Mineral Projects

DIANNE COPPER MINE RECOMMENCEMENT PROJECT

Environmental Authority Amendment Application
Environmental Assessment Report

EA holder: *Mineral Projects Pty Ltd and Tableland Resources Pty Ltd*
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Tenure: *ML 2810, ML 2811, ML 2831, ML 2832, ML 2833 and ML 2834*
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1 Introduction

The Dianne Copper Mine is located in Cape York Peninsula, Queensland, approximately 160 kilometres northwest of Cairns and 100 km southwest of Cooktown (Figure 1). The Dianne Copper Mine comprises Mining Leases ML 2810, ML 2811, ML 2831, ML 2832, ML 2833 and ML 2834. The mine has been under care and maintenance since copper mining activities ceased in 1982. The proponent for the Dianne Copper Mine is Mineral Projects Pty Ltd and Tableland Resources Pty Ltd.

This Environmental Authority (EA) amendment application has been prepared for the recommencement of mining at the Dianne Copper Mine.

This document describes the EA amendment application, and is set out as follows:

- Section 2 includes the project description
- Section 3 outlines the legislative requirements for the EA amendment
- Section 4 describes the background of the site
- Section 5 details the community consultation process
- Section 6 describes the geological setting, mine waste and geochemistry
- Section 7 and 8 describe water management
- Section 9 and 10 documents terrestrial and aquatic ecology
- Section 11 describes land, soils and rehabilitation
- Section 12 and 13 outline cultural heritage and the Western Yalanji environmental assessment of the site
- Section 14 summarises other minor studies including noise and air quality

2 Project Description

The Dianne Copper Mine is located in Cape York Peninsula, Queensland, approximately 160 kilometres northwest of Cairns and 100 km southwest of Cooktown (Figure 1). The Dianne Copper Mine comprises Mining Leases ML 2810, ML 2811, ML 2831, ML 2832, ML 2833 and ML 2834. The mine has been under care and maintenance since copper mining activities ceased in 1982. The proponent for the Dianne Copper Mine is Mineral Projects Pty Ltd and Tableland Resources Pty Ltd. The Dianne Copper Mine is authorised under Environmental Authority (EA) EPML00881213.

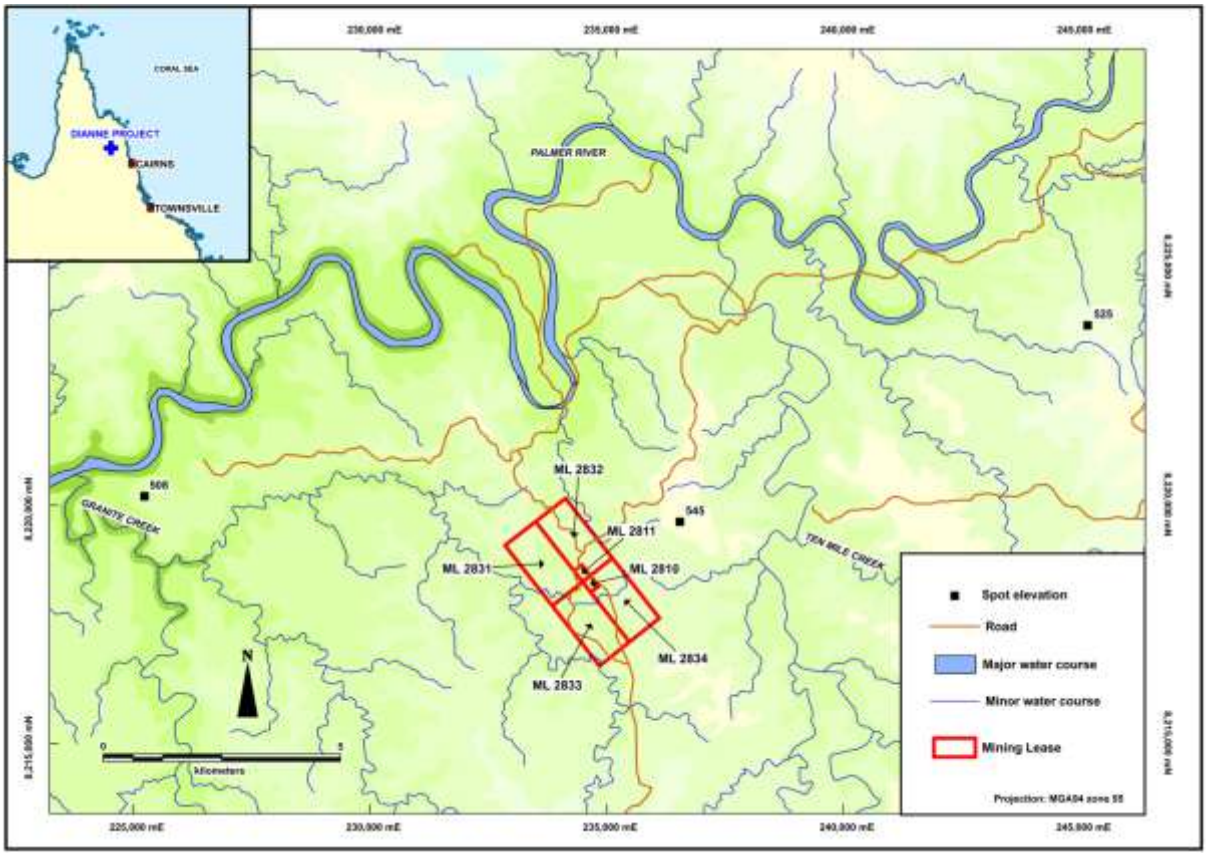

Figure 1: Regional Location

The historic mining operations under care and maintenance at Dianne Copper Mine consist of a total of 14.1 ha disturbance, and include:

- Pit and portal
- Run of Mine site
- Waste rock stockpile
- Settling Dam
- Raw Water Dams 1 and 2
- Roads and tracks
- General re-profiled area, including infrastructure areas

The Dianne Recommencement Project (the project) involves the recommencement of mining and associated activities at the Dianne Copper Mine. The project will include:

- Mining approximately 1.6 Mt of copper ore as a single pit with an approx. depth of 124 m using conventional excavator and truck load and haul methods. A throughput of up to 900,000 tonne per annum of ore will be mined with a target recovery rate of 85%. Note the pit will be located over the old open cut pit and portal. The draft project layout is shown in Figure 2.
- Processing ore (Figure 3) via crushing, screening, agglomeration and stacking circuits on up to six heap leach pads. Ore will be crushed and stacked on a specially prepared and lined heap leach pad area with overall approximate dimensions of 300 meters (m) length by 100 meters width. Stockpiles on the pads will be to a height of approximately up to 6 m. No tailings dam is required on site, and spent ore will be stockpiled, reprofiled and rehabilitated in a manner that is consistent with the existing approved PRCP.

  As detailed in Section 6, definitions of material include:

  - Overburden = material removed from above the ore body to allow the excavation of ore, in addition to any material below ore cutoff grade (being 0.25% copper). Overburden material will be used in construction, to backfill the pit for final landform design, and remainder placed in an Overburden Stockpile.
  - Spent Ore = the material that remains once processing is finished. Spent Ore material will be used to backfill the pit for final landform design where shown this is geochemically suitable, and remainder placed in an Overburden Stockpile.
  - Waste Rock = the existing waste rock stockpile leftover from historic operations. Once reprocessed, waste rock will be treated as Spent Ore.

  Processing of the ore will generally include:

  - Mining of copper ore and existing/historical waste rock.
  - Beneficiation of ore by crushing using mobile crushing plant typical of a medium-size quarry and then 'agglomerating' the ore into small pebbles.
  - Heap leaching the copper from the beneficiated ore by irrigating it with acid on High Density Poly Ethylene (HDPE)-lined pads which will be constructed to contain any runoff from heaps.
  - Treating the pregnant liquor (fluid containing copper) by solvent extraction to recycle acid for reuse in the heap leaching process and generate copper-rich electrolyte.
  - Using electric circuits to extract sheets of copper on electric cathodes (electrowinning).
- Reprocessing the existing waste rock stockpile. Existing waste rock will either be reprocessed, or treated as required and used in the construction of the heap leach pads.
- Mine infrastructure upgrades and construction including:
  - Run of mine laydown area
  - Access roads to site from Whites Creek Road
  - Temporary accommodation camp and associated sewage treatment plant (Figure 2a and 2b, with a smaller septic tank located at the workshop)
  - Water management infrastructure including additional remediation and upgrading of the existing Settling Dam (to be renamed the Release Dam)

  - Workshop facility
  - Site office
  - Temporary fuel storage in fully bunded areas
  - Power infrastructure (solar and diesel combination). The general arrangement of the project power infrastructure is shown in Figure 2c.
  - A small landfill for construction and general waste (approximately 2,400 m^2)
  - Topsoil and subsoil stockpiles
- Employment of approximately 35 construction and 40 operation staff. Opportunities will be prioritised for Indigenous people supported by on-the-job training, and employment, with an aim of a minimum 20% FTE Indigenous employment. In addition, local employment opportunities will be made available from the Lakeland, Cooktown, Mareeba and Mossman regions.
- Ongoing exploration programs will be aimed at confirming additional mineral resources.

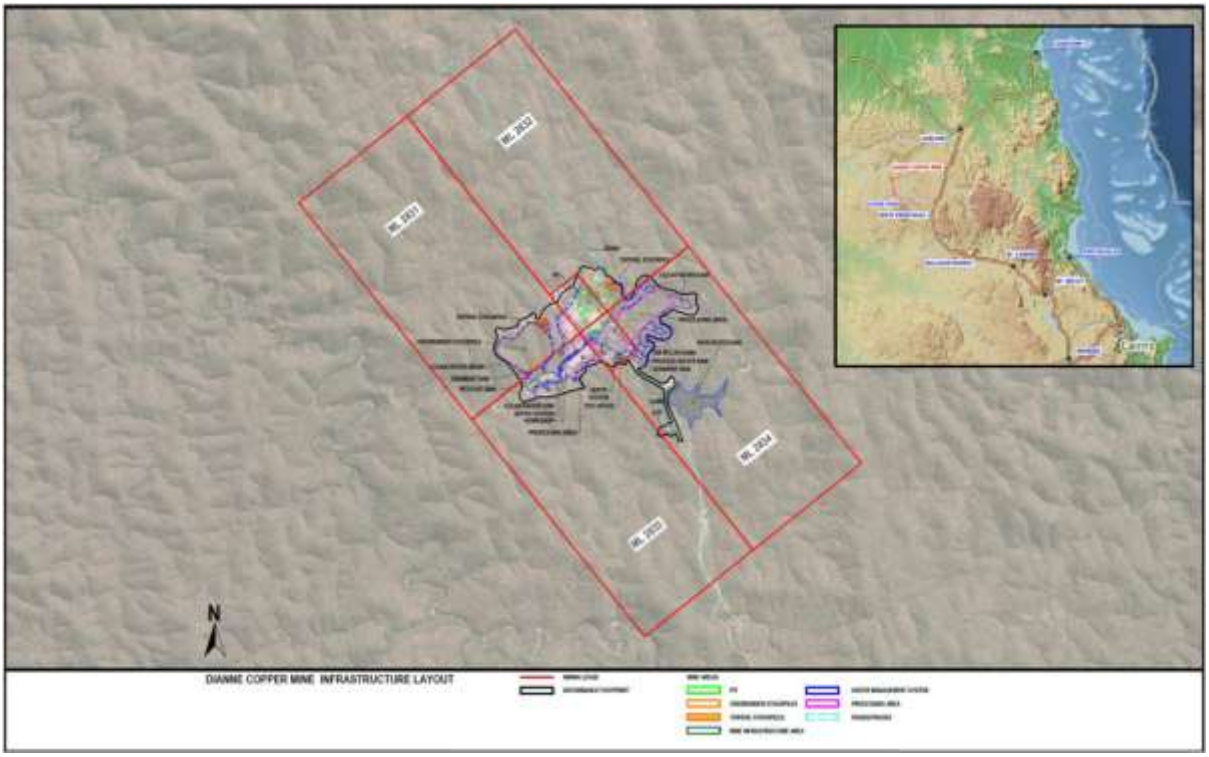

Figure 2: Project Layout

Project infrastructure will include six heap leaching areas, carried out on an HDPE-lined pad (HL Pad) area with dimensions of 300 m in length and 100 m in width. The HL Pad lining will be made with an impermeable 1.5 mm HDPE material, covered by a 300 mm cushion layer to protect the liner from mechanical damage. A total of six heaps, each with dimensions of 100 m length by 50 m width, will be filled at 1 pad per month by truck dumping of ore, followed by stacking and levelling with an excavator to a height of up to 6 m.

Electrowinning and solvent extraction processing will include one electrowinning tank, three separators and mixers, a filter skid, crud area, and six tanks (Figure 4). The electrowinning and extraction areas will be located within closed sheds or similar structures, which will

reduce impacts from noise and dust, reduce evaporation, and reduce environmental risk in relation to heavy rainfall events.

The existing site access roads will be upgraded as part of the project to provide safe and all weather travel. These upgrades will include:

- Installation of Corrugated Steel Pipe Culverts
- Road widening and earth bunds, where required
- Pavement gravel, where required

Detailed design for the project will be completed prior to construction.

The indicative project infrastructure to replace the current Environmental Authority Schedule A – Table 1 (Project Infrastructure Layout) is as follows:

Mine Feature Name	Disturbance Area (ha)	Coordinates GDA 2020 MGA Zone 55	
		Easting	Northing
Pit	4.84	234452.076	8218784.949
		234612.5	8218665.429
		234593.75	8218619
		234438.199	8218636.773
Overburden Stockpile	4.74	234157.83	8218591.617
		234234.333	8218404.911
		234069.598	8218351.495
		233964.15	8218466.431
Release Dam	1.26	234130.233	8218256.389
		234159.378	8218200.644
		234145.038	8218181.894
		234106.027	8218249.316
Process Water Dam	1.31	234622.07	8218613.661
		234700.178	8218525.886
		234643.53	8218491.329
		234575.607	8218557.597
PLS Pond	0.13	234663.646	8218480.361
		234694.099	8218507.021
		234678.744	8218462.079
		234710.055	8218489.968
ILS Pond	0.15	234699.955	8218512.241
		234733.292	8218540.343
		234715.769	8218492.366
		234749.635	8218522.87
Raffinate Pond	0.09	234739.765	8218544.229
		234764.531	8218564.744
		234753.131	8218527.898
		234777.674	8218549.674
Raw Water Dam 2	0.69	234639	8218522
		234559	8218583
		234617	8218609
		234676	8218559

Processing Area	7.02	As Indicated on Schedule G: Figure 1 – Mine Infrastructure Layout
Water Management Dams (Sediment Dams, Clean Water Dams)	4.37	As Indicated on Schedule G: Figure 1 – Mine Infrastructure Layout
Topsoil Stockpiles	0.55	As Indicated on Schedule G: Figure 1 – Mine Infrastructure Layout
Infrastructure (including Roads)	0.84	As Indicated on Schedule G: Figure 1 – Mine Infrastructure Layout
Other Disturbance (including Buffer Areas	24.56	As Indicated on Schedule G: Figure 1 – Mine Infrastructure Layout

The major disturbance areas for the project, per Figure 2, are:

- Infrastructure – incorporating the temporary accommodation village, sewage treatment plant, office, workshop and main roads.
- Pit – incorporating the mining operations pit.
- Overburden Stockpiles – incorporating the temporary and permanent overburden stockpiles.
- Mine Water Management – incorporating all mine water management systems including dams, drains, etc.
- Processing Area – incorporating the ROM area, heap leach pads and Solvent Extraction and Electrowinning Areas.
- Other – incorporating all other disturbance which includes minor access tracks, power and pipe lines, topsoil stockpiles, fire breaks and buffer areas.

An area marked ‘Other Disturbance” zone surrounding the entire project disturbance boundary has been included for the project. These areas are not anticipated to be significantly impacted by the project, and were included in all field surveys and technical studies, including flora and fauna wet season and dry season studies to ensure all potential environmental values for the project were identified. Importantly, they provide space for minor disturbance such as fire breaks and access to monitoring points, in addition to a buffer between mining operations and non-disturbed areas to help mitigate on site impacts. The application is seeking approval for the total disturbance boundary of 50 ha, however 27.8 ha of this is minor disturbance (access roads, power and pipe lines, topsoil stockpiles, etc.) and buffer areas.

Figure 2a: Project Layout - Sewage Treatment Plant Location

The STP will be located at the temporary accommodation village as shown on Figure 2a. It will be adequate for the 40 FTE staff for the project operations, and will be compliant with ERA 63 – Sewage Treatment (i.e. sized between 21 and 100 EP) and will be able to comply with “Eligibility criteria and standard conditions Sewage treatment works (ERA 63)” (ESR/2015/1710).

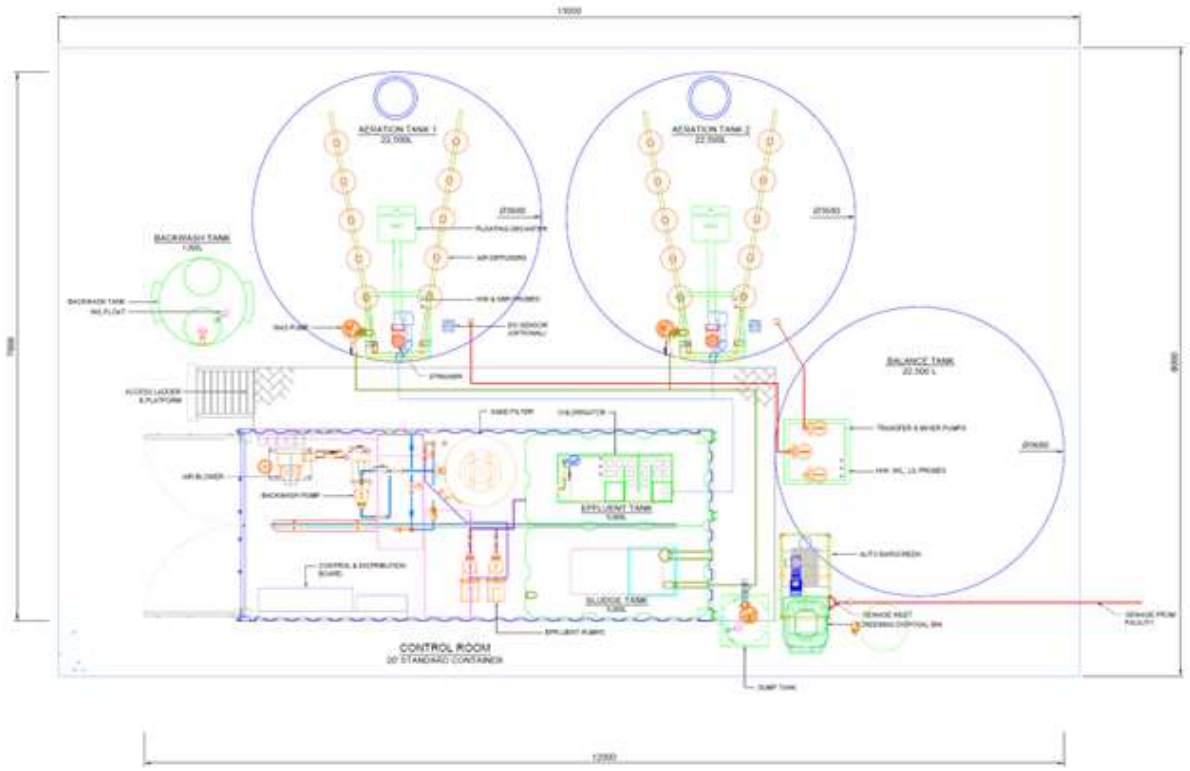

Figure 2b: Project Layout - Sewage Treatment Plant Indicative Layout

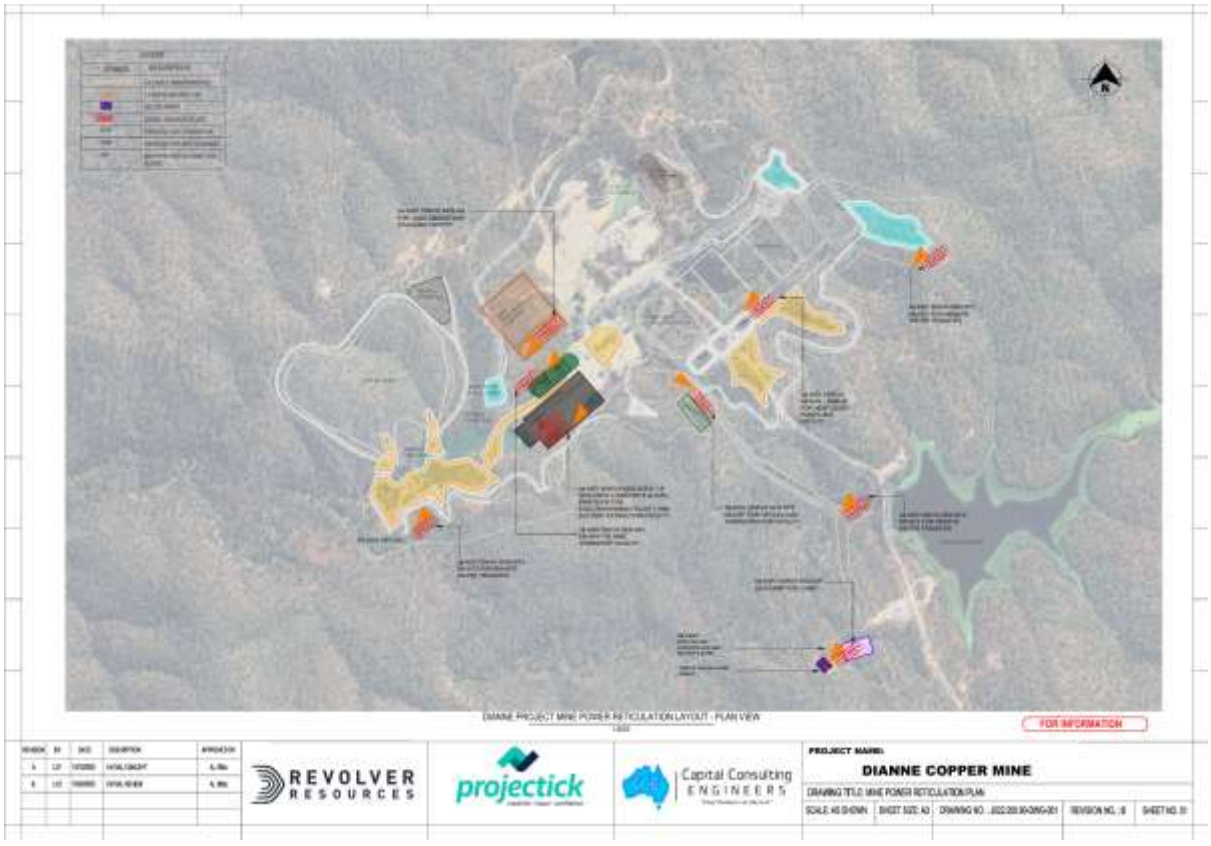

Figure 2c Project Layout – Mine Electrical Reticulation

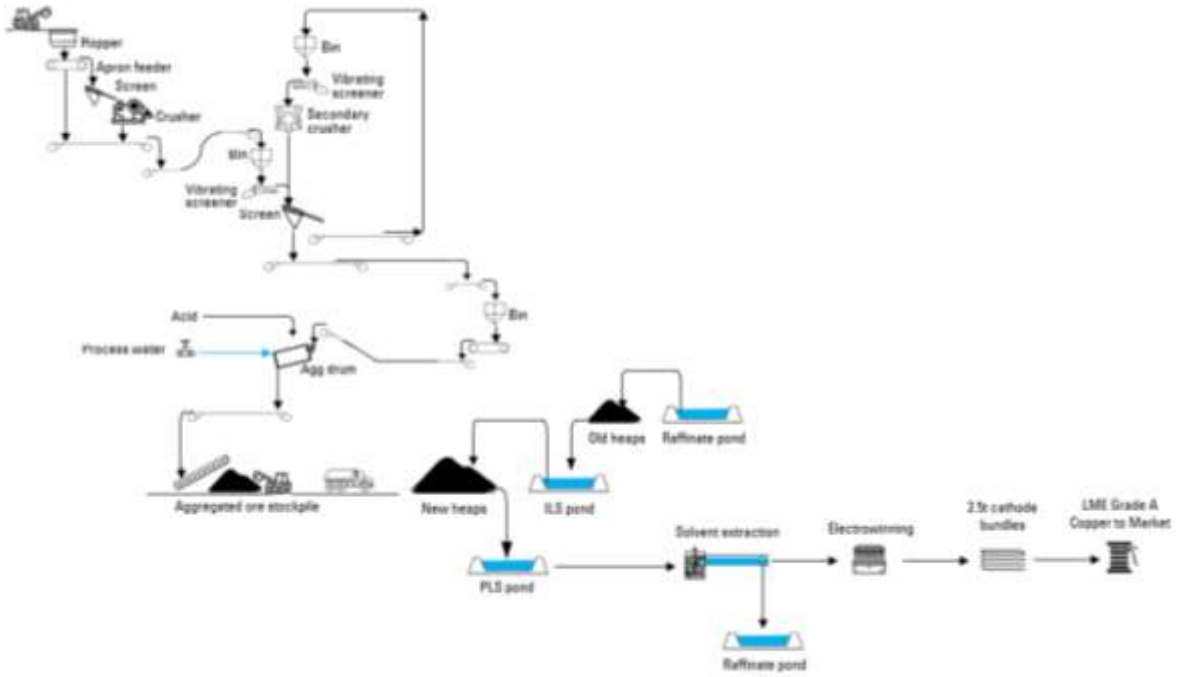

Figure 3: Indicative processing flowchart

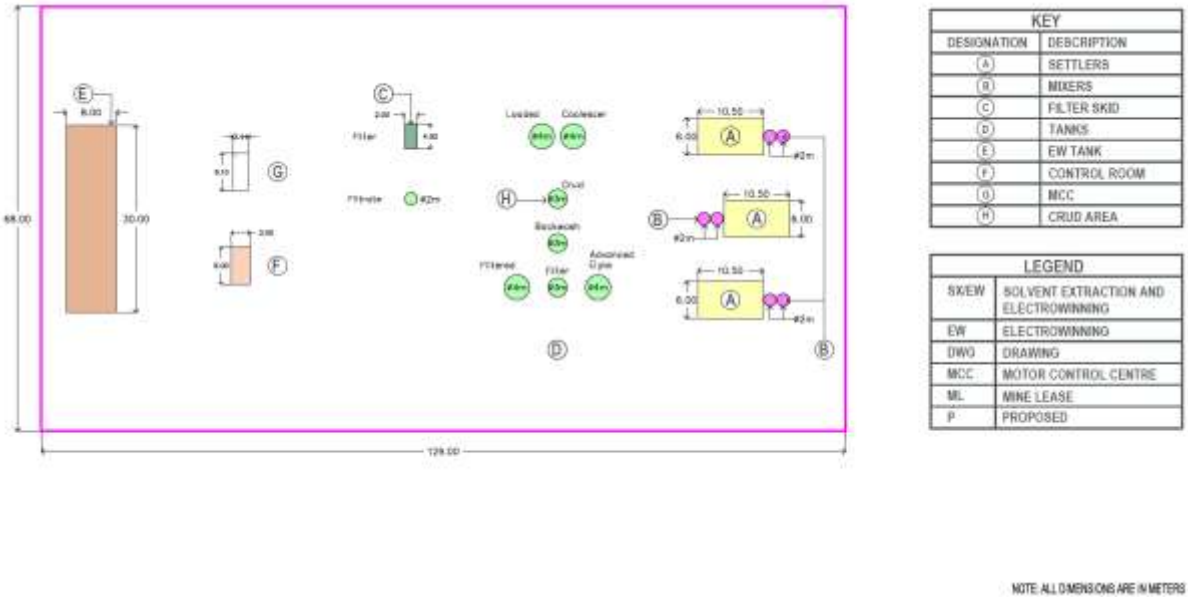

Figure 4: Indicative Processing Infrastructure Layout

It is estimated with currently known resources that the mine life will be 5 years commencing in late 2024 (early construction works, including earthworks and road upgrades), with an additional 6 to 12 months required for closure and rehabilitation. The mining leases are due to expire in April 2028, and an extension will be applied for at a minimum of 12 months prior.

The Dianne deposit is hosted in deformed Paleozoic shale and greywacke of the Hodgkinson Formation. Three distinct styles of mineralisation occur: primary massive

sulphides consisting of pyrite, chalcopyrite and sphalerite; enriched supergene sulphide composed of pyrite and chalcocite and an associated low grade mushroom shaped halo of supergene oxide copper mineralisation, the Green Hill deposit, comprising stockwork and disseminations of malachite, azurite cuprite, tenorite chalcocite and native copper.

The chalcocite enriched sulphide mineralisation from the massive sulphide zone was the source of the high-grade direct shipping ore that was previously mined at the project.

The Dianne Mineral Resource Estimation (MRE) has been independently prepared by resource geologists from AMC in accordance with the JORC Code. The Dianne MRE delivered an Indicated and Inferred Mineral Resource totalling 1.62 Mt @ 1.1% Cu with total contained metal of 18,000 tonnes of Cu. The MRE was calculated based on a 0.5% Cu cut-off for primary and supergene sulphide mineralisation and 0.25% Cu cut-off for Green Hill supergene oxide mineralisation, reported above an elevation of 280m RL (approximately 130 m below surface).

The model has taken into account historic underground and open pit depletions. Some underground development contains a variety of fill mediums, including remnant ore, fall material, sand fill, or void space. Drilling data for the void fill is insufficient to be used for calculation of an MRE.

The Dianne MRE was estimated by ordinary kriging methods for all mineralised zones. The density was assigned according to the mineralised zone and oxidation state, with values ranging from 2.3 to 4.5 t/m3 on the basis of moderate test-work. The resource model emulates an agglomeration of 6.25 mE by 6.25 mN by 2.5 mRL selective mining units (SMUs), in anticipation that any future mining would be small-scale, selective open pit mining.

Copper product will be transported to Townsville via road transport (25 tonne trucks) back-haul at a rate of 4 truck movements per week, on average, for export to international markets given coppers designation as a critical mineral central to supporting the transition to renewable energy. Discussions on any required road/signage upgrades on Council owned roads are ongoing with the Cook Shire Council.

The draft project total disturbance area will be approximately 50 hectares (ha), which includes utilisation of the existing disturbance areas of 14.1 ha (Figure 5).

All areas will be progressively rehabilitated, with detail provided in an updated PRCP to be completed and submitted to the Department of Environment, Tourism, Science and Innovation (DETSI) as part of the project.

Figure 5: ***Dianne Copper Mine Site Aerial (May 2021)***

2.1 Project Need

The Project aligns with the Queensland Government Critical Minerals Strategy, and has received a $1.3M grant from the Queensland Government Critical Minerals and Battery Technology Fund to support further exploration and expedite the recommencement of the mine. The Queensland Critical Minerals and Battery Technology Fund has been established by the Queensland Government to support Australian business to compete globally by enhancing the extraction and processing of critical minerals in Queensland, accelerating the development of battery technologies and production of precursor or advanced materials in Queensland and supporting Queensland jobs and economic growth.

In addition to the detailed environmental studies, process engineering design, and civil engineering design, initial discussions on equipment and workforce procurement have commenced to support the approvals process for the recommencement of copper production as soon as practicable.

2.2 Land Use and Critical Design Assessments

The Project has been designed for closure considerations whilst minimising environmental impacts as far as possible.

The existing site is a historic copper mine in care and maintenance for over 30 years, and as such the Project will assist in the rehabilitation of the sites historical impacts and bring site management to contemporary standards. Significant time and effort has been put into the design of the project to reduce and minimise negative environmental impacts, including:

- Utilisation of the existing disturbance footprint
- Minimising new disturbance
- Confining new disturbance areas to existing disturbed water catchments

- Processing historical waste rock
- Upgrading of existing water management system, including remediation of the Settling Dam
- Implementation of current best practice environmental management and rehabilitation across the site, for both the historic disturbance and project disturbance
- Reducing transport numbers by utilising back-hauls (i.e. trucks delivery material to site will also be the trucks used to haul copper from site to port).

The site is a historic mining area and subject to long term disturbance, there are no areas identified with high conservation values or sensitive land uses within or adjacent to the Project. All relevant environmental values and any impacts on these values are discussed in detail in this EA amendment report. In addition, there are not anticipated to be any negative adverse environmental impacts beyond the mining lease boundaries.

3 Legislative Requirements

3.1 Queensland

The key legislation for this EA amendment is the *Environmental Protection Act 1994* (EP Act) and associated *Environmental Protection Regulations 2019* (EP Regulations) and Environmental Protection Policies, in addition to the Guideline: Major and Minor Amendments (ESR/2015/1684) and associated guidelines for assessment of impacts on environmental values. This EA amendment is made in accordance with Section 226 of the EP Act. The proposed amendments to the current EA are outlined in Table 1. A full copy of the existing EA is provided in Appendix 10.

The EA amendment is considered a major EA amendment.

The *Mineral Resources Act 1989* provides the framework for mining tenure. No mining tenure updates are proposed as part of this amendment. However, the mining leases are due to expire in April 2028, and an extension will be applied for at a minimum of 12 months prior.

Additional legislation, policies and regulations relevant to the management of environmental values such as ecology and water are detailed in technical reports. In summary, these include:

- *Nature Conservation Act 1992*;
- *Water Act 2000* (Water Act);
- *Fisheries Act 1994*;
- Directory of important wetlands of Australia, Ramsar wetlands and the Map of Queensland wetland environmental values;
- *Vegetation Management Act 1999*;
- *Biosecurity Act 2014*;
- Commonwealth and State environmental offsets policy/framework.

As the project is a continuation of historical operations at the site, no additional approvals under the *Planning Act 2016* are expected to be required.

Table 1: *Environmental Authority EPML00881213 (31 July 2023) Proposed Amendments*

EA Condition	Proposed Amendment	Proposed Amendment Justification
Environmentally Relevant Activities: Schedule 3 17: Mining Copper Ore	Add additional ERAs: Schedule 2 8 – chemical storage - 1 storing a total of 50t or more of chemicals of dangerous goods class 1 or class 2, division 2.3 under subsection (1)(a) Schedule 2 30 – metal smelting and refining - (d) more than 10,000t of metals or metalloids Schedule 2 31 – mineral processing - 2 processing, in a year, the following quantities of mineral products, other than coke— (b) more than 100,000t Schedule 2 60 – waste disposal - 2 operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(b)— (a) less than 2,000t Schedule 2 63 – sewage treatment - 1 operating sewage treatment works, other than no-release works, with a total daily peak design capacity of— (a) 21 to 100EP— (i) if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme; or	Updated to reflect new mining activities
Schedule A – Table 1 Project Infrastructure Layout – Mine Area	New coordinates, areas, and infrastructure detail to replace Schedule A – Table 1 provided in Section 2.	Updated to reflect new mining activities
Schedule A Condition A5 An environmental monitoring program sufficient to demonstrate compliance with the conditions of this environmental authority must be developed by an appropriately qualified person and implemented by 1 February 2014.	Remove, condition is now redundant as replaced by new standard conditions of required monitoring	Administrative
Schedule A Condition A8 The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management	Update condition: *The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk*	Administrative

(IS031000:2009), or the latest edition of an Australian Standard for Risk Management, to the extent relevant to environmental management, by 1 May 2014.	*Management (IS031000:2009), or the latest edition of an Australian Standard for Risk Management, to the extent relevant to environmental management*	
Schedule C – Table 1 Release Point Location	Update condition in Section 8.2.	Updated to reflect new mining activities
Schedule C Condition C6 Receiving Environment Monitoring Program	Removal of the implementation date '*by 1 February 2014'*, REMP is in place	Administrative
Schedule C – Table 4 Receiving Waters Monitoring Locations	Receiving Waters Monitoring Locations provided in Section 8.2. Remove footnote in relation to TBAs.	Updated to reflect new mining activities
Schedule C Condition C7 A REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administering authority by 1 February 2014.	Update condition: *A REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administering authority*	Administrative
Schedule C Condition C10 A Groundwater Monitoring Program must be developed by an appropriately qualified person and implemented by 1 May 2014. The Groundwater Monitoring Program must include adequate information and data to allow the administering authority to make an assessment of compliance with Condition C9.	Update condition: *A Groundwater Monitoring Program must be developed by an appropriately qualified person and implemented. The Groundwater Monitoring Program must include adequate information and data to allow the administering authority to make an assessment of compliance with Condition C9.*	Administrative
Schedule C Condition C11 A Water Management Plan must be developed by an appropriately qualified person, in accordance with the administering authority's guideline "Preparation of Water Management Plans for Mining Activities", and implemented at the licensed place by 1 November 2013. The Water Management Plan must be reviewed annually, by 1 September, to assess the adequacy of the plan, ensure actual and potential environmental impacts are managed, and identify any necessary amendments to the plan to ensure compliance with this environmental authority.	Update condition: *A Water Management Plan must be developed by an appropriately qualified person and implemented. The Water Management Plan must be reviewed annually, by 1 September, to assess the adequacy of the plan, ensure actual and potential environmental impacts are managed, and identify any necessary amendments to the plan to ensure compliance with this environmental authority.*	Administrative
Schedule C Condition C12 An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented at the licensed place before 1 December 2013, to	Update condition: *An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented to minimise erosion,*	Administrative

minimise erosion, contamination of stormwater and the release of sediment to receiving waters.	*contamination of stormwater and the release of sediment to receiving waters.*	
Schedule D Condition D3 The only waste that can be disposed at the licensed place is waste generated at the licensed place, and is limited to waste rock.	Remove condition. ERA 60 – Waste Disposal to be included in the Environmental Authority.	Updated to reflect new mining activities
Schedule D Condition D6 Waste Rock Management Plan	Removal of the implementation date '*by 1 February 2014'*	Administrative
Schedule D Biodiversity Conditions 8 to 12	Remove condition. The entire proposed disturbance area has undergone appropriate flora and fauna surveys in line with required guidelines, with the technical reports attached to this application. No additional significant residual impacts are expected and rehabilitation will be completed to match pre-mining environment. As such, no biodiversity offsets are proposed. Detailed assessment on ecology is provided in Sections 9 and 10, including mitigation measures that will be put in place for the project.	Updated to reflect new mining activities
Schedule E Condition E0 A hazard assessment report and certification must be prepared for each structure classified as hazardous and must be provided to the administering authority before 1 November 2013. The hazard category of any structure on site must be assessed by a suitably qualified and experienced person in accordance with the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635).	Update condition: *A hazard assessment report and certification must be prepared for each structure classified as hazardous and must be provided to the administering authority. The hazard category of any structure on site must be assessed by a suitably qualified and experienced person in accordance with the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635).*	Administrative
Schedule E – Table 1 Location of Regulated Structures	Details of updated regulated structures are provided in Section 8.3. Exact locations of the structures will be confirmed during detailed design and provided to the Administering Authority for inclusion in the EA. Update footnote that TBA details to be provided to the administering authority by 1 November 2025	Updated to include detail on additional mining activities, detail to be included once constructed

Schedule E – Table 2 Basic Details of Regulated Dams	Details of updated regulated structures are provided in Section 8.3. Details of the structures, including completion of a CCA and for construction drawings, will be confirmed during detailed design and provided to the Administering Authority for inclusion in the EA. Update footnote that TBA details to be provided to the administering authority by 1 November 2025	Updated to include detail on additional mining activities, detail to be included once constructed
Schedule E – Table 3 Hydraulic Performance of Regulated Dams	Details of updated regulated structures are provided in Section 8.3. Details of the structures, including completion of a CCA and for construction drawings, will be confirmed during detailed design and provided to the Administering Authority for inclusion in the EA. Update footnote that TBA details to be provided to the administering authority by 1 November 2025	Updated to include detail on additional mining activities, detail to be included once constructed
Schedule E - E35 Each regulated structure listed in Schedule E – Table 1 must within a period of five years (the transitional period) from the date this environmental authority takes effect, meet the performance requirements of conditions E34 and E35	Delete	Removal of transitional conditions
Schedule E - E36 During the transitional period, for each declared regulated structure listed in condition E33, either: a) Certification must be provided, by a suitably qualified and experienced person, in the form set out in the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams: i.that the declared regulated structure is suitable for use as a regulated structure and can be transitioned to meet with either conditions E34 and E35 of this authority; and ii.of any design plans for the modification of the declared regulated structure where modification is required to meet with either conditions E34 and E35 of this authority; or b)	Delete	Removal of transitional conditions

The declared regulated structure must be decommissioned.		
Schedule G – Figure	New figure provided in Appendix 11	Updated to reflect new mining activities
PRCP	Per Appendix 6	Updated to include detail on additional mining activities
PRCP Schedule	Per Appendix 6	Updated to include detail on additional mining activities

The following Environmentally Relevant Activities (ERAs) will occur for the project:

- Schedule 2
  - ERA 8 – chemical storage - 1 storing a total of 50t or more of chemicals of dangerous goods class 1 or class 2, division 2.3 under subsection (1)(a)
  - ERA 30 – metal smelting and refining - (d) more than 10,000t of metals or metalloids
  - ERA 31 – mineral processing - 2 processing, in a year, the following quantities of mineral products, other than coke— (b) more than 100,000t
  - ERA 60 – waste disposal - 2 operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(b)— (a) less than 2,000t
  - ERA 63 – sewage treatment - 1 operating sewage treatment works, other than no-release works, with a total daily peak design capacity of— (a) 21 to 100EP— (i) if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme; or
- Schedule 3
  - ERA 17 – mining copper ore

Under EA Condition A16, exploration will comply with Standard Environmental Conditions contained in the "Eligibility criteria and standard conditions for exploration and mineral development projects“ (ESR/2016/1985).

ERA 63 – Sewage Treatment will be able to comply with “Eligibility criteria and standard conditions Sewage treatment works (ERA 63)” (ESR/2015/1710).

No other ERA Standard Conditions are requested for the project.

The following notifiable activities (NA) will occur for the project:

- NA 7 chemical storage - other than petroleum products or oil under item 29)—storing more than 10 t of chemicals (other than compressed or liquefied gases) that are dangerous goods under the dangerous goods code.
- NA 20 Landfill - disposing of waste (excluding inert construction and demolition waste).
- NA 24 Mine wastes –
  - storing hazardous mine or exploration wastes, including, for example, tailings dams, overburden or waste rock dumps containing hazardous contaminants;
  - or exploring for, or mining or processing, minerals in a way that exposes faces, or releases groundwater, containing hazardous contaminants.
- NA 25 Mineral processing - chemically or physically extracting or processing metalliferous ores.
- NA 29 Petroleum product or oil storage—storing petroleum products or oil—
  - in underground tanks with more than 200 L capacity; or
  - in above ground tanks with—
    - for petroleum products or oil in class 3 in packaging groups 1 and 2 of the dangerous goods code—more than 2500 L capacity; or
    - for petroleum products or oil in class 3 in packaging groups 3 of the dangerous goods code—more than 5000 L capacity; or
    - for petroleum products that are combustible liquids in class C1 or C2 in Australian Standard AS 1940,‘The storage and handling of flammable and combustible liquids’ published by Standards Australia—more than 25 000 L capacity.

The current Estimated Rehabilitation Cost (ERC) was approved on 17 May 2022. The ERC will be updated upon approval of the EA amendment.

3.2 *Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act covers nine protected matters, as outlined in Table 2.

Table 2: *EPBC Act Protected Matters*

EPBC Act Protected Matter	Anticipated Project Impact
World Heritage areas	Nil – none present within the mining leases
National Heritage places	Nil – none present within the mining leases
Wetlands of International Importance	Nil – none present within the mining leases
Listed threatened species and ecological communities	No listed threatened ecological communities mapped or present. Listed threatened species within the mining leases, discussed in Section 9.
Listed migratory species	Listed migratory species within the mining leases, discussed in Section 9.
Commonwealth Marine Areas	Nil – none present within the mining leases
Great Barrier Reef Marine Park	Nil – none present within the mining leases
Nuclear actions	NA – project does not involve nuclear actions
Water resources (coal seam gas and large coal mines)	NA – project does not involve coal seam gas and is not a large coal mine

A detailed Terrestrial Ecology Technical Report (Appendix 4) has been prepared for the project and describes in detail the potential for Listed threatened species and ecological communities and Listed migratory species to be present on the project site and potential impacts from the project.

The project is not anticipated to have any residual, significant impact on any EPBC Act protected matters under the *Guideline: Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*, and a self-assessment for the project has been completed as detailed in Section 9.2.

4 Background Information

4.1.1 Mining Tenements

The mining titles held for the mine are outlined in Table 3.

Table 3: *Mining Tenements*

Title	Type and Purpose	Status	Grant Date	Expiry Date	Area
ML 2810	Mining and exploration	Granted	24/04/74	30/04/28	5.7
ML 2811	Mining and exploration	Granted	24/04/74	30/04/28	5.7
ML 2831	Mining and exploration	Granted	2/08/73	30/04/28	129.5
ML 2832	Mining and exploration	Granted	15/11/73	30/04/28	123.8
ML 2833	Mining and exploration	Granted	15/11/73	30/04/28	129.5
ML 2834	Mining and exploration	Granted	15/11/73	30/04/28	123.8

4.1.2 Landownership

Underlying tenure for all leases is Lot 66 SP245572, owned by Bonny Glen Holding under a Lands Lease rolling term lease pastoral holding. Bonny Glen Holding is owned by the Gummi Junga Aboriginal Corporation (GJAC), who are also the Traditional Owner representatives of the land. The proponent has an agreement with GJAC for mining activities within the mining leases.

The Bonny Glen Holding is a grazing property and is also the adjacent land holding to the site.

The Western Yalanji Aboriginal Corporation RNTBC are the registered Native Title body across the site under Native Title Determination QCD1998/001, QCD2006/001, QCD2013/002, QCD2013/003 as registered on 30/12/1998.

4.1.3 History of Dianne Copper Mine and Copper Ore Reserves

There is a long history of exploration activities that have been undertaken within the Dianne Copper Mine mining leases.

The Uranium Corporation commenced exploration activities in 1958 at the Dianne Copper Mine to assess the deposit. These exploration results were inconclusive.

In 1968, North Broken Hill Pty Ltd carried out core drilling and calculated reserves of 451,000 tonne of oxidised copper ore, although no mining was carried out as reserves were below company targets.

In 1969, Kennecott Exploration Pty Ltd carried out further drilling. The rich supergene zone of the copper massive sulphide deposit was discovered in Kennecott Exploration's second drill hole in 1968, with an intercept of three metres of 30% copper.

In 1979, Mareeba Mining and Exploration Pty Ltd acquired the deposit. Once acquired, they then estimated 90,000 tonnes of ore at 24% copper was located within the mining leases, and commenced developmental work. Production of direct shipping grade ore commenced and

the secondary copper was mined to a depth of 90 m where it gave way to a massive sulphide ore. All of the ore from this operation was trucked to Cairns and shipped to Japan and Korea as direct shipment ore (DSO).

Partial mining in the period 1979-82 extracted some 68,000 tonnes of ore at 23% copper by open stoping, with a further 5,800 tonnes of 22% copper from a near-surface open cut. The operation was terminated at the end of 1982 due to the fall in world copper prices.

Mareeba Mining and Exploration Pty Ltd carried out mining as an underground operation followed by a short period as an open cut mine, ending in 1983. It was then taken over by Nickmere Pty Ltd the ownership was transferred to DMC (Dianne Mining Corporation Pty Ltd). Ownership of the DCM changed hands in mid-2005. In 2019/2020, the operation of the mine changed from DMC to Mineral Projects Pty Ltd and Tableland Resources Pty Ltd.

5 Community Consultation

Consultation on the proposed project including the scale of the project, operational requirements, employment and local business opportunities, and post mining land uses. An important part of the consultation includes impacts of the project on the local environment, steps proposed to mitigate environmental impacts and progressive mine rehabilitation methods required to support mine closure land use i.e. cattle grazing. Consultation has been undertaken to date with the landowners, Traditional Owners, the Cook Shire Council and the DETSI as outlined in Table 4. The Palmer River Roadhouse was also consulted for the project due it being the closest place of accommodation to the project. Due to the remoteness of the site, there are no towns or additional sensitive receptors within the vicinity of the mine that may be impacted by mining activities, rehabilitation outcomes and/or post mine land uses.

The landowner and Traditional Owner representatives Gummi Junga Aboriginal Corporation (GJAC) have been involved with the final land use considerations and have provided written agreement on post-mining land use (namely to retain valuable infrastructure (access roads and freshwater dam) and to rehabilitate to cattle grazing land to continue support for surrounding agricultural practices).

Consultation has shown that the community generally supports the recommencement of the mine and the project as a whole.

Table 4: ***Community Consultation Register***

Consultation Date	Community Member	Consultation Type	Information Provided	Issues Raised	How Issues Were Considered	Outcomes/Decisions and Commitments
Jun-08	GJAC	Meeting	Compensation agreement – commercial in confidence	Compensation agreement – commercial in confidence	Compensation agreement – commercial in confidence	Compensation agreement – commercial in confidence
Oct-19	GJAC	Meeting	Infrastructure figure	Infrastructure to remain post mining	Request from GJAC agreed	Agreement to retain access roads, Raw Water Dam 1 and Raw Water Dam 2 post mining
Nov-19	GJAC – Barb Rose and Eric Rosendale	Meeting	Introduction to Mineral Projects, outlined future works plan including site improvements	Nil	NA	Commitment to address legacy environmental issues.
Jan-20	GJAC – Barb Rose	Meeting	Access and security updates	Nil	Nil	Location of new gates on access roads. 2 x sets of keys provided to GJAC. Continued access to GJAC for stock movement
Feb-20	Cook Shire Council - Linda Cardew and Robyn Holmes	Meeting and workshop in Cooktown	Outline of intended activities on site, including traffic use and frequency of activity along public access roads.	Nil. Request by Council to notify of any recommencement of permanent operations.	Agreed.	Council to be notified of any recommencement of operations.
Jun-20	GJAC – Barb Rose	Meeting and site visit	Site visit to show extent of works completed on site and inspection by GJAC	Recognition from GJAC about the significant positive impact made by Mineral Projects since commencing. Barb stated we were the first and only group who had lived up to commitments made in relation to site work and all commercial payments.	NA	Nil
Aug-20	GJAC – Lenore Casey	Meeting	Presentations made on work achievements completed and outline of	Nil	NA	Nil

Consultation Date	Community Member	Consultation Type	Information Provided	Issues Raised	How Issues Were Considered	Outcomes/Decisions and Commitments
			future work scope.			
Apr-21 to Aug-21	GJAC – Leeann Latu and Stephen Wallace	Meeting	Presentations provided on site works completed and improvements completed.	Nil	NA	Agreement reached to include GJAC on any work involving new disturbance of any areas across the ML's.
Various - 2021	DETSI	Emails and phone discussion	Draft PRCP information	PRCP requirement	All comments are being updated in the PRCP for submission	Update PRCP prior to submission
Jul-21	DETSI	Online meeting	Draft PRCP	Per email correspondence	All comments are being updated in the PRCP for submission	Update PRCP prior to submission
Sept-21	DETSI	Online meeting	Draft PRCP	Per email correspondence	All comments are being updated in the PRCP for submission	Update PRCP prior to submission
Dec-21	DETSI	Online meeting	Draft PRCP	Per email/DETSI correspondence	All comments are being updated in the PRCP for submission	Update PRCP prior to submission
Mar-22	DETSI	Online meeting	Draft PRCP	Per email/DETSI correspondence	All comments are being updated in the PRCP for submission	Update PRCP prior to submission
Sept-22	GJAC	Meeting	Ongoing site updates with a focus on exploration activities	Nil	NA	GJAC involvement in ongoing exploration clearance works
Oct-22	DETSI	Online meeting	Draft PRCP	Per email/DETSI correspondence	All comments are being updated in the PRCP for submission	Update PRCP prior to submission
Sept-23	DETSI	On site inspection	Overview of current activities, brief update on proposed project	Focus on current operations		
Jul-24	DETSI	Online meeting	Overview of EA amendment and updates to PRCP	Per email/DETSI correspondence		
Aug-24	DETSI	On site inspection	Overview of current activities and update on proposed project	Agree the project will provide positive environmental outcome,	On going discussions on remediation plan and current options	Ongoing per discussions with DETSI

Mineral Projects

Consultation Date	Community Member	Consultation Type	Information Provided	Issues Raised	How Issues Were Considered	Outcomes/Decisions and Commitments
				DESI focus on remediation of Settling Dams		
Jul-24	Cook Shire Council – Mayor Holmes, CEO Joiner and full Council	Meeting	Presentation to full Council membership on the details of the mine recommencement	Nil. Request to maintain ongoing liaison with Manager Engineering Infrastructure for any Whites Creek Road upgrade requirements	Strong support for regional activity and potential employment opportunities	Inform Council again once timetable for planned operations commencement is known
Jul 24	GJAC – President Anthony Rosendale	Meeting	Presentation and detailed outline of mine recommencement, duration of work and scale of upgrade activities	Employment opportunities and Bonny Glen station assistance in proximity to mine (fencing, fire breaks, access roads)	Strong support for mine recommencement and the eventual planned rehabilitation of the mine area	Ongoing GJAC engagement in the lead up to operations commencement.
Jul 24	Palmer River Roadhouse – Brett Moylan and Kierstan Simon (Owners)	Meeting	Presentation and detailed outline of mine recommencement, duration of work and scale of upgrade activities	Potential increase of new business generated from mine reopening, potential catering/employment interest.	Discussed the type and nature of operations. Brett and Kierstan have worked in the CQ coal industry previously.	Ongoing engagement in the lead up to operations commencement.
Feb 24, Mar 24, Apr 24, May 24, Jun 24, Jul 24	WYAC – Brad Grogan, Floyd, DJ Williams, Danny Le Chu	Meetings, Site Clearance, Ecology Surveys	Several ongoing meetings, presentations and workshop discussions relating to mine recommencement activities	Employment, training, skills development of younger GJAC community	Strong levels of interest in participating in both construction and future operations activities.	Maintain ongoing meetings to outline timetable of planned activities.
Jul 24	Mareeba Shire Council – Mayor Toppin , CEO Franks	Meeting	Presentation and outline timetable of planned recommencement. Mareeba will be a prominent location for support services and mine employment.	Nil	Strong support for regional activity and potential employment opportunities	Inform Council again once timetable for planned operations commencement is known
Apr 24, May 24, Jun 24, Aug 24	Palmerville Station – Darren Pearson (Western neighbouting station)	Online meeting	Presentation and detailed outline of mine recommencement, duration of work and scale of upgrade activities	Interest in potentially providing some accommodation and heavy earthmoving equipment to support the project	Understood capability of Palmerville and discussed timeframe and potential camp capacity/location	Maintain regular contact as construction and operations commence.

Mineral Projects

Consultation Date	Community Member	Consultation Type	Information Provided	Issues Raised	How Issues Were Considered	Outcomes/Decisions and Commitments
Jul 24	Maitland Downs Station – John and Tanya Ahlers (Eastern neighboring station)	Meeting	Presentation and detailed outline of mine recommencement, duration of work and scale of upgrade activities	Nil	Strong support for mine recommencement and activity into the region.	Occasional updates on progress once the operations commencement was imminent.

**All references to GJAC refer to consultation with GJAC as both the landowner and Traditional Owner representatives*
**All references to DETSI also refer to previous versions of the Department*

6 Mine Waste, Overburden and Geochemistry

6.1 Geological Setting

The Groundwater and Surface Water Report (C&R, 2024) details the geological and hydrogeological setting of the project site. In summary, the site is located within the Hodgkinson Province of the Mossman Orogen, comprising a deformed Ordovician to early Carboniferous sedimentary package with minor, mafic volcanics. The area of the site in the central-northwestern Hodgkinson Province is characterised by shallow, plunging, isoclinal folding and associated north/northwestern, pervasive, slaty cleavage. The dominant fault system trends north to northwesterly, subparallel to the major bedding and cleavage direction. Displacement along faults is mostly indeterminate. However, associated north-plunging kink folds along north- /northwest-trending faults east of the site suggest oblique-slip movement. A later east-/southeast-trending fault set persists across the region, along with extensive dolerite dykes aligned parallel to the northwest major faults. These structures and fabrics are associated with the main shortening events (D1 and D2) of the Mossman Orogen. Additionally, a northeast-trending lineament array is notable across the lease area. This array is interpreted as conjugates to the major north-/northwest-trending faults, and possible dilatational faults or joints. Creeks commonly follow these lineaments.

6.2 Mine Waste and Overburden

There are three mine waste streams to be produced from the project, namely:

- Overburden = material removed from above the ore body to allow the excavation of ore, in addition to any material below ore cutoff grade (being 0.25% copper). Overburden material will be used in construction, to backfill the pit for final landform design, and remainder placed in an Overburden Stockpile.
- Spent Ore = the material that remains once processing is finished. Spent Ore material will be used to backfill the pit for final landform design where shown this is geochemically suitable, and remainder placed in an Overburden Stockpile.
- Waste Rock = the existing waste rock stockpile leftover from historic operations. Once reprocessed, waste rock will be treated as Spent Ore.

The Project will be reworking old mine waste stockpiles from mining of the old pit, which will provide an improved environmental outcome post-mining with these areas rehabilitated to current standards and the removal of historic waste stockpiles and other legacy environmental impacts.

The project will also utilise geochemically benign overburden for construction, including building up the heap leach pad bases and for road construction.

Mined waste rock and overburden material from the project will consist of a range of rock types, including unmineralised material and material from the mineralised zones below the copper cut-off grades. Several of these rock types are likely to be highly pyritic (i.e. likely potentially acid forming and a potential source of acid mine drainage). The current mine schedule estimates that 96% of the waste rock that will be mined from the pit is from the unmineralised zone, assumed non-acid forming material. This material will be used in construction and to encapsulate the potentially acid forming material in the waste rock storage

areas. The waste rock characterisation program is planned to validate and improve the confidence in this assumption.

More than 95% of the ore planned to be reached is oxide ore, while the remaining 5% is secondary sulphide ore. After leaching, spent ore may still contain significant loadings of sulphuric acid and readily leachable metals and metalloids as well as sulphides that may have not oxidised completely over the course of residence time at the heap leach pad. These materials represent a potential source of acid mine drainage while stored at the waste dump as well as within the open pit void upon emplacement. Column leach tests of ore materials are currently underway which will provide material representative of spent ore for additional test work (MEC, 2024).

A detailed Mine Waste Rock Management Plan is in place for the existing mine and has been updated to include the project overburden and spent ore management plan, rehabilitation, and closure design. The Mine Waste Rock Management Plan is provided in Appendix 1.

The final Overburden Stockpile will be used to stockpile both overburden and spent ore not used in construction or to backfill the pit. In addition, there will be a temporary overburden stockpile to the east of the pit of approximately 200,000 m^3. The final volume used to backfill the pit will be approximately 1,000,000 m^3. The final volume of in the stockpile will be approximately 550,000 m^3. Figure 6 shows the stockpile, with a capacity of 665,000 m^3, which exceeds the required final capacity by over 100%. As the majority of the pit backfilling will only be done after completion of mining operations, this will allow for temporarily stockpiling.

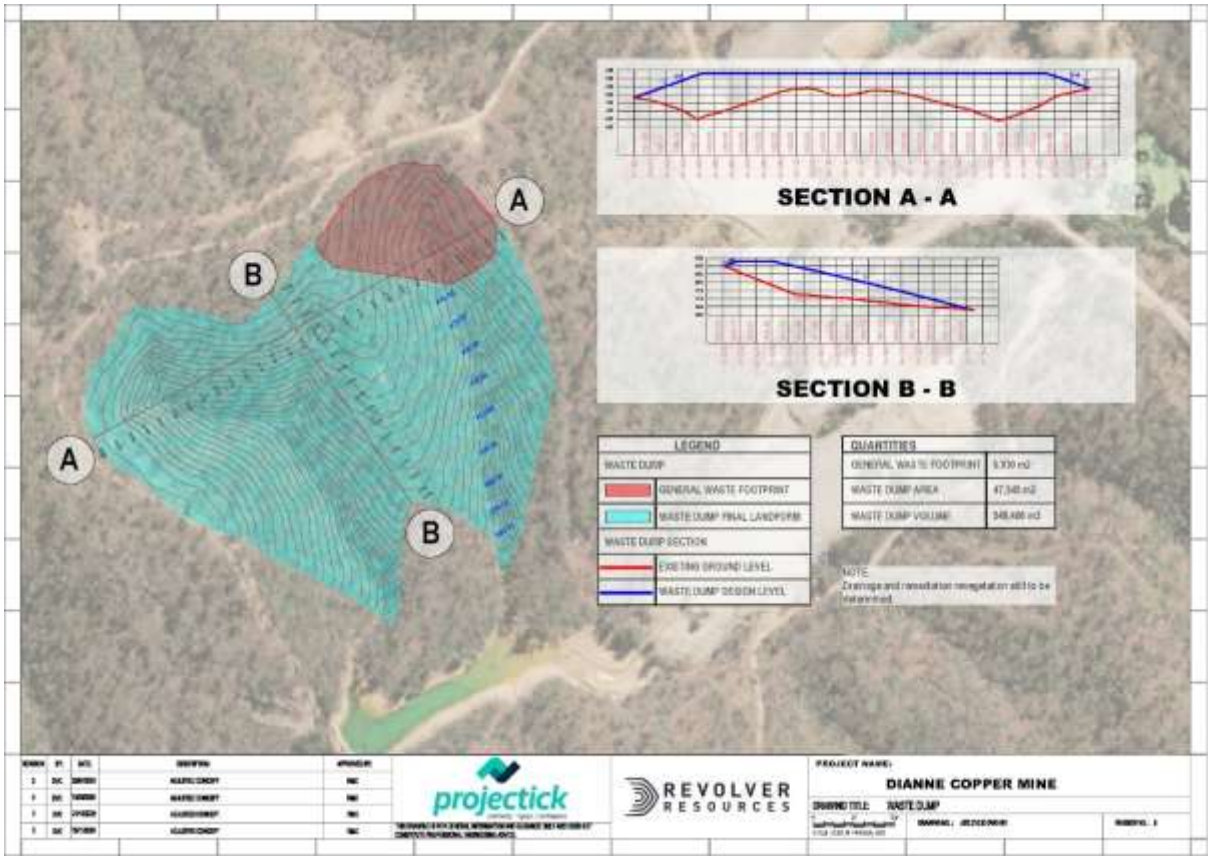

Figure 6: Overburden Stockpile

At final landform, the temporary overburden stockpile will be removed and used to backfill the pit, in addition to use as cover for the main Overburden Stockpile. The Overburden Stockpile will be reshaped with batters at a maximum grade of 2.75H to 1V, to provide a factor of safety 1.5 or greater. Similarly, where structures were built using overburden, such as the HL Pads, they will be reshaped. All areas will be topsoiled and revegetated. Further detail is provided in the PRCP (Appendix 6).

6.3 Geochemistry

The ore will be processed on-site using heap leaching, solvent extraction, and electrowinning, as described in Figure 3. Heap leaching separates the copper metal from the surrounding waste rock by percolating dilute sulphuric acid (H2SO4) using sprinklers or drippers at 1 m spacings. The acid reacts with the copper, outputting a copper-containing liquor. This is recirculated through the leach stockpiles until the concentration of the liquor is suitable for further processing. It is then referred to as Pregnant Leach Solution (PLS). The PLS is pumped to the Solvent Extraction (SX) plant where the solvent extraction process extracts the copper into an electrolyte and the dilute acid is then recycled back to the leaching process described above. The electrolyte then enters the final process where copper metal is recovered onto cathode plates using an electrical current.

The concentration of copper leaching from each stockpile will reduce over time. Leaching will be discontinued for a stockpile when copper recovery is not sufficient to justify continuing the

leaching, which is currently forecast at 85% of total contained copper metal (terminal recovery). Once leaching is discontinued, ore will be rinsed and removed from the heap leach pad to enable the next stockpile of ore to be loaded and leaching commence. There will be 6 leach pads on-site, each with a height of up to 6m, and a land area of 100*50m. Each leach pad will be filled and removed progressively to produce an ongoing cycle of operations across the 6 pads. Heap leach pads will be constructed with a 1% grade on the floor to capture the liquor and lined with a 1.5mm High-Density Polyethylene (HDPE) impermeable plastic lining for PLS capture. The heap leaching area drains to HDPE lined ponds.

Ore composition at the mine site consists of three main ore types:

- oxide ore;
- chalcocite, or secondary sulphide; and
- primary sulphide ore.

Of the 1.5 million tonnes of ore, roughly 1.4 million is oxide, mainly malachite ($Cu_2CO_3(OH)_2$). Oxide ore contains no sulphide minerals capable of forming sulfuric acid. In addition, geochemical testing of ore conducted in 2024 showed no formation of acid while leaching oxide ores. Due to these factors, it is assumed that spent oxide ore is non-acid forming (NAF). Further Nett Acid Generation tests (NAG tests) are to be performed on the spent ore from leaching trials later in 2024 to verify this assumption (that the spent oxide ore is NAF). Once oxide ores have been leached to terminal recovery, they will be rinsed, removed from the leach pads and mixed with the overburden.

Secondary sulphide ores will also be processed onsite by heap leaching and SX/EW. Further geological sampling and modelling is ongoing, but based on current sampling there is 100,000 tonnes of secondary sulphide ore. Extracting copper from chalcocite requires using ferric sulphate ($Fe_2(SO_4)_3$) instead of sulphuric acid. Geochemical studies are ongoing, but initial indications show that the secondary sulphide ore is acid-consuming. However, some potential may exist for minor acid generation in the later leaching stages. Due to this, spent secondary sulphide ore is currently being considered as potentially acid-forming (PAF), pending results from NAG testing of the spent ore from leaching trials of the secondary sulphide ores.

Primary sulphide ores consist of complex ores that do not respond to leaching and are typically PAF. To the extent possible, primary sulphide ores will not be mined, but where they must be mined for safe access to the recoverable ore, they will be trucked offsite to a suitable copper processing facility. Geological modelling and pit delineation to assess the quantity of primary sulphide is ongoing.

A detailed Waste Rock Management Plan has been completed for the project and includes information regarding the project geochemistry (Appendix 1).

7 Groundwater

The existing groundwater environmental values for the project have been described in detail based on multiple field surveys, and detailed in Appendix 3. In summary:

- The watercourses within the project site are intermittent to ephemeral, with most sites have a habitat condition of moderate to good.
- No registered groundwater bores exist within the bounds of the mining leases or within a 10 km radius.
- There are no wetlands of significance within the project site.
- Groundwater quality data displays no evidence of impacts from historical mining operations

Potential project impacts to groundwater water values include:

- Physical disturbance and associated habitat loss.
- Changes in the groundwater regime.
- Mine affected water releases.

A detailed groundwater investigation and impact assessment was completed for the project, as provided in C&R Consulting's Groundwater and Surface Water Report (Appendix 3).

In summary:

- No registered groundwater bores exist within the bounds of the mining leases, or within a 10 km radius. There are 23 registered bores within a 30 km radius of the site, of which 9 are abandoned. These bores are utilised for groundwater monitoring of nearby mines, exploration, and homestead water supply.
- There are no mapped groundwater dependent ecosystems (GDEs) within the mining leases, however most of the waterways within the local area are considered GDEs because water (flows and remnant pools) is maintained for an extended period (i.e. months) following significant rainfalls.
- Groundwater quality data displays no evidence of impacts from historical mining operations.

The project will be operated in a way that protects the environmental values and minimises impacts to groundwater and any associated surface ecological systems. Mitigation measures including a risk management strategy is to be put in place for the project to reduce impacts on groundwater environmental values include:

- Mine water management strategies will be in place to reduce potential impacts to groundwater quality (Appendix 2).
- Monitoring programs are in place, including groundwater, surface water, and Receiving Environment Monitoring Program (REMP).
- Vegetation species used within rehabilitation are not dependent on permanent groundwater resources.
- There will be no direct release of contaminants to groundwater.
- Reducing disturbance footprint and progressive disturbance
- Progressive rehabilitation

- Water releases to occur from a set release point at the Release Dam
- Implementation of a detailed Water Management Plan
- Ongoing groundwater monitoring
- Final Landform Cover Design to be implemented, including store and release cover systems, for the overburden stockpiles and backfilled pit.

Underground water rights are not proposed to be changed from historical operations i.e. groundwater inflow to the pit and the option to use groundwater for operations/camp requirements. However, historical operations were completed prior to the *Water Act 2000* being in place. As such, a conservative approach has been taken such that underground water rights are required for the project, under *Guideline: Requirements for site-specific and amendment applications—underground water rights* and Section 126A of the EP Act, for non-associated water use. Detail on the groundwater regime and aquifers present on site is detailed in the Groundwater and Surface Water Report, with water use for the project including groundwater use described in the Mine Water Management Plan. It is expected that limited groundwater will be present, and with mitigation measures in place, no significant negative impacts to groundwater environmental values, water quality, water levels, or surrounding groundwater bores are expected from the project.

A groundwater monitoring program has been developed by suitably qualified and experienced hydrogeologists, with three groundwater monitoring bores were drilled on site in June and July 2022:

- DCM_GW01 located north and upstream of all mining activities – total depth of 86.5 m, targeted Hodgkinson Formation – Fault
- DCM_GW03 located downstream of mining activities including mine water management structures – total depth of 58 m, targeted Hodgkinson Formation – Fracture
- DCM_GW04 located east and upstream of all mining activities – total depth of 83 m, targeted Hodgkinson Formation – Fracture

These bores are monitored at least biannually, with continuous water level loggers also installed in each bore. The groundwater monitoring program aims to get an accurate understanding of the site hydrogeology, the existence of groundwater, elevations, flow direction, yield, quality, and confirm the level of surface water / groundwater interaction.

A detailed Mine Water Management Plan is in place for the existing mine and has been updated to include the project groundwater system and potential impacts. The Mine Water Management Plan is provided in Appendix 2.

7.1 Hydrogeology

A hydrogeological assessment of the site has been completed as part of the detailed Surface Water and Groundwater Report (Appendix 3).

The project site – associated with an elevated bedrock plateau (~400–450 m AHD [metres Australian Height Datum]) to the west and south of the Great Dividing Range – lies within the

surface water catchment system of the Mitchell–Coleman rivers. The local, geological context of deformed, metamorphosed, fractured, folded and faulted, fine- to medium-grained siltstone and sandstone (Hodgkinson Formation) is characteristic of a fractured aquifer system. Groundwater storage is most likely within open cavities within the indurated, low permeability siltstone and sandstone host rock, and associated with joints and fractures developed through multiple deformation events. Moderate- to highly-weathered, near surface rocks are potential additional groundwater repositories.

Regional groundwater drilling experience indicates that groundwater resources are associated with well-developed, orthogonal joint sets. Local, structural analysis of the project site will provide conceptual constraint on likely groundwater storage capacity. Bore yields in the northern zone of this fractured rock province range from 0.5–30 L/s; with highest values closest to modern water courses; yields up to 30 L/s are associated with intense fracturing and faulting (Geoscience Australia, 2024a).

Determining flow systems across the project site – within the context of the discontinuity typical of these unconfined, fractured aquifers – will be challenging. However, because groundwater in upper catchment areas may naturally discharge through springs and as baseflow to streams (Geoscience Australia, 2024a), local topographic constraints and surface water discharge features, together with local, structural characterisation (cleavage trends and delineation of fracture types), may help in developing a suitable, conceptual model.

While further studies and the continuation of the current monitoring program are necessary, the project, with the adoption of appropriate mitigation measures, was found to have a limited impact on the surface water and groundwater environmental values identified in the project site.

8 Surface Water and Mine Water Management

The project will be operated in a way that protects environmental values of waters.

There are no wetlands on site, and no environmental values of wetlands are anticipated.

8.1 Surface Water

The Water Act provides for the sustainable management of water resources, and any potential works that will destroy vegetation, excavate – or place fill within – a watercourse, lake or spring will require a riverine protection permit application. The Water Act provides for the identification of watercourses on the watercourse identification map – or declaration of a watercourse by the administering authority. Mining operations may be exempt from obtaining a riverine protection permit under the guideline Activities in a watercourse, lake or spring associated with mining operations (Department of Environment and Resource Management [DERM], 2010), provided works are consistent with the guideline.

The existing water environmental values for the project have been described in detail based on multiple field surveys, and detailed in Appendix 3. In summary:

- The watercourses within the project site are intermittent to ephemeral, with most sites have a habitat condition of moderate to good.
- No other State or Commonwealth listed species were recorded during the surveys and are not expected to occur within the project site.
- There are no wetlands of significance within the project site.

Potential project impacts to surface water values include:

- Physical disturbance and associated habitat loss.
- Changes in the groundwater regime.
- Mine affected water releases.
- The project causing the introduction or spread of pests and weeds

Mitigation measures to be put in place for the project to reduce impacts on surface water environmental values include:

- Reducing disturbance footprint and progressive disturbance
- Progressive rehabilitation
- Water releases to occur from a set release point at the Release Dam
- Implementation of a detailed Water Management Plan
- Ongoing REMP monitoring

The project activities that may impact the surface water environment include physical disturbances, release of mine affected water, and seepage of spent ore and waste rock stockpiles impacting water values. The signature heavy metal contaminants associated with the operations and historical results suggest that a release will negatively influence the downstream water quality associated with the receiving environment. However, the mitigation measures and strategies are in place to limit the potential of such a release occurring to within appropriate risk levels.

A detailed Mine Water Management Plan is in place for the existing mine and has been updated to include the project water management. The Mine Water Management Plan is provided in Appendix 2.

A detailed Groundwater and Surface Water Report was completed for the project by C&R Consulting, and is provided in Appendix 3.

8.2 REMP

A Receiving Environment Management Program (REMP) is currently in place for the site, and includes 14 sites across receiving and background watercourses and site water storages.

Section C Table 4 of the EA – Receiving Waters Monitoring Locations is to be updated as follows to reflect the site:

Monitoring Point	Description	Coordinates GDA 94 MGA Zone 55	
		Easting	Northing
Receiving Water Sites			
S11	Downstream of RP1 on Gum Creek tributary, approx. 300 m downstream	233945	8218179
S12	Downstream of RP1 on Gum Creek tributary, approx. 600 m downstream	233729	8218223
Reference (Background) Sites			
S13	Upstream of RP1 on Gum Creek tributary, approx. 500 m upstream	234299	8217892
S7	Upstream of RP1 on Gum Creek tributary, approx. 100 m upstream	234167	8218077
Potential Release Waters			
RP1	Settling Dam spillway	234159*	8218214*
S6	Settling Dam	234213*	8218273*
S9	Settling Dam sump	234090*	8218198*

** Upon remediation and upgrade of the Settling Dam (Release Dam), these coordinates will be updated.*

The 2024/25 REMP field work has been locked in. The REMP Design Report will be updated to reflect the project upon approval of this EA amendment and is anticipated to be in place for

the 2025/26 REMP period. These updates will include amendment to the location of RP1, S6 and S9 due to upgrades of the Settling Dam.

8.3 Mine Water Management

There is a detailed mine water management system in place to provide for the protection of surface water and aquatic ecology, as outlined in the Water Management Plan. The system provides for:

- The storage and handling of contaminants to minimise releases
- Contingency measures for controlled and unplanned discharges
- Containment of stormwater, with controlled releases to be compliant with water quality objectives outlined in the EA
- Management of PAF material per the Waste Rock Management Plan and detailed rehabilitation cover design
- All new dams will be designed, assessed and managed under the *Guideline: Manual for assessing consequence categories and hydraulic performance of structures*

A detailed Mine Water Management Plan is in place for the existing mine and has been updated to include the project water management. The Mine Water Management Plan is provided in Appendix 2.

Any controlled water releases will be in compliance with the EA and be suitable for the receiving environment.

Details of updated regulated structures will be confirmed during detailed design and provided to the Administering Authority for inclusion in the EA. As part of detailed design, all newly constructed dams will be designed, assessed and managed under the *Guideline: Manual for assessing consequence categories and hydraulic performance of structures*, including the completion of detailed Consequence Category Assessments. All new dams that are designated hazardous structures will be confirmed and relevant detail provided to the Department prior to construction commencing, under current EA Schedule E Conditions. Per the Water Management Plan, the structures that are anticipated to be designated regulated structures include:

- Release Dam
- Process Water Dam
- Clean Water Dam 1, 2 and 3
- Overflow Dam 1 and 2
- ILS Pond
- PLS Pond
- Raffinate Pond

8.4 Water Quality Objectives

Interim water quality objectives have been derived for a number of water quality parameters, where enough data exists. The detail on how these have been derived is outlined in Appendix 3 (Groundwater and Surface Water Report, C&R 2024). In summary:

- Data collected from the upstream monitoring sites on South Creek (AQ05, S7 and S13) were considered reference, collated and assessed collectively for the purposes of calculating site-specific values (i.e. the data was pooled from all three upstream sites to determine the values for downstream South Creek).
- Parameters with 8 or more data points above the Limit of Reporting were updated – namely pH, electrical conductivity, sulphate, aluminium, arsenic, copper and manganese.
- It is recommended additional monitoring is completed to confirm water quality objectives for all values (i.e. when a minimum of 24 data points are available), and in the interim, keep the current wording provided in the EA (i.e. default value or 80th percentile of the reference site concentration, whichever is higher).

The updated water quality objectives are outlined in Table 5. In particular, the interim values show the significant background values present in the area for copper.

Table 5: ***Interim EA Water Quality Objectives***

Parameters	**Units**	**Default Water Quality Objectives – EA Schedule C Table 3**	**Reference Site 80th Percentile (i.e. Interim EA Values)**
pH	pH units	6.0 to 8.0	**7.2 to 8.1**
Electrical Conductivity	uS/cm	125	**487**
Aluminium	mg/L	0.055	**0.3**
Copper	mg/L	0.0014	**0.014**
Manganese	mg/L	1.9	0.011
Arsenic	mg/L	0.013	0.002
Sulphate	mg/L	770	1.2

9 Terrestrial Ecology

A detailed terrestrial ecology assessment has been completed for the project, including four field surveys completed between November 2023 and May 2024:

- 6–12 November 2023 dry season fauna and flora survey
- 30 January – 3 February 2024 early wet season fauna survey (migratory birds)
- 24–28 March 2024 wet season fauna survey (migratory birds)
- 29 April – 4 May 2024 wet season flora and fauna survey

The field surveys included:

- Fauna survey sites
- Fauna habitat assessments
- Camera traps
- Ultrasonic bat detectors
- Bird surveys
- Spotlighting and owl playbacks
- Opportunistic surveys

The project is located in an area subject to historical disturbance from small-scale mining operations and grazing activities. Approximately 30% of the proposed disturbance area has previously been cleared for historic mining operations and exploration activities, with much of the remainder historically disturbed for cattle grazing.

The vegetation within the project site is listed as Least Concern Regional Ecosystems and consists of Eucalypt low, open woodlands. No threatened ecological communities or flora species were identified.

The project has a maximum disturbance area of 50 ha, which includes 16.1 ha of non-remnant (i.e. cleared), 33.1 ha of mapped remnant, 0.3 ha of regrowth vegetation, and 0.5 ha of open water (i.e. existing dams).

Potential project impacts include:

- Vegetation clearing and associated habitat loss
- Fragmentation and edge effects
- Habitat disturbance
- Disturbance, injury or mortality of fauna
- Noise, vibration and lighting

The project has been designed to reduce the total disturbance footprint as much as possible, in addition to being designed for closure to reduce impacts as much as possible. Mitigation measures in place will include:

- Minimising disturbance footprint and utilise existing disturbance as much as practical
- Progressive disturbance and progressive rehabilitation
- Fauna spotter catcher to be present for all vegetation clearing
- Stockpiling of fallen logs and trees with hollows for use in rehabilitation
- The freshwater dams will be remediated as required and kept post-mining

- Weed and pest control management measures will be in place for construction and operations
- Species specific mitigation measures outlined in Section 8 of the Terrestrial Ecology Technical Report

Given the nature of the project in the immediate vicinity of an existing disturbed site and in the context of the broader region, the risks to the identified terrestrial ecology values from most of the identified hazards can be appropriately mitigated within the design phase of the project through the adoption of current best-practice measures. Therefore, it is concluded that there is unlikely to be significant impacts to threatened or migratory species, their habitat, or connectivity from the project, due to:

- The amount of habitat/vegetation clearing required for the project is relatively small, suggesting a low risk of population decline in terms of abundance and extent for any identified threatened and migratory species.
- A range of effective avoidance and mitigation measures will be implemented to protect individuals of each listed species observed within the area. Additionally, a program of ongoing monitoring and adaptive management will be implemented to track and respond appropriately if any adverse impacts not expected are identified.
- On-site observations, species records and modelled habitat suggest there are large areas of contiguous suitable habitat surrounding the project area, limiting the potential to fragment and isolate impacted communities.
- Invasive weeds (grader grass) and pest animals (cane toads, feral cattle, etc.) are already present on site. Weed and pest prevention and control measures will be implemented to prevent new weed and pest incursions and to avoid direct risks to key species and altered fire regimes.
- The risk of injury and mortality from mine operations is considered low, but will be monitored and actioned accordingly.

Provided that the species-specific mitigation measures are delivered, the key habitat values for threatened and migratory species will continue to be present within and adjacent to the project site, suggesting the development and operations of the project will not prevent the use of the local area by these species.

9.1 Terrestrial Ecology – State

A number of threatened fauna species or their habitat were identified as potentially occurring within the project site, and focused on during field surveys. Site specific assessments were completed for the following species known or expected to occur within the project site, with no significant, residual impacts anticipated:

- Gouldian Finch
- Buff-Breasted Button-Quail
- Australian Painted Snipe
- White-Throated Needletail
- Mertens' Water Monitor
- Northern Quoll

- Large-Eared Horseshoe Bat

Only one species was recorded during surveys, Mertens' Water Monitor.

No threatened flora species are known to occur within the study area and field surveys have not identified any threatened flora species.

A detailed Terrestrial Ecology Technical Report has been prepared for the project and is provided in Appendix 4.

9.2 Terrestrial Ecology – Commonwealth

The project is not anticipated to have any residual, significant impact on any EPBC Act protected matters under the *Guideline: Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*, and a self-assessment for the project has been completed.

A detailed Terrestrial Ecology Technical Report has been prepared for the project and is provided in Appendix 4.

9.3 Biodiversity Offsets

Due to the small disturbance area, short term nature of the activities, and mitigation measures in place for the project, there is not anticipated to be any significant residual impacts on any Commonwealth or State listed species. As such, biodiversity offsets are not required. Detail is provided in Appendices 4 and 5.

10 Aquatic Ecology

A detailed aquatic ecology assessment has been completed for the project, including wet and dry season field surveys completed between November 2023 and May 2024, and annual REMP field surveys.

A total of 12 sites were assessed for aquatic ecology values along the watercourses upstream and downstream of the project disturbance area in addition to farm dams. A summary of the aquatic ecology values of the project site include:

- The watercourses within the project site are intermittent to ephemeral, with most sites have a habitat condition of moderate to good.
- A total of seven fish species were recorded during the surveys, with none being listed at either a State or Commonwealth level.
- No turtles, or evidence of turtles, were recorded during the surveys.
- No other State or Commonwealth listed species were recorded during the surveys and are not expected to occur within the project site.
- There are no wetlands of significance within the project site.
- There is evidence of historical impacts on aquatic environmental values downstream of the site, with sediment quality results indicating levels of signature contaminants associated with historical operations within downstream reaches.
- The only MSES identified on site, with respect to aquatic ecology, were waterways providing fish passage.

The project has a maximum disturbance area of 50 ha, which includes 16.1 ha of non-remnant (i.e. cleared), 33.1 ha of mapped remnant, 0.3 ha of regrowth vegetation, and 0.5 ha of open water (i.e. existing dams).

Potential project impacts include:

- Physical disturbance and associated habitat loss
- Changes in the groundwater regime
- Mine affected water releases
- The project causing the introduction or spread of pests and weeds

The risks to the identified aquatic ecology values from these potential impacts will be appropriately mitigated within the design phase of the project through the adoption of current best-practice measures. For instance, culverts will be designed to incorporate fish passage requirements relevant to the level of risk. With the adoption of appropriate mitigation measures, the project was found to have a negligible influence on the aquatic environmental values identified within the aquatic ecology study area.

A detailed Aquatic Ecology Technical Report has been prepared for the project and is provided in Appendix 5.

11 Land, Soils and Rehabilitation

The project will be operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna.

The project will not impact on any areas of regional interests (ARI) under the *Regional Planning Interests Act 2014.*

11.1 Land Use

Pre-mining land use for the site was gold mining and cattle grazing.

The existing land use within the mining leases and surrounding areas is predominately cattle grazing, with a number of mining tenements overlaying the grazing properties. The area remains subject to formal exploration and unauthorised exploration and mining activities, primarily alluvial gold, tin and copper.

The existing land/land use environmental values for the project site is historical gold mining and cattle grazing.

Releases from the project that may affect land and land use include mine water release and releases to groundwater, which are described in detail in Sections 8 and 7 respectively.

Post-mining land use is detailed in the PRCP (Appendix 6) and, the agreed post mine land use includes cattle grazing and infrastructure (i.e. water management structures and access roads).

11.2 Environmentally Sensitive Areas

There are no mapped Category A, B or C Environmentally Sensitive Areas within the mining leases.

11.3 Soils and Land Capability

The site conditions are the result of historical impacts and the natural environmental conditions. There is limited topsoil on site which is consistent with the surrounding area and consists of natural loam soil predominantly on the lower slopes and gullies. Rehabilitation completed to date shows positive progression towards completion criteria, ongoing monitoring and evaluation will ensure rehabilitation objectives will be met. It is not anticipated that import of topsoil will be required due to initial positive rehabilitation outcomes, risk of importing pests, weeds and disease, economic constraints, distance from substantial topsoil resources.

A soil characterisation assessment was undertaken in 2024 for the project site. The assessment included:

- 10 survey sites (Figure 7)
- Collection of representative topsoil and subsoil samples
- Physical and chemical analyses of samples
- Analysis of results and assessment for rehabilitation suitability

Figure 7: Soil Sampling Locations

The primary soil type found is a tenosol, specifically Fu25. This type of soil is generally found in low, hilly to hilly lands closely dissected by numerous small streams. Undulating areas occur marginally and there are some areas of high hills with very steep slopes and common rock outcrops. The dominant soils are very shallow, gravelly, bleached loams (Um2.12), with lesser areas of similar loams (Um2.21, Um4.1, and Um4.21). Smaller areas of similar, sandy loams (such as Uc2 and Uc4) occur locally. Associated throughout the unit are areas of shallow, gravelly duplex soils (namely Dy3.41, Dr2.41, and Dr3.41), particularly on lesser slopes. In some valley floors, there are small areas of Dy3.43 soils. Small areas of basic volcanic rocks in the unit have deeper, red, friable clays (i.e. Uf6.31). At the northern margin of the project site, the unit may be capped by small sandstone mesas of unit Ca35.

With the exception of the SS5 site, soils from across the site are generally within nutrient and salinity ranges conducive to successful plant growth of endemic species. The majority of the soils sampled are not overly susceptible to erosion based on the physical and chemical properties observed.

The project will be managed in a manner that the release of water or waste to land is sustainable and is managed to prevent or minimise adverse effects on the composition or structure of soils and subsoils.

Topsoil management measures will include:

- Topsoil stripping prior to disturbance to conserve the limited topsoil resource on site to use in future rehabilitation.
- Subsoil stripping for use as capping material, where required.
- Topsoil and subsoil stockpiling and seeding of topsoil stockpiles.

Topsoil and subsoil will be stripped to a minimum of 200 mm depth for all new disturbance for the project. Over much of the project site, clay is present below the topsoil for an additional 500 mm dept. In these areas, additional stripping of clay material will be undertaken. The stripped material will be placed in topsoil stockpiles, with a maximum height of 2 m, and seeded if left for greater than 12 months. The material will be used in rehabilitation, with subsoil to be used for capping of the permanent overburden stockpiles and backfilled pit as required (store and release with vegetation).

The material balance is provided in Table 6, with the following assumptions:

- All disturbance areas will be stripped to 200 mm.
- The Release Dam and Raw Water Dam 2 will utilise existing infrastructure and therefore no topsoil stripping will occur.
- Other Disturbance Areas will have minor disturbance, so for a conservative material balance it is assumed no topsoil stripping. However, any disturbance occurring in this area will be stripped of topsoil to be used for rehabilitation.
- The Raw Water Dam 2 will remain post-mining.
- Topsoil will be placed at a minimum of 100 mm for rehabilitation.
- Overburden Stockpile will be rehabilitated with 500 mm cover.

The preliminary material balance shows that there is sufficient topsoil/subsoil for use in rehabilitation.

Table 6: *Preliminary Soil Material Balance*

Mine Feature Name	Disturbance Area (ha)	Stripped Topsoil (m3)	Required for Rehabilitation (m3)
Pit	4.84	9680	4840
Overburden Stockpile	4.74	9480	23700
Release Dam	1.26	0	1260
Process Water Dam	1.31	2620	1310
PLS Pond	0.13	260	130
ILS Pond	0.15	300	150
Raffinate Pond	0.09	180	90
Raw Water Dam 2	0.69	0	0
Processing Area	7.02	14040	7020
Water Management Dams (Sediment Dams, Clean Water Dams)	4.37	8740	4370
Topsoil Stockpiles	0.55	1100	550
Infrastructure (including Roads)	0.84	1680	840
Other Disturbance (including Buffer Areas	24.01	0	0
Total		**48,080**	**44,260**

11.4 Rehabilitation

The project will be progressively rehabilitated once land becomes available as mining activities progress. Rehabilitated land will be in a stable condition and meet rehabilitation objectives and rehabilitation milestones outlined in the PRCP.

Rehabilitation and final landform have formed part of the mining plan from the initial planning stage i.e. the project has been designed to plan for closure. The project will be operated in a manner to protect environmental values of the land, both during and post mining. Management measures will include:

- Disturbance will be undertaken progressively and limited as much as possible.
- Topsoil/subsoil stripping will be completed in all new areas of disturbance.
- Vegetation, including trees with hollows, will be stockpiled and incorporated into rehabilitation areas.
- Disturbance will be progressively rehabilitated as land becomes available.
- All disturbed areas will be rehabilitated per the PRCP Schedule.
- Rehabilitated areas will be
    - safe to humans and wildlife
    - stable landforms
    - able to sustain the outlined PMLUs
- Rehabilitation to a sustainable post-mining land use will occur, as outlined in the PRCP.

Rehabilitation activities utilising heavy machinery will be focused during the dry season and limited during the wet season to control erosion and sediment and for safety and access reasons. Other activities, including planting and seeding, will be undertaken after rainfall events during the wet season.

In accordance with the EA and PRCP guidelines, the rehabilitation plan includes the following high level phases to achieve self-sustaining vegetation communities:

1. Identification of areas available for rehabilitation.
2. Removal of infrastructure.
3. Removal of any contaminated material or capping with clean material.
4. Earth works and shaping.
5. Installation of water management as required including contour drains.
6. Installation of additional requirements as required including ameliorants such as lime.
7. Topsoil or other media (e.g. suitable overburden as capping) placement if required and available. Steeper areas may require additional stability measures to be installed such as coconut matting, mulch and other ameliorants such as gypsum and/or lime.
8. Ripping along the contour.
9. Seeding of ripped areas – the seed mix will include native grasses, pasture grasses, and a native shrub and tree mix consistent with the surrounding woodlands and post mining land uses. Infill tube stock planting will be undertaken where required.
10. Ongoing monitoring and evaluation program.
11. Contaminated land inspection and assessment prior to relinquishment of mining leases and/or sign off of rehabilitation will be undertaken. Any remnant contaminated material will either be remediated and/or buried on site.

Rehabilitation species will include native grasses; cover crops for stabilisation; pasture grasses and native shrubs and trees. Rehabilitation species will be consistent to pre mine site disturbance and post mining land use, and align with those in the surrounding properties and include fauna habitat and other associated ecosystem services. Key flora species will be sources from the Northern Queensland region (including Tropical Pasture Seeds Australia, Atherton; and Nutrien Ag Solutions, Tolga) and will include a mixture of, where available,:

- Native grass species including *Heteropogon contortus, Aristida* spp. and *Themeda triandra*.
- Native sub storey and shrub species including *Melaleuca* spp., *Acacia* spp., and *Petalostigma* spp.
- Native tree species including *Eucalyptus cullenii, E. staigeriana, Corymbia spp*. and *Melaleuca* spp.
- Pasture grasses for grazing including ryegrass, Rhodes grass and bluegrass.
- Cover crops including sorghum spp. and Japanese Millet.

Seed will be direct seeded at a minimum application rate of 2 kg/ha for pasture and native grasses, and 5 kg/ha for native tree and sub storey species. Direct seeding will occur at the commencement of the wet season following rainfall and prior to additional rainfall, where possible.

The benign material from the project disturbance areas will be broken up and used as fill in the pit (void) backfilling.

At completion of mining, the pit will be backfilled and there will be no final void. It is estimated that the final volume of the pit is 1,000,000 m3 of void, of which approximately 440,000 m3 will be backfilled, to the groundwater water line. The final landform will be graded to prevent water ponding, and remaining slopes (e.g. highwall) will be battered to ensure a stable final landform (Figure 8).

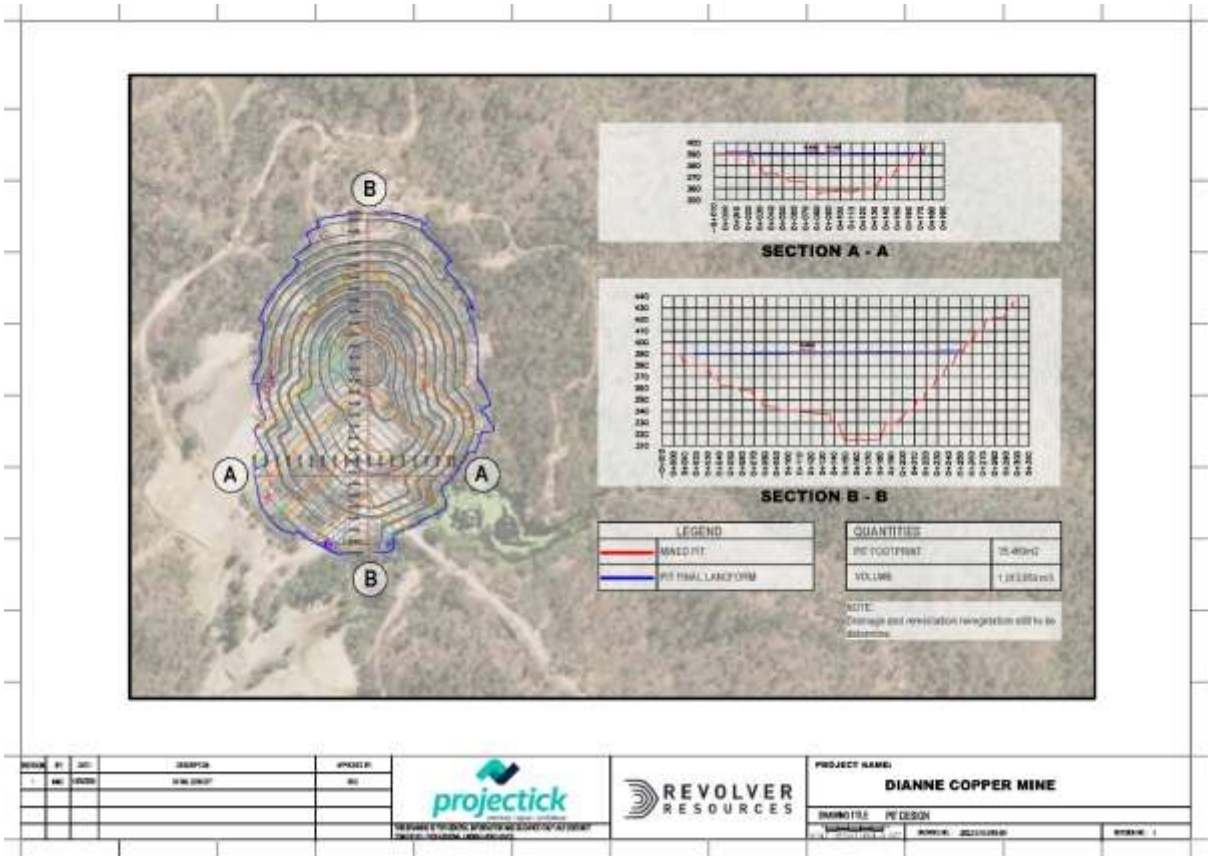

Figure 8 – Backfilled Pit

A comprehensive program for characterising all waste rock materials is currently being undertaken and will be finalised prior to the commencement of mining, and used to update the Waste Rock Management Plan and associated Final Landform and Cover Design (Appendix 7) for the project. This program includes staged geochemistry sampling and test work to estimate the types and quantities of rock with potentially acid forming and acid mine drainage potential. For each material type the program will:

- Develop project specific set of criteria that can be used to readily identify potentially-acid forming and non-acid forming materials;
- Indicate the proportions of potentially-acid forming and non-acid forming materials to be mined;
- Develop protocol for regular short interval sampling and geochemical test work to identify potentially acid forming materials for the future drilling programs;
- Develop a protocol for incorporating the data into the block model and producing a life of mine schedule of potentially-acid forming and non-acid forming materials to be mined.

Measures will be taken to re-establish connectivity to the greatest, realistic extent.

The final landform for the overburden stockpile has been designed as a store and release system with vegetation cover and an infiltration barrier. It is anticipated that there is sufficient clay material on site for the construction of the infiltration barrier. All PAF material and material with the potential for AMD will be encapsulated within the overburden stockpile prior to closure,

with cover material a minimum of 2 m of benign material (i.e. confirmed not PAF or with a potential for AMD).

Prior to the commencement of the overburden stockpile during mining operations, the following additional work will be completed and the Final Landform Design (MEC, 2024) will be updated:

- Detailed erosion modelling
- Infiltration testing
- Test pits of the base of the overburden stockpile to confirm soil structure and permeability
- Additional geotechnical testing

Rehabilitation for the project and the rehabilitation monitoring program are detailed in the PRCP and PRCP Schedule (Appendix 6).

11.5 PRCP

The PRCP has been updated to reflect the project. The updated PRCP is provided in Appendix 6.

12 Cultural Heritage

The recommencement of mining operations is generally supported by the Western Yalanji People, who are also the landowners of the Bonny Glen Station, on which the mining leases are located.

Approximately 30% of the proposed disturbance area has previously been cleared for historic mining operations and exploration activities, with the remainder historically disturbed for cattle grazing. All exploration activities undertaken by Mineral Projects within the mining leases have been completed with Western Yalanji present to complete cultural heritage clearance.

All ground disturbance and new clearing works proposed for the project will include Western Yalanji people as monitors to help support identification of any cultural artefacts that maybe identified through ground disturbance.

13 Western Yalanji Environmental Assessment

Representatives of the Western Yalanji People participated in multiple field surveys throughout 2023 and 2024 to provide an assessment of proposed impacts of the project. The field surveys focused on cultural and ecological values of the proposed area from the perspective of traditional custodians. The ecological values including traditionally used plants such as medicinal plants, food plants, calendar plants and uses of vegetation as habitat for key species, ecosystem services and or significant environmental features. In addition to the culturally important ecosystem services the cultural field surveys included inspection for cultural heritage values, cultural sites and artefacts such as stone tools, scar trees, and occupation sites.

The Western Yalanji People cultural heritage and environmental surveys confirmed there are no cultural sites or cultural artefacts of cultural importance in the proposed disturbance area. It is confirmed there are no significant ecosystem services identified during this survey that would be impacted by the proposed project. A detailed technical report is provided in Appendix 8.

The recommencement of mining operations is generally supported by the Western Yalanji People, who are also the landowners of the Bonny Glen Station, on which the mining leases are located.

In addition, project clearing works will include Western Yalanji people as monitors to help support identification of any cultural artefacts that maybe identified through ground disturbance.

14 Other Studies

14.1 Noise and Vibration

The existing noise environment includes roads, alluvial gold mining, and cattle grazing activities. Within the site, there is also background noise related to exploration and rehabilitation activities.

There are no permanent sensitive receptors or sensitive places in the vicinity of the project site. The closest public road is located approximately 20 km south of the project.

There are a number of small, sporadic alluvial gold mining areas approximately 10 km from the project site. No adverse noise impacts are expected at these locations.

The existing noise environmental values for the project are limited to fauna, due to the remote nature of the site. Noise emissions from the project are anticipated to be minor in nature, with a number of mitigation measures in place, and be limited to the following:

- Noise from machinery
- Blasts

The project will be operated in a way that will protect environmental values of the acoustic environment, in line with *Guideline: Application requirements for activities with noise impacts*. Due to the remote nature of the site, short duration of the project, and limited nighttime activities, no noise or vibration impacts are expected at any sensitive receptor or environmental values (e.g. fauna) or cultural values due to the project. Sound from the project is not anticipated to be audible at any sensitive receptor.

It is anticipated that there will be approximately 20 blasts required across the life of the project.

In addition, the following mitigation measures will be in place to manage and reduce noise and vibration impacts so that adverse effects on environmental values, including health and wellbeing and sensitive ecosystems, are prevented or minimised:

- Blasting will be limited to between the hours of Monday to Friday 6 am to 6 pm
- Use of heavy equipment operating will be limited at night (between the hours of 10 pm and 6 am)
- All equipment will be operated in accordance with their operating manual to protect the health and safety of employees
- Disturbance will be progressive
- Progressive rehabilitation will be undertaken
- Any complaints in relation to noise or vibration will be investigated as soon as practicable

14.2 Air Quality and Greenhouse Gas Emissions

The project will be operated in a way that will protect environmental values in relation to air quality. Due to the remote nature of the site, short duration of the project, and small scale of the project, no air quality impacts are expected at any sensitive receptor or environmental values (e.g. fauna) due to the project.

The existing air quality environmental values for the project are limited to flora and fauna, due to the remote nature of the site. Air quality emissions from the project are anticipated to be minor in nature, with a number of mitigation measures in place, and be limited to the following:

- Dust from vehicle movement and clearing
- Greenhouse gas emissions
- Dust from blasts

The project will be operated in a way that will protect environmental values of the acoustic environment, in line with *Guideline: Application requirements for activities with air impacts*.

In addition, the following mitigation measures will be in place to reduce noise and vibration impacts:

- Dust suppression will be utilised on roads when excessive dust is being produced e.g. water carts
- Speed limits will be in place on site of 50 km/hr
- Blasting will be undertaken during appropriate weather conditions to limit distribution of fumes and dust
- Use of heavy equipment operating will be limited at night (between the hours of 10 pm and 6 am)
- All equipment will be operated in accordance with their operating manual to protect the health and safety of employees
- Disturbance will be progressive
- Progressive rehabilitation will be undertaken
- Any complaints in relation to air quality will be investigated as soon as practicable
- The project is in line with both State and Commonwealth renewable energy transition targets, in particular the *critical minerals strategy.*

The project will be operated in a way that will limit Greenhouse Gas Emissions, as forecasted below (based on the current forecast diesel usage):

Item	Description	Fuel Burn (l/hr)	Forecast Usage (hrs)	Total Forecast Fuel (kl)	Total Forecast GHG (t CO2)
1	40t Artic. Dump Truck	27.9	27,225	760	1,930
2	90t Rigid Dump Truck	75	4,675	351	892
2	D10 Bulldozer	69.8	3,985	278	706
4	30t Excavator	20.5	1,130	23	58
5	45t Excavator	38.1	13,661	520	1,321
7	180t Excavator	165	1,430	236	599
8	14' grader	25.8	4,550	117	297
10	30kL Watercart	32.6	4,753	155	394
11	Roller compactor	23.5	1,851	43	109
	Crushing plant	82	8,015	657	1,669
21	Light vehicles	11	9,360	103	262
22	Generator (large)	110	32,955	3,625	9,208

23	Generator (medium)	24	48,920	1,174	2,982
	TOTALS			**8,042**	**20,427**

14.3 Traffic

Predominantly, all access to DCM will be by road from the south through Mt Carbine (either from Cairns/Port Douglas via Highway 44 to Highway 81 or from Mareeba via Highway 81) with a small amount of traffic from the north (local employees from the Palmer River, Lakeland area) as shown in Figure 9.

Typically traffic will be:

- Heavy Vehicles – single semi-trailer, heavy combination trucks; and
- Light Vehicles – commercial vehicles and cars.

Processed ore will be transported to Townsville via road transport as back-haul. This method will reduce total number of vehicle movements, with an estimated average rate of 4 truck movements per week, for export to international markets aimed to support the transition to renewable energy with copper designated a critical mineral. Discussions on any required road/signage upgrades are ongoing with the Cook Shire Council.

Table 7 summarises the expected traffic volumes to DCM during each phase, showing a weighted average of 16 Heavy Vehicles and 40 Light Vehicles per week for 3 years.

Due to the short duration of the project, small workforce number and mitigation measures being discussed with Council, no significant negative impacts on traffic and roads are expected due to the project.

Table 7: *Estimated Traffic Volumes*

Phase	HV Traffic (ea way per week)	LV Traffic (ea way per week)	Expected Duration (weeks)
Early Works	3	30	14
Construction, Mining & Copper Processing	30	100	26
Mining & Copper Processing	18	30	52
Copper Processing & Closure	12	25	65
Weighted Average	16.2	39.5	157

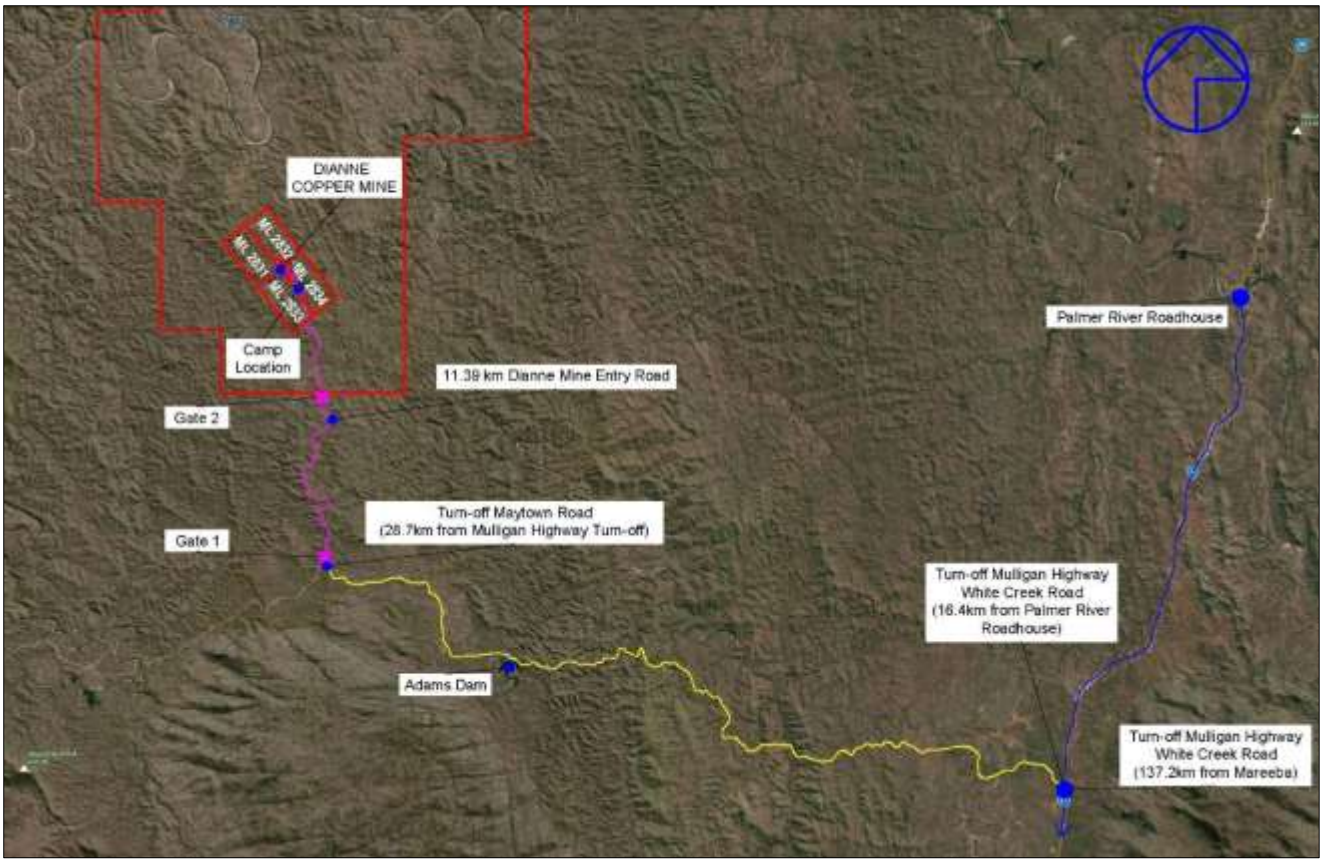

Figure 9 – Access to Dianne Copper Mine

14.4 Visual

A visual impact assessment has been undertaken to determine the impact of the project on the surrounding area. The visual impact assessment involved field assessment and photographic/map analysis in relation to nearby receptors.

The visual landscape surrounding the site is dominated by cattle grazing and woodland vegetation in a remote setting. Key visual receptors include:

- Maytown (Whites Creek) Road
- Surrounding rural properties

The potential visual impact of the project is focused on the overburden stockpiles.

The project turn off from Maytown Road is located 28 km from the turnoff of the Mulligan Highway. The project gate is located 10 km along the project access road, with the project a further approximately 10 km along the road. As such, there is significant distance from all public roads to the project site along undulating terrain.

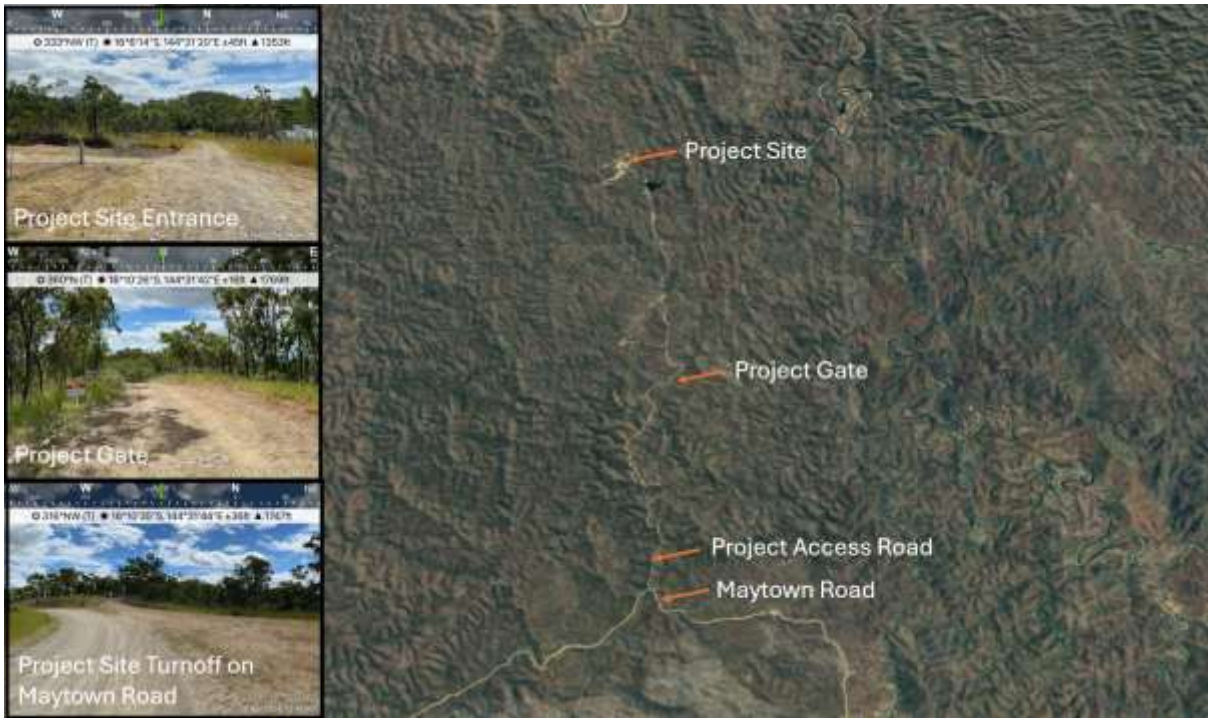

Figure 10: Visual Assessment

There are no visible aspects of the project from any of the visual receptors, and the visual impact of the project is negligible (Figure 10). The following mitigation measures will be undertaken for the project:

- Progressive rehabilitation.
- Design of external lighting to minimise impacts.

14.5 Socio-economic

The project is remote, with the closest towns Lakeland (population 333), located approximately 90 km noth; and Mount Carbine (population 101) and Mount Molloy (population 266), located approximately 100 km and 130 km south, respectively. The project is located within the Cook Shire Council Local Government Area (Figure 11), which covers an area of 105,718 km^2 in Far North Queensland. Total population of the region is 4,761 (ABS, 2023) people, and 20% being Aboriginal and/or Torres Strait Islander (CSC Economic Profile, 2015). The largest employer of the region is mining (22.6%), followed by agriculture, forestry and fishing (10%) (CSC Economic Profile, 2015).

Employment of approximately 35 construction and 40 operational staff. Opportunities will be prioritised for Indigenous training, development and employment, with an aim for 20% FTE Indigenous employment.

Workers are anticipated to be based in both the Cook Shire and Mareeba Council Local Government Areas, namely from properties in the local area, Lakeland, Cooktown, Mareeba and Mossman (Douglas Shire). Both construction and operational workforce will utilise the on-site temporary accommodation camp during shift.

The temporary on-site accommodation camp is anticipated to be a 52 room camp to cater for the entire workforce. It will also include a sewage treatment plant suitable to accommodate this number of personnel.

Positive impacts for the regional and local area from the project will include:

- Economic growth
- Employment growth
- Skills enhancement
- Small business opportunities, with a focus on Aboriginal local businesses

Potential negative impacts for the area from the project may include:

- Labour draw
- Increased traffic movements on regional roads
- Increased demand for services e.g. emergency services

The potential negative impacts will be mitigated by:

- The project will utilise a temporary on-site accommodation camp to house workers.
- The workforce will be sourced from the Far North Queensland region where possible, including population centres of Cooktown, Mossman and Mareeba.
- The project will include on-site services including power and first aid emergency services.

Overall, it is anticipated that the project will have a positive socio-economic impact for the region.

The Project aligns with the Queensland Government Critical Minerals Strategy, and has received a $1.3M grant from the Queensland Government Critical Minerals and Battery Technology Fund to expedite the recommencement of the mine. The Queensland Critical Minerals and Battery Technology Fund has been established by the Queensland Government to support Australian business to compete globally by enhancing the extraction and processing of critical minerals in Queensland, accelerating the development of battery technologies and production of precursor or advanced materials in Queensland and supporting Queensland jobs and economic growth.

In addition to the detailed environmental approvals studies, process engineering design, and civil engineering design, initial discussions on equipment and workforce procurement have commenced to support a recommencement of mining early 2025.

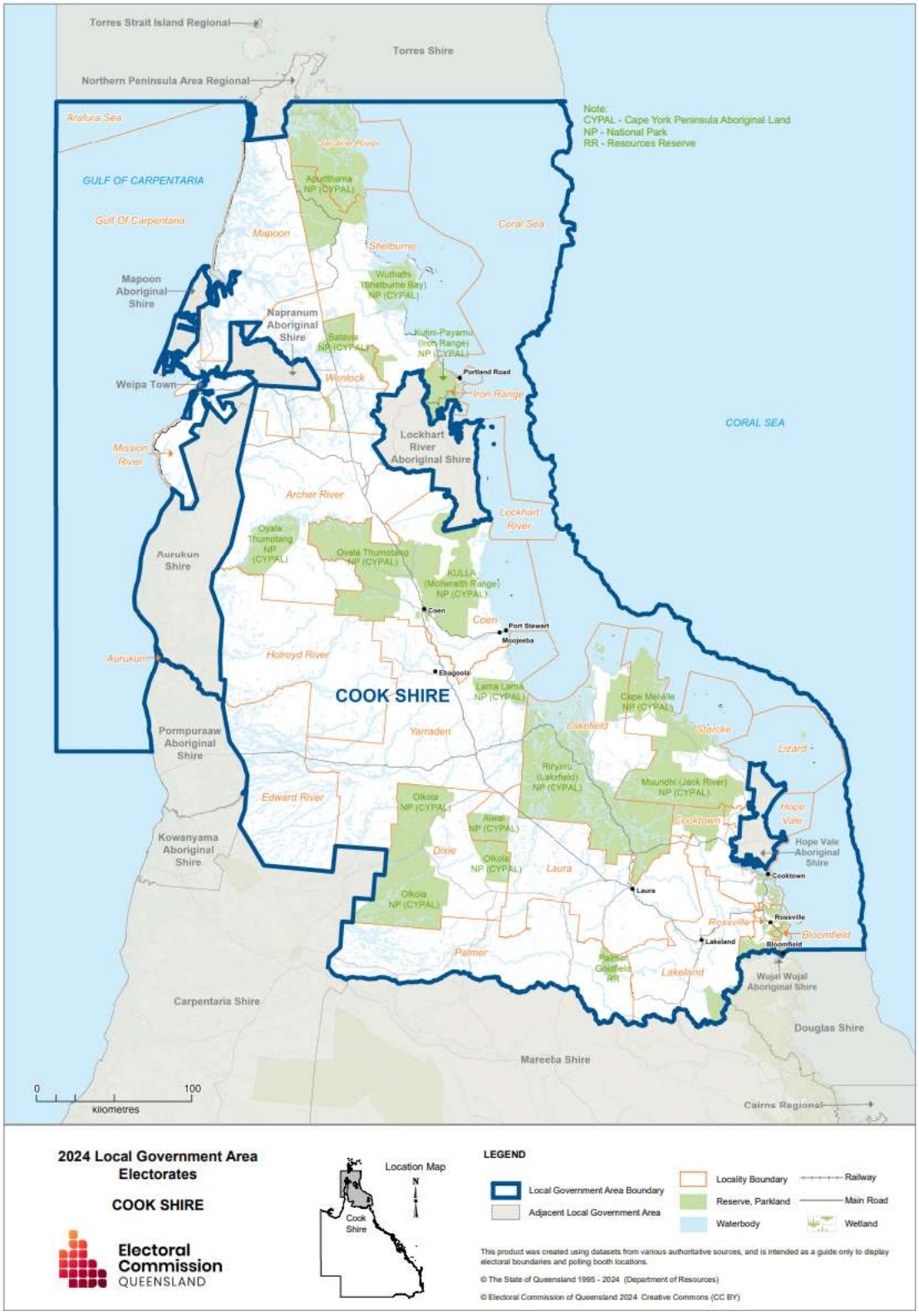

Figure 11: Cook LGA

14.6 Non-mining Waste

Non-mining waste generated by the project is anticipated to include the categories and quantities outlined in Table 8.

Table 8: *Non-Mining Waste*

Waste Category	Quantities	Management Strategy
Green waste	-	Stockpiled and used in rehabilitation
Scrap metal	500 t	Recycled
Waste hydrocarbons and chemicals including oil	25,000 L	Recycled where possible Transferred to a licensed facility
Acids and salts	10 t	Recycled where possible Transferred to a licensed facility
Batteries	27	Transferred to a licensed facility
Tyres	30	Transferred to a licensed facility
General waste	2,000 m^3	Disposed of on-site
Sewage	Maximum capacity 52 person camp	Disposed of in on-site system

The project will be operated in a way that will protect environmental values in relation to the management of waste, in line with *Guideline: Application requirements for activities with waste impacts*.

Any non-mining waste generated, transported, or received as part of the project will be managed in a way that protects all environmental values and minimises adverse environmental impacts. Non-mining waste will be managed following the waste management hierarchy of:

1. Avoidance
2. Reduction
3. Reuse
4. Recycling
5. Recovery
6. Treatment
7. Disposal

A small landfill will be excavated on the site for construction and general waste. It is anticipated that total general waste to be placed in the on-site landfill will total approximately 2,400 m^2 in volume, which is <1% of the total overburden stockpile (Figure 12). Figures 12a and 12b show how the small landfill will integrate into the overall overburden stockpile footprint, including full encapsulation. The total landform will then be capped and rehabilitated per the Final Landform and Cover Design Report. No hazardous waste will be placed in the on-site landfill.

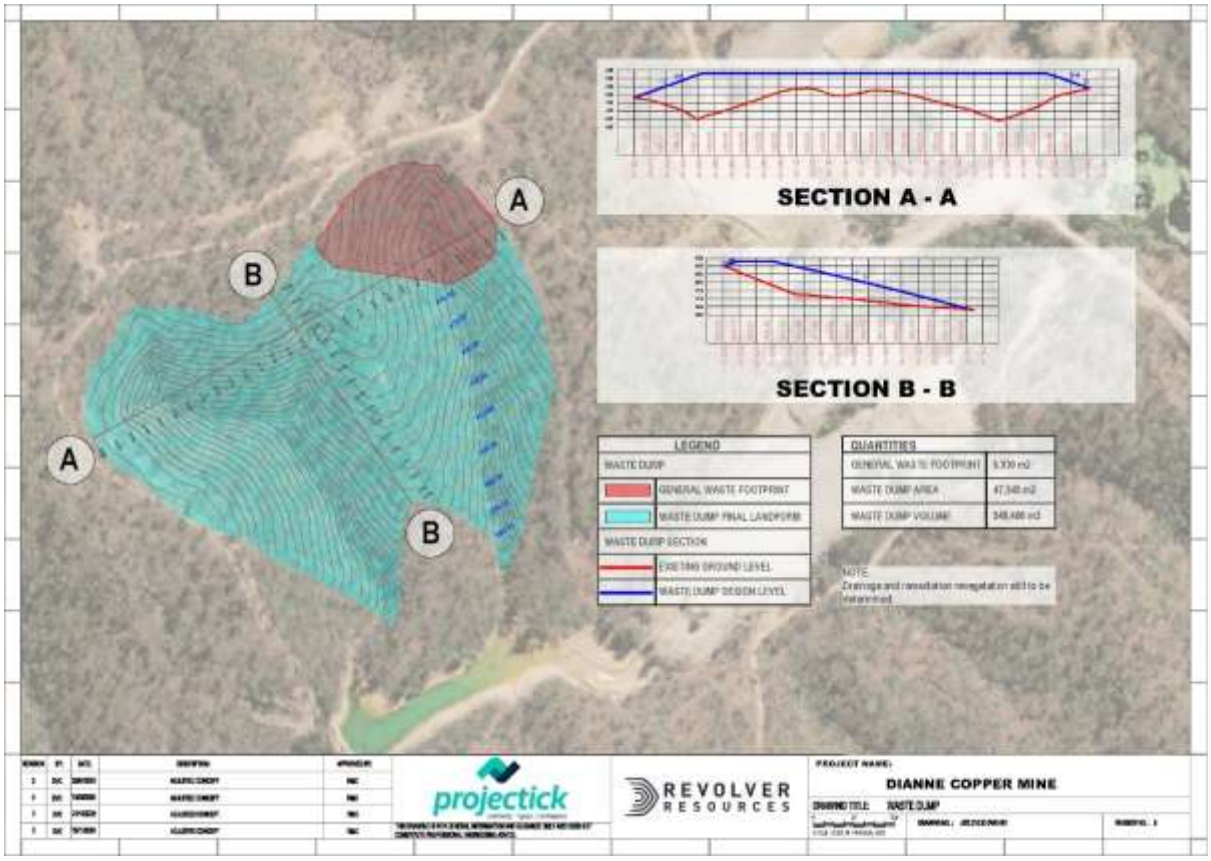

Figure 12: Predicted Landfill Layout

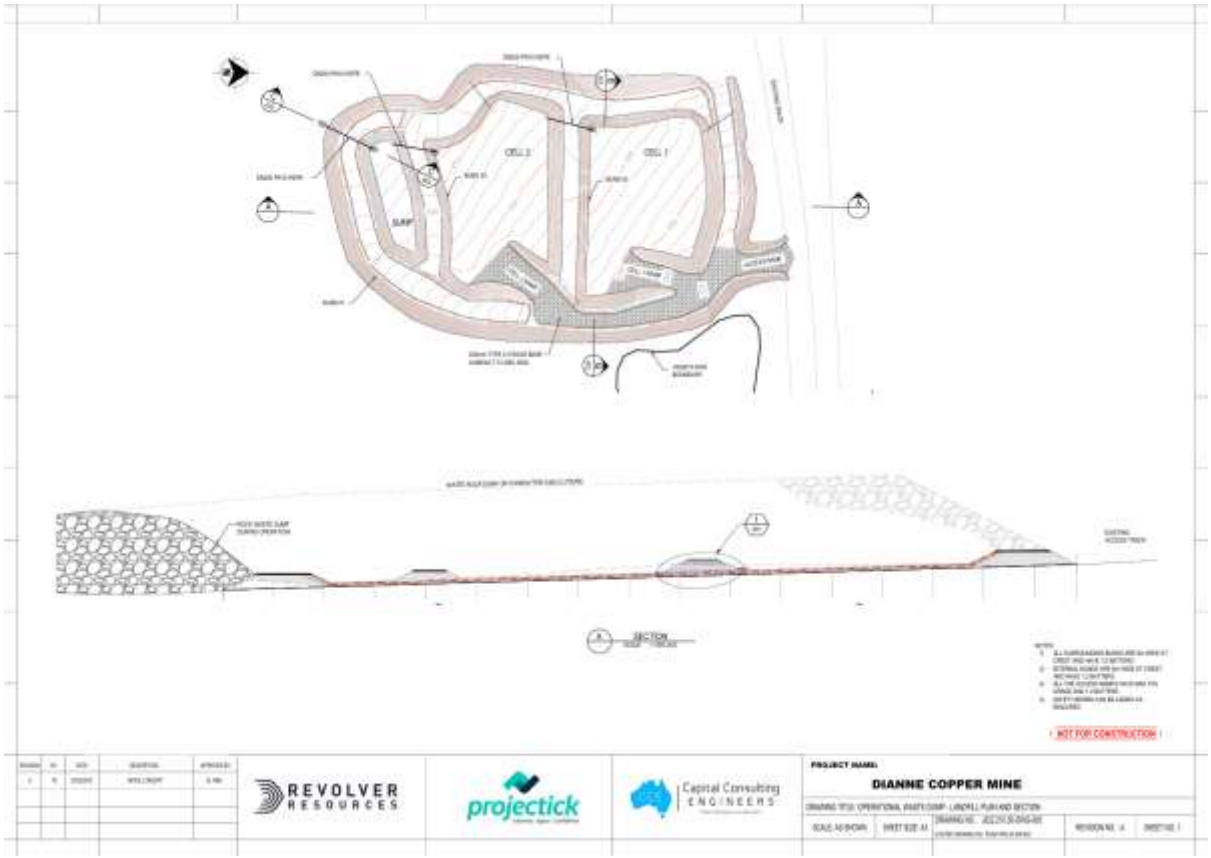

Figure 12a: Predicted Landfill Layout – Plan and Cross Section

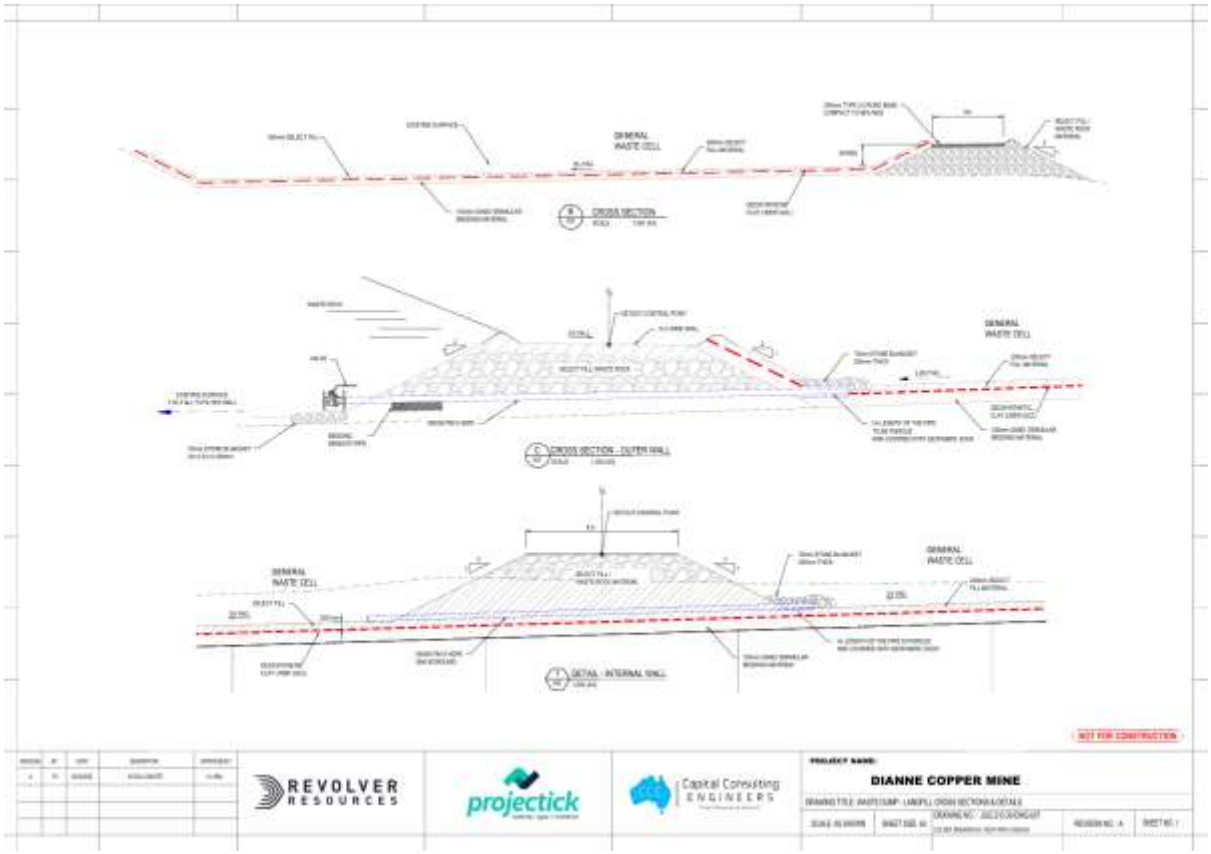

Figure 12b: Predicted Landfill Layout – Detailed Cross Section

Once the landfill is complete, it will be capped and form part of the mine waste stockpile. As such, the mine waste management and mitigation measures will also be in place for the landfill, including groundwater monitoring and surface water shedding. All other non-mining waste, including all hazardous wastes (hydrocarbons etc.), will be disposed of will be removed to a licences place lawfully able to accept the waste in accordance with the EA conditions. It is anticipated that this facility will be the Springmount Waste Management Facility, located to the south of Mareeba. All waste to be transported off-site will be managed in a way that protects environmental values and in accordance with EA conditions and the *Waste Reduction and Recycling Act 2011*. No waste will be received as part of the project.

Waste will not be burnt on site.

A contaminated land investigation will be completed post rehabilitation as part of mine closure, to be prepared by an approved person. The investigation will include a report containing a site suitability statement that states that land is not contaminated and is suitable for the proposed PMLU.

14.6.1 Chemical Use and Storage

During operation, the operation will be managed to prevent and minimise where possible any adverse environmental impacts, including compliance with guidelines for chemical storage. Chemicals and hazardous materials will be contained in bunded systems in accordance with AS 1940-2004, and spill kits will be available on site. An Emergency Management Plan is in place for the site, and will be updated to include the project. The Emergency Management Plan will plan for fire, flood, and containment spills.

The following chemicals will be used on site for the project:

- Diesel
  Diesel to be used as fuel in power generators, trucks and other machinery.
  Diesel will be stored in the fuel storage area.
- Oil
  Oil to be used in power generators, trucks and other machinery.
  Oil will be stored in the workshop area.
- Cobalt sulphate
  Cobalt sulphate is a cobalt based complex that is used in the electrowinning process to improve the stability of the lead anodes utilised for plating copper metal. The presence of cobalt in the circulating electrolyte solution within the electrowinning cell helps to reduce what is known as the “anode overpotential”, which in turn helps to reduce the rate at which lead dioxide flakes break away from the anode (“spalling”). The lead flakes can become trapped in the high purity copper growth, thereby reducing the quality. Additionally, a high rate of spalling reduces the serviceable lifespan of the anode.
  The cobalt sulphate is mixed with water at its point of use in the electrowinning area using a simple mixing tank and agitator. The cobalt sulphate solution is then conveyed to the electrolyte circulation tank using a positive displacement dosing pump.
  Cobalt consumption for the project will be relatively low, with approximately 5 kg per day being required. The cobalt sulphate solution is mixed in batches on a daily basis, with the plant operator emptying the bags into the mixing unit by hand.
  A hard stand area is provided next to the cobalt sulphate mixing tank for several bags of cobalt sulphate (20-25 kg palletised bags of crystal form). Additionally, up to one pallet of cobalt sulphate bags will be stored in a dedicated dry reagents storage area, within the site stores warehouse.
- Guar
  Guar is a long chain, natural polymer that is commonly used in food processing. The natural polymers in guar have a rather unique ability to cover small, nodular growths on the surface of the copper metal cathode. By covering, and binding to the nodular growths, the guar renders the small point growth electrically inert, thereby allowing further copper crystal deposition to “catch up”, the net result of which is a smoother copper deposit.
  The guar is mixed with water at its point of use in the electrowinning area, using a skid mounted mixing unit incorporating a dry powder hopper, powder metering device and mixing/storage tank. The guar solution is then injected into the strong electrolyte pipeline that feeds the tankhouse, using a positive displacement dosing pump. Additionally the guar can be dosed to the Circulating Electrolyte Tank.
  A hard stand area is provided next to the guar mixing unit for storing one pallet of guar gum bags (powder form in 20-25 kg palletised bags). The guar solution is mixed in batches on a daily basis using about one bag of guar gum per day. The plant operator empties the bags into the mixing unit by hand.
- Sulphuric acid
  Sulphuric acid will be used for the project as the major “lixiviant”, or leaching agent, in the heap leaching process. Additionally, sulphuric acid is used to make electrolyte,

which in turn is responsible for stripping of copper from the selective extraction reagent used in the Solvent Extraction (SX) process.

Concentrated sulphuric acid has a slightly oily consistency, a strong, pungent odour and a clear, sometimes slightly yellow brown colour. In a concentrated form, sulphuric acid is highly corrosive and as such all handling is strictly controlled with stringent safety protocols.

Addition of sulphuric acid is carried out at the agglomeration stage of the Crushing / Heap Leach process by adding concentrated acid directly to the ore, inside the agglomeration drum. Further acid is added to the Heap Leach system by dilution with process solution followed by transfer to the Heap Leach ponds, along with a very small amount of acid that is added to the electrolyte stream in the electrowinning section of the process.

Sulphuric acid arrives on site concentrated form (98%) in a bulk tanker and is then transferred by gravity to storage tanks, prior to use in the processing circuit. Storage of concentrated sulphuric acid for the project will be in (6) stainless steel isotainers, each having a nominal capacity of 24 m3 for a total storage capacity on site of (up to) 144 m3. The isotainer type storage tanks are bottom discharge and will be interconnected. Delivery of acid to the various addition points will be achieved using a positive displacement pump in conjunction with a flowmeter for accurate addition and measuring of daily total acid consumption, which will also detect any leaks in the pump/pipe system.

- Copper extraction

  The copper extractant chemical to be used for the project is a highly selective reagent (aldoxime or aldoxime / ketoxime mixture) that is mixed with diluent (hydrocarbon) and performs the selective removal of copper ions from the impure leach solution. This selectivity is the underlying key to the SX process being able to produce a highly pure copper sulphate solution for the production of high purity copper metal.

  Copper extractant is delivered in liquid form in 1 m3 Intermediate Bulk Containers (IBC's). A bulk liquid storage facility is not required. The extractant is decanted directly from the IBCs into the organic weirbox/launder of the stripping settlers, where it enters the processing circuit and mixes with the plant "organic", which is comprised of extractant and diluent.

- Diluent

  Diluent is a hydrocarbon liquid, often described as a "narrow cut kerosene", albeit having slightly different properties to a conventional kerosene hydrocarbon. Diluent is used to make up the bulk fluid called "organic" in the SX plant, which is comprised of approximately 10 – 15% extractant and 85 – 90 % diluent. ie the diluent is a "carrier" for the highly selective copper extractant, described above in Section 1.5.

  Diluent is delivered in liquid form in 20 m3 isotainers or by bulk tanker, depending on local supply methods and regional shipping logistics. The diluent is pumped from the isotainers, or bulk tanker, into the diluent storage tank. From this tank the diluent is pumped to SX settlers or the crud collection tank when required.

  The storage tank is a 55 m3 carbon steel horizontal cylindrical tank. The diluent pumps are horizontal centrifugal solution pumps. The tank and pumps are installed in a stand-alone bunded area.

Chemicals will be managed per standard conditions for ERA 8 and NA 7:

- ERA Schedule 8 – chemical storage
- NA 7 chemical storage - other than petroleum products or oil under item 29)—storing more than 10 t of chemicals (other than compressed or liquefied gases) that are dangerous goods under the dangerous goods code.

Chemical estimated usage details are as follows.

COBALT SULPHATE		
Concentration in Electrolyte (Co)	ppm	180
Electrolyte Bleed Rate	m³/h	0.2
Total Usage (as Co)	kg/d	0.86
Co in $CoSO_4$	% w/w	21
Usage per day (as $CoSO_4$)	kg/d	4.1
Mixing/storage tank capacity	m³	3.0
Delivery	-	25 kg bags
GUAR		
Consumption	g/t of cathode	300
Total Usage	kg/d	6.7
Delivery	-	25 kg bags
Mix Strength	% w/w	0.25
Usage per day	L/d at mix strength	2,672
Storage Tank Capacity	m³	3.0
SULPHURIC ACID		
Form		Liquid
Packaging		Bulk Tanker
Sulphuric acid supply strength	% w/v	98
Sulphuric acid solution SG		1.84
Sulphuric acid consumption (GAC)	kg/t ore	15
Sulphuric acid consumption	tpd	25
Number of storage tanks	No	6
Storage tank type		Isotainer
Sulphuric acid storage tank capacity	m³	24
Total storage capacity	m³	144
Sulphuric acid storage tank capacity	days	11
EXTRACTANT		
Product Name	-	Solvay M5774
Estimated Consumption	m³/mth	2
Delivery	-	1 m³ IBC's
Dosing Strength	vol %	100
Extractant SG	t/m³	0.92
DILUENT		
Product Name		Shellsol 2046
Delivery		Bulk Tanker (or isotainer)
Consumption	m³/mth	16
Storage Tank Capacity	m³	55
Storage Supply Capacity	days supply	103
Flashpoint	°C	79
Diluent Density (at 25°C)	t/m³	0.806
Maximum Aromatics Content	%	19.0

During operation, the operation will be managed to prevent and minimise where possible any adverse environmental impacts, including compliance with guidelines for chemical storage. Chemicals and hazardous materials will be contained in bunded systems in accordance with AS 1940-2004, and spill kits will be available on site. An Emergency Management Plan is in place for the site, and will be updated to include the project. The Emergency Management Plan will plan for fire, flood, and containment spills.

14.7 Risk Management

The Dianne Copper Mine implements internal environmental management systems to effectively manage environmental issues and ensure compliance with regulatory requirements per EA EPML00881213. The environmental management system includes internal procedures, standards and management plans, and will continue to be operated to ensure all environmental, social, and cultural responsibilities are met.

A risk assessment workshop was completed on 9 July 2024 with the proponent, mining engineers, and rehabilitation specialists. In accordance with Section 126C(1)(f) of the EP Act, the risk assessment assesses the environmental risks of the project and how these risks will be managed or minimised. An overview of the outcomes of the risk assessment is provided below in Appendix 9.

14.8 Cumulative Impacts

The project is located in an area subject to historical disturbance, namely grazing activities and small-scale alluvial mining operations, including the establishment of the mining settlements of Maytown and Palmerville in the 1870's. There remain small-scale alluvial mining operations in the region today, however these are generally sporadically mined.

No cumulative impacts from the project are predicted due to the significant distance to the nearest permanent and/or larger scale mining activity and sensitive receptors including towns.

15 References

Australian Bureau of Statistics (2024) *2016 Census Cook Shire Quickstats https://www.abs.gov.au/census/find-census-data/quickstats/2016/LGA32500*

Cook Shire Council (2015) *Cook Shire Council Economic Profile.*

Department of Environment and Science (2023) *Environmental Authority EPML00881213.*

Environmental Protection Act 1994.

Environmental Protection Regulation 2019.

Commonwealth Government (2013) *Guideline: Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999.*

Planning Act 2016

Queensland Government (2015) *Eligibility criteria and standard conditions Sewage treatment works (ERA 63)* (ESR/2015/1710)

Queensland Government (2016) *Eligibility criteria and standard conditions for exploration and mineral development projects* (ESR/2016/1985)

Queensland Government (2024) *Grazing as a post-mining land use: Implications for leading practice.*

Queensland Government (2024) *Guideline: Application requirements for activities with impacts to air (ESR/2015/1840).*

Queensland Government (2024) *Guideline: Application requirements for activities with impacts to land (ESR/2015/1839).*

Queensland Government (2024) *Guideline: Application requirements for activities with noise impacts (ESR/2015/1838).*

Queensland Government (2024) *Guideline: Application requirements for activities with waste impacts (ESR/2015/1836).*

Queensland Government (2024) *Guideline: Application requirements for activities with impacts to water (ESR/2015/1837).*

Queensland Government (2024) *Guideline: Greenhouse gas emissions (ESR/2024/6819).*

Queensland Government (2024) *Guideline: Major and Minor Amendments (ESR/2015/1684).*

Queensland Government (2024) *Guideline: Progressive rehabilitation and closure plans (PRC plans) (ESR/2019/4964).*

Queensland Government (2024) *Guideline: Requirements for site-specific and amendment applications—underground water rights (ESR/2016/3275).*

Mineral
Projects

Appendix 1 – Waste Rock Management Plan (MEC)

Mineral
Projects

Appendix 2 – Water Management Plam (Engeny)

Mineral
Projects

Appendix 3 – Groundwater and Surface Water Report (C&R Consulting)

Mineral
Projects

Appendix 4 – Terrestrial Ecology Report (C&R Consulting)

Mineral
Projects

Appendix 5 – Aquatic Ecology Report (C&R Consulting)

Mineral
Projects

Appendix 6 – Progressive Rehabilitation and Closure Plan

Mineral
Projects

Appendix 7 – Final Landform and Cover Design (MEC)

Mineral
Projects

Appendix 8 – Traditional Owner Environmental and Cultural Report

Mineral Projects

Appendix 9 – Environmental Risk Assessment

The Dianne Copper Mine implements internal environmental management systems to effectively manage environmental issues and ensure compliance with regulatory requirements per EA EPML00881213. The environmental management system includes internal procedures, standards and management plans, and will continue to be operated to ensure all environmental, social, and cultural responsibilities are met. Mineral Projects is responsible for the management and mitigation of all risks for the project, and will provide adequate resources as required.

A risk assessment workshop was completed on 23 July 2024 with the proponent and rehabilitation specialists. In accordance with Section 126C(1)(f) of the EP Act, the risk assessment assesses the risks of a stable PMLU not being achieved, and how these risks will be managed or minimised. An overview of the outcomes of the risk assessment is provided below in Tables 6 and 7.

Table 6 – Risk Matrix

Likelihood of Risk	Consequence of Risk				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Moderate	High	High	High	High
Likely	Low	Moderate	High	High	High
Possible	Low	Moderate	Moderate	High	High
Unlikely	Low	Low	Moderate	Moderate	Moderate
Rare	Low	Low	Low	Moderate	Moderate

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
New disturbance areas	Land clearance – topsoil and subsoil is not stripped and/or managed poorly	P	Mi	Mo	• The extent of disturbance will be minimised where possible. • New disturbance areas will be stripped of vegetation and topsoil and stockpiled to be used in rehabilitation. • Where possible, new disturbance will be undertaken during the dry season to reduce compaction due to wet soil.	U	Mi	L
New disturbance areas	Land clearance – vegetation clearing is managed poorly	P	Mi	Mo	• Areas will be cleared progressively as required for mining operations. • Areas to be cleared will be clearly demarcated. • Vegetation clearing will be undertaken with a fauna spotter catcher present. • A detailed fauna assessment was undertaken outlining any potential habitat on site.	U	Mi	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
Explosives	Unplanned explosion	R	C	Mo	• No explosives will be stored on site.	R	C	Mo
Transport of materials to and from site	Containment failure	U	Ma	Mo	• Use of licenced contractors. • Obey all road rules. • Radio communications on vehicles. • Regular inspection and maintenance of vehicles and equipment.	U	Ma	Mo
Sewage Treatment Plant	Spill	P	Mi	Mo	• Plant will be operated in accordance with all regulatory requirements. • Routine inspections and maintenance will be undertaken of the plant. • Use of PPE in the case of a spill	U	Mi	L
Process water / acid storage	Spill	U	Ma	Mo	• Bunding allows for full containment • Annual inspection of regulated structures by an RPEQ	U	Ma	Mo

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
					• Additional routine inspections and maintenance as required of regulated structures			
All	Extreme weather event e.g. cyclone, fire	P	Mo	Mo	• Emergency procedures in place • Mine water management system to include procedure for high rainfall events, including provision of freeboard at the start of the wet season • Annual inspection of regulated structures by an RPEQ • Additional routine inspections and maintenance as required of dams • Fire management plan in place, including evacuation of staff in catastrophic events • Fire breaks constructed	P	Mi	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
All	Noise and vibration impacts	U	Mi	L	• There will be no heavy equipment operating at night (between 10 pm and 6 am). • Blasting to be limited to Monday to Friday 6 am to 6 pm. • There are no sensitive receptors within proximity of the site. • Progressive disturbance • Progressive rehabilitation • Investigate any noise and/or blasting complaints as soon as practicable	U	Mi	L
All	Air quality impacts	U	Mi	L	• Dust suppression as required e.g. water trucks • Progressive disturbance • Progressive rehabilitation • Investigate any air quality complaints as soon as practicable	U	Mi	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
	Poor storage and management of chemicals/hydrocarbons and infrastructure leading to water quality issues	P	Mi	Mo	• Chemicals will be stored per Australian Standards.	U	Mi	L
	Failure to remove all infrastructure in accordance with the PRCP schedule	U	Mi	L	• Infrastructure decommissioning per PRCP schedule	U	Mi	L
	Poor management of non-mining waste	U	Mi	L	• Waste generation will be limited and adhere to the waste management hierarchy. • Waste will be disposed of within the on-site landfill or transferred to an appropriately licenced place.	U	Mi	L
	Failure to backfill pit (void) area	P	Mo	M	• Progressive rehabilitation including backfilling of the pit • Groundwater and surface water monitoring programs are in place.	U	Mi	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
	Water quality of discharges from site during post mining phase is not suitable for receiving environment (both surface water and groundwater)	Li	Mo	H	• Progressive rehabilitation. • Groundwater and surface water monitoring programs are in place. • There are no known groundwater users within the mining leases or 10 km of the leases	U	Mo	M
	Inadequate volume of topsoil or capping material for rehabilitation	Li	Mi	M	• Topsoil and subsoil capping materials will be won from other areas of site as required to use in rehabilitation, or use of the NAF material. • New disturbance areas will strip topsoil and other capping materials where possible. • Where required, soil will be stockpiled outside of active work areas and erosion and sediment controls installed.	U	Mo	M

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
	Poor geochemistry of exposed surfaces of overburden and spent ore stockpiles and management dams, including acid sulphate soils and acid forming materials	Li	Mo	H	• Identify areas of poor geochemistry on site including exposed surfaces of overburden and spent ore stockpiles and sediment build up in associated catch dam. • Mine water management system to redirect water around overburden and spent ore stockpiles. • Rehabilitation of overburden and spent ore stockpiles per detailed cover design. • Water quality monitoring to continue. • Encapsulation of PAF material in overburden and spent ore stockpiles at the base of the final landform.	P	Mo	M
	Identification of previously unknown contaminated areas	P	Mi	M	• All spills to be cleaned up immediately. • All new spills to be recorded.	MI	U	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
					• Contaminated land assessment to be completed at closure.			
	Erosion and/or stability issue causing failure of rehabilitation areas (i.e. not a stable landform)	P	Mi	M	• Appropriate erosion and sediment controls will be established prior to disturbance, or where required in existing disturbance areas such as silt fences. • Clean water catchments will be diverted around disturbed areas where possible. • Runoff from disturbed areas will be diverted into sediment dams and into the site water management system. • Groundwater and surface water monitoring programs are in place. • Progressive rehabilitation .	P	Mi	M

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
					• Additional erosion modelling will be completed to guide final landform design. • Reshaped landforms will be shaped in such a way to ensure a stable landform long term including reduction of slopes, benching of areas, and adequate water management structure installation.			
	Final landform is not stable, with instability or failure of reshaped landforms	P	Mo	M	• Reshaped landforms will be shaped in such a way to ensure a stable landform long term including reduction of slopes, benching of areas, and adequate water management structure installation. • Pit will be backfilled and shaped.	P	Mi	M

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
					• Highwall will be made safe and stable via benching if required. • Highwall will be fenced off for safety. • Site investigation to evaluate the strength of the foundation of the proposed waste rock dump will be completed prior to construction of the waste rock dump. • Reshaped landforms will be shaped in such a way to ensure a stable landform long term including reduction of slopes, benching of areas, and adequate water management structure installation.			
	Inadequate seed mix or unavailability of seed	P	Mi	M	• Use of local and commercially available seed.	U	Mi	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
	Intruding livestock and/or native herbivores	AC	Mi	H	• Additional gates and fences installed to reduce access for people and stock.	Li	Mi	M
	Grazing pastures on rehabilitation are not comparable to surrounding land use	U	Mi	L	• Rehabilitation areas will be topsoiled and ripped prior to seeding and tree planting to increase filtration and seed set.	U	Mi	L
	Weed infestation of rehabilitation areas	L	Mi	M	• Weed management programs will be implemented where required.	P	Mi	L
	Failure of rehabilitation due to natural event (sustained drought, flood, fire, storm, frost)	R	Ma	M	• Rehabilitation areas will be completed to sustain natural events where possible. • Native vegetation from the region will be planted, in addition to hardy pasture grasses.	R	Ma	M
	Poor topsoil structure / geochemistry issues leading to failure of vegetation	Li	Mi	M	• Soil ameliorants will be mixed with soil used in rehabilitation as required, such as gypsum.	U	Mi	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
	Excessive density of trees and/or sub storey vegetation	P	Mi	M	• If excessive density of mature vegetation, thinning will be undertaken which will provide additional habitat features. • Focus on reseeding of pasture and native grasses. • Use of lower density of trees and/or sub storey seed mix to reduce risk of excessive density.	U	Mi	L
	Poor pasture development	P	Mi	M	• Use of a seed mix including hardy pasture grasses and native grasses. • Rehabilitation objectives to meet reference sites. • Reseeding will be undertaken if not meeting rehabilitation objectives.	U	Mi	L
	Water quality of retained water in water management structures post mining is unfit for use (both surface water and groundwater)	U	Mo	M	• Catchments do not include mine disturbance areas • Dams are not linked to dams within the mine disturbance areas	R	Mo	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
					• Groundwater and surface water monitoring programs are in place. • There are no known groundwater users within the mining leases or 10 km of the leases			
	Instability or failure of water management structures and hazardous dams	R	Mo	L	• Regular inspections (at least annually) will be completed of disturbance areas and the site water management system. • Water management structures will be categorised and inspected as required under legislation. • Structures will be operated in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures* • Pre-wet season inspection checklists will be completed	R	Mo	L

Milestone	Hazard / Risk and Potential Impact	Risk Classification			Risk Treatment Plan, Mitigation Measures and Performance Measures	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
					to confirm sufficient freeboard prior to the wet season.			

Mineral
Projects

Appendix 10 – Environmental Authority

Appendix 11 – New Figure for Environmental Authority