surface water inflows – 401ML (5.6%)	

	Internal water storage capacity	Raw water dam (RWD) 6.25ML Mine settling dam (MSD) 156ML	
	Controlled release (discharges)	Controlled release of excess water from MSD to ephemeral drainage line to the south of the mine site during the wet season. Subject to granting of a Waste Discharge Licence under the *Water Act*.	
	Land irrigation area (option)	A land irrigation area may be required to manage excess water during BP33 construction phase. Initial assessment indicates an area of 20ha but actual requirement, size and location will be determined through detailed design. Locations identified in the revised BP33 water management plan (EcOz 2022) – adopted by the Company.	
	Transfer to Grants open pit	Excess water pumped to Grants open pit for storage and reuse. Forecast up to 60-180 ML/month based on current water balance.	
	Flood immunity	The project area is not impacted by storm surge or flooding. No considerations such as levy walls are required.	Surface hydrology and flood inundation report (EnviroConsult Australia Pty Ltd 2020) (Appendix H)
Power Supply	Power supply to mining operations	Onsite diesel power generation is base case. Potential for connection to mains power under consideration. Finniss Lithium Site is 8km from grid power. Connection agreement with NT Government-owned Power and Water Corporation. Potential for solar farm under consideration.	N/A

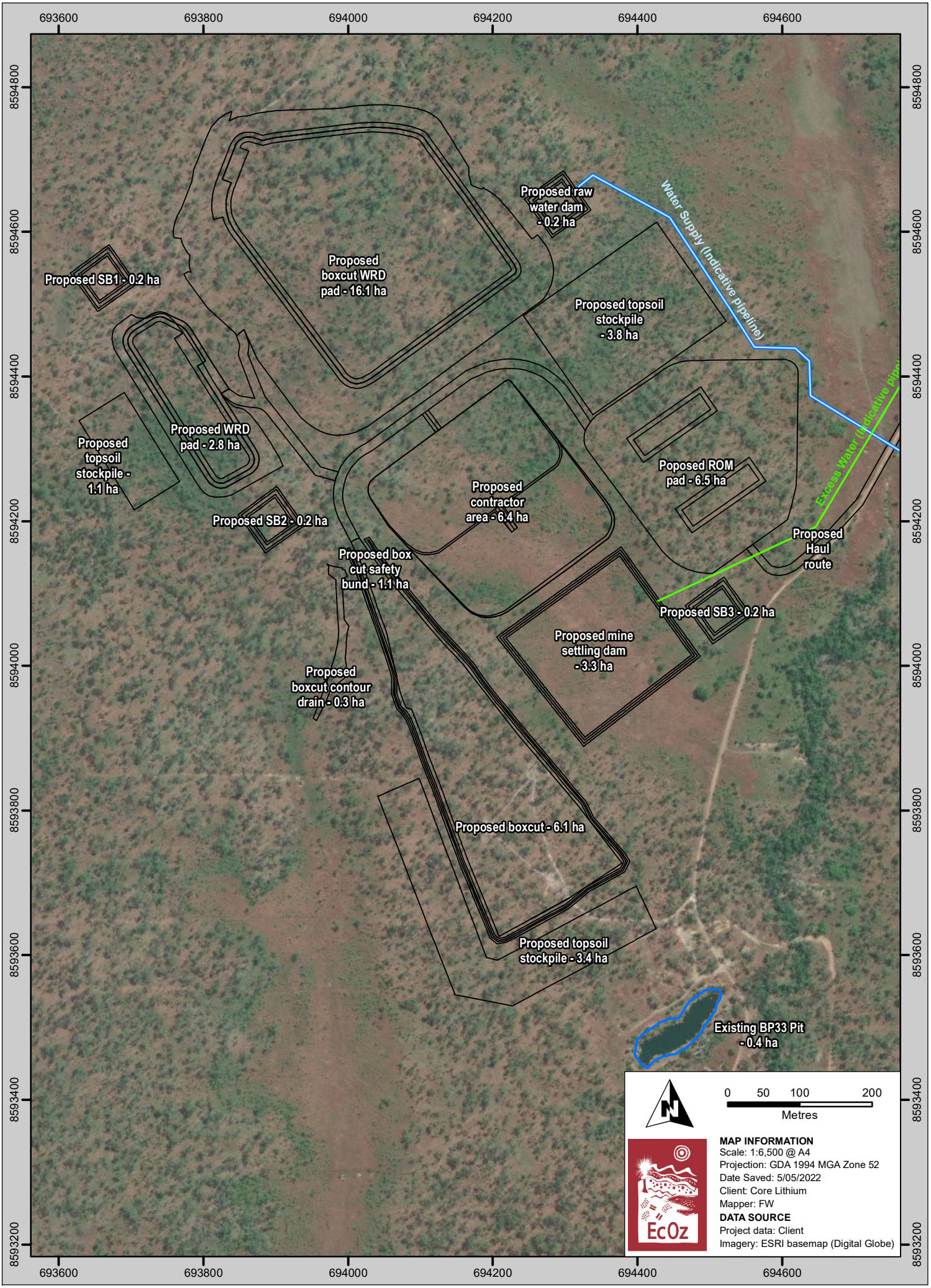
Aspect	Element	Details / description	References
Roads and Traffic	Internal haulage	Mined ore hauled from BP33 to Grants processing facility.	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B)
	Product transport	Quad road trains will transport product from site to Darwin Port via Cox Peninsula Road and Stuart Highway; 10 return trips/day. Road safety risks were assessed through the Grants Lithium Project EIS. A Journey Management Plan is in place to provide safety controls along the haul route.	
Workforce	Construction	~60 personnel	
	Operations	~125-150 personnel	
Mine Closure	Infrastructure	Removed from site on completion of mining	Finniss Lithium Project BP33 Underground Mine, Mine Closure Plan (MLC 2022) – adopted by the Company (Appendix E) Groundwater assessment (CloudGMS 2021) (Appendix I)
	Backfilling	WRD's backfilled to the box cut, underground and potentially the existing BP33 pit	
	Plugging – Underground	The backfill material will comprise of fresh waste rock reclaimed from the BP33 underground mining process. The fresh waste will backfill approximately the first 20 m of depth (TME 2019). The fresh waste will be used to establish a competent base in which to block the portal and complete the box-cut backfilling process with the remaining oxide waste material.	
	Rehabilitation	All mine waste will be backfilled underground, within the box-cut and potentially the existing BP33 pit. The site will be revegetated with native local species.	Rehabilitation Management Plan (EcOz 2022) – adopted by the Company (Appendix E)
Project history	Existing BP33 open-cut pit	The BP33 deposit was historically mined in the 1980's and 1990's as an open pit mine. The ore was trucked to a central processing facility located nearby at Observation Hill. The Observation Hill processing facility operated for over a decade. The BP33 historical open-cut pit is located on ML32346.	BP33 Referral (Appendix A)

2.2 Disturbance footprint

Existing and proposed disturbances of the BP33 Project are summarised in Table 2-2, and shown on Figure 2-3. The proposed footprint area is based on the TME (2019) design as shown in Figure 2-3.

Table 2-2. Existing and proposed disturbances

Disturbance Summary	Footprint (ha)			Permanent / Temporary (if temp, when will be rehabilitated)
	Existing	Proposed (this MMP)	Total	
Mine administration / contractor area	-	6.4	6.4	Temporary -to be rehabilitated at cessation of mining
Existing open-cut BP33 pit	0.4		0.4	Temporary – previous disturbance, potentially to be backfilled with mine waste and rehabilitated during operations
Box-cut	-	6.1	6.1	Temporary -to be backfilled at cessation of mining
Box-cut safety bund	-	1.1	1.1	Temporary -to be re-spread over final surface of backfilled box-cut
Box-cut contour drain	-	0.3	0.3	Temporary -to be reprofiled and rehabilitated at cessation of mining
Underground	-	0	0.0	Permanent water filled void at cessation of mining
WRD 1 (Box-cut)	-	16.1	16.1	Temporary -to be backfilled into the box-cut
WRD 2 (UG WRD)	-	2.8	2.8	Temporary -to be backfilled into the box-cut and underground
ROM Pad	-	6.5	6.5	Temporary -to be rehabilitated at cessation of mining
Raw water dam (RWD)	-	0.19	0.19	Temporary -to be rehabilitated at cessation of mining
Mine settling dam (MSD)	-	3.27	3.27	Temporary -to be rehabilitated at cessation of mining
Sediment basins (SB)	-	0.82	0.82	Temporary -to be rehabilitated at cessation of mining
Exploration	-	-	-	Exploration disturbance and security captured in exploration MMP. Temporary – disturbance within mine footprint to be rehabilitated on closure.
Box-cut access road	-	0.8	0.8	Temporary -to be rehabilitated at cessation of mining
WRD access roads	-	0.4	0.4	Temporary -to be rehabilitated at cessation of mining
Topsoil stockpile (UG)	-	8.3	8.3	Temporary -to be rehabilitated at cessation of mining
Ancillary – Water pipeline corridor from OHD to mine		0.4	0.4	Temporary -to be decommissioned and rehabilitated at cessation of mining
Ancillary-Haul Road from BP33 to Grants processing facility		12.5	12.5	Temporary -to be rehabilitated at cessation of mining and processing



Path: \\ecoz-file01\dardata\01 EcOz_Documents\04 EcOz Vantage GIS\EZ20208 - BP33 Supplementary Environmental Report\01 Project Files\Report maps\Figure 1 2. Map of BP33 mine site layout.mxd

Figure 2-3. Map of BP33 site layout, existing and proposed disturbances

2.3 Organisational structure

The Organisational Structure that will implement the management systems detailed in this MMP is detailed in Table 2-3.

Table 2-3. BP33 organisational structure

Role	Responsibility
Mine Manger	Over-arching accountability for compliance with MMA, MMP authorisation and ensuring compliance with the MMP throughout operations.
HSE Manager	Key person responsible for maintaining and implementation of the Lithium Developments Finniss Lithium Project Environmental Management System (EMS). Addresses all commitments and conditions associated with the environmental and mining approvals, permits and licences.
Environmental Superintendent	Provide direct support to the HSEC Manger to maintaining Lithium Developments Finniss 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. Implementation of EMPs
Environmental Advisor	Conduct site compliance monitoring programs and provide support to the Environmental superintendent and HSEC Manager
HSEC Advisor	Conduct site compliance monitoring and provide support to the Environmental superintendent and HSEC Manager

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

3 SITE CONDITIONS

3.1 Site setting

Key site details are outlined in section 3.1.1 through to 3.1.14 below. Site details are used to inform the development of a Conceptual Site Model (CSM) that identifies the sources (including contaminants), pathways and receptors for the proposed disturbance (see section 3.2).

3.1.1 Climate

Description			References
Climate Type: ☑ Wet/dry tropics or ☐ Arid or ☐ Other:_____			Department of Environment and Science (DES) SILO (Scientific Information for Land Owners) database (https://legacy.longpaddock.qld.gov.au/silo/) from January 1957 to November 2021. BP33 (-12.70 and 130.80 decimal degrees) Figure 3-1. Average monthly rainfall and evaporation for BP33 – SILO data from 1957 to 2021 Figure 3-2. Average monthly temperature for BP33 – SILO data SILO data from 1957 to 2021
Average Temperature (°C)	Min: 17.7 Max: 34.4	Month: July Month: October	
Average Rainfall (mm)	Min: 0.9 Max:411.1 Average: 1624.8	Month: July Month: January	
Average Evaporation (mm)	Min: 150.3 Max: 240.3 Average: 2327.3	Month: February Month: September	

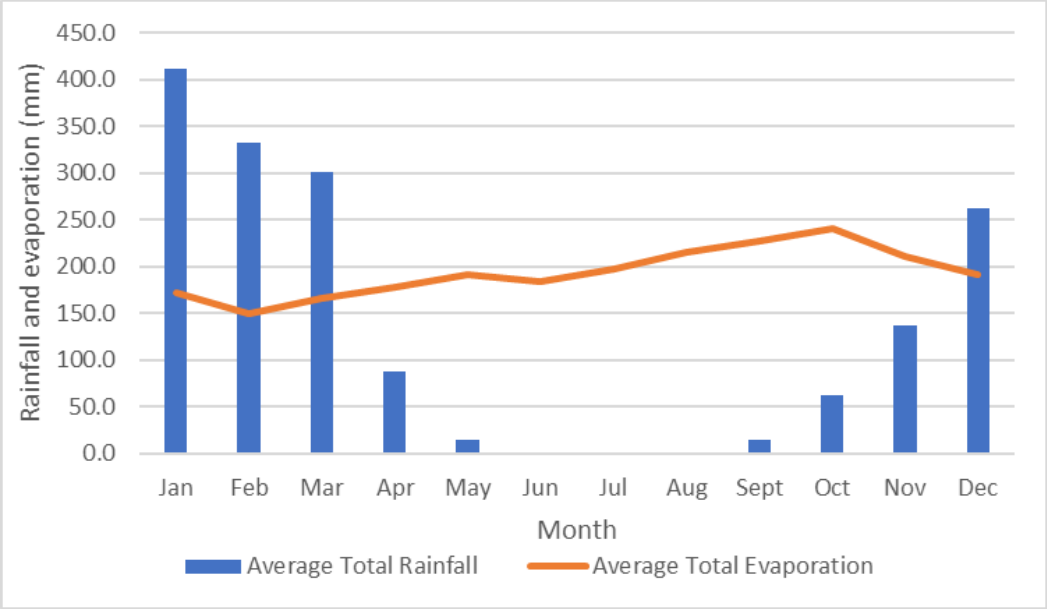


Figure 3-1. Average monthly rainfall and evaporation for BP33 – SILO data from 1957 to 2021

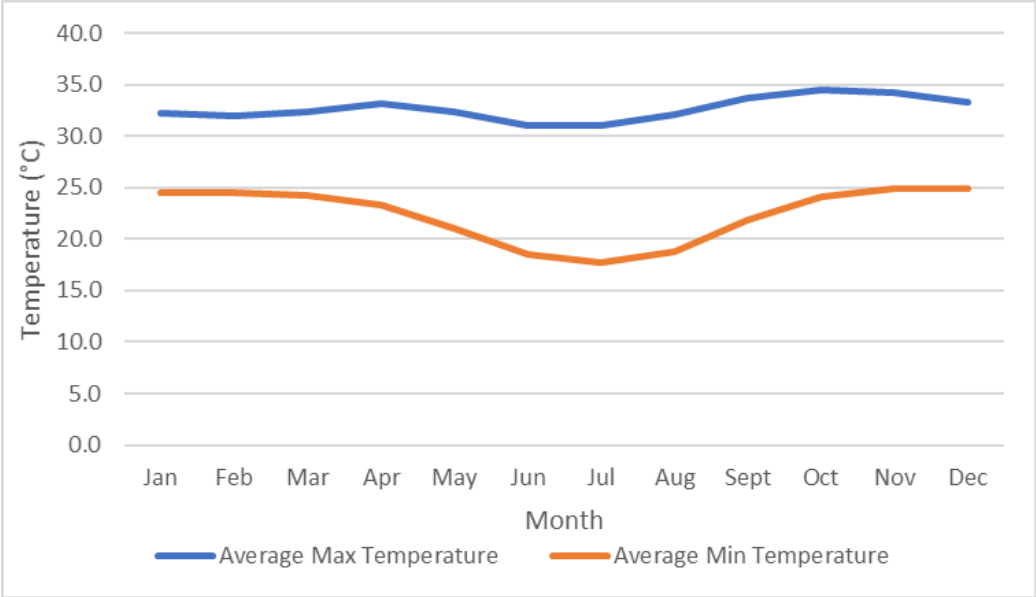
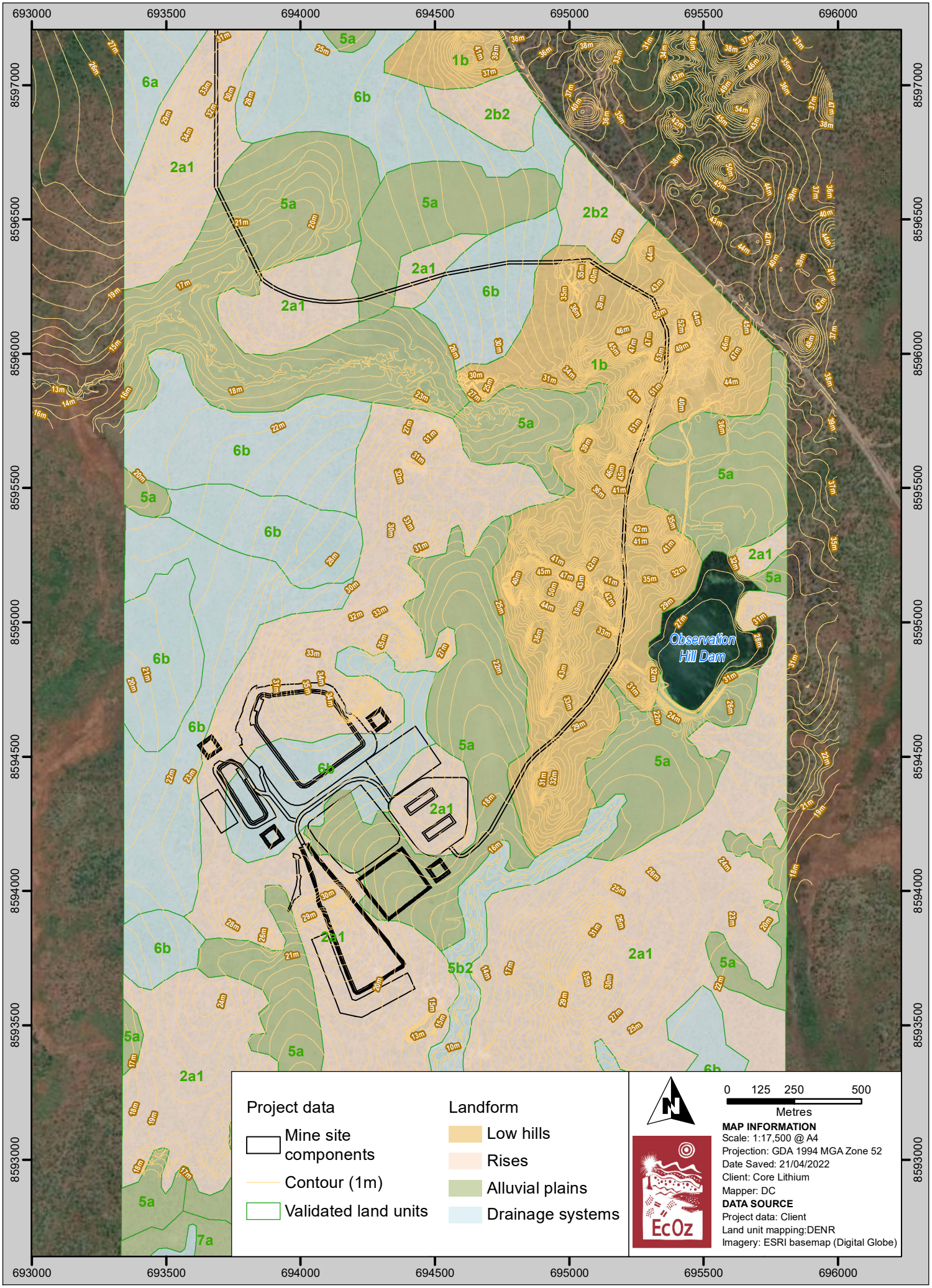


Figure 3-2. Average monthly temperature for BP33 – SILO data SILO data from 1957 to 2021

3.1.2 Landscape and Soils

Description	References
Topography: The land is generally flat, with a slope of 5%, except for short section of steep ridges traversed by the haul road from BP33 to the Grants Project (land unit 1b). Locally BP33 is situated in a subtle valley with a south to south-west orientation. **Land units:** The survey area comprised of eight land units. The project area broadly comprises well-drained low hills and rises, intersected by seasonally waterlogged drainage systems and alluvial plains. The proposed mine site occurs predominately on land characterised as low rises with gravelly well-drained soils (land unit 2a1). The contractor area and sections of the RoM Pad, topsoil stockpiles and the box-cut waste rock dump (WRD) pad, are located on broad drainage floors (land unit 6b). Only a small section of the haul road and the contractors' area is located on narrow alluvial plains and upland terrain (land unit 5a). Both land units 6b and 5a are classified as having 'severe level of seasonal water logging'. Observation Hill Dam (OHD) is located on narrow upland alluvial plains (land unit 5a), which are associated with ephemeral drainage lines. The pre-existing 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 traverses' steep ridges (land unit 1b) and narrow alluvial plains (land unit 5a). **Soils type:** There are predominantly two soil groups in the BP33 proposed disturbance area – Rudosols and Hydrosols. Rudosols are very shallow soils or those with minimal development. Hydrosols are seasonally inundated and generally occur on coastal floodplains, swamps and drainage lines. **Soil characterisation:** Soil characterisation results suggest that the soil at the site is an infertile, gravelly sandy loam. The Emerson test indicates that the soil should be non-dispersive but given the low organic matter level and sandy texture the soil likely has poor structure and limited water-holding capacity, and therefore could be susceptible to erosion under wet conditions. It is expected successful rehabilitation will require increasing the physical and chemical fertility of the soil to some extent, consistent with the proposed final end use (EGi, 2020).	Groundwater assessment (CloudGMS 2021) (Appendix I) Geochemical characterisation reports (EGi 2020, 2021, 2022) (Appendix F) Ecology reports (EcOz 2020) (Appendix J) Figure 3-3. Map of BP33 topography and land units



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ21269 - BP33 - Mining Management Plan\01 Project Files\Updated maps Apr 2022\Figure 2-3 Map of topography and landunits.mxd

Figure 3-3. Map of BP33 topography and land units

3.1.3 Geology and material characterisation

Description	References
Regional geology: Regional geology is in the Pine Creek Orogen of the Finniss River Group. Lithology description Greywacke, shale. Siltstone, sandstone (Strike). **Local geology:** Geology of the BP33 resource is almost identical to that of the Grants resource (located ~5 km to the north of BP33). Within the weathering zones there are two predominate lithologies, phyllite and pegmatite. The ore (spodumene) is located within the fresh pegmatite and the Phyllite is associated with the Burrell Creek Formation (BCF). The Finniss Lithium Project comprises a number of pegmatite prospects that are being explored by Core Lithium Ltd. Phyllite is a foliated rock, and based on the discussion with exploration personnel, it is understood that the foliation is striking approximately North-South (~010-015°). This is consistent with bedding trends mapped in outcropping BCF in regional geological maps. A review of the Bynoe 1:100 000 surface geology (Pietsch, 1986) did not reveal any mapped faults or significant geological structures in the vicinity of the BP33 project area (CloudGMS 2021). **Geochemical characterisation:** Classification criteria: • Non-acid forming (NAF): Ore or Oxide or Transitional and fresh rock with Total S<0.2% • Potentially acid forming – Low Capacity (PAF-LC): Transitional and fresh rock with Total S ≥0.2% and <0.4% • PAF: Transitional and fresh rock with Total S ≥0.4% Results of static tests suggest that all the stockpiled mine materials, including the oxide waste placed in WRD1 and the transition and fresh waste in WRD2 will present little risk of producing acidic metalliferous drainage as a result of short-term surface storage during the mining operation. The results of water extraction tests conducted on waste rock samples (EGi 2021) showed: • Oxide waste rock stored in WRD1, or transition and fresh waste rock stored in WRD2 would be unlikely to produce low pH saline seepage during short-term surface storage. • The mobility of Al in all waste rock and As in fresh waste rock on contact with water, could potentially result in elevated concentrations of these elements in seepage from WRD1 (Al only) and WRD2 (Al and As) during short-term surface storage. • Concentrations of As in water extracts of transition and fresh waste rock were of a similar magnitude to those measured in the groundwater collected from bores sampling the deeper aquifer within the BCF at the nearby Grants project. These results suggest that, on backfilling the box-cut with fresh waste rock that has not undergone extensive weathering, groundwater should not be significantly impacted in terms of mobilisation of As. The results of peroxide extraction tests conducted on waste rock samples showed: • Should substantial oxidation of fresh waste rock occur during surface storage, the concentrations of a number of metals/metalloids including Al, As, Co, Cr, Cu, U and Zn may by elevated in comparison to desirable environmental conditions, and seepage from the WRD could potentially represent a risk of contaminating the receiving environment. The results of water extraction tests conducted on ore samples (EGi 2021) showed: • Water extracts for the ore samples were slightly alkaline with low salinity • Except for Al and Fe, metal and metalloid concentrations were non-detectable in almost all of the water extracts of the ore samples • Al in run-off from ore stockpiled in the ROM pad may present an environmental risk • As the ore samples are all likely to be NAF and therefore unlikely to produce acidic drainage, stockpiled ore may not require any specific management to reduce potential impacts from run-off. However, the potential risk from elevated Al concentrations in run-off, should be evaluated and monitored at site.	Groundwater Assessments (Groundwater Enterprises 2019 and CloudGMS 2021) (Appendix I) Geochemical characterisation reports (EGi 2020, 2021 and 2022) (Appendix F) Figure 3-4. Cross section at BP33 showing pegmatite intersections in previous drilling Figure 3-5. Location of drill holes for geochemical characterisation

Description	References
Kinetic leach column testing confirmed the non-acid forming (NAF) classification of the Oxide, Transition and Fresh waste rock samples tested during this study, demonstrating that this excess alkalinity can be delivered at a rate to match or exceed the rate of acid generation, ensuring neutral pH conditions will be maintained under both oxidising and saturated conditions (EGi 2022). The results of leachate analysis for leach column tests were compared with baseline surface and groundwater quality for the BP33 project. Results from leach column testing suggest that while acidic drainage from wastes stored in WRD at the BP33 project or following backfilling of mine voids is unlikely, there is potential for water in contact with these materials to contain elevated concentrations of a number of metals/metalloids (arsenic, copper, lead and zinc, and possibly aluminium) relative to local surface and groundwaters (EGi 2022).	

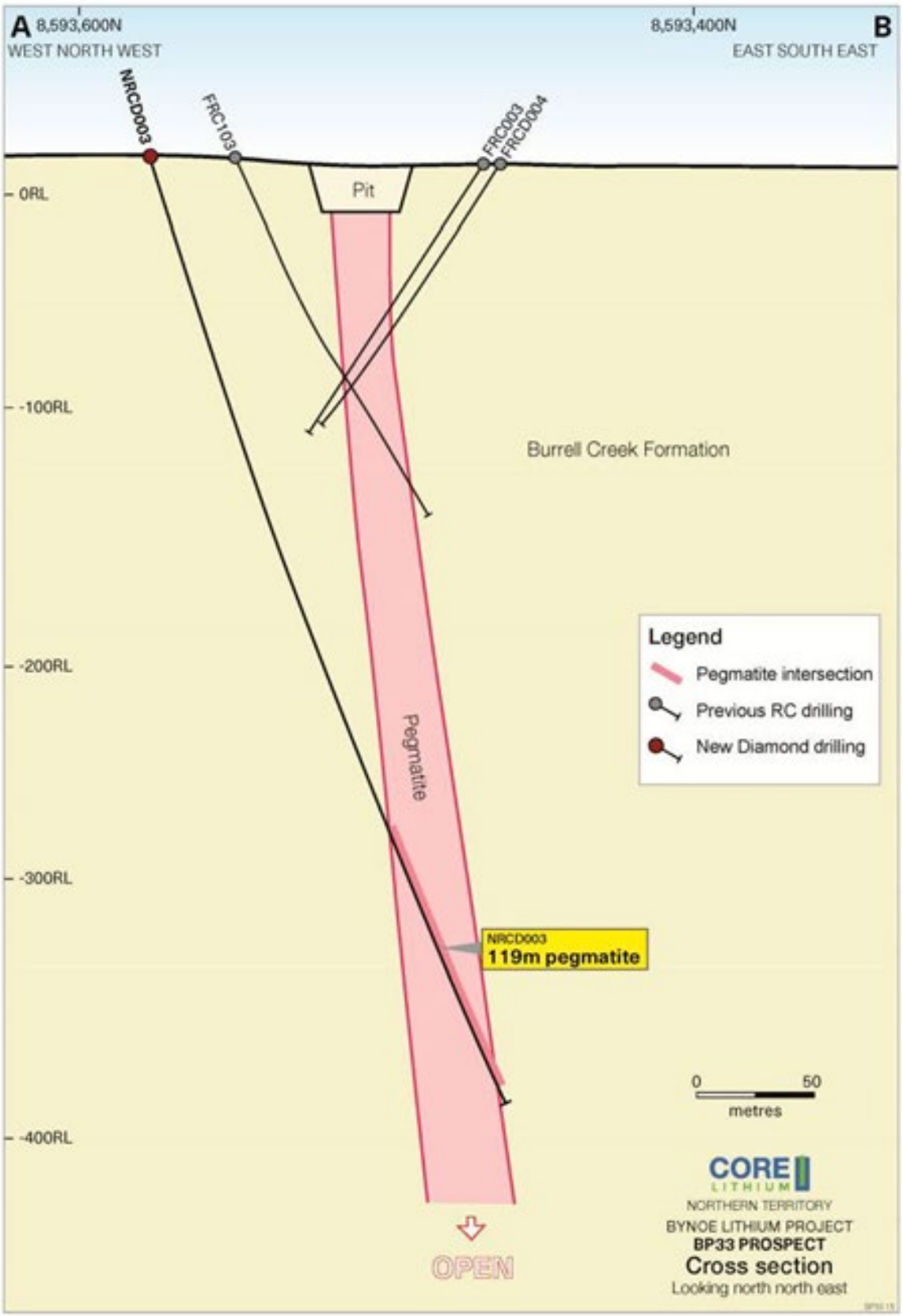


Figure 3-4. Cross section at BP33 showing pegmatite intersections in previous drilling

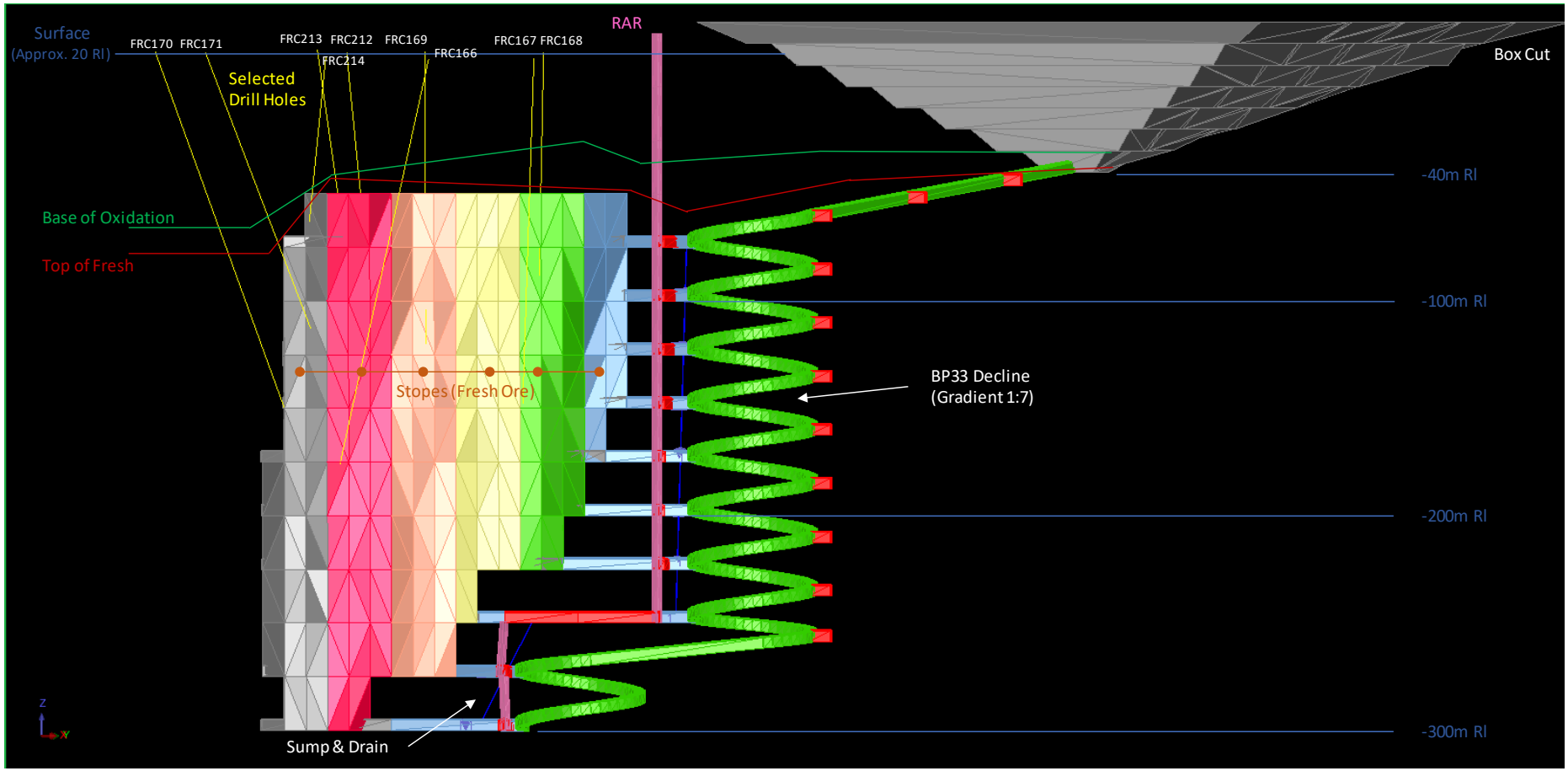


Figure 3-5. Location of drill holes for geochemical characterisation

3.1.4 Local Hydrogeology

<table>
<tr><th>Description</th><th>References</th></tr>
<tr><td>

Beneficial use declaration:

The project area is within the Darwin Rural Water Control District declared under the NT *Water Act 1992*. The district has the following declared beneficial uses: Agriculture, aquaculture, public water supply, environment, cultural, industry, rural stock and domestic, mining activity and petroleum activity.

Aquifer characteristics of the BP33 mine site area

<table>
<tr><th>Age</th><th>Name</th><th>Lithology</th><th>General depth/ thickness</th><th>Hydrogeology</th></tr>
<tr><td>Quaternary</td><td>Alluvial sediments</td><td>Silty sand and gravel</td><td>Present at surface, mostly confined to drainage lines, usually <4.5 m thick. Not a significant aquifer in the region</td><td>Permeable, but above the water table (unsaturated) most of the time</td></tr>
<tr><td>Proterozoic</td><td>Highly to moderately weathered BCF</td><td>Saprolite (phyllite). Mostly silt, clayey and minor sand</td><td rowspan="2">Weathered zone is on average 60 m thick, with the upper 30 m extensively weathered and the lower 30 m moderately to slightly weathered</td><td>Mostly low permeability</td></tr>
<tr><td>Proterozoic</td><td>Slightly weathered BCF</td><td>Saprock (phyllite) mostly clayey silt with rock fragments</td><td>Mostly low permeability. A few fractured aquifers, but yields typically less than 2 L/s</td></tr>
<tr><td>Proterozoic</td><td>Fresh BCF</td><td>Blue-grey fresh phyllite</td><td>Generally occurs at depths greater than 50 m</td><td>Low permeability, locally fractured rock</td></tr>
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Aquifers and depth:

The Burrell Creek Formation (BCF) forms the main aquifer beneath the BP33 Project.

Groundwater is typically intersected at the base of the weathering zone/transition into fresh BCF. Groundwater drilling around the BP33 site indicates the main groundwater intersections occur at depths of 25 – 70 m with most bores intersecting the groundwater at depths around 45 m.

Yield:

BCF is a marginal fractured rock aquifer with typical bore yields of less than 0.5 L/s; largely due to the low primary porosity and lack of open fracturing within the formation. Higher yields (up to 3.5 L/s) have been recorded where drilling intersects fracture zones or bands of quartz veining. These fracture zones are discrete and commonly less than 1 m in thickness (CloudGMS 2021).

Maximum pumping rates ranged between 1.8 and 2 L/s, which are typical of the fractured BCF aquifer across the wider region. Bore yields are relatively low, but groundwater inflows into the BP33 box cut and underground are projected to intersect relatively large volumes of groundwater requiring dewatering.

The BCF aquifer has low transmissivity, so the amount of water entering into the bores is relatively low. As the box cut/mine will be open to a much larger cross section of the aquifer, even with low transmissivity/storage there is potential to intercept reasonably large volumes of groundwater.

Aquifer hydraulic properties

Slug tests completed on the installed monitoring bores, hydraulic conductivity results from Groundwater Enterprises (2020) reveal that the permeability of the BCF is dependent on secondary porosity (i.e., fracture and joint development). Fresh and weathered BCF with negligible fracturing displayed a

</td><td>

Groundwater Assessments (Groundwater Enterprises 2019 and CloudGMS 2021) (Appendix I)

BP33 Underground Mine Water Management Plan (EcOz 2022) – adopted by the Company (Appendix G)

Bureau of Meteorology Groundwater Dependent Ecosystems (GDE) Atlas http://www.bom.gov.au/water/groundwater/gde/map.shtml

Figure 3-6. Map of BP33 groundwater flows, predicted drawdown and bore locations

</td></tr>
</table>

Description	References
hydraulic conductivity range of 0.003 – 0.08 m/day. Bores that intersected fractured BCF (fresh or weathered) showed a hydraulic conductivity two orders of magnitude higher with a range from 0.27 – 2.6 m/day. The alluvial sediments (silty sand) tested with a hydraulic conductivity in the order of 0.4 m/day. **Groundwater levels (standing water level):** Groundwater level monitoring has been undertaken on the BP33 bores since their installation in the dry season of 2020. Groundwater levels in the deeper fractured BCF bores ranged from 4.5 to 9.8 mBGL in the late dry season. The bores responded uniformly to wet season recharge and groundwater levels approached land surface by late January 2021. The seasonal change in water levels in the deep BCF bores ranges from 3.7 – 9.6 m. The seasonal range is greatest in BPG1 and BPG6, which are located on a ridge of outcropping BCF approximately 15 m higher in the landscape than the other bore sites. The larger water level range in these bores suggests that recharge rates may be higher in the elevated areas relative to the lower lying sites along the drainage lines. The water level range observed in 2020 is consistent with the longer monitoring record available from bores at Grants Lithium Project where since 2018 the annual change in groundwater levels in the deep BCF bore has ranged from 5.4 – 9.3 m. Groundwater levels in the shallow bores constructed in the heavily weathered top of the BCF or alluvial sediments ranged from 4.4 – 6.6 mBGL in the late dry season. They rose steadily in response to wet season rainfall from December 2020 and plateaued by mid-February at levels around the natural surface. The seasonal water level fluctuation in the shallow bores ranged from 3.1 – 5.5 m. **Groundwater flow direction:** The local flow direction of groundwater is south-east across the BP33 site with groundwater moving from the more elevated areas in the north-west of the site to the lower lying areas along the drainage line in the south-east. **Existing groundwater users:** Excluding monitoring bores drilled for the Grants and BP33 project's there are six registered groundwater bores within 10 km of the BP33 site. The closest groundwater bore in use is RN041993, located 4.6 km south of BP33 on the Fog Bay Road and is a domestic water supply bore drilled in 2020. **Groundwater dependent ecosystems:** The Bureau of Meteorology (BOM) Groundwater Dependent Ecosystems (GDE) Atlas maps an area of medium GDE potential along the drainage lines to the immediate east and south of BP33. Small pools have been observed to persist in the watercourse into the late dry season (EcOz, 2019) and a narrow zone of riparian rainforest occurs, which suggests a level of groundwater dependence. These ecosystems are likely facultative GDEs, with an infrequent or partial dependence on groundwater (CloudGMS, 2021). **Groundwater drawdown:** Modelling of groundwater drawdown was undertaken as a component of a broader modelling study with the objective of identifying potential impacts to the groundwater system and associated receptors from the Finniss Lithium Project (including Grants open cut mine and BP33 underground mine). The modelled extent of groundwater drawdown around the BP33 mine (and Grants mine) due to dewatering, shows that there will be two separate drawdown cones in the surrounding BCF groundwater system at the end of the BP33 life of mine. The BP33 drawdown cone extends approximately 2 km from the underground mine (Figure 3-6) and the Grants drawdown cone approximately 1 km from the open pit. The Grants and BP33 drawdown cones do not interact, indicating that groundwater impacts are localised around each of the mine sites. Once mining ceases, the water table is predicted to recover to pre-mining levels within three years. **Groundwater quality:** Baseline groundwater quality monitoring has been undertaken at 13 groundwater monitoring bores in seven locations since their installation in September 2020 (Figure 3-6). A combination of shallow (<36m depth) and deep bores (>36m deep, max. 109mBGL) were installed to provide data representative of the range of groundwater quality conditions encountered as the mine progresses deeper underground. Results indicated that the shallow and deep aquifers have distinct water quality characteristics. The data show that the deep groundwater aquifer is naturally high in arsenic, which is potentially toxic to aquatic organisms, and phosphorous, which can cause algal blooms in surface water courses. This indicates that groundwater inflows dewatered from the underground mine may include water quality	

Description	References
characteristics that mean the water cannot be directly released to surface waters, even if free from any contaminants associated with mining. Water treatment may be required as a contingency strategy to ensure that water high in arsenic and phosphorus is not released to surface water. A WDL will be obtained prior to any discharge of waste waters and a discharge plan will be developed for approval prior to any discharge occurring.	

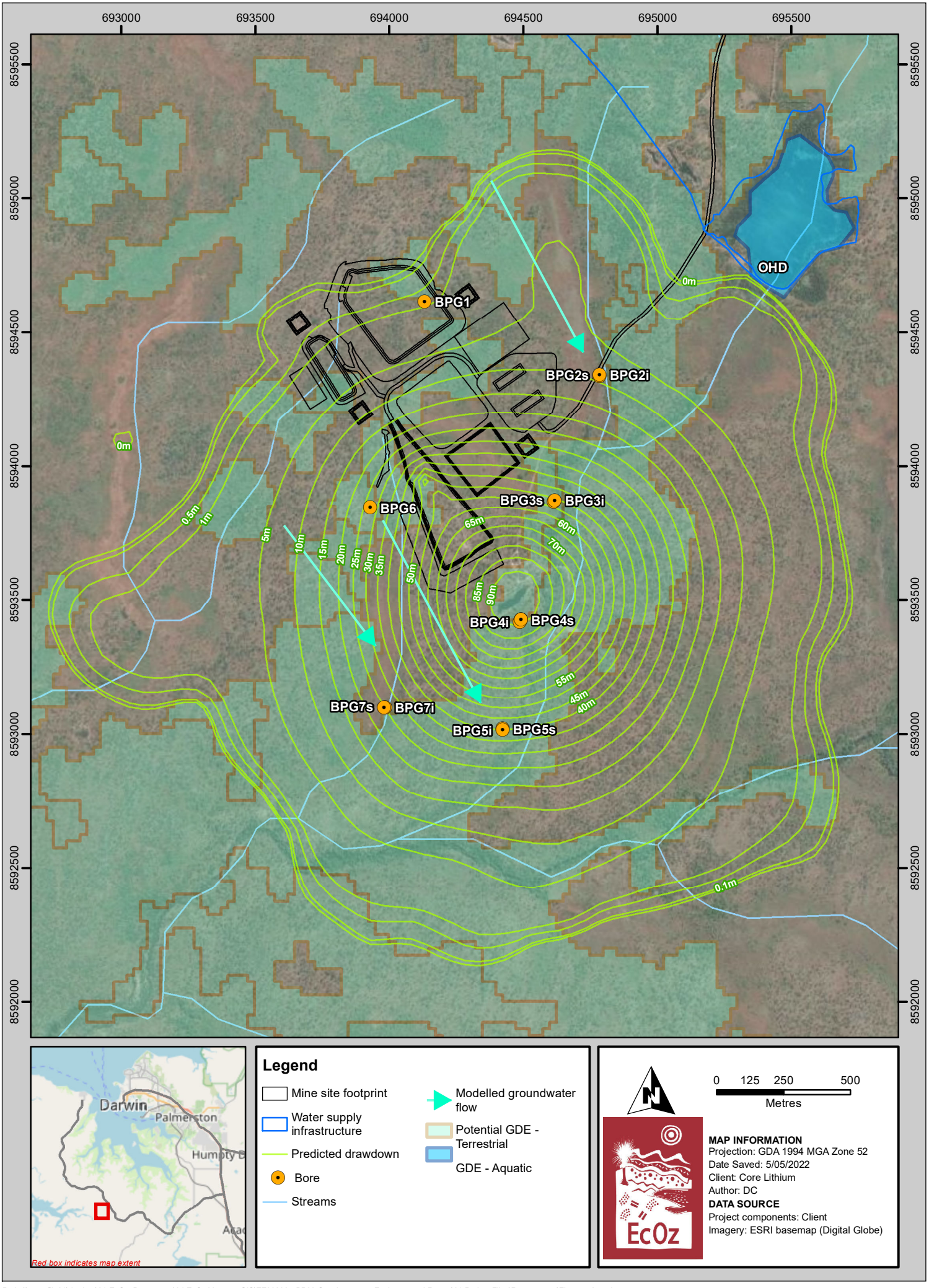

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Figure 3-6. Map of BP33 groundwater flows, predicted drawdown and bore locations

3.1.5 Local Hydrology

Description	References
Catchment and water courses: The project is located within the Charlotte River catchment of Bynoe Harbour. A minor ephemeral watercourse (stream order 1) flows along the eastern boundary of the mine site and discharges off the southern boundary of the ML and into the Charlotte River, approximately 2.5km downstream. The watercourses in the ML are ephemeral and generally cease to flow by April-May each year; however, some small pools remain into the dry season and indicate there is likely some groundwater interaction.	Surface hydrology and flood inundation report (EnviroConsult Australia Pty Ltd 2020) (Appendix H)
Flows: Surface flows in the area follow the topography gradient of the drainage lines to the southwest of the project area; towards the Charlotte River, and into Bynoe Harbour.	Site water balance (WRM 2021) (Appendix H)
Beneficial use declaration: The harbour is captured under the Fog Bay area, which has a declared beneficial use under the NT *Water Act* of aquatic ecosystem protection and recreational water quality aesthetics. The *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG 2018) apply to waterways subject to potential impacts from the BP33 mine.	BP33 Underground Mine Water Management Plan (EcOz 2022) – adopted by the Company (Appendix G)
Water bodies: The man-made OHD is a permanent waterbody that will be used as a water source for mining and there are also a number of pit lakes that have formed from past mining activities.	
Water quality: Baseline water quality has been collected from water storages (OHD and existing BP33 Pit) and surface water creek sites since 2017. All water quality is with ANZG (2018) guideline value or limit of reporting (LOR) except as detailed below. Surface water storages (OHD and existing BP33 Pit): • Arsenic (which is naturally high in the groundwater) had occasional detections above the guideline value at BP33 Pit, probably because it receives groundwater inflows. • Iron and lithium, which are not considered toxic but were detected and do not have specific guideline values against which to assess toxicity. • E. coli and enterococci were also sampled and detected at varying levels indicating that the water will require treatment when used as a potable water supply. Upstream and downstream sampling sites: • Ph slightly acidic to neutral (pH generally between 5.2 and 7.3) • Barium, iron, lithium and strontium concentrations were detected above the LOR, but do not have specific guideline values against which to compare concentrations as they are not key toxicants. • Aluminium was the only dissolved metal that recorded concentrations above the guideline value for most sampling rounds, indicating it is naturally elevated in the surface waters. • *E. coli* and *enterococci* were also sampled and detected as expected.	Figure 3-7. Map of BP33 Project catchment hydrology and surface water monitoring locations
Flooding: The project area is not impacted by storm surge or flooding. Because of the steep terrain in the Bynoe Harbour catchments, it is unlikely storm surge will have an impact on the mine infrastructure (EnviroConsult 2020). Flood risk analysis showed that there is no increased danger to humans, livestock or native wildlife due to the mine site. Flood inundation modelling indicated that there is little difference to the natural flow regime caused by the mine site.	

Description	References
Catchment discharges for the 1%AEP event are 237 m3s-1 for the pre-mining and 236.3 m3s-1 for the mining scenario and Engineers Australia Regional Flood Frequency Estimated discharge is 298 m3s-1 (EnviroConsult 2020). **Water balance model outcomes:** • The mine water balance will be net positive. That is, water inflows will be greater than water losses and usage. This is mainly due to the large volumes of groundwater inflow (6,359 ML), which are close to double the modelled losses and usage (3,327 ML) over the life of mine. • Additional water disposal methods will be required to manage surplus groundwater. Most of the groundwater inflows received by the BP33 water management system would be transferred to the Grants site and stored in the finished open cut void. However, other options are required to manage surplus water during the period between the BP33 mine starting and the Grants mine finishing. • There would be no spills from the BP33 mine water storages (MSD and RWD) for any of the climatic conditions assessed. **Surplus water management strategies:** 1. *Water transfer and storage* Most of the surplus water will be transferred to the Grants open cut void. The monthly volumes that would need to be transferred to keep the BP33 underground dry, range between approximately 60 ML/month to 180 ML/month over the life of mine. It is assumed that water cannot be transferred until month 18 in the BP33 mining schedule, which is when mining has ceased at Grants (schedule for September 2024). Once transfer of water commences, the Grants open cut void is predicted to accumulate up to approximately 4.7 GL of water by January 2027 (during median climatic conditions), which is approximately half of the total Grants void capacity and so does not pose any risk of causing the pit to overtop. 2. *Controlled off-site discharges* Controlled release will occur from the MSD into the drainage line east of the mine in accordance with a Waste Discharge Licence under the *Water Act*, which Lithium Developments will need to apply for prior to commencement of mining. The volumes that can be released by this method are limited by the naturally high arsenic concentrations of groundwater dewatered from the underground, as well as the restricted timing of discharges to periods when the ephemeral drainage line would naturally flow i.e. discharge is not permitted during the dry season. The maximum allowable controlled release rate has been determined based on the dilution factors required to meet the arsenic site-specific guideline value (SSGV) for surface water (0.013 mg/L) and is predicted to fluctuate generally between 1:17 and 1:12 parts MSD water to parts receiving water, depending on the amount of dilution from rainfall runoff. The modelled controlled release volumes from MSD to the receiving environment under different climatic conditions show that in very wet (1%ile) climatic conditions, the site could release up to 150 ML/month in the peak of the wet season. In median (50%ile) climatic conditions, the site could release up to 25 ML/month. 3. *Irrigation* Irrigation of surplus water to a designated land irrigation area may be required during the BP33 start-up phase, prior to the Grants open cut void being available for the transfer of water. The total volume of water requiring disposal during the 16 months start-up phase is estimated to be between 120 ML to 210 ML, depending on the climatic conditions experienced at the time. Modelling outcomes indicate that an irrigation area of 20 ha should be sufficient to accept these volumes of water during most climatic conditions. Achievable irrigation rates at BP33, as well as assessment of the area available to irrigate, will be undertaken through the detailed mine design phase to confirm the suitability of this as a water disposal method for the project. Potential locations will be included in the BP33 underground water management plan revision (EcOz 2022) – adopted by the Company. *Contingencies* • Additional mine water storage: This may include constructing an additional 320 ML storage. • Evaporator fans at Grants Pit: This would increase water disposal opportunities. • Water treatment for arsenic removal: This could increase controlled release opportunities and water transfer options to clean water storages such as OHD. • Reduced catchment by 6.1 ha by backfilling box-cut with cut and cover method (see Section 5.8).	

Description	References
Contingencies will be further evaluated through the detailed mine design phase. As the production phase at Grants mine is planned to commence in late 2022, groundwater inflows and dewatering monitoring data recorded at the Grants mine site will be used to refine the groundwater and water balance models for the BP33 projects to aid mine water management planning prior to commencement of mining.	

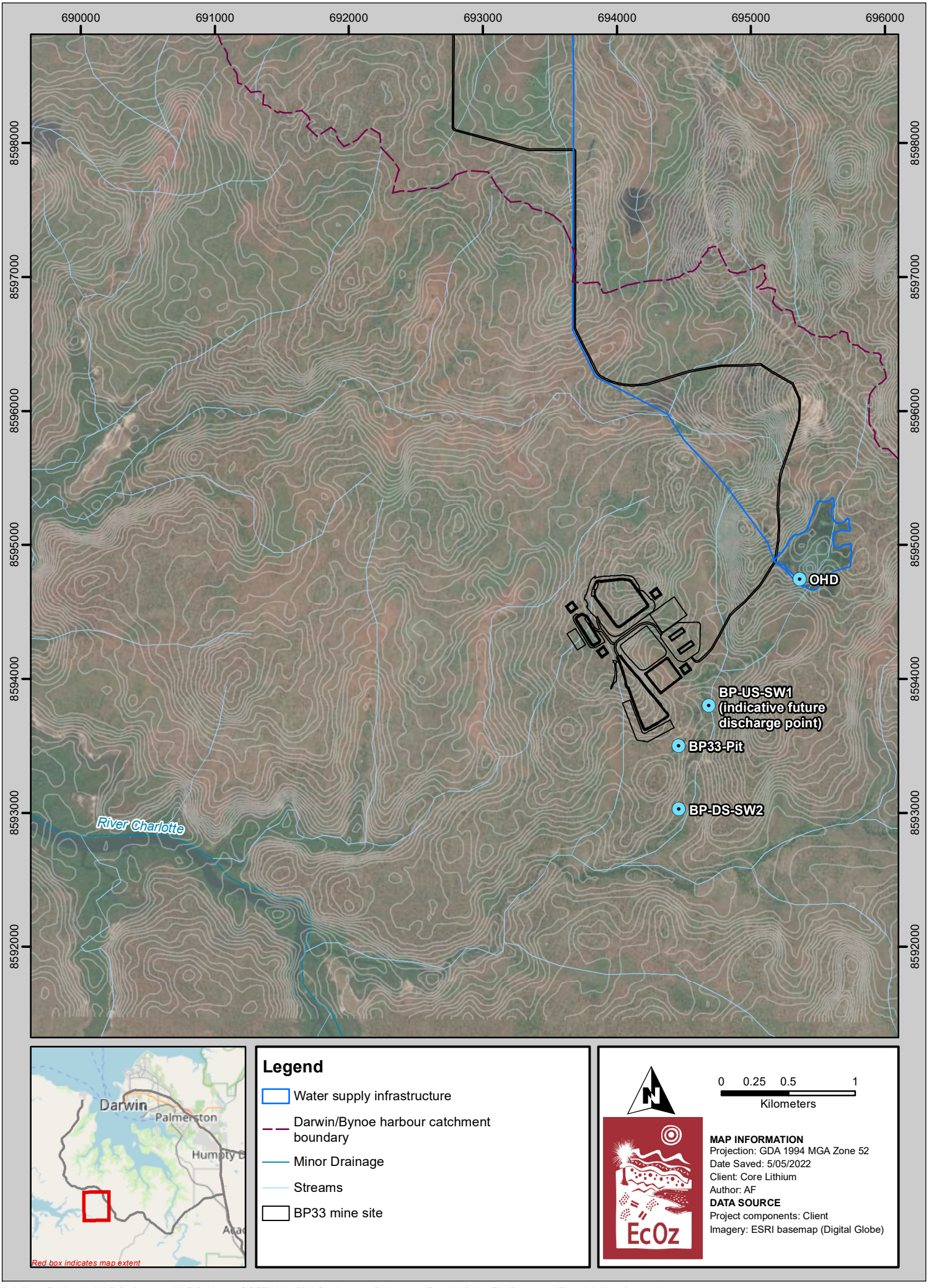

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Figure 3-7. Map of BP33 Project catchment hydrology and surface water monitoring locations

3.1.6 Sacred Sites

Description	References
An AAPA Authority Certificate has been granted to Lithium Developments (Grants) NT over subject land, for activities authorised under the NT *Mining Management Act 2011.* There are no Aboriginal Sacred Sites or restrictions identified within the BP33 disturbance footprint.	AAPA Authority Certificate

3.1.7 Other Heritage/Cultural Sites

Description	References
Based on a search of the NT Heritage Register, the nearest site protected under the *NT Heritage Act* is 'Site 5', a previously recorded Aboriginal archaeological site. This site, approximately 6 km to the north-west of the proposed mine site, is a stone artefact scatter of moderate site significance. A number of historic mining sites, listed on the NT Heritage Register but not protected under the *NT Heritage Act,* were identified by the search. The closest of these is approximately 500 m from the WRD pad. Core does not propose any activities that would disturb this site. None of the sites listed in the NT Heritage Register are intersected by the project components.	NT Heritage Register

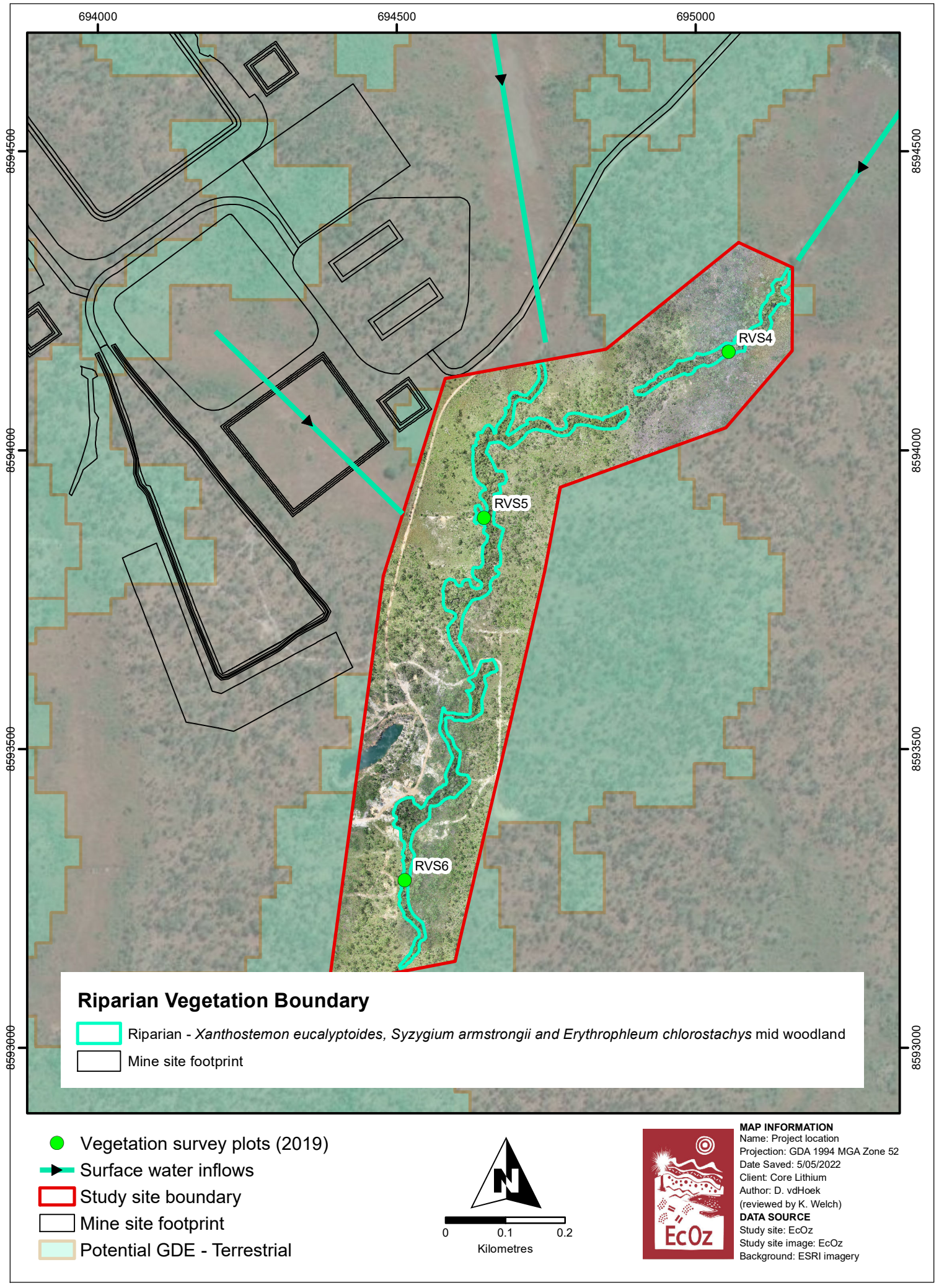
3.1.8 Flora

Description	References
Vegetation: The most widespread, land unit is 2a1 is comprised of Eucalypt tall open forest, typically consisting of Darwin Woolybutt (*Eucalyptus miniata)* and Darwin Stringybark (*E. tetrodonta*), followed by land unit 5a – *Eucalyptus alba* mid open woodland in alluvial plains. There are also significant areas of poorly drained *Grevillea pteridifolia*, *Pandanus spiralis*, and *Lophostemon lactifluus* shrublands (Figure 3-3. Map of BP33 topography and land units). **Significant or sensitive vegetation:** The only sensitive vegetation type relevant to the project is the narrow fringe of riparian vegetation along an ephemeral watercourse downstream of the OHD– land unit 5b2, as shown in Figure 3-8. The well-developed riparian vegetation indicates some level of groundwater dependence supporting this vegetation community throughout the dry season; however, there is no evidence of spring-fed surface water flows. The watercourse is a minor stream order one drainage line, but the closed structure of the riparian vegetation and observed persistence of surface pools of water in the dry season (EcOz, 2020), indicates the community is likely to be a facultative GDE, with an infrequent or partial dependence on groundwater (CloudGMS, 2021 p.59). Monitoring data collected from monitoring bore BPG5i[1], close to the riparian area, indicate that depth to groundwater ranges from around one meter in the wet season, to six metres in the late dry season[2] and on this basis it is assumed that the riparian vegetation accesses the groundwater for some or part of the dry season when there are no surface flows.	*NT Land Clearing Guidelines* (DEPWS 2021) NT Government (DEPWS) Flora and Fauna division Ecology reports (EcOz 2020a and 2020b) (Appendix J) Darwin Regional Weed Strategy (2021-2026) (DRWS).

[1] Hydrographs are based on monitoring data collected over the period October 2020 to April 2021

[2] Refer to the WMP (Appendix G) – section 3.4.2 for graphs

Description	References
Threatened species: Two listed threatened plant species with a high or medium likelihood of occurring within the project footprint were identified in conducting a Commonwealth and NT threatened species EPBC PMST. Targeted surveys were undertaken for these species *Typhonium praetermissum* (a herb) and *Stylidium ensatum* (Trigger Plant). Areas within the project footprint that were modelled by DEPWS as being moderate likelihood habitat for *Typhonium praetermissum* were surveyed. Targeted surveys for the species in accordance with DEPWS guidelines did not detect the species. Previous surveys undertaken for the nearby Grants Lithium Project also did not detect the species. The species is very unlikely to occur in the area. There are areas within the project footprint that are modelled by DEPWS as being potentially suitable habitat for *Stylidium ensatum*. The areas of potentially suitable habitat in the BP33 footprint were surveyed during July 2020 when the species is detectable. No *S. ensatum* plants were found in the survey area and it is unlikely to be present in the project disturbance footprint. A survey for this species in similar habitat for the Grants Project also did not result in any detections. **Invasive species:** Weed species identified as priority weeds for strategic control in the Darwin Regional Weed Strategy (2021-2026) that have been recorded within 20 km buffer of the Project area are: • Gamba Grass (*Andropogon gayanus*) • Bellyache Bush (*Jatropha gossypiifolia*) • Mimosa (*Mimosa pigra*) • Olive Hymenachne (*Hymenachne amplexicaulis*) • Parkinsonia (*Parkinsonia aculeata*) • Perennial Mission Grass (*Cenchrus polystachios*) • Grader Grass (*Themeda quadrivalvis*) Out of these 8 weeds, two (Gamba Grass and Perennial Mission Grass) have been observed in the disturbed area of the Project area.	Groundwater assessment (CloudGMS 2021) (Appendix I) Figure 3-3. Map of BP33 topography and land units Figure 3-8. Map of BP33 Project riparian vegetation and riparian monitoring sites



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ19042 - Grants Project supplementry ecology 2019\01 Project Files\Riparian veg assessment\Figure 4. GDE vegetation boundaries.mxd

Figure 3-8. Map of BP33 Project riparian vegetation and riparian monitoring sites

3.1.9 Fauna

Description	References
Threatened species: Nine listed threatened fauna species with a high or medium likelihood of occurring within the project footprint were identified in conducting a Commonwealth and NT threatened species EPBC PMST. The 3 high likelihood species include: • *Geophaps smithii* (Partridge Pigeon – eastern subspecies) • *Mesembriomys gouldii* (Black-footed Tree-rat – Kimberley and mainland NT subspecies) • *Saccolaimus saccolaimus* (nudicluniatus) (Bare-rumped Sheath-tail Bat) The 6 medium likelihood species include: • *Tyto novaehollandiae kimberl* (Masked Owl -northern subspecies) • *Dasyurus hallucatus* (Northern Quoll) • *Rattus tunneyi* (Pale Field-rat) • *Varanus mertensi* (Mertens' Water Monitor) • *Varanus mitchelli* (Mitchell's Water Monitor) • *Varanus panoptes* (Floodplain Monitor). The findings of desktop studies and field-based habitat assessments indicated that project disturbance footprint is unlikely to contain important habitat critical to survival of any of these fauna species because the habitat types are common and not restricted in extent across the wider region. **Invasive species:** 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*). Cane Toads and feral cats were observed during field surveys of the project area	Ecology reports (EcOz 2020) (Appendix J)

3.1.10 Historical Mining Development and Disturbances

Description	References
The area has a long history of exploration and mining activity, with the majority of the known resources discovered in the late 1800's to early 1900's. Tin (Sn) and Tantalum (Ta) have been mined in the Bynoe Pegmatite area for over 100 years. The most recent mining activities in the area were in the 1980's to early 1990's, when tin and tantalum were mined at Observation Hill. • 1979 – Greenbushes Tin Ltd commenced exploration in the Bynoe pegmatite district. • 1980–1989 tin-tantalum mining footprint became significantly larger, but mine life continued to be short and sporadic.	Grants Mining Management Plan (Core Lithium 2019)

Description	References
• 1995–1999 – Greenbushes commenced mining a number of new pegmatites in the Observation Hill area, including small open-cut mines (Booths South, Lees, Yan Yams, Hang Gong, Highland, BP33, Rubik's and Carlton) and processing them through their Observation Hill trial plant. • 2016-2017: Liontown Resources identified highly weathered and leached spodumene mineralisation from dump samples, and significant lithium mineralisation at depth in many prospects. • 2016: Core Exploration commenced exploration on EL29698 for lithium mineralisation	

3.1.11 Underlying Land Use

Description	References
Core holds approximately 400 km^2 of granted exploration tenements across the Bynoe pegmatite field. Currently, the main land-use is mining exploration. The project area is surrounded by undeveloped Vacant Crown Land (VCL) owned by the NT Government – Section 1 Hundred of Parsons and Section 2746 Hundred of Hughes. The local Government area is the Unincorporated (Cox-Daly) area.	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B) NTG DEPWS NR Maps NR Maps (nt.gov.au)

3.1.12 Surrounding Land use

Description	References
Much of the surrounding area including Grants, BP33, Observation Hill and other pegmatite deposits were covered historically by granted Extractive Mineral Lease MLN16. The surrounding land uses are categorised by the zoning developed under the NT Planning Scheme, in accordance with the *Planning Act* (NT). The land surrounding the project area is zoned Rural (R). There are no nearby residences, farms or industries within the catchment areas upstream or downstream, and no commercial or domestic uses for which surface water or groundwater is currently being extracted anywhere near the project area. Cox Peninsula Road is the closest gazetted road, approximately 2km from the Run of Mine (RoM) pad. The area is also heavily covered in granted Exploration Licences (EL) for exploration of mineral resources for potential mining activities. North of the project area Lithium Developments have the Grants Lithium Project – an open-cut lithium mine. There are no sensitive land uses within 1 km of the project operations area.	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B) NTG DEPWS NR Maps NR Maps (nt.gov.au)

3.1.13 Nearest town(s)

Description	References
The BP33 project is located 2.5 km south-west of the Cox Peninsula Road, approximately 33 km west (by road) of the Berry Springs Township. The nearest community is Belyuen located approximately 22km NW of the BP33 project (approximately 28km by road). Belyuen is a small community of about 190 people.	Engagement reports (True North 2020) (Appendix L) Social impact assessment (True North 2021) (Appendix M) Social impact management plan (True North 2021) – adopted by the Company (Appendix N)

Description	References
	Figure 2-1. Map of BP33 Project location, surrounding land tenure and proximity to communities

3.1.14 Regional infrastructure

Description	References
The haul route is along Northern Territory Government (NTG) controlled main roads that pass through the areas of Litchfield, Palmerston and Darwin municipalities. The product will be loaded onto road trains for transport to Darwin Port (East Arm). The total distance to the Port is 94.5 km. The haul route is along Cox Peninsula Road, through to the Stuart Highway, along the Stuart Highway to Tiger Brennan Drive and then Berrimah Road, to the East Arm Port. 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 BP33 proposal will not increase the frequency of haul truck trips on public roads, as the rate of production from the processing plant will remain the same. BP33 Project will extend the timeframe that the haul route is in operation from 3 years to 7+ years (i.e. there will be 10 return truck trips per day for 7 years).	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B) Figure 2-1. Map of BP33 Project location, surrounding land tenure and proximity to communities

3.2 Conceptual site model

The BP33 Conceptual Site Model (CSM) had been developed to describe the key project risks and assesses the adequacy of the management system. The potentially impacted receptors from the potential contaminants of concern (PCoC) are surface water, groundwater, riparian vegetation and soils. The overarching objectives of these receptors, as detailed in section 7.1.5, are:

Terrestrial ecosystems: *Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.*

Terrestrial environmental quality: *Protect the quality and integrity of land and soils so that environmental values are supported and maintained.*

Hydrological processes: *Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.*

Inland water environmental quality: *Protect the quality of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.*

Site-specific objectives and environmental management to achieve these objectives are discussed in section 7.1.6.

Table 3-1. BP33 Conceptual site model

Disturbance / Source	Potential contaminants of concern (PCoC)	Reference	Comments	Pathway	Receptor
Box-cut – mining fleet / pumps	Turbidity (TSS) Hydrocarbons (TRH/TPH)	BP33 Underground Mine Water Management Plan (EcOz 2022) – adopted by the Company (Appendix G)	Turbidity caused in the wet season during mining and subsequent dewatering of the box-cut. Potential hydrocarbon spills and leaks from mining fleet and dewatering of the box-cut during construction.	Water – dewatering to MSD Seepage	Surface water Groundwater Riparian habitat Aquatic fauna
• Underground mining – mining fleet / pumps – hydrocarbon sources • Groundwater (shallow aquifer <36m) • Groundwater (BCF deep aquifer >36m)	Primarily: • Arsenic (As), Total Phosphorus (TP) and Electrical Conductivity (EC) (deep aquifer) To a lesser extent: • Elevated metals and metalloids – Al, Li, Zn • Hydrocarbons (TRH/TPH) – potential spills Baseline groundwater (shallow aquifer <36m):	BP33 Underground Mine Water Management Plan (EcOz 2022) – adopted by the Company (Appendix G)	Naturally high background metals, metalloids, and nutrients in the groundwater. Potential hydrocarbon spills and leaks from mining fleet underground and dewatering pumps in underground sumps.	Water – dewatering to MSD	Surface water Groundwater Riparian habitat

Disturbance / Source	Potential contaminants of concern (PCoC)	Reference	Comments	Pathway	Receptor
	• **pH** is slightly acidic (4.8-5.6). • **EC** low (median of 66 µS/cm) • **Al** on occasion above the GV, however concentrations low compared to surface water • **Zn** concentrations are above the guideline value most of the time, also high compared to the deeper bores and surface water concentrations Baseline groundwater (BCF deep aquifer >36m): • **As** (median value 0.160mg/L),12 times above the ANZG (2018) guideline value • **Li** concentration of two bores located where the BP33 underground mine is to be located (BPG4i and BPG4d) lithium concentrations, with a median of 0.761 mg/L. SSGV based on ecotoxicity testing is 0.43mg/L. • **Total Phosphorus (TP)** concentrations have a median of 0.29 mg/L. This is around 15 times higher compared to surface water concentrations • **EC** high compared with surface water (median 251 uS/cm)				
Waste rock dump (WRD1) • Oxide waste rock from the Box-cut (NAF)	KLC testing identified **Aluminium (Al), and Copper (Cu)** in leachates are elevated compared to baseline water quality 80th percentile. The numbers below represent the average exceedance factor of the baseline water quality 80th percentile. **Al** • Surface water 15 • Shallow groundwater 76 • Deeper groundwater 5 **Cu** • Surface water 20 • Shallow groundwater 14	Geochemical Characterisation Reports (EGi 2022b) (Appendix F).	KLC results under free draining, oxidising conditions designed to simulate conditions during surface storage of waste materials throughout the operational stage and Under saturated conditions designed to simulate backfilled material underground and within box-cut under the depth of the rebound water table. The concentrations of solutes in leachates from leach column tests are unlikely to be directly relatable to concentrations in seepage/runoff from the WRDs or from backfilled mine wastes. Rather they can provide a qualitative indication of which metals in waste rock leachate may be present at	Water – seepage and runoff	Surface water Groundwater

Disturbance / Source	Potential contaminants of concern (PCoC)	Reference	Comments	Pathway	Receptor
	TSS runoff to sediment basin.		elevated concentrations in comparison with baseline water quality values. Thus, the exceedance factors shown are not designed to represent a risk factor for adverse impact of particular metals on surface or groundwater quality (EGi 2022b)		
Waste rock dump (WRD2) • Transitional and fresh waste rock from the underground.	KLC testing identified **Al, Arsenic (As) and Cu** in leachates are elevated compared to baseline water quality 80th percentile. The numbers below represent the average exceedance factor of the baseline water quality 80th percentile. **Al** • Surface water 6 • Shallow groundwater 32 **As** • Surface water 39 • Shallow groundwater 101 **Cu** • Surface water 16 • Shallow groundwater 11 ARD (<1% PAF and <6% PAF-LC). TSS runoff to sediment basin.	Geochemical Characterisation Reports (EGi 2022b) (Appendix F).		Water – seepage and runoff	Surface water Groundwater
Backfilled box-cut	KLC testing determined **Cu and Zinc (Zn)** in leachates are elevated compared to baseline water quality 80th percentile. The numbers below represent the average exceedance factor of the baseline water quality 80th percentile. **Cu:** • Shallow groundwater 25 • Deeper groundwater 49 **Zn:** • Shallow groundwater 18 • Deeper groundwater 57	Geochemical Characterisation Reports (EGi 2022b) (Appendix F)		Water – seepage, subsurface flows	Groundwater
Backfilled underground	KLC testing determined **Lead (Pb) and Zn** in leachates are elevated compared to baseline water quality 80th percentile. The numbers below represent the average exceedance	Geochemical Characterisation Reports (EGi 2022b) (Appendix F)		Water – seepage, subsurface flows	Groundwater

Disturbance / Source	Potential contaminants of concern (PCoC)	Reference	Comments	Pathway	Receptor
	factor of the baseline water quality 80th percentile. **Pb:** • Deeper groundwater 12 **Zn:** • Deeper groundwater 50				
Run of Mine (RoM) pad • Ore from the underground	Elevated Al TSS runoff to sediment basin.	Geochemical Characterisation Reports (EGi 2020, 2021) (Appendix F).	Drainage directed to a sediment basin. Water quality of sediment basin to be monitored during the wet season. Ore temporary stockpiled and hauled to Grants processing facility.	Water – runoff	Surface water Groundwater
Mine Settlement dam (MSD) • Dewatering of the box-cut and underground. • Groundwater (shallow aquifer <36m) • Groundwater (BCF deep aquifer >36m) Mining fleet / pumps – hydrocarbon sources	Electrical Conductivity (EC) Total Phosphorus (TP) Elevated metals and metalloids – Al, As, Li, Zn Hydrocarbons (TRH/TPH) Turbidity (TSS).	BP33 Underground Mine Water Management Plan (EcOz 2022) – adopted by the Company (Appendix G)	Potential for hydrocarbons through spills/leaks from mining fleet underground, pumped into MSD. Groundwater inflows to the underground, pumped from underground sumps to MSD likely to contain elevated suspended sediments. The groundwater is also naturally high in arsenic, lithium, phosphorous compared to local surface water characteristics. Water to be treated and settlement time prior to removal of wastewater from MSD.	Water – controlled discharge land irrigation	Surface water Groundwater Soils Vegetation

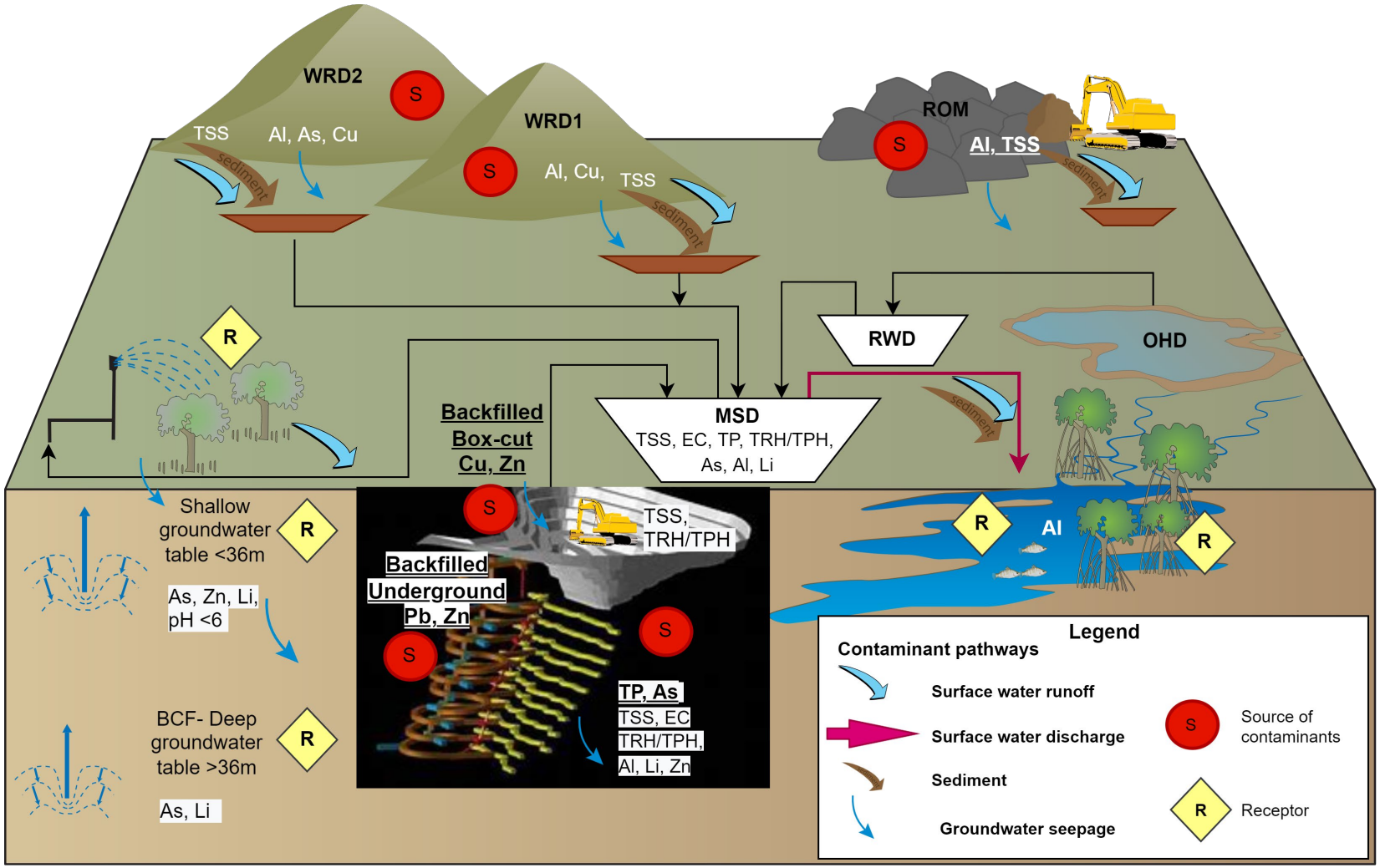


Figure 3-9. BP33 Conceptual site model diagram

3.3 Socio-economic status

Table 3-2. BP33 socio-economic status

Item		Description	References
Workforce	Construction	It is estimated that peak workforce will be 60 people during construction.	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B) Engagement reports (True North 2020) (Appendix L)
	Operations	The BP33 Project will employ 125-150 jobs during operations.	
	Closure	It is estimated that peak workforce will be approximately 20 people during closure and rehabilitation.	-
Stakeholder engagement		Lithium Developments, with the assistance of engagement and communications specialists True North, have undertaken engagement activities for the Finniss Lithium Project, including BP33, throughout the approvals phase. These activities have involved providing information to stakeholders and the community in the form of fact sheets and letters to residents. Community information stalls, posters and social media posts were used to try and reach as many in the local community as possible. Targeted briefings and interviews were held with stakeholders holding a key interest in the project. Generally, the feedback received from the community was positive, with support for the potential employment opportunities and economic benefits. People raised concerns about road safety and degradation issues when the haul trucks are using Cox Peninsula Road. Some people are not supportive of the project, mainly citing environmental concerns. The key opportunities considered in the SER focused on economic opportunities: • Boost to the regional economy through employment • Enhanced opportunities for local Aboriginal people for jobs and training • Boost to the regional economy through local procurement • Local communities benefit through sponsorship and local support. Key potential impacts raised by community/stakeholders and assessed as part of the SIA are: • Higher level of road trauma as a result of mine traffic • Reduced sense of safety and wellbeing due to mine traffic sharing roads with local traffic • Amenity impacts due to road train movements for seven years • Increased anxiety due to perceptions about the project's water use • Concerns about legacy mines and the impact on the environment • Cumulative impacts of multiple projects in the region (particularly increased traffic). The findings of the SIA process indicate that social and economic impacts and benefits associated with the proposal will occur across the Greater Darwin region, with communities on the Cox Peninsula most directly affected and also having the greatest opportunity to benefit from increased local employment, economic activity and community sponsorship. Local communities will notice increased heavy vehicle traffic on the Cox Peninsula Road for an extended period, which could lead to accidents and inconvenience to road users. People are also likely to notice increased activity at local shops and hospitality venues associated with the presence of mine workers, which will provide economic benefits but could also lead to inconvenience and tensions. Local people have generally expressed support for the proposal and a strong interest in training, employment, supply and contracting opportunities; however, some community members also raised concerns about the social and	Engagement reports (True North 2020) (Appendix L) Social impact management plan and stakeholder communication and engagement plan (True North 2021) – adopted by the Company (Appendix N) Social impact assessment (True North 2021) (Appendix M)

Item	Description	References
	environmental impacts that could occur. The level of community acceptance of the mine is likely to be strongly influenced by Lithium Developments achievement of environmental protection outcomes and realisation of the opportunities that the community is seeking. A Social Impact Management Plan (SIMP) outlines Lithium Developments' commitments to manage, mitigate or enhance the negative impacts and positive impacts identified as part of the SIA. Commitments made to stakeholders and the community are also provided. Effective implementation of the SIMP, environmental protection commitments made in the SER and ongoing stakeholder engagement, is likely to ensure that the NT EPA's objective for the Community and Economy factor are met. A list of key stakeholders is available in the stakeholder engagement reports.	
Other details	The NTEPA issued Assessment Report 94 (AR 94) on 8 April 2022. The AR94 outlines BP33 SER commitments for each key environmental factor identified in the assessment process. Appendix 1 of AR94 contains the Draft Environmental Approval EP2020/001-001, which outlines 12 environmental approval conditions.	BP33 Supplementary Environmental Report – Main report (Appendix B) NT EPA Assessment Report 94 and Environmental Approval (Appendix C)

4 LEGISLATION AND OBLIGATIONS

4.1 Statutory requirements

Legislation / Requirement	Pertinent information	When
Commonwealth		
Environment Protection and Biodiversity Conservation (EPBC) Act 1999	BP33 project did not require referral under the EPBC Act.	N/A
Native Title Act 1993	The project area is not located on land subject to native title claim and therefore the Native Title Act does not apply.	N/A
National Greenhouse and Energy Reporting Act 2007	Lithium Developments will be required to submit a NGER report annually for the Finniss Lithium Project (cumulative for BP33 and Grants) due to the Project emissions exceeding the NGER 25,000 CO2-e/year Scope 1 & 2 emissions threshold (ERM 2021).	Annually
Northern Territory		
Mining Management Act 2001	Grant of mining authorisation	Prior to mining
Mineral Titles Act 2010	Granted mineral titles: ML32346, ML32074 and MLN16	Prior to mining
Water Act 1992	Surface water extraction licence – water extraction from Observation Hill Dam (OHD) Groundwater extraction licence – extract water from bores. Waste Discharge Licence (WDL) – for controlled release of wastewater offsite	Application to be submitted to NT Water Resources for approval during 2023.
Environment Protection Act 2019	NT EPA Assessment Report 94 (AR94) and Environmental Approval EP2020/001-001 issued 8 April 2022 and approved by the Minister on 26 April 2022. AR94 summarises NTEPA assessment findings and recommendations. EP2020/001-001 outlines BP33 Environmental Approval conditions (see section 7.1.2)	EA conditions are to be implemented in accordance with EA timeframes (see section 7.1.2).
NT Aboriginal Sacred Sites Act 1989	An AAPA Authority Certificate has been provided by the Aboriginal Areas Protection Authority to ensure the protection of sacred sites throughout the project.	Planning and approvals phase
Bushfires Management Act 2016	The project area is located within the declared Northern Fire Protection Zone, permits and conditions apply.	NT permit to burn required prior to conducting prescribed burning activities
Building Act 1993	The mine site is located within the Darwin Building Control Area. Building and occupancy permits will be required. A registered certified plumber will conduct any upgrades required to the wastewater management system (septic).	Approvals required prior to construction (prior to installation of wastewater management system).
Crown Lands Act 1992	The proposed Mineral Leases (ML) are located on Vacant Crown Land (VCL).	n/a
Dangerous Goods Act 1998	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. All fuel storages must meet Australian Standard 1940: Storage and Handling of Flammable and Combustible Liquids	Prior to mining
Heritage Act 2011	All sites on the NT Heritage Register and archaeological sites are protection under this Act. The proposal will not affect any sites listed on the NT Heritage Register. A number of unregistered historic mining sites were identified the closest being 500m from the WRD pad. Lithium Developments does not propose any activities that would disturb this site.	Planning / prior to disturbances

Legislation / Requirement	Pertinent information	When
Territory Parks and Wildlife Conservation (TPWC) Act 1976	Requires a permit to be obtained prior to interference with threatened species listed under the Act. i.e translocation of Cycads	Prior to undertaking activities
Soils Conservation and Land Utilisation Act 1969	Erosion and Sediment Control Plans (Appendix P) – adopted by the Company, required to facilitate compliance with the general provisions of this Act	Prior to clearing
Waste Management and Pollution Control Act 1998	For wastes that are removed for off-site disposal, waste management contractors engaged by the project and facilities accepting listed wastes must be licensed under this Act.	When engaging waste management contractors
Weeds Management Act 2001	Landholders and occupiers have statutory obligations to manage declared under the Act. A Weed Management Plan will be required for this project to facilitate compliance with this Act.	Life of project
Work Health and Safety (National Uniform Legislation) Act 2011	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.	Life of project

4.2 Non-statutory requirements

Requirement	Description	Relevance to Project
Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008)	Storm-water management, erosion and sediment control –ESCP– adopted by the Company (Appendix P) developed in accordance with best practice guidelines.	Prevention of potential erosion and sedimentation issues i.e sedimentation of downstream waterway
• Global Acid Rock Drainage (GARD) 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)	Geochemical characterisation of waste materials in accordance with best practice guidelines (see Section 7.1.6).	Inform appropriate management of waste through planning, design, operations, and closure to prevent potential AMD/NMD/SD issues.
Airborne Contaminants, Noise and Vibration – Leading Practice Sustainable Development Program for the Mining Industry (Department of Foreign Affairs and Trade, 2009)	Noise and dust	Implement measures to reduce noise, vibration and dust.
• 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).	Water management plan – adopted by the Company (Appendix G) development in accordance with best practice guidelines.	Protection of surface water and groundwater quality values
Australian National Committee on Large Dams (ANCOLD) Guidelines	Design and construction of water storage dams in accordance with ANCOLD guidelines	Applicable for water site storage dams
Australian Dangerous Goods Code 7.6 AS1940:2017 The Storage and Handling of Flammable and Combustible Liquids (Standards Australia, 2017)	Storage and handling of hazardous substances and dangerous goods in accordance with best practice guidelines.	Fuel storage facility on site
• Mine Rehabilitation – Leading Practice Sustainable Development Program for the Mining Industry (Department of Foreign Affairs and Trade 2016d)	Stakeholder engagement on mine closure and rehabilitation plan – determine agreed end land use and closure criteria.	Development of mine closure and rehabilitation plan

Requirement	Description	Relevance to Project
• Mine Closure – Leading Practice Sustainable Development Program for the Mining Industry (Department of Foreign Affairs and Trade 2016) • Western Australian Government's "Mine Closure Plan Guidance – How to prepare a mine closure plan in accordance with Part 1 of the Statutory guidelines for mine closure plans" (the guidelines) (DMIRS 2020). • Integrated Mine Closure, Good Practice Guide, 2ND Edition. International Council on Mining and Metals (ICMM 2019).		

5 OPERATIONAL ACTIVITIES

5.1 Mine infrastructure area

The mine infrastructure area (MIA) is divided into zones based on spatial and environmental management areas. The BP33 project has three zones:

- Zone A – Mine operations compound (MOC)
- Zone B – Water pipeline corridor
- Zone C – Haul Road from BP33 to Grants processing facility

The mine infrastructure areas are summarised in the following tables.

The magazine will remain at the Grants mine site and service truck used to transport to BP33.

Table 5-1. Proposed mine infrastructure area – summary

Zones	Titles	Infrastructure	Total number of structures	Footprint (ha)			Development details		LOM year of construction
				Existing	Proposed	Total	Development sequence	Details	
A	ML32346	Bore field (Figure 3-6)	13	0.28 (7 areas ~20m x 20m pads)	-	0.28	Planning	Drilled during planning phase for baseline monitoring.	Planning phase – prior to operations
A	ML32346	Topsoil stockpiles (Figure 2-4)	3		8.3	8.3	Construction – primary	Topsoil will be stripped from all cleared areas to a depth of 100 mm and subsoil will be stripped to a depth of 400 mm. It has been estimated that a total of 61,250m3 of topsoil and 189,806m3 of subsoil will be produced from all mining components and the haul road, for the duration of the mine life. Stockpile are located on flat terrain with indicative locations shown on the site layout map (Figure 2-4).	Year 1 - during construction

Zones	Titles	Infrastructure		Total number of structures	Footprint (ha)			Development details		LOM year of construction
					Existing	Proposed	Total	Development sequence	Details	
									Stockpile heights – 2m max topsoil and 3m max for subsoil.	
A	ML32346	Mine operations compound (administration buildings/offices, contractor area – workshop, laydown / storage area, fuel farm, water treatment plant) (Figure 2-4)	Administration buildings / offices	Multiple demountable	-	6.4	6.4	Construction – primary	The contractor's area will comprise a raised compacted split-level pad, approx. 300 x 300m to accommodate a single bay workshop, water conditioning and treatment plants, ablutions, office.	Year 1 - during construction
			Contractor area (workshop, laydown / storage area)	1 of each					Maintenance areas will be bunded with drainage directed to a sump for removal of hydrocarbons	
			Fuel farm	1					Diesel – multiple locations using wrap tanks or bunded storage facilities ranging in size from 5,000 litres to 50,000 litres. Maximum quantity stored on site will be ~110,000litres. Fuel storages will be bunded with drainage directed to a sump for removal of hydrocarbons	
			Water treatment plant (potable and sewage)	2					Potable water sourced from OHD will be treated prior to use. Wastewater from staff amenities will be directed to a septic system designed and constructed in accordance with the Code of Practice for Onsite Wastewater Management (July 2014).	
A	ML32346	Sediment basins (Figure 2-4)		3	-	0.82	0.82	Construction – primary	Internal to the mine site a stormwater drainage network will provide for collection and	Year 1 - during construction

Zones	Titles	Infrastructure	Total number of structures	Footprint (ha)			Development details		LOM year of construction
				Existing	Proposed	Total	Development sequence	Details	
								treatment of water in sediment basins prior to controlled discharge off site or returned to OHD for re-use. The sediment basins will be located at the base of WRD 1, WRD 2, and the RoM Pad. A toe drain will be constructed around the perimeter of the WRDs and RoM to direct surface flows to the sediment basins. The sediment basins will be sized and constructed appropriately to manage the infrastructure catchment flows. The sediment basins will be monitored for sediment load, particularly following the first wet season post construction, and sediment cleaned out as required to prevent risk of downstream sedimentation.	
A	ML32346	ROM Pad	1	-	6.5	6.5	Construction – secondary	Flat pad on RL23 for ROM stockpiles and road train haulage activities Max height above topography is 4.5 m. Capacity to store 60,000 tonnes ore stockpiles. Drainage from the ROM pad will enter the internal stormwater drainage network and sediment basins that will discharge clean water off-site.	Year 1 - during construction
A	ML32346	Box-cut access road	1	-	0.8	0.8	Construction – primary	13 m wide Access from the Boxcut to the ROM pad Flat gradient	Year 1 - during construction

Zones	Titles	Infrastructure	Total number of structures	Footprint (ha)			Development details		LOM year of construction
				Existing	Proposed	Total	Development sequence	Details	
A	ML32346	WRD access roads	2	-	0.4	0.4	Construction – primary	13 m wide Access from the Boxcut to both WRD's Flat gradient	Year 1 - during construction
B	ML32346 ML32074	Water pipeline corridor (BP33 to OHD)	1	-	0.4	0.4	Construction – primary	The pipeline will be constructed of polyethylene plastic and will be buried to a sufficient depth to provide for protection from bushfire. The pipeline is approximately 1.4 km and traverses alongside the existing access track, which will be widened and upgraded for use as a haul road. The 800 m section of water pipeline from the OHD pump station to the edge of the mine site will require clearing of an additional 5 m wide corridor alongside the haul route (i.e. 0.4 ha footprint). The 600 m of the pipeline corridor from the RWD to the intersection of the haul road is within the mine site footprint. The proposed pipeline route is shown on (Figure 2-2)	Year 1 - during construction
C	ML32346 ML32074 EMP28651 ML31726	Haul Road from BP33 to Grants processing facility	1	-	12.5	12.5	Construction – secondary	Preparation of the haul road will involve removal of approximately 8-10 m of vegetation alongside the existing cleared access track to increase the corridor width to nominally 13 m wide. The entire 13 m wide corridor will require clearing for the last 1.8 km of the route into the Grants mine site, as there is no existing track in this area.	Year 1 - during construction

Zones	Titles	Infrastructure	Total number of structures	Footprint (ha)			Development details		LOM year of construction
				Existing	Proposed	Total	Development sequence	Details	
								Cut and fill requirements for the haul road will be determined during detailed design. Where fill is required, materials are expected to be sourced locally from existing borrow areas on Lithium Developments' leases, Grants WRD (oxide materials) or the BP33 box-cut oxide material.	

Table 5-2. MIA risk, controls and management

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
Zone A MOC						
1	Clearing	Approximately 23 ha to be cleared. Sequence as follows: A. Progressive ESCP developed B. Area to be surveyed C. Site environmental clearance obtained (permit to disturb) D. Machinery for clearing to be mobilised to site and inspected (mechanical and weed hygiene) E. Pre clearance survey undertaken F. Clearing to be undertaken with fauna spotter as required	• Erosion and sedimentation • Unauthorised clearing • Inappropriate topsoil removal and storage • Dust emissions • Impacts to flora and fauna • Weed introduction / spread • Bushfire	• Primary ESCP developed • Progressive ESCP for construction to be developed prior to clearing • Land disturbance procedures developed. • Topsoil stockpiled on the designated topsoil dumps to 1.5m maximum height. • Dust suppression activities and progressing clearing to reduce impacts of dust • Fauna spotted during clearing activities and pre-clearance surveys • Minimise disturbance to authorised disturbance footprint and undertake progressing clearing as required by construction schedule.	• Downstream waterways not impacted by sedimentation (within acceptable ANZG 2018 guideline limits) • Construction of ESC infrastructure as per plan • No unauthorised clearing activities • Clearing in accordance with internal vegetation clearing procedures and permits • Appropriate topsoil stockpiling undertaken to ensure sufficient	Water Management Plan (Appendix G) Vegetation clearing procedure (Appendix Q) Primary ESCP (Appendix P) Ecology studies (Appendix J) Risk Register (Appendix U)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
		G. ESCP infrastructure construction H. Topsoil stockpiled		• Weed hygiene inspections of all machinery coming to site • Implementation of weed management as detailed in EMP. • Finniss Lithium Project Weed Management Procedure • Bushfire response addressed in site Emergency Management Plans	growth medium stockpiled for closure. • No dust complaints • Ecology studies undertaken • Weed seed hygiene inspections undertaken of all plant and equipment mobilised to site • No new introduced declared weeds or spread of declared weeds • No unauthorised fires	
2	Construction	A. Issued for construction (IFC) designs B. Plant and equipment inspection checks completed on all mobilised construction machinery C. Construction of pads for fuel farm, administration demountable, contractor area, workshop, ablutions. D. Fuel container brought to site and set-up E. Potable water treatment plant and waste water systems established F. Construction of buildings and workshop areas	• Erosion and sedimentation • Hydrocarbon spills / contamination • Construction not to approved design • Alteration of surface flows affecting downstream environmental values • Material (sand, rock, clay) imported from off-site	• Primary ESCP developed • Plant and machinery inspection checks prior to mobilisation to site • Fuel storage and handling in accordance with AS1940. • Engineer design controls/ engineer sign off on constructed infrastructure as per constructed design • Mine site design include sediment dams that provide for treatment and discharge of stormwater. • Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • Use of onsite material suitable for construction. Any off-site sources to be declared weed free	• Downstream waterways not impacted by sedimentation • Plant and machinery inspections undertaken • Construction to final approved designs • Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines • No new introduced declared weeds or spread of declared weeds	Primary ESCP – adopted by the Company (Appendix P) Final designs (Appendix S) Water Management Plan – adopted by the Company (Appendix G)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
		G. Construction of RoM pad H. Engineer sign-off on construction as per IFC				
3	Commissioning/Operations	A. Commissioning of facilities i.e water treatment plant and septic plant B. Operation of facilities C. Monitoring as per MMP/WMP	• Alteration of surface flows affecting downstream environmental values • Water quality not suitable for use • Hydrocarbon spills / contamination • Noise, vibration and dust • Fauna injury or death from vehicle/machinery interaction • Waste storage areas attract pest, vectors and vermin • Leaks from septic system into groundwater or surface water	• Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • Reverse osmosis water treatment of OHD water for suitable drinking water requirements • Regular maintenance schedules of vehicles and spill kits available and stocked • Fuel storage and handling in accordance with AS1940. • Speed restrictions to reduce dust and fauna collision • Machinery and equipment checked for noise levels in accordance with standards and manufacturers specifications • Dust suppression will be undertaken using water carts • Waste will be storage in designated covered bins and removed from site by a licensed contractor. Vermin control will be implemented if required. • Waste water system to be installed and maintained as per manufacturers specifications. • On-site waste water system will be installed by a licensed plumber in accordance with NT	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines for purpose • No dust, vibration or noise complaints • All hydrocarbon spills reported and cleaned up • No visual wind-blown waste, appropriate segregation of waste • No septic overflow / spills	Water Management Plan – adopted by the Company (Appendix G)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
				Code of Practice for onsite wastewater management. • Approval for wastewater treatment system under the Building Act prior to installation		
4	Unplanned closure	A. Development of a care and maintenance plan B. Update security based on current disturbance C. Assess site security D. Assess personnel skills and numbers required to appropriately manage site E. Implement plan	• Lack of personnel for appropriate management during unplanned closure • Security not sufficient for rehabilitation and closure	• Care and maintenance plan to be developed and implemented in the event of early closure and accounts for suitable personnel numbers and skills to enable on-going environmental management of the site • Current mine closure plan includes details of unplanned closure • Security calculation undertaken in accordance with DITT template and security to be approved for mining authorisation • Internal EOFY security calculation completed annually to ensure sufficient funds for disturbance	• Monitoring undertaken in accordance with care and maintenance plan and water management plan	Mine Closure Plan – adopted by the Company (Appendix E)
Zone B Water pipeline corridor						
1	Clearing	0.4ha to be cleared. Sequence as follows: A. Progressive ESCP developed – includes pipeline route B. Pipeline route to be surveyed C. Site environmental clearance obtained (permit to disturb) D. Machinery for clearing and trenching to be mobilised to site and	• Erosion and sedimentation • Unauthorised clearing • Inappropriate topsoil removal and storage • Dust emissions • Impacts to flora and fauna • Weed introduction / spread • Bushfire	• Primary ESCP developed • Progressive ESCP for construction to be developed prior to clearing to include pipeline route • Minimise disturbance following existing access tracks where possible • Land disturbance procedures developed. • Topsoil stockpiled on the designated topsoil dumps to 1.5m maximum height.	• Downstream waterways not impacted by sedimentation (within acceptable ANZG (2018) guidelines or SSGV's) • No unauthorised clearing activities • Clearing in accordance with internal vegetation clearing procedures and permits	Water Management Plan – adopted by the Company (Appendix G) Vegetation clearing procedure (Appendix Q) Primary ESCP – adopted by the Company (Appendix P)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
		inspected (mechanical and weed hygiene) E. Pre clearance survey undertaken F. Clearing to be undertaken with fauna spotter as required G. ESCP infrastructure construction		• Dust suppression activities and progressing clearing to reduce impacts of dust • Fauna spotted during clearing activities and pre-clearance surveys • Minimise disturbance to authorised disturbance footprint and undertake progressing clearing as required by construction schedule. • Weed hygiene inspections of all machinery coming to site • Implementation of weed management as detailed in EMP. • Finniss Lithium Project Weed Management Procedure • Bushfire response addressed in site Emergency Management Plans	• Appropriate topsoil stockpiling undertaken to ensure sufficient growth medium stockpiled for closure. • No dust complaints • Ecology studies undertaken • Weed seed hygiene inspections undertaken of all plant and equipment mobilised to site • No new introduced declared weeds or spread of declared weeds • No unauthorised fires	Ecology studies (Appendix J) Risk Register (Appendix U)
2	Construction	A. Dig trench B. Pipeline laydown on site C. Poly-weld pipe D. Lay pipe within trench E. Backfill pipe with soil material	• Erosion and sedimentation • Hydrocarbon spills / contamination • Construction not to approved design • Alteration of surface flows affecting downstream environmental values • Material (sand, rock, clay) imported from off-site	• Primary and progressive ESCP • Plant and machinery inspection checks prior to mobilisation to site • Engineer design controls/ engineer sign off on pipeline construction as per constructed design • Water Management Plan - activities include monitoring surface water in downstream watercourses • Use of onsite material suitable for construction. Any off-site sources to be declared weed free	• Downstream waterways not impacted by sedimentation • Plant and machinery inspections undertaken • Construction to final approved designs • Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGV's • No new introduced declared weeds or	Primary ESCP – adopted by the Company (Appendix P) Water Management Plan– adopted by the Company (Appendix G)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
					spread of declared weeds	
3	Commissioning/Operations	A. Pump test pipe on commissioning B. Install flow meter on pipe	• Alteration of surface flows affecting downstream environmental values • Structural failure – burst pipe • Exceedance of water extraction entitlements	• Water Management Plan - activities include monitoring surface water in downstream watercourses • Water extraction entitlements applied per period to the OHD Surface water extraction licence (SWEL).	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines for purpose • Operation in accordance with operation, maintenance, and surveillance management plans • No exceedances of extraction or non-compliance with conditions of the OHD SWEL	Water Management Plan– adopted by the Company (Appendix G)
4	Unplanned closure	A. Decommission of pipeline as required	• Lack of personnel for ongoing active water management during unplanned closure • Security not sufficient for rehabilitation and closure	• Care and maintenance plan to be developed and implemented in the event of early closure and include water management strategies and accounts for suitable personnel numbers and skills to enable on-going environmental management of the site • Current mine closure plan includes details of unplanned closure • Revised water balance for care and maintenance activities • Security calculation undertaken in accordance with DITT template and security to be approved for mining authorisation	• Monitoring undertaken in accordance with care and maintenance plan and water management plan	Mine Closure Plan – adopted by the Company (Appendix E)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
				• Internal EOFY security calculation completed annually to ensure sufficient funds for disturbance		
Zone C Haul Road from BP33 to Grants processing facility						
See Table 5-29 Haul and access roads risk, controls and management						

Table 5-3. MIA – summary of environmental performance

Zone A **Zone B** **Zone C**	Key environmental risk of zone A, B and C is sedimentation of receiving waterways from clearing activities. Key performance criteria are receiving waterways not impacted by sedimentation – water quality remains within acceptable ANZG (2018) guideline limits or within SSGV's and timely construction of ESC infrastructure as per ESCP. Environmental performance to be provided in subsequent MMP following commencement of construction / operations.

Table 5-4. Independent expert

Q1 Will an independent expert be engaged by the Operator?
☐Yes – Go to Q2 *Note: any independent experts engaged will be subject to approval by the Minister and will require a terms of reference (ToR) approved by the Minister.*
☒ No – please explain why, and then move onto Q2: Mine designed by a suitably qualified mining engineer, TME Mine Consulting Pty Ltd and OreWin Consultants.
Q2 Will detailed designs be prepared and reviewed by an independent expert?

☐Yes – Go to Q3 *Note:* - *Any designs reviewed by an independent expert approved by the Minister, must be submitted together with independent review comments and how any improvements in design were addressed to the satisfaction of the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.* - *Detailed designs must include* *a) Hold points at suitable intervals that may affect the construction and future performance of the structure* *b) Performance monitoring requirements and frequency* c) *Reporting requirements to the regulator to demonstrate compliance and design to the satisfaction of the Minister*
☒ No – please explain why, and then move onto Q3: Mine designed developed by a suitably qualified mining engineer, TME Mine Consulting Pty Ltd and OreWin Consultants. Designs are low risk.
Q3 Will a detailed management plan be developed that describes in detail the operator's maintenance, surveillance and closure requirements of the structure?
☐Yes *Note: This plan must be endorsed by the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.*
☒ No – please explain why: No operational or surveillance management plan required for infrastructure identified within this mine infrastructure area. Construction of the infrastructure will be undertaken by suitable qualified and experienced personnel. An erosion and sediment control plan – adopted by the Company (Appendix P) provides an overview of surveillance and management of the sediment basins. A mine closure plan and rehabilitation management plan – adopted by the Company, (Appendix E) addresses decommissioning, closure and rehabilitation of the mine infrastructure.

Table 5-5. Closure

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
Unplanned	**Temporary suspension:** A geotechnically stable and non- polluting landform. **Unforeseen closure:** A geotechnically stable and non- polluting landform which supports self-sustaining native vegetation and fauna comprising local species.	**Temporary suspension:** • Erosion score to remain 2 or less (minor erosion). • No increase in erosion from previous monitoring event for at least two consecutive years. • No declared weed species not previously recorded in the mining lease • No significant difference in abundance of feral animal and pests compared to previously recorded in the mining lease. **Unforeseen closure:** • Criteria adopted as per planned closure.	• Rehabilitation trails to be conducted at the Grants site. Trials to investigate suitable growth medium, soil conditioning requirements, seed versus tube stock success. • Closure – end of land use / closure criteria. Future stakeholder engagement to discuss end land use and closure criteria.	• Grants rehab trials to commence 2023 and be ongoing throughout operations. Outcomes to be completed Q4 2024. • Closure criteria and end land use requirements to be discussed in future stakeholder consultation during 2023. Outcomes will be included in future revisions of the MCP.	Mine closure and rehabilitation plan– adopted by the Company (Appendix E)
Planned	Decommissioning and removal of infrastructure	• All non-geological waste is removed from site on the completion of mining activities. • Plumbing standpipes and above ground components of the water supply and workshop wastewater system are removed to below ground. Washdown bays are scrapped clean and sediment stored as for sediment ponds, then demolished and topsoiled and revegetated. • All pumping infrastructure is removed from site on the completion of mining activities. • Pipeline Corridor: Breather valves and surface infrastructure removed. • Domain is re-profiled to pre-mining conditions. Re-profiled surface is ripped and covered with topsoil.			

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
		• Final surfaces do not show signs of erosion more than reference sites.			
	Support infrastructure domain is returned to pre-mining and stable and non-polluting landform.	• Domain re-profiled to pre-mining conditions, ripped, covered with suitable growth medium to sustain plant growth and seeded. • Soils quality within acceptable criteria for successful plant growth. • Erosion score to remain 2 or less (minor erosion). • No increase in erosion from previous monitoring event for at least two consecutive years.			
	Domain supports self-sustaining native vegetation not significantly different to that of the surrounding ecosystems.	• Groundcover % and groundcover species richness recorded at vegetation transects not less than analogue sites for two consecutive years post closure. • Abundance of woody plants (stems ≥ 2 cm DBH and greater than 3 m high) recorded at vegetation transects not less than of representative analogue sites. • Not less than three dominant species (per strata) recorded at vegetation transects present in analogue sites. • Density of weed species within rehabilitated domain is not more than reference sites for three consecutive years. No declared weed species not previously recorded in the mining lease is present within the rehabilitated domains for three consecutive years. • No fire scars recorded at vegetation transects within first three years of rehabilitation.			

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
	The domain supports fauna recolonisation not significantly different to that of the surrounding ecosystems.	• Trend of increasing native wildlife abundance and diversity each year with eventual results not significantly different to analogue sites. • Key indicator invertebrate biota assemblages of rehabilitated areas not significantly different to analogue sites. • No significant difference in abundance of feral animal and pests compared to analogue sites.			

5.2 Pits and extractives

The BP33 box-cut and historical BP33 pit void are summarised in the following tables.

Table 5-6. Pits – summary

Item		Pertinent information		
No. of pit operations		Pit 1: Box-cut (new disturbance)		
Open pit or extractive		Open pit		
Titles		ML32346		
Footprint (ha)		7.2 (including safety bund)		
Target material/commodity		Construction material		
LOM year of construction		Construction commencing Q3 2022. Construction period of 6 months including construction of box-cut.		
Pit	Proposed Box-cut Dimensions (m)	Length: ~580	Width: ~160	Depth: 60-70m
	Current BP33 Pit Dimensions	Length: 160	Width: 40	Depth: ~10
	Waste volumes	Excavation of the box-cut will remove approximately 2 million bank cubic metres (bcm) of oxide waste material (OreWin, 2020).		

Item		Pertinent information
	Waste uses	The suitable oxide (NAF) material will be used for construction of the box-cut safety bund (12,724m3), contractor's area pad (94,149m3), underground WRD pad (14,890m3), ROM pad (95,216m3). Further material may be sources for construction of diversion bunds and drainage, water storages, access roads and OHD wall lift. Excess materials and/or materials that do not meet construction specifications will be placed in WRD1 (1,585,047m3) where they will be stored for up to four years, prior to being used to backfill the box-cut (primarily). Excess material on completion of mining activities will be disposed of underground.
	Waste types to be encountered and volumes	Predominantly oxide: 2,000,000t
Dewatering / pit stabilisation	Standing Water Level (SWL)	SWL in the deep BCF bore has ranged from 5.4 – 9.3 m. SWL in the shallow bores ranged from 3.1 – 5.5 m.
	No of bores	n/a – Dewatering via pit sump
	Extraction rate	See section 5.3 Underground
	Cone of depression distance (m) from pit	See section 5.3 Underground
	Water management requirements	The box cut will require dewatering to prevent the underground mine from flooding. Inflows will be pumped to the mine settling dam (MSD), where the water will be treated to remove sediments and any other contaminants so that it can be reused supply the mine non-potable water demand. Excess water transferred to Grants open pit void after mining in the Grants pit ceases. Controlled release: volumes are only constrained by the dilution requirements in Drainage Line 1 and only occur during the wet season. Existing BP33 pit water is clean water quality (see Appendix G). The water is of suitable quality for transfer to OHD, use for dust suppression and/or discharge to environment under an approved WDL. The water may be used for dust suppression during construction and dewatered during operations and/or dewatered if the pit is backfilled for rehabilitation and closure (see Appendix E).
	References	Site water balance (WRM 2021) (Appendix H) BP33 Underground Mine Water Management Plan (EcOz 2022) – adopted by the Company (Appendix G)
Diversions	Waterway name	n/a
	Length	n/a
	Width	n/a
	References	n/a
	1:100	Inundation risk modelling for a 1%AEP rainfall event will was used for the flood inundation modelling.

Item		Pertinent information
Flood immunity (ARI)		The maximum inflow into the Boxcut is 16420 m3d-1 for a high rainfall scenario, 7780 m3d-1 for the average rainfall scenario and 6920 m3d-1 for the low rainfall scenario. On average, the inflows into the boxcut during the high, average and low rainfall years are 440 m3d-1, 270 m3d-1 and 157 m3d-1 respectively. Most of this inflow is caused by direct rainfall on the boxcut. Very little inflow occurs from upstream catchments. For three-year rainfall scenarios, the maximum water stored in the boxcut is 203 000 m3 for the high rainfall scenario, 120 830 m3 for the average rainfall scenario and 74 660 m3 for the low rainfall scenario. For the high rainfall scenario, the maximum water level rises to 31.3 above the boxcut base level. The maximum water depth for the average and low rainfall scenario is 25.3 m and 21.0 m.
	References	EnviroConsult (2020) (Appendix H)
Pit development method	Rationale	The box-cut will be excavated by free dig using conventional truck and shovel methods, excepting the bottom 10 m bench, which will require drill and blast.
Ancillary structures	Box-cut safety bund	A safety bund will be constructed around the perimeter of the box-cut, 5m from the crest. The bund will be 2m high with a base width of 7.3 m. The safety bund will also prevent surface water flows into the box-cut.
	Box-cut contour drain	A contour drain will be constructed to the west of the box-cut to minimise surface water flows from adjacent hill areas into Boxcut excavation (Figure 5-2). The contour drain will reduce risk of water build up behind the Safety Bund in this area leading to potential flooding /inrush events during heavy rain. The contour drain will direct water flows towards a natural topographic low to the south-west (TME 2019).

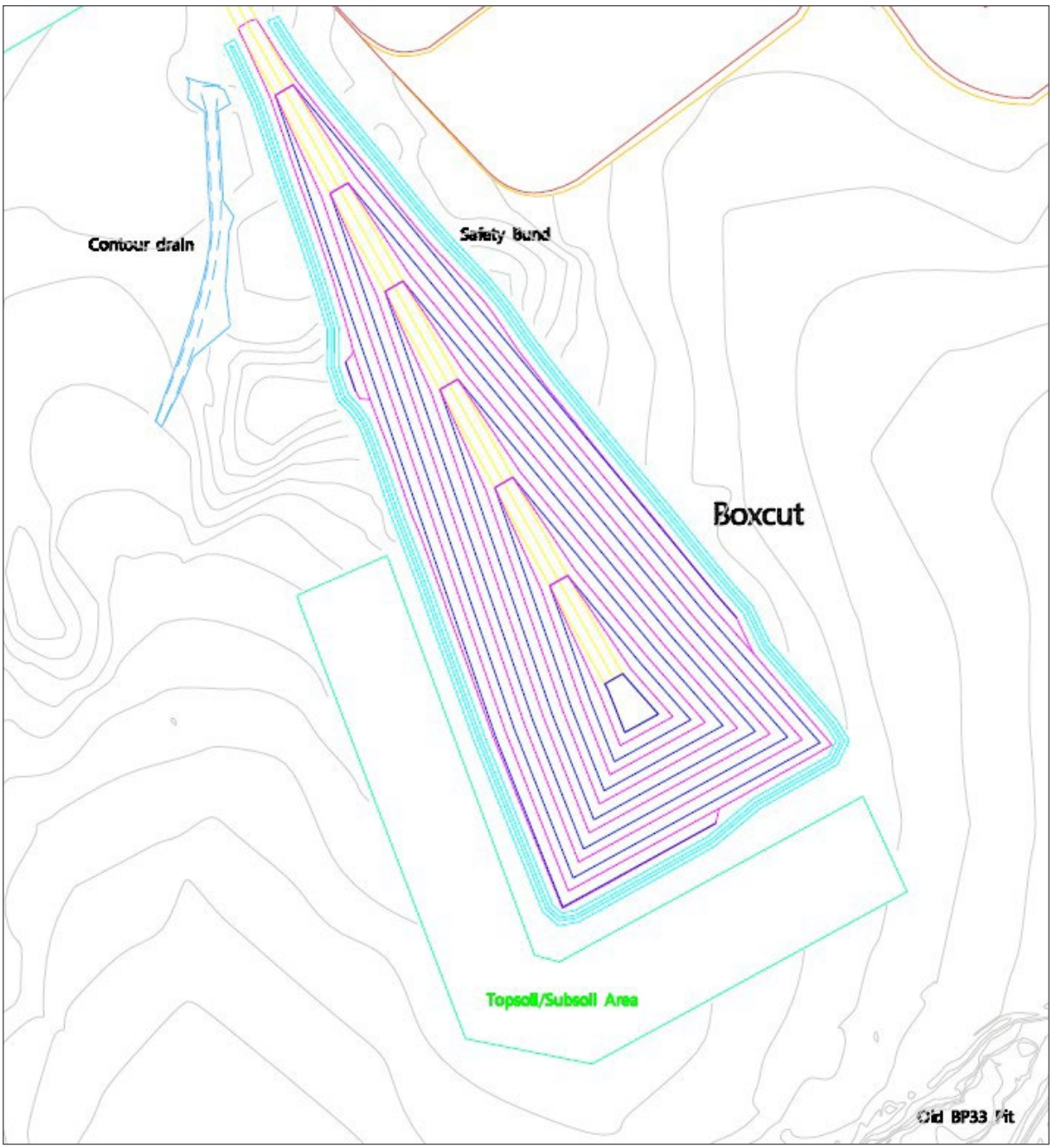


Figure 5-1. BP33 Box-cut design (TME 2019)

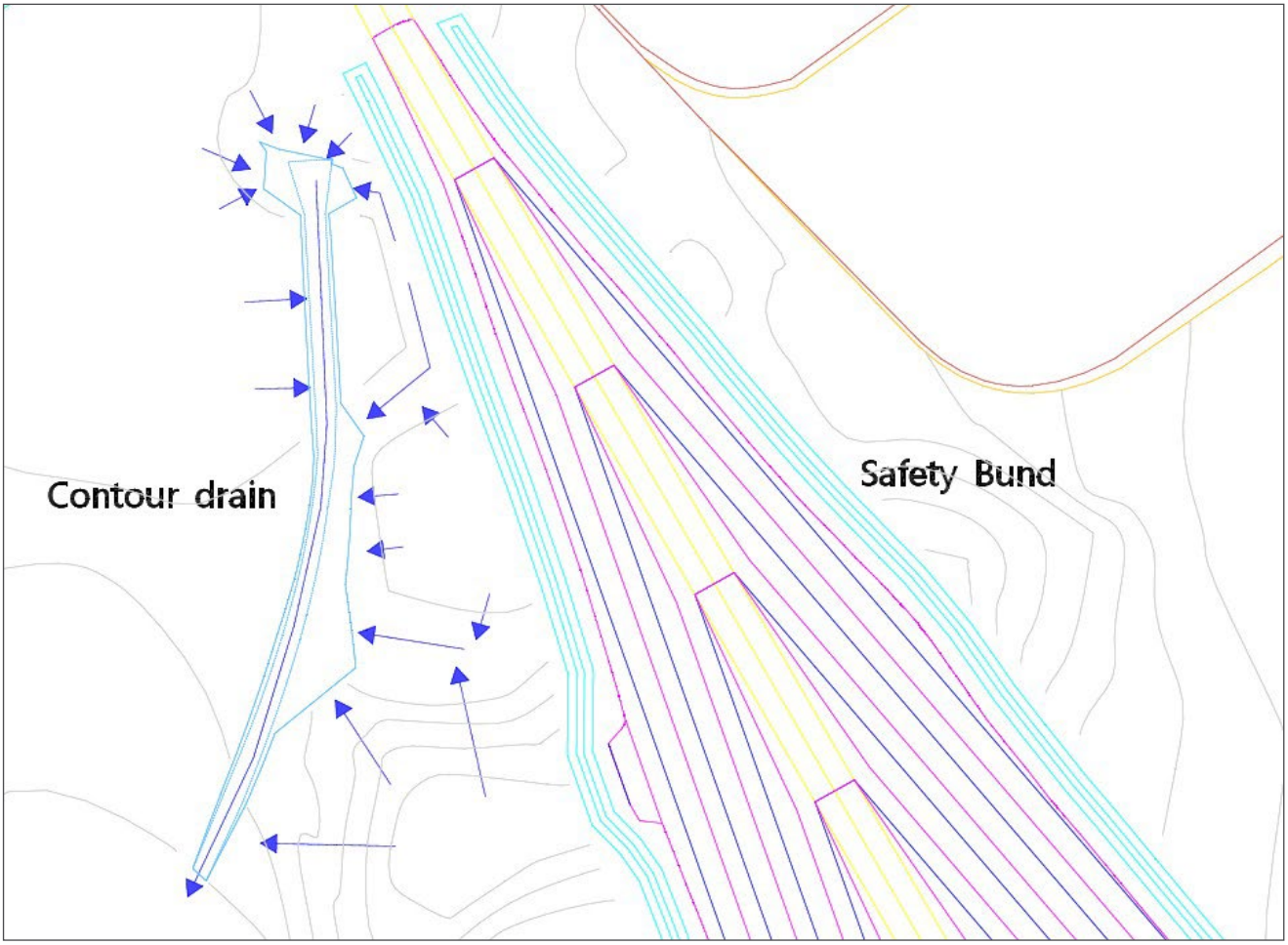


Figure 5-2. BP33 Box-cut contour drain and surface water flows (TME 2019)

Table 5-7. Pit design rationale

	Item	Design rationale	References
Reasons for choosing this location (complete all that apply)	Statutory	Within ML and approved disturbance footprint of NT EPA Environmental Approval (EP2020/001-001)	Mining Management Act Mineral Titles Act NT EPA Environmental Approval (Appendix C)
	Flora	No significant or sensitive flora within disturbance area	Ecology reports (EcOz 2020) (Appendix J)
	Fauna	No impact to threatened fauna within disturbance area	Ecology reports (EcOz 2020) (Appendix J)
	Sacred Sites	No sacred sites within disturbance area	AAPA Authority Certificate
	Heritage	No heritage sites within disturbance area	NT Heritage Register
	Water	Box-cut planned location was relocated by TME Mine Consulting, from original design location presented by OreWin Consultants to reduce risk from surface water drainage as well as optimise the position with considerations given to the Underground (UG) designs, surface Waste Rock Dumps (WRD's), surface haul roads, and the Run of Mine (ROM) stockpile (TME 2019)	Mine Design Reports (TME 2019)
	Other	Location of box-cut appropriate for accessing the underground resource	Mine Design Reports (TME 2019)
Reasons for choosing this design (design basis)	Geotechnical/engineering	The Boxcut is required to provide geotechnical stable conditions for development of the UG portal and decline of the proposed UG mine. To achieve this, the portal needs to be developed in transitional and fresh rock requiring excavation of waste material down to at least 10 m below the oxidised zone. At BP33, the geological model places this level at -40mRL making the required depth of excavation between 60 m and 70 m (TME 2019). SRK Consultants (2021) provided slope design recommendations for BP33 Box-cut.	Mine Design Reports (TME 2019, OreWin) Geotechnical Reports (SRK Consulting 2021) (Appendix R)
	Waste/water management	Location to reduce risk of surface water drainage. Dewatering of the box-cut to the MSD.	n/a
	Other	n/a	n/a
Regulatory	Existing Authorisation	Nil	n/a
	NT EPA	NT EPA Assessment Report 94 (AR94) and Environmental Approval EP2020/001-001 issued 8 April 2022 outlines BP33 Environmental Approval conditions (see section 7.1.2)	NT EPA Environmental Approval (Appendix C)
	EPBC Act	BP33 project did not require referral under the EPBC Act.	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B)

	Item	Design rationale	References
	Water Act	No water extraction required for dewatering of open cut pits WDL application will be undertaken during construction.	n/a

Table 5-8. Pits risk, controls and management

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
1	Clearing	Approximately 7.2ha to be cleared. Sequence as follows: A. Progressive ESCP developed B. Boxcut area to be surveyed C. Site environmental clearance obtained (permit to disturb) D. Machinery for clearing to be mobilised to site and inspected (mechanical and weed hygiene) E. Pre clearance survey undertaken F. Clearing to be undertaken with fauna spotter as required G. ESCP infrastructure construction H. Topsoil stockpiled	• Erosion and sedimentation • Unauthorised clearing • Inappropriate topsoil removal and storage • Dust emissions • Impacts to flora and fauna • Weed introduction / spread • Bushfire	• Primary ESCP developed • Progressive ESCP for construction to be developed prior to clearing • Land disturbance procedures developed. • Topsoil stockpiled on the designated topsoil dumps to 1.5m maximum height. • Dust suppression activities and progressing clearing to reduce impacts of dust • Fauna spotted during clearing activities and pre-clearance surveys • Minimise disturbance to authorised disturbance footprint and undertake progressing clearing as required by construction schedule. • Weed hygiene inspections of all machinery coming to site • Implementation of weed management as detailed in EMP. • Finniss Lithium Project Weed Management Procedure • Bushfire response addressed in site Emergency Management Plans	• Downstream waterways not impacted by sedimentation (within acceptable ANZG (2018) guideline limits or SSGVs) • No unauthorised clearing activities • Clearing in accordance with internal vegetation clearing procedures and permits • Appropriate topsoil stockpiling undertaken to ensure sufficient growth medium stockpiled for closure. • No dust complaints • Ecology studies undertaken • Weed seed hygiene inspections undertaken of all plant and equipment mobilised to site • No new introduced declared weeds or spread of declared weeds • No unauthorised fires	Water Management Plan (Appendix G) Vegetation clearing procedure (Appendix Q) Primary ESCP (Appendix P) Ecology studies (Appendix J) Risk Register (Appendix U)
2	Construction	A. Plant and equipment inspection checks completed on all mobilised construction machinery	• Water quality degradation • Hydrocarbon spills / contamination • Construction not to approved design	• Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • Geochemical characterisation	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) guideline limits or SSGVs • Plant and machinery inspections undertaken	Primary ESCP – adopted by the Company (Appendix P) Final designs (Appendix S)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
		B. Construction to final box-cut design C. Oxide material excavated and dumped within temporary WRD1 footprint D. Development of contour drain E. Development of boxcut safety bund F. Engineer sign-off on final constructed box-cut to mine design G. Dewatering of boxcut as required	• Alteration of surface flows affecting downstream environmental values • Noise, vibration and dust • Landform/pit instability	• Box-cut dewatered to MSD where it can be tested and treated (if required) prior to use/discharge • Plant and machinery inspection checks prior to mobilisation to site • Engineer design controls/ engineer sign off on constructed infrastructure as per constructed design • Box-cut backfilled on closure • Dust suppression will be undertaken using water carts	• Construction to final approved designs • Box-cut backfilled on closure	Water Management Plan – adopted by the Company (Appendix G)
3	Commissioning /Operations	A. Dewatering of boxcut as required	• Pit water quality degradation – not suitable for use / discharge • Structural / wall failure • Hydrocarbon spills / contamination • Noise, vibration and dust	• Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • Geochemical characterisation • Water treatment of MSD water quality prior to discharge and/or use for dust suppression and irrigation to applicable ANZG (2018) • Water Management Plan includes a surface and groundwater monitoring program to detect changes in water quality with corrective actions implemented as required. • Regular maintenance schedules of vehicles and spill kits available and stocked • Machinery and equipment checked for noise levels in accordance with	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) guideline limits or SSGVs for purpose • No dust, vibration or noise complaints • All hydrocarbon spills reported and cleaned up • Box-cut backfilled on closure	Water Management Plan – adopted by the Company (Appendix G) Mine (Box-cut) Designs

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References
				standards and manufacturers specifications • Box-cut backfilled on closure • Dust suppression will be undertaken using water carts		

Table 5-9. Independent expert

Q1 Will an independent expert be engaged by the Operator?
☐Yes – Go to Q2 *Note: any independent experts engaged will be subject to approval by the Minister and will require a terms of reference (ToR) approved by the Minister.*
☒ No – please explain why, and then move onto Q2: Box-cut designed by OreWin and reviewed by TME Mine Consulting. SRK Consulting developed the BP33 mine geotechnical design (pit wall design parameters and geotechnical stability, haul ramp design).
Q2 Will detailed designs be prepared and reviewed by an independent expert?
☐Yes – Go to Q3 *Note:* - *Any designs reviewed by an independent expert approved by the Minister, must be submitted together with independent review comments and how any improvements in design were addressed to the satisfaction of the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.* - *Detailed designs must include* *d) Hold points at suitable intervals that may affect the construction and future performance of the structure* *e) Performance monitoring requirements and frequency* f) *Reporting requirements to the regulator to demonstrate compliance and design to the satisfaction of the Minister*.
☒ No – please explain why, and then move onto Q3: Design prepared by independent expert mine and geotechnical consultants. No independent review is deemed necessary as the risk is acceptable.
Q3 Will a detailed management plan be developed that describes in detail the operators maintenance, surveillance and closure requirements of the structure?

☐Yes *Note: This plan must be endorsed by the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.*
☒ No – please explain why: No detailed management plan of the box-cut is required.

Table 5-10. Pit closure

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
Unplanned	**Temporary suspension:** Box-cut void is stable and safe. **Unforeseen closure:** A geotechnically stable and non- polluting landform which supports self-sustaining native vegetation and fauna comprising local species.	**Temporary suspension:** • Box-cut void highwalls are not prone to mass collapse. • Pit ramps submerged or are blocked by abandonment bund(s) to deter access. • Pit abandonment bunds constructed in accordance with DoIR (1997). • Risk based approach to prevention of inadvertent access, as required by Mines Safety and Inspection Regulations 1995. • Pit lake water quality meets relevant water quality guidelines for agreed end uses. • Dewatering of the pit to prevent flooding of the underground workings. **Unforeseen closure:** Criteria adopted as per planned closure.	• Existing BP33 Pit void backfill study (if option to backfill on closure progressed). • Existing BP33 Pit Lake water quality and stratification study in accordance with section 8.3.1.1 of the mine closure plan if option to dewater / use water. • If the existing BP33 Pit Lake is retained on closure, then a water balance is to be undertaken to define if flow-through as decant and/or through-flow as seepage are potential contaminant transport pathways • Definitive Armco tunnel designs for box-cut (see section 5.8).	• Existing BP33 Pit void backfill study ~Q3 2023, (if option to backfill on closure progressed) • A pit lake water quality and stratification study to occur prior to pit lake dewatering / use (only required if pit is not backfilled). Dry and wet season sampling events commencing Q1 2023. • Water balance ~Q4 2023. • Options study for definitive Armco tunnel designs for box-cut – Q4 2022.	Mine closure plan and rehabilitation management plan – adopted by the Company (Appendix E)
Planned	Rehabilitated as a safe, stable, non-polluting and erosion resistant landform.	• Box cut backfilled and covered with suitable growth medium on completion of operations. Surface is shaped to proposed x-sections,			

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
		ripped and covered with a suitable growth medium to a minimum depth of 0.2 m. • Soils analysis results within acceptable criteria for successful plant growth (in accordance with criteria • Erosion score 2 or less (minor erosion). No increase in erosion presence of severity from previous monitoring for at least two consecutive years. • No evidence of contaminated runoff or seepage from the underground to groundwater.			
	Box cut supports self-sustaining native vegetation not significantly different to that of the surrounding ecosystems.	• Groundcover % and groundcover species richness recorded at vegetation transects not less than analogue sites for two consecutive years post closure. • Abundance of woody plants (stems ≥ 2 cm DBH and greater than 3 m high) recorded at vegetation transects not less than representative analogue sites. • Not less than three dominant species (per strata) recorded at vegetation transects present in analogue sites. • Density of weed species within rehabilitated domain is not more than reference sites for three consecutive years. No declared weed species not previously recorded in the mining lease is present within the rehabilitated domains for three consecutive years. • No fire scars recorded at vegetation transects within first three years of rehabilitation.			
	The domain supports fauna recolonisation not significantly different to that of the surrounding ecosystems.	• Trend of increasing native wildlife abundance and diversity each year with eventual results not significantly different to analogue sites. • Key indicator invertebrate biota assemblages of rehabilitated areas not significantly different to analogue sites.			

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
		• No significant difference in abundance of feral animal and pests compared to analogue sites.			
	BP33 historic pit void is stable and safe.	• Pit void highwalls are not prone to mass collapse.			
	Inadvertent public access to open pit will be prevented as far as practicable.	• Pit ramps submerged or are blocked by abandonment bund(s) to deter access. • Pit abandonment bunds constructed in accordance with DoIR (1997). • Risk based approach to prevention of inadvertent access, as required by Mines Safety and Inspection Regulations 1995.			
	Pit lake decant not impacting downstream receiving environments.	• No evidence of bank or bed scouring from pit lake discharge. • Following mixing, discharge water quality meets default ANZG (2018) guidelines or SSGVs for freshwater ecosystem protection. • No significant difference between riparian vegetation of upstream and downstream reaches.			
	GDEs are remediated from any operational draw-down impacts and are not adversely affected by altered groundwater levels or flows upon equilibrium of closure groundwater levels.	• Groundwater drawdown around mine does not lead to ongoing impacts on riparian vegetation.			
	Pit lake water quality will not present an unacceptable risk to the environment or humans.	• Pit lake water quality meets relevant water quality guidelines for agreed end uses.			

5.3 Underground

The BP33 underground (UG) domain is summarised in the following tables.

Table 5-11. Underground operations summary

Identification of UG operations		BP33 UG (new disturbance)
Titles		ML32346
Target material/commodity		Pegmatite, a granite type rock containing spodumene (LiAlSi2O6), a source of lithium
Access (portal and access decline)	Number	1 portal
	Locations	A portal installed near the base of the box-cut and construction of a decline from the portal, to ~400 m to the top of the ore body.
Access (decline)	Locations	A further 2,127 m of decline constructed over the life of mine will provide access to each production level, down to a depth of approximately 320 m below surface.
	Gradient	1:7
Production levels / ore drive (SRK 2021)	Number	The underground mine will comprise ten production levels. Each 30m sublevel will contain stope access from the decline, sump/drainage, ventilation network and a turning/stockpile bay.
	Location	Accessed off the decline.
Ventilation	Primary	The underground mine will be ventilated via a dedicated raise bored Return Air Raise (RAR) to the surface. The BP33 exhaust is via a ~75 m x 4.0 m diameter dedicated raise bored RAR to surface.
	Secondary	An internal drill and blasted 4.0 m x 4.0 m RAR network provide airflow to the production area which is distributed using secondary fans on the levels between the decline and RAR access. (OreWin 2020).
Dewatering	Standing Water Level (SWL)	SWL in the deep BCF bore has ranged from 5.4 – 9.3 m. SWL in the shallow bores ranged from 3.1 – 5.5 m.
	No. of bores	No dewatering bores. Dewatering via sumps
	Extraction rate	The box-cut, decline and underground workings will require constant dewatering. Inflows and dewatering requirements are forecast to increase rapidly over the first 17 months of mining to approximately 4.5 ML/day, then will continue an upward trend through to the end of mining, when dewatering is forecast to peak at approximately 7 ML/day (CloudGMS, 2021) (Appendix H)
	Cone of depression distance (m) from pit	Drawdown cone extends approximately 2 km from the underground mine (Figure 3-6). Once mining ceases, the water table is predicted to recover to pre-mining levels within three years

Identification of UG operations		BP33 UG (new disturbance)
	Water management requirements	The underground mine will require dewatering to prevent the mine from flooding. Inflows will be pumped to the mine settling dam (MSD), where the water will be treated to remove sediments and any other contaminants so that it can be reused supply the mine non-potable water demand. Excess water transferred to Grants open pit void after mining in the Grants pit ceases Controlled release: volumes are only constrained by the dilution requirements in Drainage Line 1 and only occur during the wet season.
	References	BP33 Underground Mine Water Management Plan (EcOz 2022) – adopted by the Company (Appendix G) Desktop groundwater study (Groundwater Enterprises 2019) (Appendix I) Groundwater assessment (CloudGMS 2021) (Appendix I)
Flood immunity	1:100 (ARI)	Flood inundation modelling indicated that there is little difference to the natural flow regime caused by the mine site. Catchment discharges for the 1%AEP event are 237 m3s-1 for the pre-mining and 236.3 m3s-1 for the mining scenario and Engineers Australia Regional Flood Frequency Estimated discharge is 298 m3s-1
	References	Surface hydrology and flood inundation report (EnviroConsult Australia Pty Ltd 2020) (Appendix H)
Regulatory	Existing Authorisation	N/A
	NT EPA	NT EPA Assessment Report 94 (AR94) and Environmental Approval EP2020/001-001 issued 8 April 2022 outlines BP33 Environmental Approval conditions (see section 7.1.2 and Appendix C)
	EPBC *Act*	N/A
	Water *Act*	N/A
	Other guidelines	N/A
	References	N/A
UG development method	Rationale	The mining method selected for the BP33 resource is sublevel open stope mining with pillar support. Drill and blast methods will be used to extract the ore, which will be removed by underground production loaders leaving behind an open space referred to as a stope. The majority of the sublevel retreat mining will be done using remote loaders. Mined material is to be stockpiled on the production level or loaded directly into underground mining trucks with a 45 t capacity. Ore will be hauled to the surface via the decline.
	Geotechnical	The SRK Consulting (2021) (Appendix R) has assessed the ground conditions and stoping dimensions for BP33 with ground support in the form of in-stope pillars and cable bolts. The

Identification of UG operations		BP33 UG (new disturbance)
		recommended pillar dimensions are 15 m x 15 m. The square shape provides a greater load-bearing capacity than rectangular pillars (OreWin 2020).
ROM Pad	Ore geochemical characterisation	• Ore that will be stored in the ROM pad while awaiting transport to the processing plant is expected to be NAF • Water extracts for the ore samples were slightly alkaline with low salinity • Except for Al and Fe, metal and metalloid concentrations were non-detectable in almost all of the water extracts of the ore samples • On average, concentrations of Al in ore water extracts were about an order of magnitude higher than the default ANZECC guideline values (DGV) for freshwater systems. Similarly, the concentrations of Al in ore water extracts were in the order of ten times those measured in both nearby surface water and shallow groundwater at the adjacent Grants project. These results suggest that Al in run-off from ore stockpiled in the ROM pad may present an environmental risk (EGi 2021) (Appendix F).
	Management	As the ore samples are all likely to be NAF and therefore unlikely to produce acidic drainage, stockpiled ore may not require any specific management to reduce potential impacts from run-off. However, since the results from water extractions indicate a potential risk from elevated Al concentrations in run-off, the likelihood of this risk should be evaluated at site, and it is recommended that any run-off from the ROM stockpile should be monitored and containment of run-off undertaken as required (EGi 2021) (Appendix F)
Ancillary structures	N/A	N/A

Table 5-12. Underground operations – risk, controls and management

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
1	Clearing	n/a	n/a	n/a	n/a	n/a
2	Construction	A. Underground plant and equipment inspection checks completed on all mobilised construction machinery B. Drill and blast for construction of portal and decline C. Construction of portal to final design D. Construction of decline to final design E. Transitional and fresh waste material excavated and dumped within temporary WRD2 footprint F. Engineer sign-off on final constructed portal and decline to mine design G. Dewatering of underground	• Hydrocarbon spills / contamination • Construction not to approved design • Structural failure • Alteration of surface flows affecting downstream environmental values • Water quality degradation	• Plant and machinery inspection checks prior to mobilisation to site • Engineer design controls/ engineer sign off on constructed infrastructure as per constructed design • Mine design by suitable qualified mine engineers and geotechnical specifications by suitably qualified Geotech's • Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • Underground dewatered to MSD where it can be tested and treated (if required) prior to use/discharge	• Plant and machinery inspections undertaken • Construction to final approved designs / specifications • Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs.	Water Management Plan– adopted by the Company (Appendix G) Mine design reports. Geotechnical Reports (Appendix R)
3	Commissioning /Operations	A. Development of stopes to mine design for ore production B. Ore trucked to ROM	• Alteration of surface flows affecting downstream environmental values	• Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs for purpose	Water Management Plan– adopted by the Company (Appendix G)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
		C. Dewatering of underground sumps to MSD	• Water quality not suitable for use or discharge • Loss of sensitive riparian vegetation due to reduction in flows • Drawdown of groundwater levels in aquifer affects environmental values and/or other users • Hydrocarbon spills / contamination • Noise, vibration and dust • Structural failure	• Water treatment of MSD water quality prior to discharge and/or use for dust suppression and irrigation to applicable ANZG (2018) • Water Management Plan includes a surface and groundwater monitoring program to detect changes in water quality with corrective actions implemented as required. • Water Management Plan - activities that will be undertaken to ensure early detection of impacts to riparian vegetation health, which include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses and an annual riparian vegetation monitoring program • Groundwater Dependent Ecosystems (GDE) Management Plan (including a riparian vegetation monitoring program) developed to monitoring to the level of impact. If impacts occur, a plan will be developed for rehabilitation or offsetting impacts. • Surface water flows monitoring plan and riparian vegetation monitoring program developed as required by SWEL conditions • Regular maintenance schedules of vehicles and spill kits available and stocked • Machinery and equipment checked for noise levels in accordance with standards and manufacturers specifications • Dust suppression will be undertaken • Engineer design controls/ engineer sign off on constructed infrastructure as per constructed design	• Monitoring in accordance with GDE Management Plan • Monitoring of surface water flows and riparian vegetation in accordance with OHD SWEL Monitoring Plan • No dust, vibration or noise complaints • All hydrocarbon spills reported and cleaned up • Construction to final approved designs / specifications	GDE Management Plan – adopted by the Company (Appendix V) OHD SWEL Monitoring Plan – adopted by the Company (Appendix T)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
				• Mine design by suitable qualified mine engineers and geotechnical specifications by suitably qualified Geotech's		

Table 5-13. Independent expert

Q1 Will an independent expert be engaged by the Operator?
☐Yes – Go to Q2 *Note: any independent experts engaged will be subject to approval by the Minister and will require a terms of reference (ToR) approved by the Minister.*
☒ No – please explain why, and then move onto Q2: Mine designed by a suitably qualified mining engineer, TME Mine Consulting Pty Ltd. Geotechnical study for BP33 deposit conducted by SRK Consulting, a suitably qualified geotechnical professional (Appendix R). The study was conducted and reviewed incorporating results of the 2021 geotechnical drilling programme and rock property testing. Recommended mining method and design dimensions were detailed to provide the required stability and support to mitigate risk.
Q2 Will detailed designs be prepared and reviewed by an independent expert?
☐Yes – Go to Q3 *Note:* - *Any designs reviewed by an independent expert approved by the Minister, must be submitted together with independent review comments and how any improvements in design were addressed to the satisfaction of the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.* - *Detailed designs must include* *g) Hold points at suitable intervals that may affect the construction and future performance of the structure* *h) Performance monitoring requirements and frequency* i) *Reporting requirements to the regulator to demonstrate compliance and design to the satisfaction of the Minister.*

☒ No – please explain why, and then move onto Q3: Detailed designs prepared by TME Mine Consulting Pty Ltd, OreWin and SRK Consulting (Appendix R)
Q3 Will a detailed management plan be developed that describes in detail the operators maintenance, surveillance and closure requirements of the structure?
☐Yes *Note: This plan must be endorsed by the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.*
☒ No – please explain why: Not required for the underground.

Table 5-14. Closure – underground operations

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
Unplanned	**Temporary suspension:** Rehabilitated as safe and stable. **Unforeseen closure:** Rehabilitated as safe and stable.	**Temporary suspension:** • Underground workings are not prone to mass collapse. • Dewatering of underground to protect integrity. • Water quality meets relevant water quality guidelines for agreed end uses. **Unforeseen closure:** Criteria adopted as per planned closure.	• Groundwater inflow modelled. Required to validated during operations. • Underground water quality predicted by groundwater monitoring of bores, actual water quality to be determined during operations. • Verify modelled groundwater recovery. • GDE impacts from groundwater drawdown	• Water balance to be revised during year 1 of underground operations based on actual groundwater inflow data. • Underground water quality to be monitored during operations, and throughout unplanned and planned closure • Groundwater levels to be monitored post closure to verify modelled groundwater recovery. • Monitoring in accordance with GDE Management Plan	Mine closure plan and Rehabilitation management plan – adopted by the Company (Appendix E) Groundwater Assessments (Appendix I) GDE Management Plan – adopted by the Company (Appendix V)
Planned	Rehabilitated as safe and stable.	• Inadvertent access to underground workings is prevented. • Ground stability risk meets post mining land use and does not pose a significant risk to users.			

5.4 Dams

Preliminary design for BP33 water dams has been developed by GHD during August 2022 (Appendix S). Details of preliminary dam design information is provided below.

Table 5-15. Dam – summary

Design item		Dam 1 – Mine Settling Dam (new)	Dam 2 – Raw Water Dam (new)
Titles		ML32346	ML32346
Footprint (Ha)	Existing	-	-
	Proposed	4.5	0.4
	Total	4.5	0.4
Purpose		Store and treat sediment laden water dewatered from the underground (i.e. groundwater inflows) and/or box-cut (i.e. rainfall).	Store water for dust suppression and supply water for the mine site facilities
LOM year of construction		Construction 2023	Construction 2023
Key design considerations			
Philosophy/rationale			
Flood immunity requirements			
Type		Turkeys nest	Turkeys nest
Project LOM (months)		44	44
Design capacity (ML)		156	6.25
Construction Details			
Perimeter length (m)		729	210
Crest width (m)		6	6
Embankment geometry		1(V):2.5(H)	1(V):2.5(H)
Total height (m)		7.6	4.9
Foundation / lining		Homogenous earthfill material	Homogenous earthfill material
Construction materials	Zone 1	Low permeability earthfill core	Low permeability earthfill core
	Zone 2	n/a	n/a
	Zone 3	Weathered earth and rockfill	Weathered earth and rockfill

Design item	Dam 1 – Mine Settling Dam (new)	Dam 2 – Raw Water Dam (new)
Construction material source	Box-cut overburden material– Footprint Mine Settling Dam	Box-cut overburden material– Footprint Mine Settling Dam
Key Design Parameters (ANCOLD, 2021)		
Failure consequence category (ANCOLD 2021)	Low	Low
Factor of Safety (FoS)	Drained Condition – Full level supply: 1.5 Drained Condition – Flooded: 1.5 Undrained Condition – Full supply level: 1.3 Undrained Condition – Flooded: 1.3	Drained Condition – Full level supply: 1.5 Drained Condition – Flooded: 1.5 Undrained Condition – Full supply level: 1.3 Undrained Condition – Flooded: 1.3
Design earthquake loading (OBE and MDE)	**OBE**: 1 in 475-year AEP **MDE/SEE**: 1 in 1,000-year AEP	**OBE**: 1 in 475-year AEP **MDE/SEE**: 1 in 1,000-year AEP
Buttressing requirements	N/A	N/A
Spillway type	overtopping broad-crested weir	overtopping broad-crested weir
Spillway level (mrl)	RL 21.8	RL 29.9
Spillway design and flood capacity	1:100 AEP	1:100 AEP
Discharge method	Overflow	Overflow
Storage capacity/Allowance (ANCOLD, 2021)	156ML	6.25ML
Minimum wet season storage allowance (MOL)	120 ML	5 ML
Minimum extreme storm storage allowance	36	1.25
Contingency freeboard	0.3	0.1
Ancillary Structures		
Pipe network – inlet	Anchored Floating Intake	Anchored Floating Intake
Pipe network – outlet	Anchored Floating Intake	Anchored Floating Intake

Table 5-16. Dam design rationale

Statutory/Other considerations	Condition requirement	How it's addressed	References

ANCOLD Guidelines	• Dam design and construction fit for purpose
	• Prevent dam failure / flooding and unauthorised discharges
		• Dams designed by suitably qualified engineers (GHD).
		• Key design criteria based on ANCOLD recommendations.
		• Consequence category assessment undertaken:
		  ○ MSD embankment has been assigned a Consequence Category of 'Low'.
		  ○ The MSD Environmental Spill Consequence Category has been assessed as 'Low'.
		  ○ RWD embankment has been assigned a Consequence Category of 'Very Low'.
		  ○ Environmental Spill Consequence Category for RWD has not been assessed given the facility will contain raw water and the environmental spill risk is negligible.
		• Surveillance and monitoring recommended based on assigned consequence category. An Operations, Maintenance, and Surveillance (OMS) Manual to be developed prior to commissioning of the dams.
		• A dam safety emergency plan is to be developed prior to commissioning of the dams.
		• Geotechnical investigations undertaken to inform dam designs and identify suitable construction material.
		• Safety in design risk assessment undertaken
		• Stability assessment undertaken – meets the minimum FoS recommended by ANCOLD for all load cases and conditions.
		• Seismic analyses completed – dams meet minimum ANCOLD recommended FoS provided foundation conditions and embankment construction materials meet or exceed assumptions, construction is completed with satisfactory quality control, and embankments are constructed to the design geometry.
		• Storage capacity of the dams designed based on water balance modelling report (WRM 2021)
		• Hydrological modelling undertaken to calculate design flows for sizing emergency spillways and flood storage requirements
			Preliminary design for BP33 water dams (GHD 2022) (Appendix S).
			Water balance (WRM 2021) (Appendix H)

Table 5-17. Dam risk, controls and management

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
1	Clearing	Approximately 4.9ha to be cleared. Sequence as follows: A. Progressive ESCP developed includes dams B. Dam area to be surveyed C. Site environmental clearance obtained (permit to disturb) D. Machinery for clearing to be mobilised to site and inspected (mechanical and weed hygiene) E. Pre clearance survey undertaken F. Clearing to be undertaken with fauna spotter as required G. ESCP infrastructure construction H. Topsoil stockpiled I. Final engineered designs developed prior to construction	• Erosion and sedimentation • Unauthorised clearing • Inappropriate topsoil removal and storage • Dust emissions • Impacts to flora and fauna • Weed introduction / spread • Bushfire	• Primary ESCP • Progressive ESCP for construction to be developed prior to clearing • Land disturbance procedures developed. • Topsoil stockpiled on the designated topsoil dumps to 1.5m maximum height. • Dust suppression activities and progressing clearing to reduce impacts of dust • Fauna spotted during clearing activities and pre-clearance surveys • Minimise disturbance to authorised disturbance footprint and undertake progressing clearing as required by construction schedule. • Weed hygiene inspections of all machinery coming to site • Implementation of weed management as detailed in EMP. • Finniss Lithium Project Weed Management Procedure • Bushfire response addressed in site Emergency Management Plans	• Downstream waterways not impacted by sedimentation (within acceptable ANZG 2018 guideline limits or SSGVs) • No unauthorised clearing activities • Clearing in accordance with internal vegetation clearing procedures and permits • Appropriate topsoil stockpiling undertaken to ensure sufficient growth medium stockpiled for closure. • No dust complaints • Ecology studies undertaken • Weed seed hygiene inspections undertaken of all plant and equipment mobilised to site • No new introduced declared weeds or spread of declared weeds • No unauthorised fires	Water Management Plan – adopted by the Company (Appendix G) Vegetation clearing procedure (Appendix Q) Primary ESCP – adopted by the Company (Appendix P) Ecology studies (Appendix J) Risk Register (Appendix U)
2	Construction	A. Plant and equipment inspection checks completed on all mobilised construction machinery	• Erosion and sedimentation • Hydrocarbon spills / contamination • Construction not to approved design	• Primary ESCP developed • Plant and machinery inspection checks prior to mobilisation to site • Engineer design controls/ engineer sign off on constructed infrastructure as per constructed design	• Downstream waterways not impacted by sedimentation • Plant and machinery inspections undertaken	Primary ESCP – adopted by the Company (Appendix P) Final designs (Appendix S)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
		B. Construction to final dam design C. Material used for construction as per dam design specifications D. Engineer sign-off on final constructed dam design E. Pipework and pumps established and flow meters installed F. OMS Manual developed prior to commissioning of the dams. G. A dam safety emergency plan developed prior to commissioning of the dams.	• Alteration of surface flows affecting downstream environmental values • Material (sand, rock, clay) imported from off-site	• Mine site design include sediment dams that provide for treatment and discharge of stormwater. • Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • Use of onsite material suitable for construction. Any off-site sources to be declared weed free	• Construction signed off by qualified engineer to final approved designs • Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs • No new introduced declared weeds or spread of declared weeds	Water Management Plan – adopted by the Company (Appendix G)
3	Commissioning / operations	A. Testing of pumps and pipelines B. Operation in accordance with OMS manual C. Monitoring of water quality and flows D. Water treatment as required for re-use and/or discharge	• Alteration of surface flows affecting downstream environmental values • Structural failure • Water quality not suitable for use or discharge • Loss of sensitive riparian vegetation due to reduction in flows • Hydrocarbon spills / contamination	• Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • Operation, maintenance, and surveillance management plans to be developed prior to commissioning for water storage dams • Water treatment of MSD water quality prior to discharge and/or use for dust suppression and irrigation to applicable ANZG (2018) • Water Management Plan includes a surface and groundwater monitoring program to detect changes in water quality with corrective actions implemented as required. • Water Management Plan - activities that will be undertaken to ensure early detection of impacts to riparian vegetation health, which	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs for purpose • Operation in accordance with operation, maintenance, and surveillance management plans • Surface water flows and riparian vegetation monitoring program in accordance with OHD SWEL Monitoring Plan	Water Management Plan – adopted by the Company (Appendix G) Final designs (Appendix S) OHD SWEL Monitoring Plan – adopted by the Company (Appendix T)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
				include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses and an annual riparian vegetation monitoring program • Water extraction entitlements applied per period to the OHD Surface water extraction licence (SWEL). • Surface water flows monitoring and riparian vegetation monitoring program developed as required by SWEL conditions (OHD SWEL Monitoring Plan) • Regular maintenance schedules of vehicles and spill kits available and stocked • Machinery and equipment checked for noise levels in accordance with standards and manufacturers specifications	• No exceedances of extraction or non-compliance with conditions of the OHD SWEL • All hydrocarbon spills reported and cleaned up	

Table 5-18. Independent expert

Q1 Will an independent expert be engaged by the Operator?
☐Yes – Go to Q2 *Note: any independent experts engaged will be subject to approval by the Minister and will require a terms of reference (ToR) approved by the Minister.*
☒ No – please explain why, and then move onto Q2: Suitable qualified engineers (GHD) have developed the preliminary detailed dam designs based on field verified geotechnical data (Appendix S).
Q2 Will detailed designs be prepared and reviewed by an independent expert?

☐Yes – Go to Q3

Note:

- *Any designs reviewed by an independent expert approved by the Minister, must be submitted together with independent review comments and how any improvements in design were addressed to the satisfaction of the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.*
- *Detailed designs must include*
  - *j) Hold points at suitable intervals that may affect the construction and future performance of the structure*
  - *k) Performance monitoring requirements and frequency*
  - l) *Reporting requirements to the regulator to demonstrate compliance and design to the satisfaction of the Minister.*

☒ No – please explain why, and then move onto Q3:

Suitable qualified engineers (GHD) have developed the preliminary detailed dam designs based on field verified geotechnical data (Appendix S). Dams designed to ANCOLD Guidelines and have a low failure consequence category (ANCOLD 2021).

Q3 Will a detailed management plan be developed that describes in detail the operators maintenance, surveillance and closure requirements of the structure?

☒Yes

Note: This plan must be endorsed by the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.

An operation, maintenance and surveillance manual will be developed by GHD for the dams.

☐ No – please explain why:

Table 5-19. Closure – Dams

Closure	Objective	Criteria	Knowledge Gaps	Timelines to completion	References
Unplanned	**Temporary suspension:** A geotechnically stable and non- polluting landform. **Unforeseen closure:** A geotechnically stable and non- polluting landform which supports self-sustaining	**Temporary suspension:** • Erosion score to remain 2 or less (minor erosion). • No increase in erosion from previous monitoring event for at least two consecutive years. • No declared weed species not previously recorded in the mining lease • No significant difference in abundance of feral animal and pests compared to previously recorded in the mining lease.	Water balance to be updated during operations based on actual groundwater inflows and mine schedule (including – Grants and BP33).	Water balance to be revised during year 1 of underground operations based on actual groundwater inflow data.	Mine closure plan and Rehabilitation management plan – adopted by the Company (Appendix E)

Closure	Objective	Criteria	Knowledge Gaps	Timelines to completion	References
	native vegetation and fauna comprising local species.	**Unforeseen closure:** • Criteria adopted as per planned closure.			
Planned	Surface water quality maintains environmental values and beneficial uses.	• Riparian vegetation assemblages downstream of BP33 water storages at closure are not significantly different to pre-mining structure and composition.			
	Decommissioning and removal of infrastructure.	• All pumping infrastructure is removed from site on the completion of mining activities. • Erosion score to remain 2 or less (minor erosion). No increase in erosion from previous monitoring event for at least two consecutive years			
	Rehabilitated dams and ponds congruent with pre-mining topography.	• Hard-pack and above-ground infrastructure removed. • Domain re-profiled to surrounding surface topography, ripped, covered with topsoil and seeded. • Erosion score 2 or less (minor erosion). No increase in erosion from previous monitoring event for at least two consecutive years.			
	Domain supports self-sustaining native vegetation not significantly different to that of the surrounding ecosystems.	• Groundcover % and groundcover species richness recorded at vegetation transects not less than analogue sites for two consecutive years post closure. • Abundance of woody plants (stems ≥ 2 cm DBH and greater than 3 m high) recorded at vegetation transects not less than of representative analogue sites. • Not less than three dominant species (per strata) recorded at vegetation transects present in analogue sites. • Density of weed species within rehabilitated domain is not more than reference sites for three consecutive years. No declared weed species not previously recorded in the mining lease present within the rehabilitated domains for three consecutive years. • No fire scars recorded at vegetation transects within first three years of rehabilitation.			
	The domain supports fauna recolonisation not significantly different to that of the surrounding ecosystems.	• Trend of increasing native wildlife abundance and diversity each year with eventual results not significantly different to analogue sites.			

Closure	Objective	Criteria	Knowledge Gaps	Timelines to completion	References
		• Key indicator invertebrate biota assemblages of rehabilitated areas not significantly different to analogue sites. • No significant difference in abundance of feral animal and pests compared to analogue sites.			

*Note: This will inform section 8.

5.5 Waste rock dump

The Waste Rock Dumps (WRDs) are temporary landforms. WRD1 contains waste rock from the box-cut and will be backfilled within the box-cut on completion of underground mining. WRD2 contains waste material from the underground and will be backfilled underground. The WRD domain is summarised in the following tables:

Table 5-20. WRD summary

Item		WRD 1 (box-cut)	WRD 2 (underground)
Titles		ML32346	ML32346
LOM year of construction		Construction 2023	Operation 2023-2026
Footprint (ha)	Existing area	n/a	n/a
	Proposed area	16.1	2.8
	Total area	16.1	2.8
Waste stored (oxidation)		Temporary storage of oxide waste from the box-cut	Temporary storage of transitional and fresh waste from the underground
Key design elements			
Objective and Criteria	Objective	Oxide material to be used for construction foundations will be benign, non-polluting, and stable. All other waste material to be backfilled within the box-cut to reduce surface storage on mine closure	Temporary storage of transitional and fresh waste will not pollute the receiving environment All transitional and fresh waste backfilled in underground stopes.
	Criteria	Storage criteria: • Surrounding water quality meets ANZG (2018) 95% guideline for freshwater and/or SSGVs. Construction criteria: • Benign & non-polluting: NAF material and low risk of NMD.	Storage criteria: • Surrounding water quality meets ANZG (2018) 95% guideline for freshwater and/or SSGVs. • No venting and / or other signs of AMD/NMD caused by inappropriate classification and/or storage of waste.

Item		WRD 1 (box-cut)	WRD 2 (underground)
		• Stable: To required geotechnical specifications as per design requirements. Backfill Criteria: • Material to be backfilled in a way to encapsulate and PAF, PAF-LC and material that may leach metals and / or metalloids.	• Material identified as PAF and PAF-LC to be priority backfilled and/or temporarily encapsulated within the WRD to reduce oxidation. Backfill Criteria: • Backfilling to present low risk to groundwater and GDEs • PAF/PAF-LC material to be backfilled in stopes that will remain constantly below the water table level once the water table returns to pre-mining groundwater levels/conditions.
Design considerations	Geochemical characterisation	Oxide waste: • 100% NAF Results from water extractions (EGi 2021) indicate: • Oxide waste rock stored in WRD1, would be unlikely to produce low pH saline seepage during short-term surface storage. Results from water extractions indicate: • The mobility of Al in all waste rock on contact with water, could potentially result in elevated concentrations in seepage from WRD1 short-term surface storage. Results from leach column testing suggest that while acidic drainage from wastes stored in WRD at the BP33 project or following backfilling of mine voids is unlikely, there is potential for water in contact with these materials to contain elevated concentrations of a number of metals/metalloids (arsenic, copper, lead and zinc, and possibly aluminium) relative to local surface and groundwaters. Specifically for WRD 1: Al and Cu.	Transitional and fresh waste: • 94.3% NAF • 5.1% PAC – LC • 0.6% PAF Results from water extractions (EGi 2021) indicate: • Transition and fresh waste rock stored in WRD2 would be unlikely to produce low pH saline seepage during short-term surface storage. • The mobility of Al and As in fresh waste rock on contact with water, could potentially result in elevated concentrations of these elements in seepage from WRD2 during short-term surface storage. • Concentrations of As in water extracts of transition and fresh waste rock were of a similar magnitude to those measured in the groundwater collected from bores sampling the deeper aquifer within the Burrell Creek Formation (BCF) at the nearby Grants project. These results suggest that, on backfilling the mine with fresh waste rock that has not undergone extensive weathering, groundwater should not be significantly impacted in terms of mobilisation of As. The results of peroxide extraction tests conducted on waste rock samples showed (EGi 2021): • Should substantial oxidation of fresh waste rock occur during surface storage, the concentrations of a number of metals/metalloids including Al, As, Co, Cr, Cu, U and Zn may by elevated in comparison to desirable environmental conditions, and seepage from the WRD could potentially represent a risk of contaminating the receiving environment.

Item		WRD 1 (box-cut)	WRD 2 (underground)
			Results from leach column testing suggest that while acidic drainage from wastes stored in WRD at the BP33 project or following backfilling of mine voids is unlikely, there is potential for water in contact with these materials to contain elevated concentrations of a number of metals/metalloids (arsenic, copper, lead and zinc, and possibly aluminium) relative to local surface and groundwaters. Specifically for WRD 2: Al, As and Cu.
	Water management	Surface water monitoring program to include monitoring of runoff from WRDs. Run-off from WRDs is contained within run-off/seepage ponds and water quality monitored especially in relation to arsenic, copper and aluminium concentrations and, if required, stored (e.g., MSD) for later discharge at times of high flow or treated before discharge if required (EGi 2022b) Groundwater monitoring program to include monitoring of seepage from WRDs	
	Geotechnical	Temporary landforms – see section 5.2 box-cut geotechnical data for geological units	
Dump configuration	e.g valley fill, cross-valley fill etc	Temporary valley fill	
Flood immunity		Not impacted by storm surge or flooding.	Not impacted by storm surge or flooding.
Dump dimensions (m)	Length	400	300
	Width	480	100
	Height	25	10
Dump volume / design capacity		2 million m^3	229,000 m^3
Foundation type		Base lift of oxide material 1-3 m to establish a flat surface.	Initially, oxide waste material excavated from the box-cut will be used to construct a flat compacted low permeability 1-2 m high pad (top RL 27).
Method of construction		The WRD will be constructed in three lifts; a base lift of 1-3 m to establish a flat surface and two 10 m lifts (top RL48). Ramp gradient 10% (1 in 10) Paddock dumping. Majority of the volume will be reclaimed for Boxcut backfilling.	The WRD will be constructed in a single 10 m lift (top RL 37). Ramp gradient 10% (1 in 10) This WRD will accept only transitional and fresh waste rock. All material will be reclaimed for backfill of the box-cut.
Dump slope	Batter angle	20	20
	FoS	-	-
Dump rate		The mining production rate is expected to be between 600,000 tonnes per annum and 1,000,000 tonnes per annum (waste:ore)	
Seismicity		The 0.0 s Spectral Acceleration (SA) peak ground acceleration hazard value in the area for return period of 500 years is estimated as low at between 0.03 g and 0.04 g (Leonard et al., 2013) (SA for Darwin is 0.0370 g in a 500 year return period). The Project area is consequently at low risk from seismic activity.	

Item			WRD 1 (box-cut)	WRD 2 (underground)
Construction sequence and design description				
Construction	1	Clearing	Stage 1 – removal of vegetation from WRD 1 at commencement of box-cut construction	Stage 2 – removal of vegetation from WRD 2 at commencement of decline development
	2	Foundation	Removal of topsoil	Removal of topsoil
	3	Base	A base lift of 1-3 m to establish a flat surface	Construction of a flat, compacted low permeability pad of 1-2 m using oxide waste material excavated from the box-cut
Operations	4	Halo	n/a – oxide material	n/a – all material transitional and PAF
	5	PAF cell	n/a -no PAF	Temporarily encapsulate PAF until material is backfilled
	6	Backfill	WRD1 material backfilled within box-cut on cessation of mining.	WRD 2 material to be backfill underground and within the box-cut on cessation of mining.
Closure	7	Capping	n/a – temporary storage	n/a – temporary storage
	8	Backfill	The mine closure concept involves using all of the material in WRD 1 to backfill the box-cut excavation.	WRD 2 material to be backfill underground and within the box-cut on cessation of mining.
Environmental management				
Key risks	Potential elevated seepage concentrations of Al and Cu from WRD1 compared to baseline water quality 80th percentile.			Potential elevated seepage concentrations of Al, As and Cu from WRD2 compared to baseline water quality 80th percentile.
Triggers	Triggers: • Water monitoring results indicate Al and/or Cu exceeds the ANZG (2018) guideline or SSGV. • Water quality monitoring indicates an upward trend in Al and/or Cu over time.			Triggers: • Water monitoring results indicate Al, As, and/or Cu, exceeds the ANZG (2018) guideline or SSGV. • Water quality monitoring indicates an upward trend in Al, As, and/or over time.
Management action	Management requirements are informed by the results if the static and kinetic testing of mined material. Run-off from the WRDs is to be contained within run-off/seepage ponds and water quality monitored especially in relation to arsenic, copper and aluminium concentrations and, if required, stored (i.e MSD) for later discharge at times of high flow or treated before discharge if required (EGi 2022b) An assessment of ARD risks is incorporated in the BP33 Risk Register (Appendix U). The residual risk is low. An ARD/NMD management plan is included in section 7.1.6. Further studies recommended in the EGi (2022b) report (discussed in Table 5-27 below) will further assess the risks.			
Closure				
Rehab objectives	• Operational waste rock dumps are entirely removed and footprint rehabilitated as a safe, stable, non-polluting and erosion resistant landform. • Domain supports self- sustaining native vegetation not significantly different to that of the surrounding ecosystems. • Footprints support fauna abundance and diversity not significantly different to that of the surrounding ecosystems. • Surface water quality does not lose identified environmental values and beneficial uses. • Beneficial uses are not adversely affected by altered groundwater levels or flows.			
References	Geochemical Characterisation Reports (Appendix F) • BP33 Project Geochemical characterisation of waste rock and ore report (EGi 2020).			

Item	WRD 1 (box-cut)	WRD 2 (underground)
	• Finniss Lithium Project BP33 Underground Mine, Static Geochemical Testing of Mine Wastes and Ore (EGi 2021) • Geochemical Testing of Mine Waste Materials – Progress Report on Kinetic Test Program – Memorandum (EGi 2022a) • Kinetic Geochemical Testing of Waste Rock - Finniss Lithium Project BP33 Underground Mine (EGi 2022b)	

Table 5-21. WRD design consideration

Statutory/Other considerations	Condition requirement	How it's addressed	References
Backfill of WRDs on closure	As detailed in BP33 Referral and SER, waste will be backfilled to the box-cut and underground.	Waste rock to be backfilled underground and within the box-cut on closure	BP33 Referral (Appendix A) BP33 Supplementary Environmental Report – Main report (Appendix B) MCP (Appendix E)
Environmental Approval EP2020/001-001	Condition 2. Action implementation and closure: (1) The action must be rehabilitated and closed in such a manner that the approval holder can demonstrate that it: (a) is physically safe to humans and animals; and (b) is geo-technically stable; and (c) is non-polluting, non-contaminating; and (d) does not cause material environmental harm or significant environmental harm; and (e) is able to sustain the post-mining land use in the approved Mine Closure Plan required by condition 3.	Geochemical characterisation studies WRDs temporary and to be backfilled on closure. Preparation of the following plans: • AMD Management Plan • ESCP • MCP • WMP	Geochemical characterisation reports (Appendix F) AMD Management Plan (section 7.1.6) ESCP – adopted by the Company (Appendix P) MCP – adopted by the Company (Appendix E) WMP – adopted by the Company (Appendix G)
NT EPA AR94 recommendations – Inland water quality	The proponent would prepare and implement an AMD Management Plan. MM Act will require the review and assessment of impacts related to mine waste and AMD, and regulate the design, construction, and operation of the temporary WRDs.	AMD Management Plan prepared	See section 7.1.6

Table 5-22. Waste Classification Criteria

Material	Criteria	WRD 2 Volume (t)	WRD 1 Volume (t)	Management requirements	References
Potentially acid forming (PAF)	Transition and fresh waste rock with Total S ≥0.4%	1,463	0	ARD/NMD risk have been thoroughly assessment in the risk assessment (Appendix U) Based on the outcomes of the static tests and the kinetic tests the risks have been assessed as low and a stand-alone AMD management plan is not required. However,	Geochemical Characterisation Reports (Appendix F)
Potentially acid forming – low capacity (PAF-LC)	Transition and fresh waste rock with Total S ≥0.2% and <0.4%	13,457	0		

Material	Criteria	WRD 2 Volume (t)	WRD 1 Volume (t)	Management requirements	References
Non-acid forming (NAF)	Ore OR Oxide waste rock OR Transition and fresh waste rock with Total S <0.2%	214,080	2,000,000	AMD management has been incorporated into Section 7.1.6, to ensure appropriate ongoing verification testing is undertaken, and monitoring of runoff and seepage to management any elevated metals/metalloids.	
UC	N/A	N/A	N/A	N/A	
Total		229,000	2,000,000		

Table 5-23. Material Quality and Beneficial Re-use

Formula/geo classification		Lithology/waste type	Properties	Suitability for re-use	References
Ore OR Oxide waste rock	NAF	Oxide	Benign – Low risk	Yes - water quality should be monitoring for Al and Cu concentrations to ensure levels remain within acceptable ANZG (2018) water quality guidelines or SSGV criteria.	Geochemical Characterisation Reports (Appendix F)

Table 5-24. WRD design rationale

Reasons for choosing this location (complete all that apply)	Statutory	Within ML and approved disturbance footprint of NT EPA Environmental Approval (EP2020/001-001)
	Flora	No significant or sensitive flora within disturbance area
	Fauna	No impact to threatened fauna within disturbance area
	Sacred Sites	No sacred sites within disturbance area
	Heritage	No heritage sites within disturbance area
	Water	WRDs do not intersect any waterways
Reasons for choosing this design (design basis)	Geotechnical engineering	n/a
	Geotechnical	n/a
	Waste/water management	n/a
	Additional information	Proximity to box-cut and underground for economical removal and backfill of waste rock
	Performance	n/a – no existing WRDs

Table 5-25. WRD risks, controls and management

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
1	Clearing	Approximately 18.9 ha to be cleared. Sequence as follows: A. Progressive ESCP developed B. WRD areas to be surveyed C. Site environmental clearance obtained (permit to disturb) D. Machinery for clearing to be mobilised to site and inspected (mechanical and weed hygiene) E. Pre clearance survey undertaken F. Progressing clearing to be undertaken as required (i.e WRD1 prior to WRD2 is required) with fauna spotter as required G. ESCP infrastructure construction H. Topsoil stockpiled	• Erosion and sedimentation • Unauthorised clearing • Inappropriate topsoil removal and storage • Dust emissions • Injury/death of fauna • Habitat loss • Weed introduction / spread • Bushfire	• Primary ESCP developed • Progressive ESCP for construction to be developed prior to clearing. ESCP includes design specifications for drains and sediment dams. • Land disturbance procedures developed. • Topsoil stockpiled on the designated topsoil dumps to 1.5m maximum height. • Dust suppression activities and progressing clearing to reduce impacts of dust • Fauna spotted during clearing activities and pre-clearance surveys • Ecology surveys undertaken as part of environmental approvals • Minimise disturbance to authorised disturbance footprint and undertake progressing clearing as required by construction schedule. • Weed hygiene inspections of all machinery coming to site • Implementation of weed management as detailed in EMP. • Finniss Lithium Project Weed Management Procedure • Bushfire response addressed in site Emergency Management Plans	• Downstream waterways not impacted by sedimentation (within acceptable ANZG 2018 guideline or SSGV limits) • No unauthorised clearing activities • Clearing in accordance with internal vegetation clearing procedures and permits • Appropriate topsoil stockpiling undertaken to ensure sufficient growth medium stockpiled for closure. • No dust complaints • Ecology studies undertaken • Weed seed hygiene inspections undertaken of all plant and equipment mobilised to site • No new introduced declared weeds or spread of declared weeds • No unauthorised fires	Water Management Plan (Appendix G) Vegetation clearing procedure (Appendix Q) Primary ESCP (Appendix P) Ecology studies (Appendix J) Risk Register (Appendix U)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
2	Construction	A. Plant and equipment inspection checks completed on all mobilised construction machinery B. Placement of waste in accordance with WRD designs and material classification C. Development of WRD drains and runoff/seepage/sediment ponds D. Establishment of pipeline and pump infrastructure at WRD sediment ponds to enable pumping of water to MSD if required E. Engineer sign-off on temporary constructed WRD design	• Erosion and sedimentation • Hydrocarbon spills / contamination • Construction not to approved design • Alteration of surface flows affecting downstream environmental values • Water quality degradation • NMD form waste material	• Primary ESCP developed • WRD designs and ESCP includes specifications for drains and sediment dams. • Water treated with flocculent and tested to achieve water quality criteria prior to release. • Plant and machinery inspection checks prior to mobilisation to site • Engineer design controls/ engineer sign off on constructed infrastructure as per constructed design • WRD's are a temporary storage, however, designed as if it were a permanent structure, annulus to be constructed of competent waste material. • Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • On-going operational waste characterisation to confirm material characteristics. • Temporary and short-term storage of waste rock material prior to backfill • Design and operational controls around waste rock placement, storage and backfill. • Design specifications for drains and sediment dams that enable testing of	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs • Plant and machinery inspections undertaken • Construction to final approved designs • No new introduced declared weeds or spread of declared weeds • Management in accordance with AMD management plan • Drains and sediment dams constructed to design. • Pumping infrastructure established in sediment dams to allows management of water as required.	Primary ESCP – adopted by the Company (Appendix P) Water Management Plan – adopted by the Company (Appendix G) Geochemical Characterisation (Appendix F) Mine Design reports AMD Management Plan (Section 7.1.6)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
				runoff/seepage water quality and pump to MSD if required for management. • Waste material to be backfilled in box-cut and underground for closure • Implementation of AMD Management plan (section 7.1.6)		
3	Commissioning / operations	A. Placement of waste in accordance with WRD designs and material classification B. Monitoring of water quality within WRD sediment ponds C. Pumping of water from WRD sediment ponds to MSD if determined by water quality (not within acceptable SSGV to passively drain off site). D. Commence backfill of waste underground when available	• Erosion and sedimentation • Hydrocarbon spills / contamination • Alteration of surface flows affecting downstream environmental values • Water quality degradation • NMD form waste material	• Primary ESCP developed • WRD designs and ESCP includes specifications for drains and sediment dams. • Water treated with flocculent and tested to achieve water quality criteria prior to release. • Plant and machinery inspection checks prior to mobilisation to site • WRD's are a temporary storage, however, designed as if it were a permanent structure, annulus to be constructed of competent waste material. • Water Management Plan - activities include monitoring groundwater levels in bores, installation of a flow gauge to monitor surface water discharges to downstream watercourses • On-going operational waste characterisation to confirm material characteristics. • Temporary and short-term storage of waste rock material prior to backfill	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs • Plant and machinery inspections undertaken • No new introduced declared weeds or spread of declared weeds • Management in accordance with AMD management plan • Drains and sediment dams constructed to design. • Pumping infrastructure established in sediment dams to allows management of water as required.	Primary ESCP – adopted by the Company (Appendix P) Water Management Plan – adopted by the Company (Appendix G) Geochemical Characterisation (Appendix F) Mine Design reports AMD Management Plan (Section 7.1.6)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
				• Design and operational controls around waste rock placement, storage and backfill. • Design specifications for drains and sediment dams that enable testing of runoff/seepage water quality and pump to MSD if required for management. • Waste material to be backfilled in box-cut and underground for closure • Implementation of AMD Management plan		

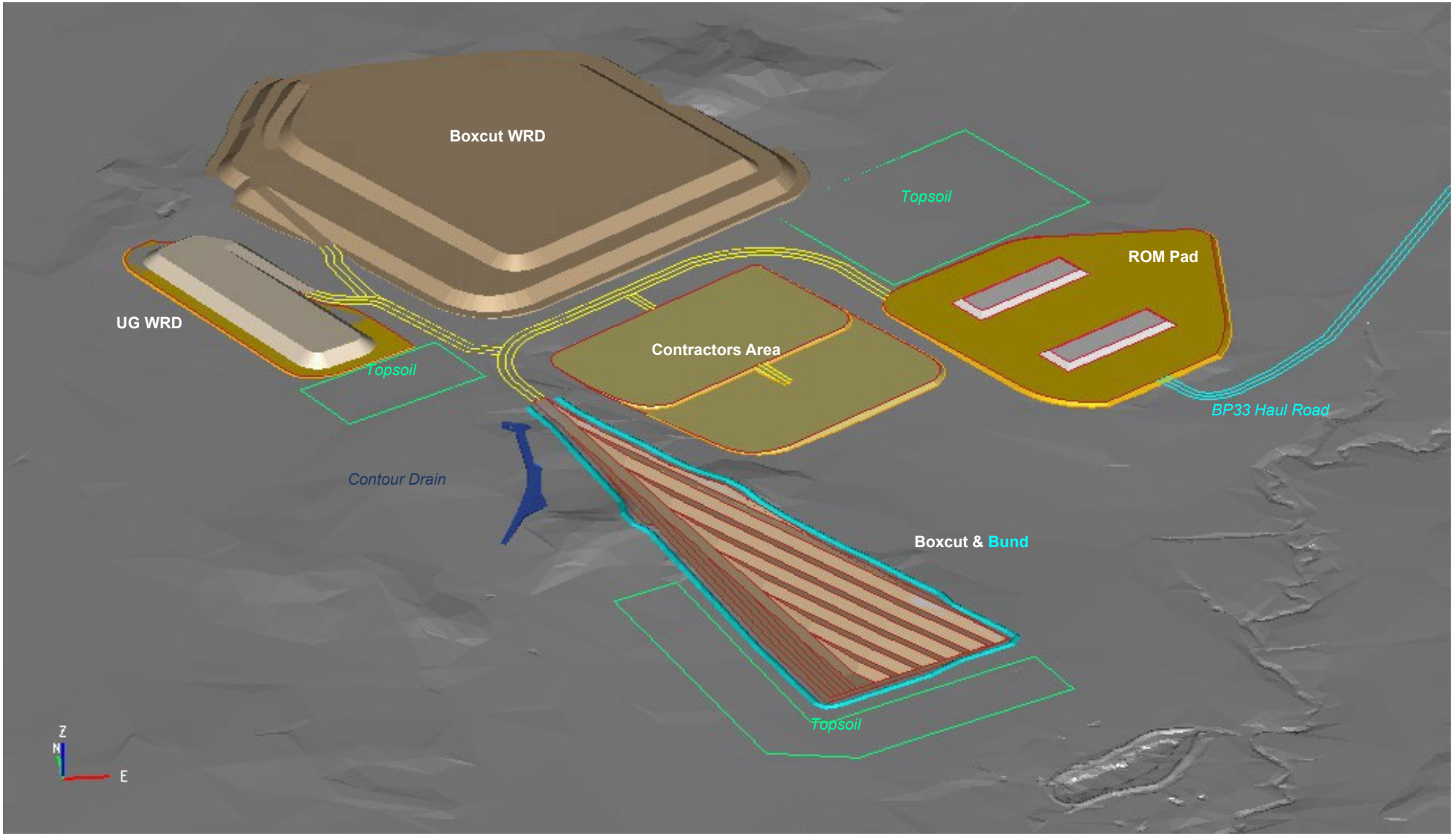


Figure 5-3. BP33 Mine design showing WRD design and location (TME 2019)

Table 5-26. Independent expert

Q1 Will an independent expert be engaged by the Operator?
☐Yes – Go to Q2 *Note: any independent experts engaged will be subject to approval by the Minister and will require a terms of reference (ToR) approved by the Minister.*
☒ No – please explain why, and then move onto Q2: Geochemical characterisation of waste and ore undertaken by experts – EGi (Environmental Geochemistry International) (Appendix F). Low risk of Acid Rock Drainage (ARD); potential risk of metals/metalloids leaching under neutral conditions (Neutral Mine Drainage) to be managed
Q2 Will detailed designs be prepared and reviewed by an independent expert?
☐Yes – Go to Q3 *Note:* - *Any designs reviewed by an independent expert approved by the Minister, must be submitted together with independent review comments and how any improvements in design were addressed to the satisfaction of the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.* - *Detailed designs must include* *m) Hold points at suitable intervals that may affect the construction and future performance of the structure* *n) Performance monitoring requirements and frequency* o) *Reporting requirements to the regulator to demonstrate compliance and design to the satisfaction of the Minister.*
☒ No – please explain why, and then move onto Q3: Low risk of ARD and WRDs are temporary storages. All waste material will be backfilled on closure.
Q3 Will a detailed management plan be developed that describes in detail the operators maintenance, surveillance and closure requirements of the structure?
☐Yes *Note: This plan must be endorsed by the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.*
☒ No – please explain why, and complete table 5.5.8: The residual risk is low. An ARD/NMD management plan is included in section 7.1.6. OMS plan not required.

Table 5-27. Closure – WRD

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
Unplanned	**Temporary suspension:** A geotechnically stable and non- polluting landform. **Unforeseen closure:** A geotechnically stable and non- polluting landform which supports self-sustaining native vegetation and fauna comprising local species.	**Temporary suspension:** • Erosion score to remain 2 or less (minor erosion). • No increase in erosion from previous monitoring event for at least two consecutive years. • No declared weed species not previously recorded in the mining lease • No significant difference in abundance of feral animal and pests compared to previously recorded in the mining lease. **Unforeseen closure:** • Criteria adopted as per planned closure.	Outcomes of the kinetic leach testing recommended the following (EGi 2022): • Monitoring of leachate quality from the WRDs • WRD leachate quality/quantity data be used to calibrate leach column and validate/calibrate modelling results (see below) and the updated/ validated models used to better evaluate any potential impacts on groundwater quality from backfilled mine wastes. • Mine waste management plans be updated during the operational phase, especially in relation to closure, based on the results of the above monitoring and modelling updates as required, with a view to minimising risk to groundwater quality and potential impacts on associated ecosystems. • Qualitatively assess the risk of migration of leachable metal contaminants from the site by development of a (schematic) hydrogeological conceptual model of the waste rock dumps and underground mining to assess the potential pathways by which leachable metals may migrate into the water environment. • Quantitatively assess the same by implementation of components of the hydrogeological conceptual model in 2-dimensional finite element models (using Seep/W and CTran/W) to quantify the migration of soluble metal contaminants from temporary surface WRDs and from permanent	• Monitoring of leachate quality from the WRDs during construction and operations until material is backfilled • Qualitative and quantitative assessments (leachate PCoC concentration determination) to be undertaken during operations (~Q2 2024). Through monitoring runoff and seepage during wet season events and/or through empirical modelling.	Mine closure plan and Rehabilitation management plan – adopted by the Company (Appendix E) Water Management Plan – adopted by the Company (Appendix G)
Planned	Operational waste rock dumps are entirely removed and footprint rehabilitated as a safe, stable, non-polluting and erosion resistant landform.	• WRDs, ROM pad and topsoil landforms removed. • Footprints have been covered with suitable growth medium on completion of operations. Surface is shaped, ripped and covered with a suitable growth medium to a minimum depth of 0.2 m. • Erosion score 2 or less (minor erosion). No increase in erosion presence of severity from previous monitoring event for at least two consecutive years. • Post mining surface water quality for turbidity downstream at monitoring sites meets site-specific guidelines values. • No evidence of contaminated soils in WRD and ROM footprints.			
	Domain supports self-sustaining native vegetation not significantly different to that of the surrounding ecosystems.	• Groundcover % and groundcover species richness recorded at vegetation transects not less than analogue sites for two consecutive years post closure. • Abundance of woody plants (stems ≥ 2 cm DBH and greater than 3 m high) recorded at vegetation transects not less than of representative analogue sites.			

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
		• Not less than three dominant species (per strata) recorded at vegetation transects present in analogue sites. • Density of weed species within rehabilitated domain is not more than reference sites for three consecutive years. No declared weed species not previously recorded in the mining lease is present within the rehabilitated domains for three consecutive years. • No fire scars recorded at vegetation transects within first three years of rehabilitation.	underground void backfill, including dilution in groundwater due to advection and dispersion, and removal or capture from groundwater due to adsorption, reaction or decay.		
	Footprints support fauna abundance and diversity not significantly different to that of the surrounding ecosystems.	• Key indicator invertebrate biota assemblages of rehabilitated areas not significantly different to analogue sites. • Trend of increasing native wildlife abundance and diversity each year with eventual results not significantly different to analogue sites. • No notable increase in the presence of feral animal and pests within the vegetation transects each year compared to analogue sites.			
	Surface water quality does not lose identified environmental values and beneficial uses.	• Post mining surface water quality (for the identified parameters) downstream monitoring sites (at ML boundary GDS SW2 and downstream off lease GDS SW5), meet site- specific guidelines values.			
	Beneficial uses are not adversely affected by altered groundwater levels or flows.	• Post mining groundwater quality down groundwater gradient is within range of pre-mining groundwater quality. • Extent of groundwater drawdown around mine does not exceed modelled predictions at closure.			

*Note: This will inform section 8.

5.6 Haul roads

The Haul and Access Roads are summarised in the following tables.

Table 5-28. Haul roads and access track details

		Haul roads	Access tracks
Titles		ML32346, ML32074, EMP28651	ML32346, ML32074, EMP28651
Details	Length (m)	7,300	2,500
	Width (m)	13	13
	Height (m)	Various along route	Various along route
	Disturbance footprint (Ha)	12.5	Box-cut access tracks 0.8 WRD access tracks 0.4
	Materials used	Insitu material and benign oxide waste material	Insitu material
Materials used	Source	Insitu material and benign oxide waste material. See section 5, Table 5-23	Insitu material
	Geochemical classification and volumes	See section 5, Table 5-22	n/a – insitu material to be used
	Engineering properties	Material to contain clay for suitable compaction and heavy machinery use	Material to be suitable for light vehicle use
General description of works		A 7.3 km dedicated haul road will provide for transport of ore from the BP33 ROM pad to the Grants processing facility. From the mine site, the proposed haul route follows an existing access road north for 2.2 km towards the Cox Peninsula Road. The route then turns to the west and follows existing tracks to the west and north for 3.3 km. The final 1.8 km of the route into the Grants processing facility traverses new ground. The road has an 11 m pavement design width to cater for single trailer 'Bigfoot' haulage (3.5 m wide). Total corridor width will vary pending cut and fill, and drainage requirements. Assuming a nominal corridor width of 13 m, the haul route footprint is approximately 12.5 ha. Engineered designs will be prepared following site surveys. The road design criteria will be to provide all year heavy vehicle access. Preparation of the haul road will involve removal of approximately 8-10 m of vegetation alongside the existing cleared access track to increase the corridor width to nominally 13 m wide. The entire	Site access will be via an existing access track from Cox Peninsula Road, which will be widened to 13 m and upgraded to heavy vehicle standard. The distance from the Cox Peninsula Road intersection to the BP33 mine site is 2.5 km. There will be a number of internal light vehicle and heavy vehicle access roads between the various mine site components.

	Haul roads	Access tracks
	13 m wide corridor will require clearing for the last 1.8 km of the route into the Grants mine site, as there is no existing track in this area. Cleared vegetation will be windrowed alongside the corridor and then spread out to prevent concentration of surface water flows. Remaining vegetation, topsoil and subsoil all to be stockpiled within the final haul road disturbance corridor, either in discrete stockpiles and /or along the road length to one side. Procedures for vegetation clearing and management of debris will be documented in a Vegetation Clearing Procedure (Appendix Q). Cut and fill requirements for the haul road will be determined during detailed design. Where fill is required, materials are expected to be sourced locally from existing borrow areas on Core leases, Grants WRD (oxide materials) or the BP33 box-cut oxide material. During construction, roadside drainage (swale drains) and watercourse crossings will be constructed according to the engineered design specifications. Temporary and permanent erosion and sediment control requirements will be specified in an ESCP consistent with the Best-practice Erosion and Sediment Control Guidelines (IECA 2008).	
Water runoff management (erosion and sediment controls)	See Primary ESCP (Appendix P)	See Primary ESCP (Appendix P)
Engineers sign off requirements (fit for purpose)	Name: Signature: Date:	Name: Signature: Date:
Statutory requirements	Environmental approval EP2020/001-001 conditions: Clearing for haul route is to be no more than 12.5 ha of the approved extent.	

Table 5-29. Haul and access roads risk, controls and management

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
1	Clearing	12.5 ha to be cleared. Sequence as follows: A. Progressive ESCP developed included haul road B. Area to be surveyed	• Erosion and sedimentation • Unauthorised clearing • Inappropriate topsoil removal and storage	• Primary ESCP developed • Progressive ESCP for construction to be developed prior to clearing • Land disturbance procedures developed.	• Downstream waterways not impacted by sedimentation (within acceptable ANZG 2018 guideline limits or SSGVs)	Water Management Plan – adopted by the Company (Appendix G)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
		C. Site environmental clearance obtained (permit to disturb) D. Machinery for clearing to be mobilised to site and inspected (mechanical and weed hygiene) E. Pre clearance survey undertaken F. Clearing to be undertaken with fauna spotter as required G. ESCP infrastructure construction H. Topsoil stockpiled	• Dust emissions • Injury/death of fauna • Habitat loss • Destruction of cultural heritage or archaeological sites • Weed introduction / spread • Bushfire	• Topsoil stockpiled on the designated topsoil dumps to 1.5m maximum height. • Dust suppression activities and progressing clearing to reduce impacts of dust • Fauna spotted during clearing activities and pre-clearance surveys • Ecology surveys undertaken as part of environmental approvals • AAPA certificate • Heritage clearance • Weed hygiene inspections of all machinery coming to site • Implementation of weed management as detailed in EMP. • Finniss Lithium Project Weed Management Procedure • Bushfire response addressed in site Emergency Management Plans	• No unauthorised clearing activities • Clearing in accordance with internal vegetation clearing procedures and permits • Appropriate topsoil stockpiling undertaken to ensure sufficient growth medium stockpiled for closure. • No dust complaints • No disturbance of cultural heritage or archaeological sites • Weed seed hygiene inspections undertaken of all plant and equipment mobilised to site • No new introduced declared weeds or spread of declared weeds • No unauthorised fires	Vegetation clearing procedure (Appendix Q) Primary ESCP – adopted by the Company (Appendix P) Ecology studies (Appendix J) Risk Register (Appendix U)
2	Construction	A. Plant and equipment inspection checks completed on all mobilised construction machinery B. Construction to final haul road design C. Suitable material used for construction D. Development of drains / culverts as determined by final design E. Engineer sign-off on final constructed haul road to final design	• Erosion and sedimentation • Hydrocarbon spills / contamination • Construction not to approved design • Alteration of surface flows affecting downstream environmental values • Material (sand, rock, clay) imported from off-site	• Primary and progressive ESCP • Plant and machinery inspection checks prior to mobilisation to site • Engineer design controls - engineer sign off on constructed infrastructure as per constructed design • Water Management Plan - activities include monitoring surface water downstream • Surface water assessment / flooding assessed • Use of onsite material suitable for construction. Any off-site sources to be declared weed free	• Downstream waterways not impacted by sedimentation • Plant and machinery inspections undertaken • Construction to final approved designs • Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs • No new introduced declared weeds or spread of declared weeds	Primary ESCP – adopted by the Company (Appendix P) Water Management Plan – adopted by the Company (Appendix G)

Step	Phase	Sequence	Risks	Controls	Management performance and monitoring	References (for additional information)
3	Commissioning / operations	A. Haul road maintenance	• Alteration of surface flows affecting downstream environmental values • Structural failure • Hydrocarbon spills / contamination • Noise, vibration and dust • Fauna injury or death from haul truck interaction	• Water Management Plan - activities include monitoring surface water downstream • Regular maintenance schedules of haul trucks • Speed restrictions on haul route reduce dust and fauna collision • Machinery and equipment checked for noise levels in accordance with standards and manufacturers specifications • Dust suppression will be undertaken using water carts	• Water monitoring undertaken in accordance with WMP and quality within acceptable ANZG (2018) Guidelines or SSGVs for purpose • No dust, vibration or noise complaints • All hydrocarbon leaks reported and cleaned up	Water Management Plan – adopted by the Company (Appendix G)
4	Unplanned closure	A. Development of a care and maintenance plan B. Update security based on current disturbance C. Assess site security D. Assess personnel skills and numbers required to appropriately manage site E. Implement plan F. Decommission haul road as required	• Security not sufficient for rehabilitation and closure	• Care and maintenance plan to be developed and implemented in the event of early closure and accounts for suitable personnel numbers and skills to enable on-going environmental management of the site • Current mine closure plan includes details of unplanned closure • Security calculation undertaken in accordance with DITT template and security to be approved for mining authorisation • Internal EOFY security calculation completed annually to ensure sufficient funds for disturbance	• Monitoring undertaken in accordance with care and maintenance plan and water management plan	Mine Closure Plan – adopted by the Company (Appendix E)

Table 5-30. Independent expert

Q1 Will an independent expert be engaged by the Operator?
☒Yes – Go to Q2 *Note: any independent experts engaged will be subject to approval by the Minister and will require a terms of reference (ToR) approved by the Minister.*
☒ No – please explain why, and then move onto Q2: Haul road designed by suitably qualified engineers
Q2 Will detailed designs be prepared and reviewed by an independent expert?
☐Yes – Go to Q3 *Note:* - *Any designs reviewed by an independent expert approved by the Minister, must be submitted together with independent review comments and how any improvements in design were addressed to the satisfaction of the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.* - *Detailed designs must include* *p) Hold points at suitable intervals that may affect the construction and future performance of the structure* *q) Performance monitoring requirements and frequency* r) *Reporting requirements to the regulator to demonstrate compliance and design to the satisfaction of the Minister.*
☒ No – please explain why, and then move onto Q3: Designs prepared by suitably qualified engineers. Haul road is 7km in length, internal (not used by public) and temporary for LOM. The haul road is a low risk of failure.
Q3 Will a detailed management plan be developed that describes in detail the operators maintenance, surveillance and closure requirements of the structure?
☐Yes *Note: This plan must be endorsed by the independent expert. – This will form a condition in the Authorisation if approval is given by the Minister.*
☒ No – please explain why: Haul road is for internal purposes only, short distance (7km) and operational as a haul road for a short period of time.

Table 5-31. Closure – Haul roads

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
Unplanned	**Temporary suspension:** A geotechnically stable and non- polluting landform. **Unforeseen closure:** A geotechnically stable and non- polluting landform which supports self-sustaining native vegetation and fauna comprising local species.	**Temporary suspension:** • Erosion score to remain 2 or less (minor erosion). • No increase in erosion from previous monitoring event for at least two consecutive years. • No declared weed species not previously recorded in the mining lease • No significant difference in abundance of feral animal and pests compared to previously recorded in the mining lease. **Unforeseen closure:** • Criteria adopted as per planned closure.	Final design / route to be assessed for suitability. If design / route alters, an assessment of environmental risks / impacts and additional environmental studies undertaken as determined by risks.	Haul route / final design finalised prior to construction commencing.	Mine closure plan and Rehabilitation management plan – adopted by the Company (Appendix E)
Planned	Rehabilitated as a safe, stable, non-polluting and erosion resistant landform.	• Surface is profiled to match surrounds, ripped and covered with a suitable growth medium to a minimum depth of 0.2 m.			
	Domain supports self-sustaining native vegetation not significantly different to that of the surrounding ecosystems	• Groundcover % and groundcover species richness recorded at vegetation transects not less than analogue sites for two consecutive years post closure. • Abundance of woody plants (stems ≥ 2 cm DBH and greater than 3 m high) recorded at vegetation transects not less than of representative analogue sites. • Not less than three dominant species (per strata) recorded at vegetation transects present in analogue sites. • Density of weed species within rehabilitated domain is not more than reference sites for three consecutive years. No declared weed species not previously recorded in the mining lease is present within the rehabilitated domains for three consecutive years. • No fire scars recorded at vegetation transects within first three years of rehabilitation.			

Closure	Objective	Criteria	Knowledge gaps	Timelines to completion	References
	The domain supports fauna recolonisation not significantly different to that of the surrounding ecosystems.	• Trend of increasing native wildlife abundance and diversity each year with eventual results not significantly different to analogue sites. • Key indicator invertebrate biota assemblages of rehabilitated areas not significantly different to analogue sites. • No significant difference in abundance of feral animal and pests compared to analogue sites			

5.7 Other activities

Rehabilitation trials are proposed to be undertaken at the adjacent Grants Lithium Project and outcomes implemented within similar domains and land units for the BP33 Project.

6 PROJECT RISK ASSESSMENT

A 'whole-of-project impact analysis and risk assessment' has been undertaken for the various mine phases, including construction, operation, unplanned closure and emergency conditions. The risk assessment framework and Risk Register are provided at Appendix U. Closure risks are assessed in the mine closure plan (Appendix E).

Impact identification and analysis was informed by the BP33 Supplementary Environmental Report (SER), and the associated baseline studies undertaken at the site. Five of the NT EPA's defined environmental factors identified and assessed in the SER, have been assessed in the risk assessment:

- Terrestrial ecosystems
- Terrestrial environmental quality
- Inland water environmental quality
- Hydrological processes
- Community and economy.

For each environmental factors, activities 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.

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 and the social impacts and opportunities risk assessment are available within the Social Impact Assessment developed by True North 2021 (Appendix M)

For each potential environmental impact identified, the risk assessment considered the likelihood of the impact occurring and then the worst-possible consequence to the NT EPA's defined environmental factors and objectives. The consequence assessment was informed both by the outcomes of the impact severity analysis, and the importance/sensitivity of environmental values.

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 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 (low, medium and high).

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 risk register will be subject to review prior to commencement of each key project stage i.e. construction, operations, unplanned closure and closure and submitted to NT Department of Mines.

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 will be assessed with a greater level of certainty based on the final (as constructed) designs.

Risk profile

The distribution of inherent and residual risk ratings for each phase of the project is summarised in Table 6-1 through to Table 6-4. 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 were 75 risks assessed overall, 20 for the construction phase, 39 for operations, 10 for unplanned closure and 6 risks for emergency conditions.

There are three medium residual risks associated with erosion and sedimentation, weed introduction and spread and inappropriate topsoil removal and storage during the construction phase (Table 6-1). Controls include the development of a primary ESCP (Appendix P), progressive ESCP prior to clearing commencing, a

vegetation clearing procedure (Appendix Q), Rehabilitation Management Plan (Appendix E) and implementation of the Finniss Lithium Project Weed Management Procedure.

Table 6-1. Environmental risk summary – construction

Environmental Factor	Low	Medium	High	Very High	Totals	Impacts with a high residual risk
Terrestrial ecosystems	**6** *(4)*	**1** *(1)*	**0** *(2)*	**0** *(0)*	7	None
Terrestrial environmental quality	**5** *(1)*	**1** *(1)*	**0** *(4)*	**0** *(0)*	6	None
Hydrological processes	**2** *(2)*	**0** *(0)*	**0** *(0)*	**0** *(0)*	2	None
Inland water environmental quality	**3** *(2)*	**1** *(1)*	**0** *(1)*	**0** *(0)*	4	None
Communities and economy	**1** *(0)*	**0** *(1)*	**0** *(0)*	**0** *(0)*	1	None

Operations is the only phase that resulted in residual high risks. Two risks were identified, both associated with loss of sensitive riparian vegetation due to reduction in flows and changes in groundwater drawdown. BP33 Draft Environmental Approval (EP2020/001-001) conditions included the revision of the draft Water Management Plan – adopted by the Company, (Appendix G) and development of a Groundwater Dependent Ecosystems (GDE) Management Plan – adopted by the Company, (Appendix V) to monitor these potential impacts on the riparian vegetation health. A Surface Water Extraction Licence (SWEL #8151018) issued to Core Lithium Limited for water extraction from OHD, includes water extraction entitlements per period. Additionally, the SWEL outlines conditions for the development of a surface water flows monitoring plan and riparian vegetation monitoring plan. These monitoring programs have been developed are incorporated into the OHD SWEL Monitoring Plan – adopted by the Company (Appendix T).

Table 6-2. Environmental risk summary – operations

Environmental Factor	Low	Medium	High	Very High	Totals	Impacts with a high residual risk
Terrestrial ecosystems	**5** *(5)*	**0** *(0)*	**2** *(2)*	**0** *(0)*	7	Loss of sensitive riparian vegetation due to reduction in flows and changes in groundwater drawdown
Terrestrial environmental quality	**6** *(4)*	**0** *(1)*	**0** *(1)*	**0** *(0)*	6	None
Hydrological processes	**4** *(2)*	**0** *(2)*	**0** *(0)*	**0** *(0)*	4	None
Inland water environmental quality	**15** *(4)*	**0** *(9)*	**0** *(2)*	**0** *(0)*	15	None
Communities and economy	**7** *(3)*	**0** *(4)*	**0** *(0)*	**0** *(0)*	7	None

All residual risks for unplanned closure and emergency conditions are low.

Table 6-3. Environmental risk summary – unplanned closure

Environmental Factor	Low	Medium	High	Very High	Totals	Impacts with a high residual risk
Terrestrial ecosystems	**0** *(0)*	**0** *(0)*	**0** *(0)*	**0** *(0)*	0	None
Terrestrial environmental quality	**6** *(3)*	**0** *(2)*	**0** *(0)*	**0** *(0)*	6	None
Hydrological processes	**0** *(0)*	**0** *(0)*	**0** *(0)*	**0** *(0)*	0	None
Inland water environmental quality	**2** *(2)*	**0** *(0)*	**0** *(0)*	**0** *(0)*	2	None
Communities and economy	**2** *(0)*	**0** *(0)*	**0** *(2)*	**0** *(0)*	2	None

Table 6-4. Environmental risk summary – emergency conditions

Environmental Factor	Low	Medium	High	Very High	Totals	Impacts with a high residual risk
Terrestrial ecosystems	**1** *(1)*	**0** *(0)*	**0** *(0)*	**0** *(0)*	1	None
Terrestrial environmental quality	**1** *(1)*	**0** *(0)*	**0** *(0)*	**0** *(0)*	1	None
Hydrological processes	**2** *(0)*	**0** *(0)*	**0** *(2)*	**0** *(0)*	2	None
Inland water environmental quality	**0** *(0)*	**0** *(0)*	**0** *(0)*	**0** *(0)*	0	None
Communities and economy	**2** *(0)*	**0** *(0)*	**0** *(2)*	**0** *(0)*	2	None

AMD/NMD Risk assessment

The AMD/NMD assessment of risk has been detailed in the BP33 environmental risk assessment (Appendix U). Current knowledge includes results of the static testing and kinetic leach columns (KLC) testing under oxidising conditions (simulating surface WRDs) and under saturated conditions (waste material backfilled below the water table within the box-cut and underground). Results from leach column testing suggest that while acidic drainage from wastes stored in WRD at the BP33 project or following backfilling of mine voids is unlikely, there is potential for water in contact with these materials to contain elevated concentrations of a number of metals/metalloids (arsenic, copper, lead and zinc, and possibly aluminium) relative to local surface and groundwaters (EGi 2022b).

During unplanned closure and operations, the risk of ARD from the ore and WRDs is low for both inherent and residual risks. NMD from WRDs is a medium inherent risk, however this was reduced to a low residual risk when applying the following controls:

- On-going operational waste characterisation to confirm material characteristics.
- Temporary and short-term surface storage of waste rock material.
- Design and operational controls around waste rock placement, storage and backfill.
- Water monitoring of runoff and seepage from the WRDs will inform any requirements for water capture and management.
- All waste material to be backfilled underground and in the box-cut.

To further evaluate the risks, EGi (2022b) have recommended that:

- Run-off from WRDs is contained within run-off/seepage ponds and water quality monitored especially in relation to arsenic, copper and aluminium concentrations and, if required, stored (e.g., mine site dam) for later discharge at times of high flow or treated before discharge if required.
- WRD leachate quality/quantity data be used to calibrate leach column and validate/calibrate modelling results (see below) and the updated/ validated models used to better evaluate any potential impacts on groundwater quality from backfilled mine wastes.
- Mine waste management plans be updated during the operational phase, especially in relation to closure, based on the results of the above monitoring and modelling updates as required, with a view to minimising risk to groundwater quality and potential impacts on associated ecosystems.

A more quantitative evaluation of the potential for impact on surface and groundwater quality from WRD seepage and leaching from backfilled materials could be done using the existing groundwater model combined with development of a conceptual hydrogeological model for the WRDs, using the leaching rates and loads from the leach column tests as inputs. Specifically, this could include:

- Qualitatively assess the risk of migration of leachable metal contaminants from the site by development of a (schematic) hydrogeological conceptual model of the waste rock dumps and underground mining to assess the potential pathways by which leachable metals may migrate into the water environment.
- Quantitatively assess the same by implementation of components of the hydrogeological conceptual model in 2-dimensional finite element models (using Seep/W and CTran/W) to quantify the migration of soluble metal contaminants from temporary surface WRDs and from permanent underground void backfill, including dilution in groundwater due to advection and dispersion, and removal or capture from groundwater due to adsorption, reaction or decay.

This process would add significant value to the column leach tests and provide further evidence for evaluation of environmental risks associated with the BP33 UG Mine and can form a basis for updated mine waste and water management plans if required. These studies have formed the basis of the WRD knowledge gaps.

7 MANAGEMENT SYSTEMS

7.1 Environmental management system

Finniss Lithium Project EMS (Appendix W) has been developed and implemented to appropriately manage all environmental risks detailed in Section 6.

7.1.1 Environmental Policy

An Environmental Policy has been developed to communicate the company's commitment to understanding and managing environmental and social impacts and risks associated with its proposed activities. This policy guides the development of the EMS, processes, plans and procedures for the Finniss Lithium Project. A copy of the Environmental Policy is included in the EMS (Appendix W).

Roles and responsibilities are identified in section 2.3.

Project risks and opportunities have been identified in section 6.

7.1.2 Environmental commitments

Lithium Developments is committed to ongoing review of the environmental impacts and risks associated with the development and operation of Finniss Lithium Project – BP33 Underground Mine 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 has made a range of commitments through the environmental approvals process and in this MMP. The NT EPA has also provided their recommendations, following completion of the environmental impact assessment (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. Future MMPs amendments will provide an updated assessment of performance against the commitment.

Environmental approval EP2020/001-001 conditions

Condition number	Condition
1 Limitations and extent of action	
1-1	When implementing the action, the approval holder must ensure the action does not exceed the following extent: • Clearing for mine site: No more than 88 ha of the approved extent • Clearing for water pipeline: No more than 0.4 ha of the approved extent • Clearing for haul route: No more than 12.5 ha of the approved extent
2 Action implementation and closure	
2-1	The approval holder must implement the action to meet the following environmental outcomes: (1) The action must be rehabilitated and closed in such a manner that the approval holder can demonstrate that it: (a) is physically safe to humans and animals; and (b) is geo-technically stable; and (c) is non-polluting, non-contaminating; and (d) does not cause material environmental harm or significant environmental harm; and (e) is able to sustain the post-mining land use in the approved Mine Closure Plan required by condition 3.

Condition number	Condition
3 Mine Closure Plan	
3-1	To demonstrate that the outcomes required by condition 2-1 are achieved, the approval holder must prepare a Mine Closure Plan, before substantial disturbance, that is consistent with contemporary best practice guidance on mine closure.
4 Inland Waters	
4-1	The approval holder must implement the action to meet the following environmental objective and outcome: (1) Protect the quality and hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained. (2) Discharge of any mine-affected water from the action must not cause water quality at the downstream compliance point(s) to exceed the guideline values.
4-2	For the purpose of condition 4-1(2) the guideline values are the ANZG default guideline values for slightly to moderately disturbed systems (95% species protection level). Where natural background levels exceed ANZG default guideline values, or default guideline values have not been set by ANZG, site-specific guideline values must be derived in accordance with ANZG.
4-3	The site-specific guideline values required by condition 4-2 must be: (1) derived from baseline data prior to substantial disturbance; and (2) re-derived at the end of the wet season in any year that discharge of mine affected water to waterways occurs, from the collected baseline and operational water quality dataset. Site-specific guideline values must be derived for the physical and chemical indicators appropriate to the mineralogical properties of mined material and the range of declared beneficial uses, in accordance with ANZG.
4-4	The draft Water Management Plan (Appendix C to the SER) must: (1) be revised by a qualified person and submitted to the CEO for review and approval at least three months before substantial disturbance, and within every 12 months thereafter for the life of the action unless otherwise directed by the CEO in writing, to ensure it is consistent with achievement of the environmental outcomes in conditions 4-3(1) and 4-1(2).
4-5	The revised Water Management Plan required by condition 4-4(1) must: (1) provide for the management of potential impacts of the action on waterways, waterbodies and aquifers; and (2) include detailed baseline data, collected from a baseline study conducted in accordance with ANZG on: (a) surface water flows and quality in waterways and/or waterbodies that could be affected by the action; and (b) groundwater levels, yield and quality in aquifers that could be affected by the action. (3) define the aspects to be monitored and measured including; (a) determine the locations and methods for monitoring, measurement, analysis and evaluation to ensure valid results, including the downstream compliance point(s); and (b) define when monitoring must be performed, when the results from monitoring must be analysed and evaluated, how monitoring results will be communicated and reported and to whom; and (4) include quantitative triggers and limits which would be used to initiate investigative and/or adaptive management actions when surface water and/or groundwater monitoring results exceed

Condition number	Condition
	guideline values or deviate from the predictions outlined in the Referral and the SER and appended documents; and (5) detail how monitoring exceedances and the outcomes of investigative and/or adaptive management actions would be notified to the CEO. (6) be implemented for the life of the action.
4-6	The approval holder must continue to implement the last approved version of the Water Management Plan required by condition 4-4 until the CEO provides written confirmation that a revised version is approved.
4-7	At the end of the mine life, the approval holder must demonstrate that there has been no measurable adverse change in water quality compared to the pre-mining baseline condition at the downstream compliance point(s) established under condition 4-1(2).
5 Soil erosion and sediment control	
5-1	An Erosion and Sediment Control Plan must be developed by a Certified Professional in Erosion and Sediment Control, in accordance with International Erosion Control Association Australasia (IECA) 2008, Best Practice Erosion and Sediment Control, revised within every 12 months thereafter (or at more frequent intervals if site conditions significantly change), and implemented for the life of the action to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.
6 Groundwater Dependent Ecosystems	
6-1	The approval holder must implement the action to meet the following environmental outcomes: (1) identify the presence and extent of, and monitor the impacts of the action on, GDE vegetation within the predicted cone of groundwater drawdown; and (2) avoid the loss of no more than 3.6 ha of identified GDE vegetation in 6-1(1).
6-2	A GDE Management Plan must: (1) be developed by a qualified person and submitted to the CEO for review and approval at least three months before substantial disturbance, and within every 12 months thereafter for the life of the action unless otherwise directed by the CEO in writing, to ensure it is consistent with achievement of the environmental outcomes in conditions 6-1(1) and 6-1(2); and (2) provide for the collection of baseline data to assess the baseline condition of GDEs that could be affected by the action; and (3) provide for monitoring and management of the impacts of the action on water availability for GDE vegetation within the area of drawdown; and (4) define how the presence and extent of GDEs, and impacts of the action on GDEs, would be identified, monitored and measured including; (a) determine the locations and methods for monitoring, measurement, analysis and evaluation to ensure valid results; and (b) define when monitoring must be performed, when the results from monitoring must be analysed and evaluated, how monitoring results will be communicated and reported and to whom; and (5) include quantitative triggers and limits which would be used to initiate investigative and/or adaptive management actions when: (a) groundwater levels deviate significantly from the predictions outlined in the Finniss Lithium Project BP33 Groundwater Modelling Report, Final Version 3.0, October 2021, prepared by CloudGMS (Appendix B to the SER); and/or

Condition number	Condition
	(b) GDE vegetation monitoring identifies that the extent of impacts to GDE health exceeds 3.6 ha, which is the extent of potential GDE that occurs within the modelled extent of the groundwater drawdown cone as a result of the action; (6) detail how monitoring exceedances and the outcomes of investigative and/or adaptive management actions would be notified to the CEO. (7) be implemented for the life of the action.
6-3	The approval holder must continue to implement the last approved version of the GDE Management Plan required by condition 6-2 until the CEO provides written confirmation that a revised version is approved.
6-4	The approval holder must provide notice in writing to the CEO if GDE monitoring identifies that the total area of GDE loss attributable to the action exceeds 3.6 ha, within seven days of the identification of the exceedance.
7 Commencement of action	
7-1	This approval expires five years after the date on which it is granted, unless substantial disturbance has occurred on or before that date.
7-2	Within 10 business days of the commencement of the substantial disturbance the approval holder must provide notification in writing to the CEO.
8 Change of contact details	
8-1	The approval holder must provide notification in writing to the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within 10 business days of such change.
9 Submission of documents	
9-1	All notices, reports, documents or other correspondence required to be provided to the CEO as a condition of this approval, unless otherwise specified as a condition of this approval, must be provided in electronic form by emailing environmentalregulation@nt.gov.au.
10 Compliance reporting	
10-1	The approval holder must: (1) within six months of substantial disturbance, obtain from an independent qualified person, a report on compliance with the conditions of this environmental approval; and (2) obtain further such reports at regular intervals not exceeding 12 months from the report referred to in condition 10-1(1); and (3) submit each report to the CEO within 90 days of its completion.
10-2	The reports required by conditions 10-1(1) and 10-1(2) must: (1) be endorsed by the approval holder's Chief Executive Officer or a person delegated to sign on the approval holder's Chief Executive Officer's behalf; (2) include a statement as to whether the approval holder has complied with the conditions of this approval; and (3) identify all non-compliances and describe corrective and preventative actions taken.
11 Environmental performance report	
11-1	The approval holder must submit an Environmental Performance Report to the CEO on completion of the mine life.
11-2	The report required by condition 11-1 must be prepared by an independent qualified person.

Condition number	Condition
11-3	The Environmental Performance Report must report on impacts of the action on the state of the following environmental values: (1) terrestrial environmental quality; and (2) terrestrial ecosystems; and (3) inland waters including surface water and groundwater hydrological processes and quality; and (4) community and economy including social impacts, and community and stakeholder engagement; and (5) the whole of environment within the area of influence of the action.
11-4	The Environmental Performance Report must include: (1) a comparison of the environmental values identified in condition 11-3 at the end of the mine life against the state of each environmental value prior to substantial disturbance; and (2) a comparison of the predicted impacts of the action as identified in the Referral and SER, and the actual impacts of the action as verified by environmental monitoring data; and (3) an assessment of the cumulative impacts of the action and other actions for which the approval holder is responsible.
12 Provision of environmental data	
12-1	All environmental monitoring data required to be collected or obtained under this environmental approval must be retained by the approval holder for a period of not less than 10 years commencing from the date that the data is collected or obtained.
12-2	The approval holder must, as and when directed by the CEO, provide any validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (such as maps)) relevant to the assessment of the action and implementation of this environmental approval, to the CEO in the form and manner, and at the intervals specified, in the direction.

NT EPA Assessment Report 94 recommendations and status

Terrestrial environmental quality

Residual impact to environmental value	NT EPA AR recommendations	Status
Impacts on land and soil quality due to a delay or failure to rehabilitate the proposal.	Prepare a MCP consistent with contemporary best practice guidance to manage closure and rehabilitation to meet the mining regulator's requirements under the MM Act.	MCP – adopted by the Company, developed in accordance with best practice guidance to manage closure and rehabilitation (Appendix E)

Terrestrial ecosystems

Residual impact to environmental value	NT EPA AR recommendations	Status
Loss of native vegetation from land clearing	Implementation of the Vegetation Clearing Procedure and MCP to avoid and minimise impacts.	Vegetation Clearing Procedure developed (Appendix Q) MCP developed in accordance with best practice guidance to manage closure and rehabilitation (Appendix E)

Residual impact to environmental value	NT EPA AR recommendations	Status
Habitat degradation or loss from the introduction or spread of weeds	The proponent has proposed mitigation measures in the Referral and SER to manage indirect impacts of weeds on vegetation.	Weed management incorporated into the rehabilitation and biodiversity management plan (section 7.1.6)
Habitat degradation or loss due to altered hydrological regimes	The Water Management Plan contains measures to avoid, minimise and mitigate the impact of proposal activities on surface and groundwater, and potential GDEs.	WMP – draft developed by EcOz (2021) and revised by EcOz in 2022, adopted by the Company (Appendix G). WMP measures to avoid, minimise and mitigate the impact of proposal activities on surface and groundwater, and potential GDEs have been implemented.

Hydrological processes

Residual impact to environmental value	NT EPA AR recommendations	Status
Changes to surface flows from water take and release	Implementation of the proponent's Water Management Plan, and regulation under the MM Act	WMP – draft developed by EcOz (2021) and revised by EcOz in 2022, adopted by the Company (Appendix G). Implementation of baseline monitoring has been undertaken
Flooding impacts	The proponent has proposed mitigation measures in the Referral and SER to manage potential flood impacts.	• Flood modelling completed as part of environmental approvals • Mine designed to minimise surface water capture to mine areas through contours and bunding.
Groundwater drawdown from mine dewatering	The Water Management Plan contains measures to avoid, minimise and mitigate the impact of proposal activities on groundwater and other users of groundwater.	WMP – draft developed by EcOz (2021) and revised by EcOz in 2022, adopted by the Company (Appendix G). Implementation of baseline monitoring has been undertaken

Inland water environmental quality

Residual impact to environmental value	NT EPA AR recommendations	Status
Discharge of stormwater and/or mine affected water	Proponent's draft Water Management Plan (Appendix C to the SER) contains monitoring and management approach for water quality. A waste discharge licence under the *Water Act 1992* would regulate water quality impacts and condition controlled discharges. MM Act requirements (mining authorisation and MMP) would regulate uncontrolled discharges that are not regulated under a WDL.	• WMP – draft developed by EcOz (2021) and revised by EcOz in 2022, adopted by the Company (Appendix G). Water quality monitoring implemented in accordance with monitoring program. • A WDL application will be submitted and approved prior to any discharge occurring.
Seepage or runoff from AMD.	The proponent would prepare and implement an AMD Management Plan. MM Act will require the review and assessment of impacts related to mine waste and AMD, and regulate the design, construction, and operation of the temporary WRDs.	AMD Management Plan prepared (see section 7.1.6)

Community and economy

Residual impact to environmental value	NT EPA AR recommendations	Status
Opportunities for employment, increased economic activity, and local community benefit from sponsorship and local support	Proponent committed to implement a community and stakeholder engagement plan and a local procurement plan.	Social impact management plan prepared by True North 2021, adopted by the Company, includes a stakeholder communication and engagement plan (Section 8 of Appendix N).
Impacts to stakeholders and/or community members during	Implementation of the proponent plans for management of traffic, road journeys, the environment, community and stakeholder engagement, sponsorship, emergency management and response, mine closure, human resources, site safety and local procurement.	MCP developed by MLC (2022), adopted by the Company. Developed in accordance with best practice guidance to manage closure and rehabilitation (Appendix E) Social impact management plan prepared by True North 2021, adopted by the Company, includes a stakeholder communication and engagement plan (Section 8 of Appendix N).

7.1.3 Environmental training and induction

All new site personnel, contractors, and unaccompanied visitors will attend a Finniss Lithium Project site induction program, which will include an environmental awareness component delivered by the HSE Manager or Environmental Superintendent. The induction will include an explanation of the environmental management structure, environmental policy and requirements of management plans, including this MMP. Each person will be made aware of and understand 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.

Records of all training will be maintained in accordance with the site EMS and available for inspection by DITT when required.

7.1.4 Environmental emergency preparedness and response

Environmental emergency preparedness and response will be managed in accordance with the site Emergency Response Plan (currently in development). A draft plan addressing the key operational risks will be developed and submitted to DITT prior to commencement of substantial disturbance activities. The plan will be updated with relevant operational controls and contacts prior to commencement of each phase (construction, operations, closure). 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.

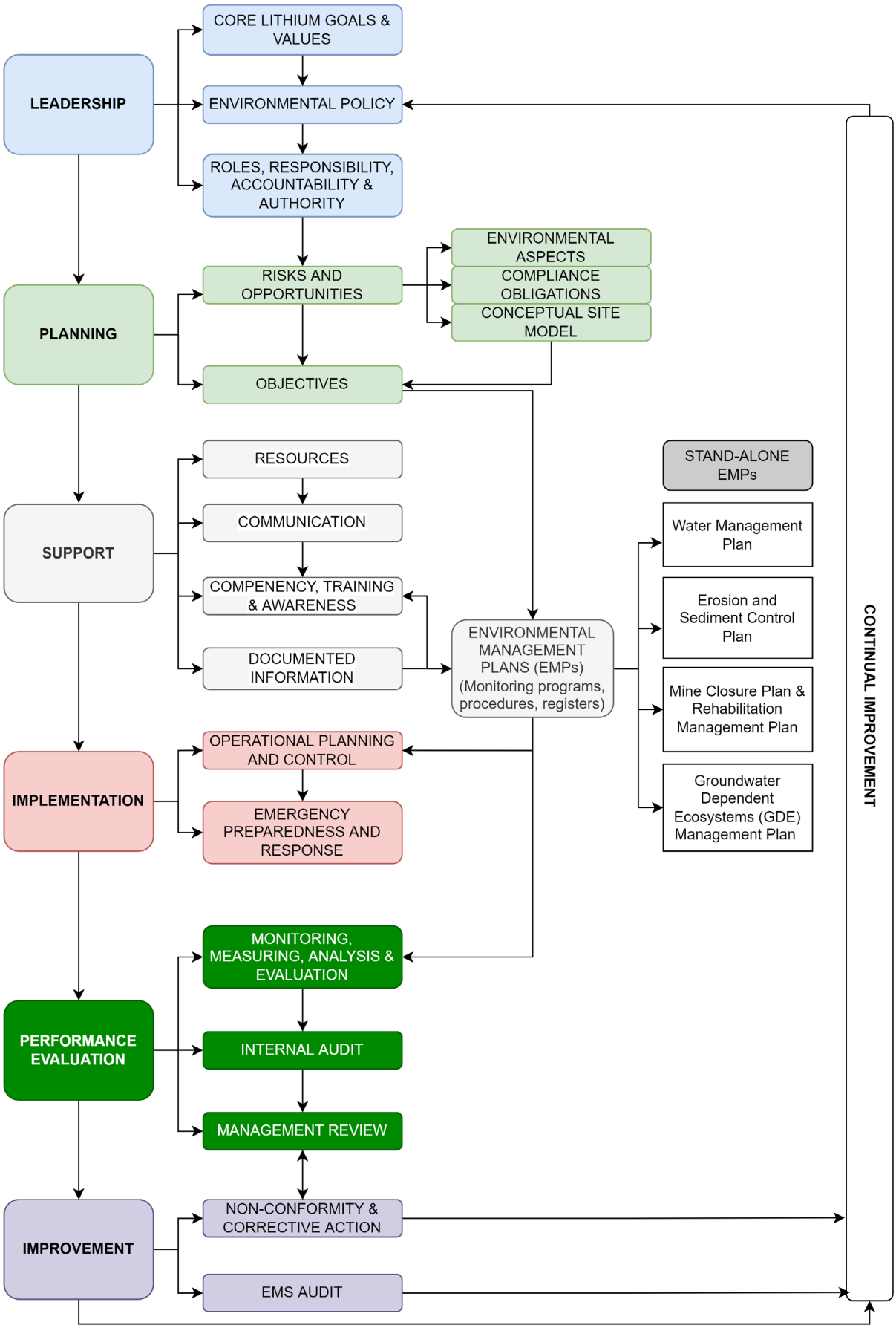


Figure 7-1. Environmental management systems hierarchy

7.1.5 Overarching environmental objectives

Overarching objectives applicable to BP33 project are adopted from the NT EPA Environmental impact assessment, general technical guidance – environmental factors and objectives (DEPWS 2021). The five applicable environmental factors and objectives assessed as part of the BP33 SER are:

Terrestrial ecosystems: *Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.*

Terrestrial environmental quality: *Protect the quality and integrity of land and soils so that environmental values are supported and maintained.*

Hydrological processes: *Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.*

Inland water environmental quality: *Protect the quality of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.*

Communities and economy: *Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.*

7.1.6 Environmental management

The BP33 CSM detailed in section 3.2 outlines the key project risks and potentially impacted receptors including surface water, groundwater, riparian vegetation and soils. The below environmental management plans provide a framework to meet the objectives of the environmental factors outlined in section 7.1.5.

Water quality protection

This management plan establishes a framework for managing risks to surface and groundwater associated with the construction and operation of BP33 Lithium Project. The plan aims to ensure that activities are undertaken in a manner that *Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained and protect the quality of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.* This plan will be integrated within project EMS prior to commencement of operations, as an overarching management plan supported by operational procedures. The BP33 underground mine water management plan (EcOz 2022), adopted by the Company (Appendix G), is a key supporting document to this plan.

Surface water					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
No contamination of surface water by hydrocarbons	• 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 • Wash-down facilities regularly inspected and maintained sumps	• No incidents of significate spills (volumes >200L or a spill that risks pollution of waterways) • Reporting of minor spill and corrective actions implemented to prevent reoccurrence • Hydrocarbons = below detection limits	• Regular site inspection for signs of spills • Weekly check that spill containment equipment kits are in order • Water quality monitoring in accordance with Water Management Plan • Recording of incidents and implementation of corrective actions	• Investigate cause of spill and update procedures as necessary • Remediate contaminated site • Review release criteria and procedures • Visually inspect mine site to identify diffuse contamination sources. • Sample sites further downstream to record extent of contamination. • Increase sampling frequency until issue resolved.	• Site Inspection Register • Incident register • Water quality database • Monitoring results reported in annual environmental mining reports (EMR) to DITT • Report to regulators in accordance with approval and licence conditions.

Surface water					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
No elevated turbidity in receiving surface water from WRD or ROM runoff	• Mine design includes internal drainage network, storage dams and sediment dams that capture all mine-affected water and avoid uncontrolled release off-site. • Sediment basins designed and operated according to Best Practice Erosion and Sediment Control Guidelines. • Water in sediment basins will be treated with flocculants to remove sediments prior to discharge off site as overland flow. The discharge standard adopted is the standard recommended for sediment basins in IECA (2008): 90th percentile NTU reading not exceeding 100, and 50th percentile NTU reading not exceeding 60.	• IECA (2008) sediment basin discharge standard – 90th percentile NTU reading not exceeding 100, and 50th percentile NTU reading not exceeding 60 • Sediment basins and erosion and sediment controls implemented as per ESCP and approved designs.	• Surface water monitoring will, including monitoring of sediment dams be undertaken as per the Water Management Plan to detect water quality issues. Adaptive management measure will be incorporated into the WMP.	• Increase retention time, addition of flocculants or physical filtering • Identify sources of sediment loads and rectify. Install sediment controls in internal drainage network. • Clean out sediment basins • Transfer water to alternative storages – i.e. MSD or Grants open pit void.	• Site Inspection Register • Incident register • Water quality database • Final designs • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT
No contamination of surface waterways from WRD or ROM (AMD/NMD)	• Geochemical characterisation of waste rock and ore during planning and operations • A risk-based approach consistent with the *GARD Guide*, will use the results of long-term kinetic testing to inform development of prevention and mitigation measures required in the detailed mine design to prevent metalliferous mine drainage. • Facilities will be in place temporarily for a short period of time (4 years). • Drains installed to capture run-off from WRDs and divert to MSD if metal/metalloid contaminants present (arsenic, copper, lead and zinc, and possibly aluminium) • The mine closure concept involves backfilling all available surface waste rock from BP33, which when completed will eliminate the WRD's as a source of contamination.	• No significant impacts on downstream water quality based on assessment using criteria in Water Quality Monitoring Plan • Toxicants = ANZG (2018) 95% species protection guideline values • Physical, bacteriological and metals with no GV = 80th percentile of baseline data. Lithium = 0.43 mg/L based on ecotoxicity testing (see surface water assessment criteria WMP section 8.2.6) • No visible signs of AMD	• Kinetic testing undertaken to improve certainty and inform detailed mine design and closure requirements. • On-going operational waste characterisation to confirm material characteristics • Surface water quality monitoring in accordance with Water Management Plan • Visual monitoring of and drainage from the WRD and ROM • Monitoring in accordance with this Waste rock and ore (AMD) Management Plan	• Capture and treat contaminated drainage • Approach and methods to be approved by DITT through update to MMP • Visually inspect mine site to identify diffuse contamination sources. • Sample sites further downstream to record extent of contamination. • Report to regulators in accordance with approval and licence conditions.	• Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT • Site Inspection Register • Incident register • Water quality database

Surface water					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	• Any identified PAF material to be segregated and temporarily covered with NAF material during temporary storage or backfilled as a priority			• Increase sampling frequency until issue resolved.	
No surface water contamination from sewage water	• Sewage treatment plant designed and installed in accordance with the Building Act (within Darwin building control area) and Public and Environmental Health Regulations • Sewage treatment plant operated in accordance with relevant standards and maintained to manufacturers recommendations • Management of sewage wastewater in accordance with approved standards and Department of Health code of practice and guidelines • A registered certified plumber will conduct any upgrades required to the wastewater management system (septic) • Development of irrigation management plan for management of grey water	• Design specifications and installation meets requirements • Maintenance and monitoring of Sewage treatment plant in accordance with manufactures recommendations • Plumber registered and certified is upgrades undertaken • No significant impacts on water quality (bacteriological) based on assessment using criteria in Water Quality Monitoring Plan	• Wastewater effluent quality testing prior to irrigation of grey water to ensure sewage treatment plant is functioning appropriately	• Review sewage treatment plant procedures • Registered certified plumber to undertake an inspection and maintenance as required to sewage treatment plant • Review irrigation procedures	• Maintenance records of sewage treatment plant • Incident register • Water quality database • Report to regulators in accordance with approval and licence conditions.
No contamination or receiving waterways due to controlled off-site discharges	• Mine-affected water reports to the MSD for removal of sediments and other contaminants prior to re-use or discharge. • Water quality testing of MSD to confirm suitability for reuse or off-site discharge. • If SSGV's specified in the draft WMP are not met, the water will be contained and treated3 prior to reuse or discharge. • Discharge to the watercourse east of the mine site will only occur when flows are sufficient to achieve dilution factors for arsenic.	• Toxicants = ANZG (2018) 95% species protection guideline values • Physical, bacteriological and metals with no GV = 80th percentile of baseline data • Lithium = 0.43 mg/L based on ecotoxicology testing • Hydrocarbons = below detection limits	• Surface water quality monitoring in accordance with Water Management Plan and WDL conditions • Internal storage dams monitored, prior to any controlled release	• Decrease discharge volumes • Check flow gauge station is providing accurate reading of flow volumes in watercourse • Review discharge criteria and procedures • Visually inspect mine site to identify diffuse	• Report to regulators in accordance with approval and licence conditions. • Water balance • Flow meter records • Discharge volume records • WDL annual return

[3] Treatment is expected to involve sediment and hydrocarbon removal at minimum. Phosphorous removal by flocculants may be required as indicated by the baseline water quality. Arsenic treatment is not required as part of the current water balance model, but may be investigated to increase water management options.

Surface water					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	• A Waste Discharge Licence will be obtained under the Water Act and discharges will be managed to comply with the licence conditions. • Surplus water volumes will be minimised by re-use of inflows dewatered from the mine for dust suppression. • Dust suppression and irrigation will only occur when daily rainfall is less than evaporation. • Irrigation area/s will be delineated by land suitability assessment in accordance with the NT Land Clearing Guidelines and an irrigation management plan will be developed and implemented to ensure site soils and water balance are maintained. • Irrigation area used to dispose of excess water during periods when watercourses are under no or low flow conditions. • Discharges will be minimised by transferring excess water to the Grants open pit once mining is finished there.	• Sediments = IECA (2008) sediment basin discharge standard – 90th percentile NTU reading not exceeding 100, and 50th percentile NTU reading not exceeding 60 • No WDL non-compliance events		contamination sources. • Sample sites further downstream to record extent of contamination. • Increase sampling frequency to weekly until issue resolved.	• Annual EMR • Incident reporting – surface water related incidents
No alteration of surface water flows due to water extraction or discharges	• Mine water management system designed to ensure all surplus water can be contained so that no releases occur to watercourses in the dry season. • A contour drain will be installed to divert overland flows away from the box cut, which will reduce dewatering and discharge requirements and maintain overland flows. • Extraction from OHD will be minimised by reusing inflows dewatered from the mine as the primary water source. • Development and implementation of the Surface Water Flows Management Plan (WRM 2022), adopted by the Company, for the OHD SWEL (8151018)	• Volumes extracted from OHD remain less than predicted in water balance model (i.e. 4ML/month during the BP33 production phase) • Discharge volumes do not exceed maximum allowable controlled release rate • No exceedance of authorised extraction limits as outlined in approved water extraction licence (SWEL 8151018)	• Extraction from OHD will be metered and reported in accordance with the conditions of OHD SWEL (8151018) • Water use on site will be metered and monitoring undertaken to assess water use efficiency. • A flow gauge will be installed to record surface flows on the drainage line downstream of OHD and mine site. • Monitoring of flows in accordance with the Surface	• Review site water use efficiency. • Check that water reuse is being maximised. • Suspend or reduce discharges • Implementation of the Surface Water Flows Management Plan (WRM 2022) Trigger Action Response Plan (TARP), adopted by the Company	• Water balance • Flow meter records • Discharge volume records • WDL annual return • Annual EMR • Incident reporting – surface water related incidents

Surface water					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	• Stormwater drainage and sediment dams will be designed to capture, treat and release clean water off site as overland flows. • Controlled discharge to the watercourse east of the mine site will be limited to periods of high flow due to the dilution factors required to meet site specific guideline values for water quality. • Maximum allowable controlled release rate has been determined based on the dilution factors required to meet the arsenic site-specific guideline value (SSGV) for surface water (0.013 mg/L). In very wet (1%ile) climatic conditions, the site could release up to 150 ML/month in the peak of the wet season. In median (50%ile) climatic conditions, the site could release up to 25 ML/month. • Controlled release of water can only be undertaken in accordance with a Waste Discharge Licence under the *Water Act*, which Lithium Developments will need to apply for prior to commencement of mining. • Storage of surplus water in Grants open pit void – Monthly volumes that would need to be transferred to keep the BP33 underground dry, range between approximately 60 ML/month to 180 ML/month over the life of mine.	• Management of flows in accordance with the Surface Water Flows Management Plan (WRM 2022), adopted by the Company	Water Flows Management Plan (WRM 2022), adopted by the Company • Discharges will be subject to a Waste Discharge Licence and volumes will be monitored and reported in accordance with the licence conditions.		
No uncontrolled discharges off-site from mine water storages	• Mine water storages designed and operated to limit the risk of uncontrolled offsite spills • MSD surveillance and operational procedure • Training and education – no unauthorised discharges discussed in site induction	• No incidents of unauthorised discharges • Management of water storages in accordance with surveillance and operational procedure	• Monitoring of water storages in accordance with surveillance and operational procedure	• Training and education • Review of water storage surveillance and operational procedure • Site inspections investigation	• Induction records • Site inspections • Incident reporting • Report to regulators in accordance with approval and licence conditions.

Surface water					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	• Emergency plans and site risk assessment include management of extreme environmental conditions i.e cyclone and flooding events • Divert clean water away from site to reduce unnecessary water storage inventory	• Discharge management in accordance with site discharge procedures. • All contractors and employees inducted • Induction includes discussion of unauthorised discharges		• Review of discharge procedure	
Potable water safe for human consumption	• Treatment of potable water supply through Reverse Osmosis plant • Regular testing regime of water quality • Treatment plant maintained and operated in accordance with relevant standards and manufacturers specifications and recommendations	• Regular water monitoring undertaken in accordance with WMP frequency and analytes • Water quality analysis meets Australian Drinking Water Guidelines (ANZG 2018) • No incidents of potable water contamination	• Potable water monitoring will be undertaken as per the draft WMP to detect water quality issues.	• Investigate issues with treatment system. • Import potable water until treatment issues resolved. • Flush and clean lines and storage tanks and retest water prior to reuse	• Maintenance records of potable treatment plant • Incident register • Water quality database
Maintain regulatory compliance reporting for surface water quality, extraction and discharges	• Obligations and commitments register developed and incorporates all water licencing, permits and WMP reporting commitments and timeframes of deliverables • Review of commitments and obligations register quarterly to track compliance	• Quarterly management review of commitments and obligations register • No non-conformance detected for regulatory compliance reporting • No breaches of WDL conditions • No breaches of water extraction licencing conditions	• Monitoring undertaken in accordance with WMP, permits and licences	• Review of WMP and associated procedures • Site investigation to understand reasons for non-compliance and prevent future reoccurrences	• MMP amendment or renewal as required under the MMA and Authorisation • Annual EMR • WDL annual return

Groundwater					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
No contamination of groundwater by hydrocarbons	• Surround storage areas for fuels and oils with an impervious bund that contains 120 % of the largest	• No signs of significant spill (volumes >200L or a spill that risks	• Regular inspection of site for signs of spills	• Investigate cause of spill and update procedures as necessary	• Site Inspection Register

Groundwater					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	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	pollution of waterways) outside of bunded area • No incidents of significate spills (volumes >200L or a spill that risks pollution of waterways) • Reporting of minor spill and corrective actions implemented to prevent reoccurrence • Hydrocarbons = below detection limits	• Weekly check that spill containment equipment kits are in order • Groundwater monitoring will be undertaken as per the draft WMP to detect groundwater quality issues. Adaptive management measure will be incorporated into the WMP. • Recording of incidents and implementation of corrective actions	• Remediate contaminated site • Visually inspect mine site to identify diffuse contamination sources. • Increase sampling frequency of bores until issue resolved.	• Incident register – number of spills relating to hydrocarbon contamination • Groundwater quality and trends • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT
No AMD / NMD contamination of groundwater by seepage from contaminant sources (i.e. WRD or ROM)	• Geochemical characterisation of waste rock and ore • A risk-based approach consistent with the *GARD Guide*, will use the results of long-term kinetic testing to inform development of prevention and mitigation measures required in the detailed mine design to prevent metalliferous mine drainage. • WRD and ROM pad designs incorporating a low permeability base • Facilities will be in place for a short period of time (4 years). • The mine closure concept involves backfilling all available surface waste rock from BP33, which when completed will eliminate the WRD's as a source of potential contamination.	• No significant impacts on downstream water quality based on assessment using criteria in Water Quality Monitoring Plan • Assessment criteria for physical, bacteriological and metals with SSTV's derived for shallow and deep bores (WMP section 8.3.5). • No visible signs of AMD / NMD seepage	• Kinetic testing undertaken to improve certainty and inform detailed mine design and closure requirements • Groundwater quality monitoring in accordance with Water Management Plan • On-going operational waste characterisation to confirm material characteristics • Visual monitoring of and seepage from the WRD and ROM • Monitoring in accordance with this Waste rock and ore (AMD) Management Plan	• Investigate source of contamination based on contaminants of concern and bore location. • Implement mitigation measures at source if possible. • Assessment of plume extent and fate by qualified hydrogeologist. • Implement controls at receptors if modelling indicates potential impact. • Approach and methods to be approved by DITT through update to MMP • Visually inspect mine site to identify diffuse contamination sources. • Sample sites further downstream to record extent of contamination.	• Groundwater quality and trends • Monitoring results reported in annual environmental mining reports (EMR) to DITT • Report to regulators in accordance with approval and licence conditions.

Groundwater					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	• Seepage and runoff from the WRD's and ROM pad will be captured and contained/treated on site if contaminant concentrations (arsenic, copper, lead and zinc, and possibly aluminium) exceed water quality guidelines. • Any identified PAF material to be managed in accordance with the Waste and Ore (AMD/NMD) Management Plan.			• Increase sampling frequency until issue resolved	
No groundwater drawdown greater than predicted modelling due to mine dewatering	• Long-term impacts to groundwater will be limited as groundwater levels recover in 3 years to pre-mining conditions. • Underground mining in accordance with approved MMP and SER conditions • Development and implementation of a Groundwater Dependent Ecosystem (GDE) Management Plan adopted by the Company (Appendix V)	• Drawdown in bores closest to the riparian zone (i.e. BPG3, BPG5) remains within predicted groundwater model levels	• Groundwater levels will be continuously monitored in all bores using Troll loggers – refer section 6.1.2 of the draft WMP to verify extent of drawdown cone over time. • Monitoring of groundwater levels in accordance with the GDE Management Plan, adopted by the Company	• The risks to the environment and other water users will be re-assessed and mitigation measures identified as part of the annual MMP reporting and review process. • Riparian vegetation condition monitoring in accordance with the Riparian Vegetation Monitoring Plan (RVMP), adopted by the Company, to assess ecosystem response to reduced groundwater availability. • If monitoring identifies a loss of the identified 3.6 ha of riparian vegetation, then the MCP will include post-mining reinstatement of habitat values in the affected areas and monitoring of ecosystem recovery.	• Water quality database – groundwater levels / trends • Monitoring results reported in annual environmental mining reports (EMR) to DITT

AMD/NMD Management Plan (waste rock and ore)

This management plan establishes a framework for managing risks of AMD / NMD to land and soils, water quality and vegetation associated with the construction and operation of Finniss Lithium Project – BP33 Underground Mine. The plan aims to ensure that activities are undertaken in a manner that m*aintains the quality of land, soils, water and ecological integrity and functioning so that environmental values are protected.* This plan will be integrated within project EMS prior to commencement of operations, as an overarching management plan supported by operational procedures.

Waste Rock and Ore AMD/NMD Management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
No contamination of soil by AMD/NMD seepage or surface water runoff	• The mine closure concept involves backfilling all mined waste material. • The results of long-term kinetic tests will be used to assess the environmental risk posed by metals and metalloids leaching from the WRD's, ROM pad during mining and underground mine post-closure. • A risk-based approach will be adopted, consistent with the GARD Guide, to identify prevention and mitigation measures to be incorporated into mine design, construction, operation and closure. • Provisions for waste rock storage based of material characterisation: - Ore is placed on the ROM for a short period of time and unlikely leach metal within that short time - Mine block model to incorporate ARD/NMD classification - WRD1 (oxide), no management provisions required during surface storage. - WRD2 (fresh and transitional) selective segregation of PAF (<1% PAF and <6% PAF-LC) and backfilled as a priority. Oxide waste material	• Soil quality not significantly impacted by AMD/NMD evident through water quality sampling, sediment sampling, riparian vegetation health in accordance with WMP. • No visible signs of AMD	• ARD classification of waste rock will be verified by ongoing field and laboratory testing during operations as recommended by the Global Acid Rock Drainage (GARD) Guide, including: - Ongoing laboratory testing checks – (particle size, whole rock analysis, minerology, acid base account and static testing) - Ongoing field leach testing - Collection and analysis of runoff and seepage samples from WRDs - Collection and analysis of water samples from underground sumps. • Surface water and groundwater monitoring will be undertaken as per section 8 of the draft WMP • Refer to Grants Lithium Project Waster Rock (AMD) Management Plan for details of sampling methods and analysis. • Classification criteria: - NAF: Ore or Oxide or Transitional and fresh rock with Total S<0.2%	• Capture and treat contaminated drainage - Approach and methods to be approved by DITT through update to MMP - Visually inspect mine site to identify diffuse contamination sources. - Sample sites further downstream to record extent of contamination. - Report to regulators in accordance with approval and licence conditions. - Increase sampling frequency until issue resolved.	• Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT • Site Inspection Register • Incident register • Monitoring database • Geologists will ensure the geochemical waste characterisation samples, results and visual observations such as visible sulphide and carbonate content are recorded in geological databases.

Waste Rock and Ore AMD/NMD Management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	excavated from the box-cut will be used to construct a flat compacted low permeability 1-2 m high pad as a competent base for WRD2. - No use of fresh material for surface construction. - Selective temporary use of transitional competent material for surface infrastructure with suitable benign clay encapsulation. Material not to be used within proximity to drainages. - Temporary use of oxide waste material for surface infrastructure with erosion and sediment controls.		- PAF-LC: Transitional and fresh rock with Total S ≥0.2% and <0.4% - PAF: Transitional and fresh rock with Total S ≥0.4%		
No vegetation dieback caused by AMD/NMD	• Geochemical characterisation of waste rock and ore during planning and operations • A risk-based approach will be adopted, consistent with the GARD Guide, to identify prevention and mitigation measures to be incorporated into mine design, construction, operation and closure. • Management of ore and waste in accordance with Waste and Ore AMD Management Plan • Short-term (4 years) temporary storage of waste rock and backfilling of all waste rock at cessation of mining, which when completed will significantly reduce the WRD's as a source of contamination.	• On-going geochemical characterisation in accordance with the Waste and Ore AMD Management Plan • Management of waste and ore types in accordance with the Waste and Ore AMD Management Plan • No signs of vegetation die-back downstream / surrounding WRD and ROM	• Surface water and groundwater monitoring will be undertaken as per section 8 of the draft WMP • Aerial imagery – drone surveillance annually of vegetation areas downstream of ROM and WRD. If vegetation impacts are detected from the previous year, on-ground vegetation transects will be undertaken to investigate extent of impacts.	• Independent review geochemical characterisation results and Waste and Ore AMD Management Plan • Visually inspect mine site to identify diffuse contamination sources. • Vegetation monitoring further downstream to record extent of impacts • Surface water and seepage monitoring further downstream to record extent of impacts	• Geochemical characterisation database • Drone imagery • Vegetation monitoring database • Report to regulators in accordance with approval and licence conditions.

Waste Rock and Ore AMD/NMD Management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
No contamination of surface (AMD/NMD) waterways from WRD or ROM	• Geochemical characterisation of waste rock and ore during planning and operations • A risk-based approach consistent with the *GARD Guide*, will use the results of long-term kinetic testing to inform development of prevention and mitigation measures required in the detailed mine design to prevent metalliferous mine drainage. • Facilities will be in place temporarily for a short period of time (4 years). • Drains installed to capture run-off from WRDs and divert to MSD if metal/metalloid contaminants present (arsenic, copper, lead and zinc, and possibly aluminium) • The mine closure concept involves backfilling all waste at cessation of mining, which when completed will eliminate the WRD's as a source of contamination. • Any identified PAF material to be segregated and temporarily covered with NAF material during temporary storage	• No significant impacts on downstream water quality based on assessment using criteria in Water Quality Monitoring Plan • Toxicants = ANZG (2018) 95% species protection guideline values • Physical, bacteriological and metals with no GV = 80th percentile of baseline data • Lithium = 0.43 mg/L based on ecotoxological testing • No visible signs of AMD	• Kinetic testing undertaken to improve certainty and inform detailed mine design and closure requirements. • On-going operational waste characterisation to confirm material characteristics • Surface water quality monitoring in accordance with Water Management Plan • Visual monitoring of and drainage from the WRD and ROM • Monitoring in accordance with this Waste rock and ore (AMD) Management Plan	• Capture and treat contaminated drainage • Approach and methods to be approved by DITT through update to MMP • Visually inspect mine site to identify diffuse contamination sources. • Sample sites further downstream to record extent of contamination. • Report to regulators in accordance with approval and licence conditions. • Increase sampling frequency until issue resolved.	• Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT • Site Inspection Register • Incident register • Water quality database
No AMD / NMD contamination of groundwater by seepage from contaminant sources (i.e. WRD or ROM)	• Geochemical characterisation of waste rock and ore • A risk-based approach consistent with the *GARD Guide*, will use the results of long-term kinetic testing to inform development of prevention and mitigation measures required in the detailed mine design to prevent metalliferous mine drainage. • WRD and ROM pad designs incorporating a low permeability base	• No significant impacts on downstream water quality based on assessment using criteria in Water Quality Monitoring Plan • Assessment criteria for physical, bacteriological and metals with SSTV's derived for shallow and deep bores (WMP section 8.3.5).	• Kinetic testing undertaken to improve certainty and inform detailed mine design and closure requirements • Groundwater quality monitoring in accordance with Water Management Plan • On-going operational waste characterisation to confirm material characteristics	• Approach and methods to be approved by DITT through update to MMP but will include the following: • Investigate source of contamination based on contaminants of concern and bore location.	• Groundwater quality and trends • Monitoring results reported in annual environmental mining reports (EMR) to DITT • Report to regulators in accordance with approval and licence conditions.

Waste Rock and Ore AMD/NMD Management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	• Facilities will be in place for a short period of time (4 years). • The mine closure concept involves backfilling all waste rock at cessation of mining, which when completed will eliminate the WRD's as a source of contamination. • Seepage and runoff from the WRD's and ROM pad will be captured and contained/treated on site if contaminant (arsenic, copper, lead and zinc, and possibly aluminium) concentrations exceed water quality guidelines. • Any identified PAF material to be managed in accordance with this Waste and Ore (AMD/NMD) Management Plan.	• No visible signs of AMD / NMD seepage	• Visual monitoring of and seepage from the WRD and ROM • Monitoring in accordance with Waste rock and ore (AMD) Management Plan	• Implement mitigation measures at source if possible. • Assessment of plume extent and fate by qualified hydrogeologist. • Implement controls at receptors if modelling indicates potential impact. • Visually inspect mine site to identify diffuse contamination sources. • Sample sites further downstream to record extent of contamination. • Increase sampling frequency until issue resolved	

Land management and soils

This management plan establishes a framework for managing risks to land and soils associated with the construction and operation of BP33 Lithium Project. The plan aims to ensure that activities are undertaken in a manner that m*aintains the quality of land and soils so that environmental values are protected.* This plan will be integrated within project EMS prior to commencement of operations, as an overarching management plan supported by operational procedures. The Erosion and Sediment Control Plan (Appendix P), developed by EcOz (2022), adopted by the Company, is a key supporting document to this plan.

Land management and soils					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
No contamination of soil by hydrocarbons	• Surround storage areas for fuels and oils with an impervious bund that contains 120 % of the largest container	• No incidents of significate spills (volumes >200L or a	• Regular inspection of site for signs of spills	• Investigate cause of spill and update procedures as necessary	• Site Inspection Register • Incident register

Land management and soils					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	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	spill that risks pollution of waterways) • Reporting of minor spill and corrective actions implemented to prevent reoccurrence	• Weekly check that spill containment equipment kits are in order • Recording of incidents and implementation of corrective actions	• Remediate contaminated site	• Monitoring results reported in annual environmental mining reports (EMR) to DITT • Report to regulators in accordance with approval and licence conditions.
No contamination of soil by AMD/NMD seepage or surface water runoff	• Implement ongoing waste characterisation monitoring • The mine closure concept involves backfilling all waste rock at cessation of mining, which when completed will eliminate the WRD's as a source of contamination. • The results of long-term kinetic tests will be used to assess the environmental risk posed by metals and metalloids leaching from the WRD's, ROM pad during mining and underground mine post-closure. • A risk-based approach will be adopted, consistent with the GARD Guide, to identify prevention and mitigation measures to be incorporated into mine design, construction, operation and closure. • Ore is placed on the ROM for a short period of time and unlikely leach metal within that short time	• Soil quality not significantly impacted by AMD/NMD evident through water quality sampling in accordance with WMP. • No visible signs of AMD	• ARD classification of waste rock will be verified by ongoing field and laboratory testing during operations. • Surface water and groundwater monitoring will be undertaken as per section 8 of the draft WMP • Sediment monitoring in accordance with future WDL conditions as required. • Monitoring and inspections in accordance with Waste and Ore AMD Management Plan. If testing indicates PAF volumes greater than predicted, the AMD Management Plan will be updated to include prevention and mitigation measures for ARD.	• Capture and treat contaminated drainage • Approach and methods to be approved by DITT through update to MMP • Visually inspect mine site to identify diffuse contamination sources. • Sample sites further downstream to record extent of contamination. • Report to regulators in accordance with approval and licence conditions. • Increase sampling frequency until issue resolved.	• Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT • Site Inspection Register • Incident register • Monitoring database
No contamination of soils or impacts to	• Controlled discharge	• Water quality meets irrigation water quality	• Monitoring in accordance with WMP and irrigation procedures	• Treatment of MSD wastewater to remove	• Water quality database

Land management and soils					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
vegetation from irrigation of surplus mine water	• Treatment of water to management potential contaminants prior to use for irrigation • Baseline water quality meets irrigation water quality trigger values as outlined in *Chapter 4 Primary Industries* of the ANZECC (2000b) guidelines. • Irrigation management plan	trigger values as outlined in *Chapter 4 Primary Industries* of the ANZECC (2000b) guidelines.	• Site inspection of irrigation area	potential contaminants (sediments, hydrocarbons and phosphorous) prior to irrigation. • Review release criteria • Transfer water to Grants open pit void if water criteria not met for irrigation.	• Site inspection register • Records of water movements (volume to discharge, irrigation, storage transfer) • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT
Minimise the impact of soil quality and loss through land clearing	• Restrict land clearing to the minimum required for the project • Progressive clearing of sections of the project footprint only when the area is required • Delineate area to be cleared as per Vegetation Clearing Procedure (Appendix Q) • Develop and adhere to a land clearing schedule • Clear and stockpile vegetation as per Vegetation Clearing Procedure (Appendix Q) • Remove stockpiled vegetation as soon as practicable	• No vegetation clearance or ground disturbance outside of the approved footprint	• Weekly inspection (using a GPS and/or mapping tools) during vegetation clearing to ensure no clearing outside of permitted area • Quarterly drone imagery – orthomosaics showing areas of disturbance	• Investigate why excessive clearing occurred and update procedures as necessary, and/or implement rehabilitation plan for over-cleared area • Review processes of land disturbance to assess system failures	• Site Inspection Register • Land disturbance register • Incident register – documenting any unauthorised clearing • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT

Land management and soils					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
Minimise loss of soil structure and seedbank due to inappropriate topsoil removal and storage	• Remove and store topsoil as per Vegetation Clearing Procedure (Appendix Q) • Implement controls to maintain structural integrity of stockpile as per ESCP • Commence rehabilitation as soon as possible	• Top-soil stockpiles managed in accordance with ESCP (Appendix P)	• Inspection of stockpile height and batter slopes • Monitor stockpile for erosion as per ESCP • Monitor vegetation growth by natural regeneration in rehabilitation trials at Grants	• Implement corrective actions as detailed in Mine Closure Plan and Rehabilitation Management Plan	• Site Inspection Register • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT
Minimise erosion of cleared areas	• Undertake construction in the Dry season • Implement the ESCP - 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 • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT
Minimise erosion of WRD	• Construct the WRD annulus from competent waste material • Place dispersive waste in the centre of the WRD • Backfill of all waste rock at cessation of underground mining operations.	No signs of significant erosion of WRD	• Geotechnical testing to define materials characteristics, sources and treatments for WRD construction and backfill • Outcomes of Grants rehabilitation trials to be used for BP33 closure and rehabilitation planning	• Implement corrective actions as detailed in Mine Closure Plan and Rehabilitation Management Plan	• Site Inspection Register • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT

Land management and soils					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
Minimise erosion on pipeline and haul road footprint	• Clear, stockpile and remove vegetation as per Vegetation Clearing Procedure • Remove and store topsoil as per the Vegetation Clearing Procedure and ESCP • Implement erosion controls as per ESCP	No signs of significant erosion along pipeline or haul road footprint	Weekly inspection of vegetation and soil stockpiles during construction of pipeline and haul road, with focus on erosion controls detailed in ESCP	Investigate cause of erosion and update procedures as necessary as per ESCP	• Site Inspection Register • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT
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 • Report to regulators in accordance with approval and licence conditions. • Monitoring results reported in annual environmental mining reports (EMR) to DITT

Rehabilitation and biodiversity management

This management plan establishes a framework for managing risks to terrestrial flora and fauna associated with the construction and operation of BP33 Lithium Project and rehabilitation. 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 will be integrated within project EMS prior to commencement of operations, as an overarching management plan supported by operational procedures. The Rehabilitation Management Plan (Appendix E), developed by EcOz (2022) and adopted by the Company, and Vegetation Clearing Procedure (Appendix Q) are key supporting document to this overarching plan.

Rehabilitation and biodiversity management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
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 mulching) 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	• Reported as incident and follow-up investigation. • 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 and Rehabilitation Management Plan • Ecology assessments prior to construction to establish baseline	Regeneration of self-sustaining local native vegetation species similar to that which was on the site previously	Monitoring of vegetation as detailed in the Rehabilitation Management Plan	• Maintain rehabilitation monitoring database • Implement corrective actions as detailed in Rehabilitation Management Plan • Review monitoring measures and effectiveness of rehabilitation as per the Rehabilitation Management Plan	• Annual Environmental Mining Report (EMR) to include details of rehabilitation • Fauna and flora sightings/survey records
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

Rehabilitation and biodiversity management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
Minimise the impact of bushfires caused by project activities	• Mulch and/or burn stockpiled vegetation as soon as practicable, as per Vegetation Clearing Procedure • Conduct prescribed burning in accordance with the Finniss Lithium Project Fire Management 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 other than prescribed burning • No uncontrolled prescribed burning	• 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 • Register of prescribed burning activities
Minimise the potential for introduction and spread of weeds	• Management of weeds in accordance with the Finniss Lithium Project Weed Management procedure • Source off-site materials from sites that have been declared weed-free • Survey disturbance area for weeds prior to commencement of clearing/construction and	• No new declared weed species introduced into the project area • No increase in declared weed infestations from baseline conditions	Monthly surveying for the presence of weeds, focussing on: • Areas to be disturbed that are in the vicinity of any weed occurrence • Stockpiles • Areas that have soil, sand or gravel introduced • Access tracks	• Review weed hygiene measures • Implement weed controls appropriate to the species detected	Weed and Pest Monitoring & Control Log New occurrences of Weeds of National Significance to be reported to the NT Weeds Branch.

Rehabilitation and biodiversity management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
	control/eradicate existing infestations • Clean, check and certify all earth-moving equipment and vehicles as weed-free before entering site (during pre-strip and construction phase) • Install wash bay facilities and maintain wash-down logs • Make available information on potential weeds to assist staff with identification and response		• Watercourses, particularly after floods		
Minimise potential for introduction of new pest species (i.e. feral ants and mosquitoes)	• Source off-site materials from sites that have been declared pest-free • Clean and check all earth-moving equipment and material loads for pest species before entering site (details to be entered into a register)	• No new pest species identified within the project area	• Incidental observations of new pest species in the project area	• Review hygiene measures • Response and control in consultation with DITT	• Weed and Pest Monitoring & Control Log • Report incursions to DITT
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 • Conduct pest and feral animal control programs within the rehabilitation and surrounding areas. • Fence establishment for pest animals	• Weed and Pest Monitoring & Control Log

Rehabilitation and biodiversity management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
Ecological restoration based on fauna recolonisation: presence, abundance and diversity. (To ensure the health of rehabilitated areas by detecting native fauna presence/absence over time and compare abundance / richness to the analogue sites).	• Site speed restrictions to minimise harm to fauna and dust on flora • Buffer zones around sensitive fauna and/or flora areas	• For early stages of rehabilitation notable increase in native wildlife occurrence and species diversity within the vegetation transects over each year with eventual results equivalent to that of the analogue sites. • Evidence of scats, tracks, digs or burrows. • No fauna injury and/or death related to mine closure and rehabilitation • No notable increase in the presence of feral animal and pests within the vegetation transects each year compared to analogue sites. • No increased evidence from previous inspection of pig wallows, hoof compaction, scats and tracks of feral animals.	• Observations during on-ground inspections for early (young rehabilitation i.e. for the first two years. • Long term fauna monitoring incorporating active searching and camera trap surveillance at vegetation transects sites	• Incorporate fauna habitat to for structural complexity i.e. logs, existing rocks, dead trees and leaf litter • Plant additional fruit bearing shrubs and trees to attract wildlife • Assess potential contamination sources e.g., mine waters that have a pathway to fauna. • Conduct pest and feral animal control programs within the rehabilitation and surrounding areas. • Fence establishment for pest animals	Report in accordance with the RMP
Native vegetation establishment comparable to that of the surrounding ecosystems i.e. within analogue sites and domains are safe, stable, non-polluting and erosion resistant landform.	Establishment of native plants in the early stages of rehabilitation through rapid assessment and weed and erosion management (if required)	Native vegetation establishment i.e. % of survivorship of planted seedlings and diversity of seedlings/plants: • Survival rate of planted tube-stock is >50% in the first year. • >30% key species present in second and third year Weed composition: • Density of weed species within rehabilitated domain is not more than reference sites for three consecutive years.	• Drone monitoring, which may lead to follow-up assessment through on-ground inspections if early management issues are identified	• Reseeding impacted areas • Sourcing and spreading of additional topsoil • Direct planting • Implement treatment and prevention controls in the Weed Management Handbook (2018) • Adhere to weed Management within Finniss Lithium Project Weed Management procedure	Report in accordance with the RMP

Rehabilitation and biodiversity management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
		• No declared weed species not previously recorded in the mining lease is present within the rehabilitated domains for three consecutive years. Erosion: • Erosion score to remain 2 or less (Minor erosion 10-25% of site affected) • No increase in erosion presence of severity from previous monitoring event for at least two consecutive years.		• Adhere to relevant ESCP's • Installation of additional erosion management structures i.e. this could be in the form of short-term stabilisation • Erosion remediation	
Self-sustaining native vegetation comparable to that of the surrounding ecosystems through long term monitoring. Domain is safe, stable, non-polluting and erosion resistant landform	To ensure the rehabilitation progression is directing towards a desirable state through long term vegetation monitoring	Ground-storey plant establishment: • Groundcover % and groundcover species richness recorded at vegetation transects needs to be more than or equal to that of the representative analogue sites for two consecutive years post closure. Canopy and mid storey establishment: • The number of woody plants (stems ≥ 2cm DBH and greater than 3m high) recorded at vegetation transects needs to be more than or equal to that of the representative analogue sites. • Three dominant species (per strata) recorded at vegetation transects need to be present in the analogue sites.	• Permanent vegetation transects and photo monitoring points of ground storey species, mid storey and upper canopy	• Supplement regeneration through tubestock plantings	Report in accordance with the RMP

Rehabilitation and biodiversity management					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
Domain is a safe, stable, non-polluting and erosion resistant landform i.e. no areas of excessive erosion impacting landform integrity and stability	Adhere to relevant site ESCP	Landform integrity and stability: • No signs of seepage, tunnelling, slumping, cracks, and other signs of erosion impacting landform integrity and stability. • No increase in seepage, tunnelling, slumping, cracks, and other signs of erosion from previous monitoring event for at least two consecutive years. Erosion: • Erosion score to remain 2 or less (minor erosion) as per the RMP • No increase in erosion from previous monitoring event for at least two consecutive years.	• Geotechnical inspections • Remote sensing • Transect monitoring	• Earthworks and remediation • Increase frequency of geotechnical inspections. • Adhere to relevant ESCP's • Installation of additional erosion management structures i.e. this could be in the form of short-term stabilisation	Report in accordance with the RMP

Riparian Vegetation Management

This riparian monitoring plan establishes a framework for monitoring the nearby riparian vegetation zone to assess potential impacts associated with the operation and dewatering of Finniss Lithium Project – BP33 Underground Mine. The plan aims to ensure that activities are undertaken in a manner that protects the surrounding riparian vegetation so that ecological integrity is maintained. This plan will be integrated within project EMS prior to commencement of operations, as an overarching management plan supported by operational procedures. The OHD SWEL Monitoring Plan (Appendix T), developed by EcOz (2022) and adopted by the Company, includes the riparian vegetation monitoring program and is the key supporting document to this overarching plan.

Riparian monitoring plan					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
Assess integrity of riparian vegetation	• No direct disturbance of riparian vegetation	• Water quality criteria meets WDL requirements at	• Groundwater levels will be sampled quarterly in monitoring bores – refer section 8.3 of the draft WMP to verify	• Cease discharge until water quality if of suitable criteria	• WDL annual return

Riparian monitoring plan					
Objective	**Management provisions (controls)**	**Performance indicators**	**Monitoring**	**Corrective actions**	**Reporting & Record-keeping**
in receiving waterways	• Long-term impacts to riparian vegetation will be avoided short LOM allowing groundwater levels to recover to pre-mining conditions in 3 years of closure. • Water dewatered from the underground mine will be treated and used as a water source to offset extraction from OHD. • Water dewatered from the underground mine will be discharged to the surface watercourse in accordance with an approved Waste Discharge Licence (WDL).	receiving sites downstream • No significant change in surface water flows downstream • Waterway banks appear stable with native grass cover presence • No erosion present • No impact to >3.6ha riparian vegetation in accordance with environmental approval.	extent of reduced water availability for riparian vegetation. • A flow gauge will be installed to record surface flows on the drainage line downstream of the OHD and mine site. • Annual riparian vegetation monitoring will occur to record changes to vegetation extent, structure and composition compared to baseline conditions – refer section 8.4 of the draft WMP.	• If monitoring identifies an unexpected impact to riparian vegetation, then the MCP will include post-mining reinstatement of habitat values in the affected areas.	• WMP reporting

7.2 Decision framework

The EMS decision framework is shown in Figure 7-2. This decision framework outlines how the EMS and EMPs are used to inform decisions and management and identifies the who is responsible throughout the process.

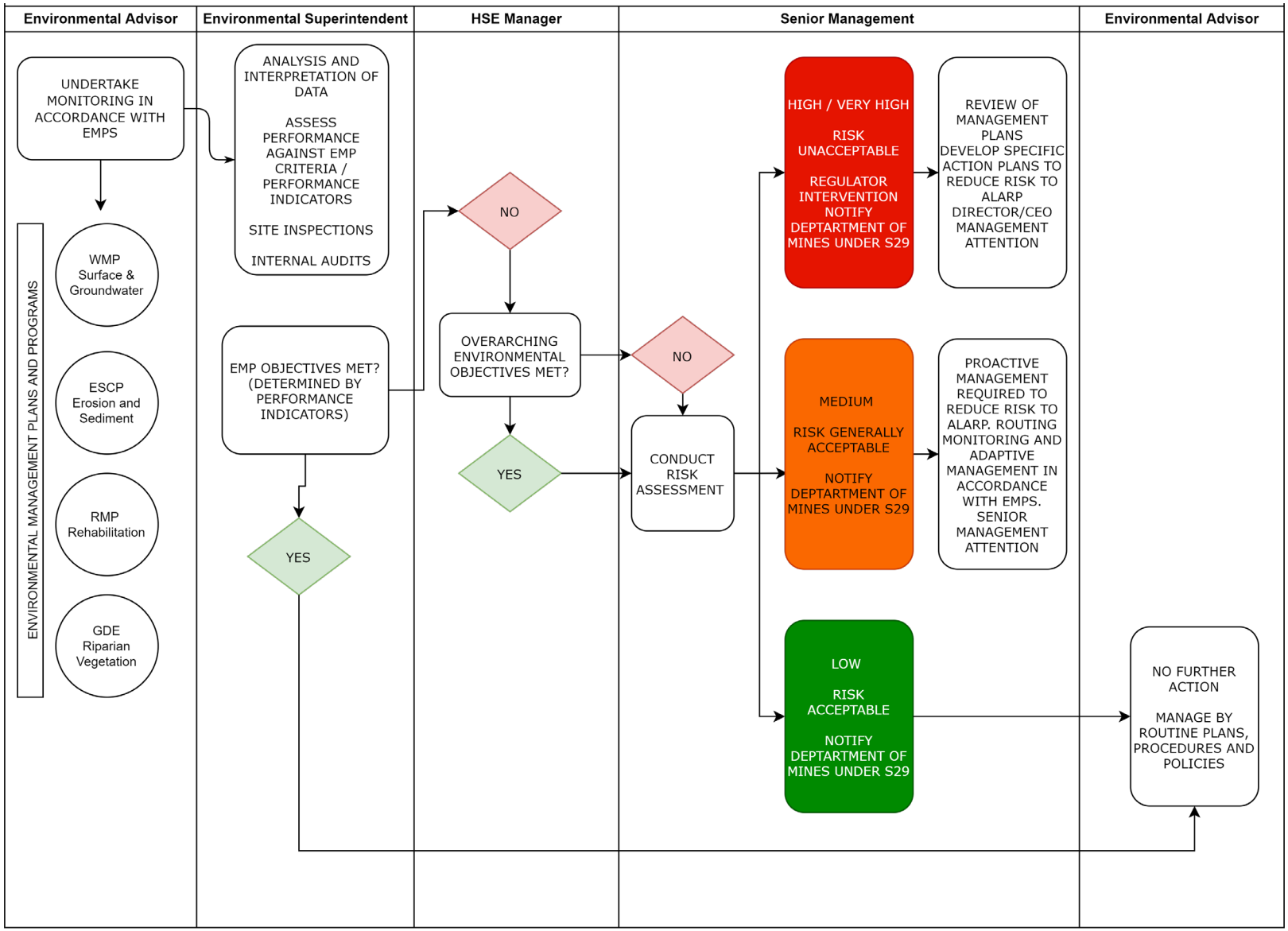


Figure 7-2. EMS decision framework and responsibility

8 CLOSURE PLANNING

8.1 Conceptual closure plan

A mine closure plan (Appendix E) has been developed for BP33 by MLC (2022) and adopted by the Company. The mine closure strategy for the BP33 mine involves removing all mining landforms, returning all fresh and transitional waste rock material underground, plugging the portal and vent shaft and backfilling the box cut, and rehabilitating the site with native vegetation species. There will be no box cut, WRD or other mining landforms remaining on site post closure. Once backfilled and plugged, the underground void will be left to fill with groundwater with modelling predicting natural groundwater levels will return within less than three years post closure.

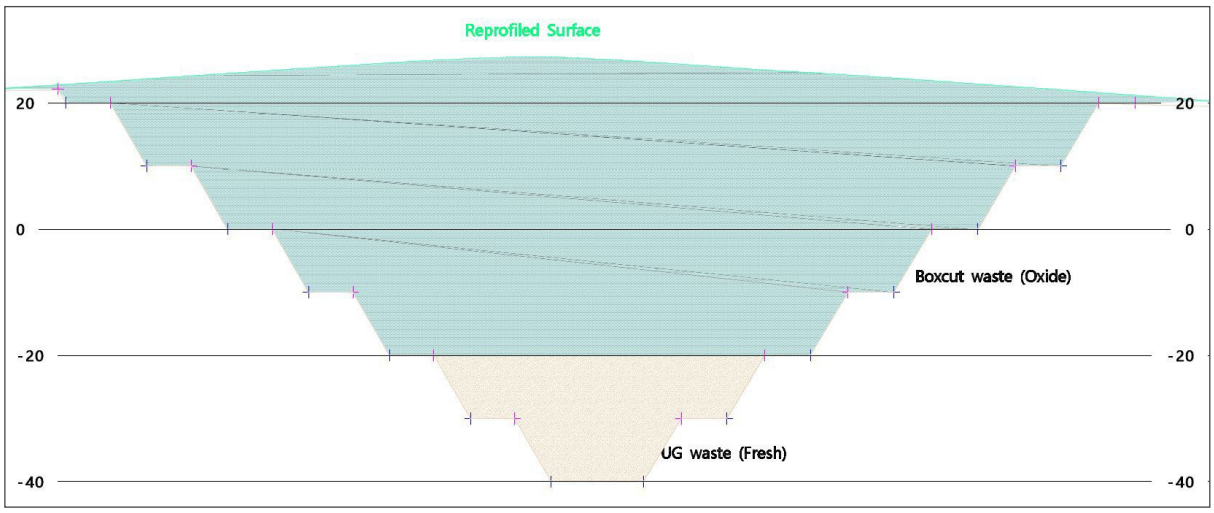


Figure 8-1. Cross section of backfilled box-cut

8.2 Environmental Approval conditions EP2020/001-001

Environmental approval conditions EP2020/001-001 relating to mine closure are outlined below:

2 Action implementation and closure

2-1 The approval holder must implement the action to meet the following environmental outcomes:

(1) The action must be rehabilitated and closed in such a manner that the approval holder can demonstrate that it:

a) is physically safe to humans and animals; and

b) is geo-technically stable; and

c) is non-polluting, non-contaminating; and

d) does not cause material environmental harm or significant environmental harm; and

e) is able to sustain the post-mining land use in the approved Mine Closure Plan required by condition 3.

3 Mine closure plan

3-1 To demonstrate that the outcomes required by condition 2-1 are achieved, the approval holder must prepare a Mine Closure Plan, before substantial disturbance, that is consistent with contemporary best practice guidance on mine closure.

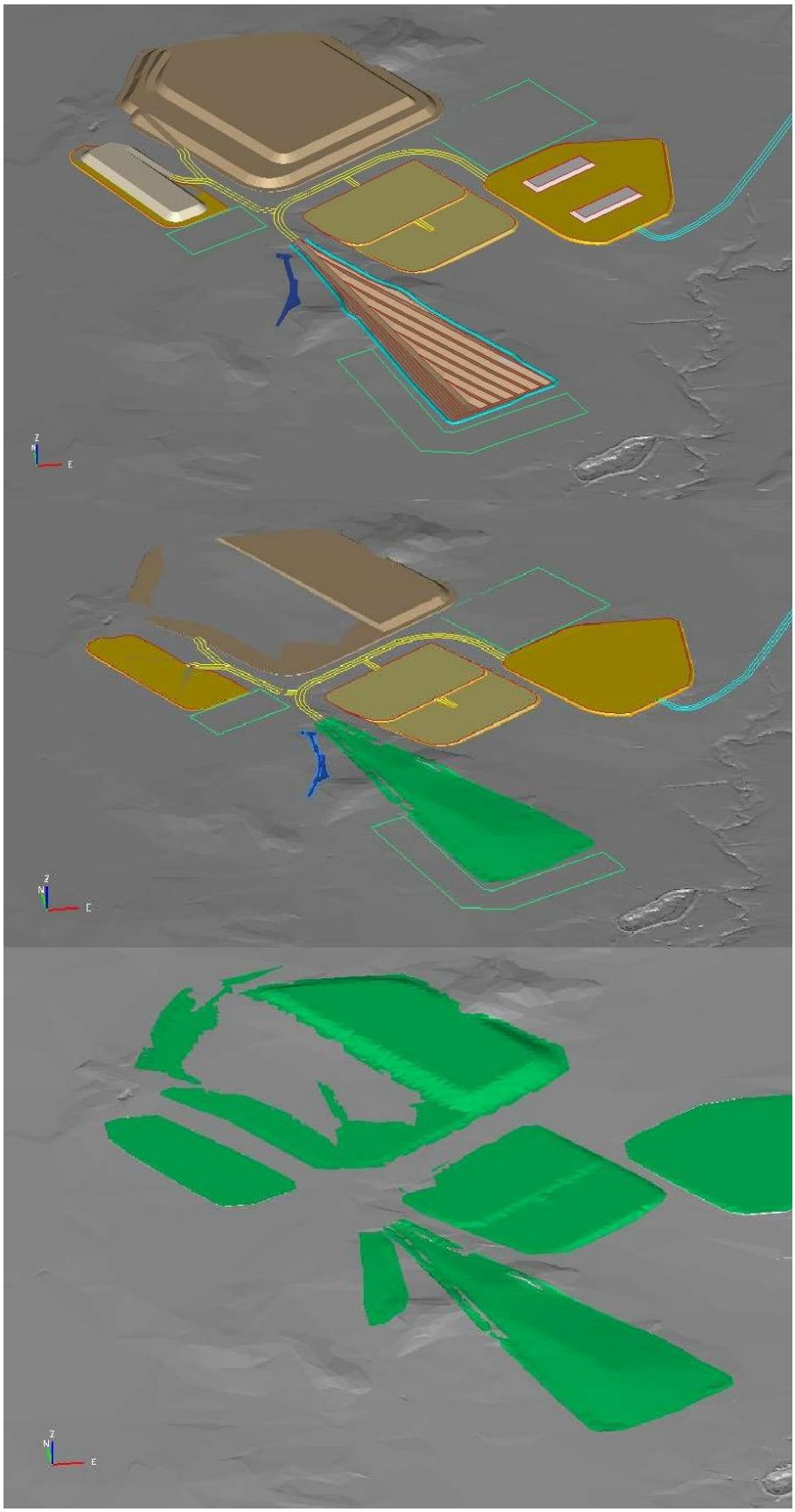


Figure 8-2. Conceptual overview of BP33 box cut and supporting mine design (top) and backfill profile and reprofiled surface (middle) and final rehabilitated landforms (bottom).

9 SECURITY

9.1 Reporting requirements

The NT Mines Departments ‘Security Calculation Tool’ has been used to derive the security. The entire BP33 disturbance footprint, as outlined in section 2.2 has been used to calculate the security. The security accounts for backfilling of all surface waste rock.

10 REFERENCES

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APPENDIX A FINNISS LITHIUM PROJECT BP33 UNDERGROUND MINE REFERRAL

APPENDIX B FINNISS LITHIUM PROJECT BP33 UNDERGROUND MINE SUPPLEMENTARY ENVIRONMENTAL REPORT

APPENDIX C NT EPA ASSESSMENT REPORT 94 AND ENVIRONMENTAL APPROVAL EP2020/001-001

APPENDIX D MINE DESIGN REPORTS

(excluded as Commercial in Confidence)

APPENDIX E MINE CLOSURE PLAN AND REHABILITATION MANAGEMENT PLAN

APPENDIX F GEOCHEMICAL CHARACTERISATION REPORTS

APPENDIX G WATER MANAGEMENT PLAN

APPENDIX H SURFACE WATER ASSESSMENTS

APPENDIX I GROUNDWATER ASSESSMENTS

APPENDIX J ECOLOGY REPORTS

APPENDIX K AAPA AUTHORITY CERTIFICATE

(excluded as Confidential)

APPENDIX L ENGAGEMENT REPORTS

APPENDIX M SOCIAL IMPACT ASSESSMENT

APPENDIX N SOCIAL IMPACT MANAGEMENT PLAN

APPENDIX O SECURITY CALCULATION

(excluded as Commercial in Confidence)

APPENDIX P EROSION AND SEDIMENT CONTROL PLAN

APPENDIX Q VEGETATION CLEARING PROCEDURE

APPENDIX R GEOTECHNICAL REPORTS

APPENDIX S DAM DESIGNS

APPENDIX T OHD SWEL MONITORING PLAN

APPENDIX U ENVIRONMENTAL RISK REGISTER

APPENDIX V GROUNDWATER DEPENDENT ECOSYSTEMS MANAGEMENT PLAN

APPENDIX W FINNISS LITHIUM PROJECT ENVIRONMENTAL MANAGEMENT SYSTEMS