DIANNE COPPER MINE RECOMMENCEMENT PROJECT

Environmental Authority Amendment Application

DETSI Information Request

Appendix 2: Supplementary Information

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 site is currently under care and maintenance, with the recommencement of mining activities being proposed under a major amendment to the existing Environmental Authority (EA) EPML00881213. Mineral Projects submitted an EA Amendment Report in February 2025.

This Supplementary Report has been prepared by Mineral Projects for the following purposes:

- To provide additional information to the EA Amendment Report of February 2025 which was not available in February.
- To provide more detail and context for Mineral Projects' responses to DETSI Information Request relating to the EA Amendment Application.
- To provide minor updates to information provided in the EA Amendment Application in relation to design development for the project between February and October.

This Supplementary Report should be read in conjunction with IR response and appendices, and the original EA Amendment Application.

2. Project Planning

2.1. Mine Location

The Dianne Copper Mine site was selected based on a strategic combination of geological, environmental, and operational factors that collectively support a sustainable and efficient mining operation. Its compact geological footprint further minimises stripping ratios and haulage distances, lowering operational costs and environmental disturbance.

The site benefits from being located entirely within granted mining leases, with existing infrastructure such as access roads, water storage dams, and temporary facilities already in place. Importantly, the project has been planned so that the mining and processing operations are sited entirely within the same catchment as the legacy mining operation; the total footprint of 50ha for the project includes 14.1ha that had previously disturbed. This reduces the need for additional disturbance and enables rehabilitation of the previous disturbance, including the existing pit void, and bringing the entire site to contemporary standards, per the project's updated Progressive Rehabilitation and Closure Plan.

Comprehensive risk mitigation measures have been undertaken, including geotechnical drilling to confirm slope stability, waste rock characterisation, and heap leach test work. These assessments have significantly de-risked key technical parameters and support the long-term viability of the project within its regulatory and environmental context.

Locating the processing operations adjacent to the mine also improves sustainability by minimising haulage. For every additional kilometre that the heap leach and processing plant areas are located further away from the mine, there would be an additional 600,000km of truck movements during the life of the mine.

2.2. Rationale for Process Selection: Heap Leach / SX-EW

The combined flowsheet processes of heap leaching, solvent extraction and electrowinning is one of the most environmentally sustainable methods of copper production available. This is because:

- There are no tailings dams;
- The reagents are recycled;
- Process chemicals within lined storage areas and tanks; and
- The finished product is high grade sheet copper which is immediately usable without further refining.

The selection of the heap leach and solvent extraction/electrowinning (SX/EW) process for the Dianne Copper Mine is based on a combination of environmental responsibility, technical feasibility, economic efficiency, and operational readiness. Metallurgical test work has demonstrated that the oxide and transition zone materials are highly amenable to heap leaching, with high copper recoveries, low acid consumption, and favourable leaching kinetics. These characteristics make the process both technically viable and highly efficient for the project.

Importantly, electrowinning at the mine site means that copper ore is transitioned to usable copper in one location within a tightly controlled process where environmental risk can be managed and the site can be rehabilitated to a sustainable Post Mining Land Use (PMLU). Although the site uses heap leaching, leached ore will not be left in the heaps but will be rinsed and returned to the existing landform in a waste rock stockpile which matches the existing topography or back to the pit so that there is no post mining void. Extensive test work has demonstrated that 95% of the mined overburden and ore will be benign when it is returned to the landform. 5% is at risk of being Potentially Acid Forming (PAF) which will be managed within a detailed Waste Rock Management Plan which has been developed for the project based on this test work.

3. Mining and Earthmoving Details

3.1. Background and Purpose

This section of the Supplementary Report describes the mining and earthmoving in more detail.

The current state of the site consists of a low-grade ore stockpile (described within the project as the existing waste rock stockpile or existing WRS), historic underground portal, settling dam, Run of Mine (ROM) laydown area, access roads, and concrete footings, as shown in Figure 1.

Figure 1 - Historic Site Locations

3.2. Material Generated from Mining

The current mine site contains the remains of mining operations conducted between 1978 and 1982, mainly the historic void from the underground mine portal and a low-grade ore stockpile. This ore within the existing WRS will be processed with the ore from the new mining operation. The summary schedule for the proposed mining operations consists of the following material to be generated:

Table 1 - Total Mining

Item	Description	Quantity	Units	Tonnage
1	Overburden from the pit	967,650	bcm	2,602,007
2	Ore from the pit	593,483	bcm	1,506,883
3	Ore from existing waste rock stockpile	51,065	bcm	102,795
	Total Material to be Mined		**T**	**4,211,685**

3.3. Material Balance During Mining Operations

3.3.1. Overburden

Due to the remote location and undulating site topography, a significant portion of the overburden material will be used for engineered fill for project infrastructure. Engineered fill, subject to confirmation that it is Non Acid Forming (NAF) will be used in the construction of the:

- ROM pad;
- heap leach pads;
- downstream processing area;
- drainage reshaping around the pit;
- dam walls;
- clean water drains; and
- roadworks.

In later stages of mine operation, the overburden from the pit will be trucked directly to the waste rock dump (WRS). Detailed geochemical characterisations of the material on the WRS will be conducted throughout the mining operations through to closure in accordance with the WRMP.

During the operational phase, the WRS will be graded to 1:1.33, with a 10m step in for each 20 step up. The sediment dams below the WRS will capture water runoff.

3.3.2. Ore

The historic mining operation left a 100kT stockpile of low-grade ore (existing waste rock stockpile) onsite which will be processed for the project. In addition, 1.5Mt of ore will be mined and processed from the new open pit.

Ore is processed by heap leaching onsite. Ore is mined and moved to the ROM, then crushed, screened and agglomerated before being placed on the leaching pads where it is irrigated with acid to dissolve the copper in the ore.

Once the maximum copper is recovered, the residual ore is rinsed, dried, and trucked to the interim waste rock dump (or direct to the pit if mining has concluded), as shown in Figure 2. At this point, spent ore is treated as waste.

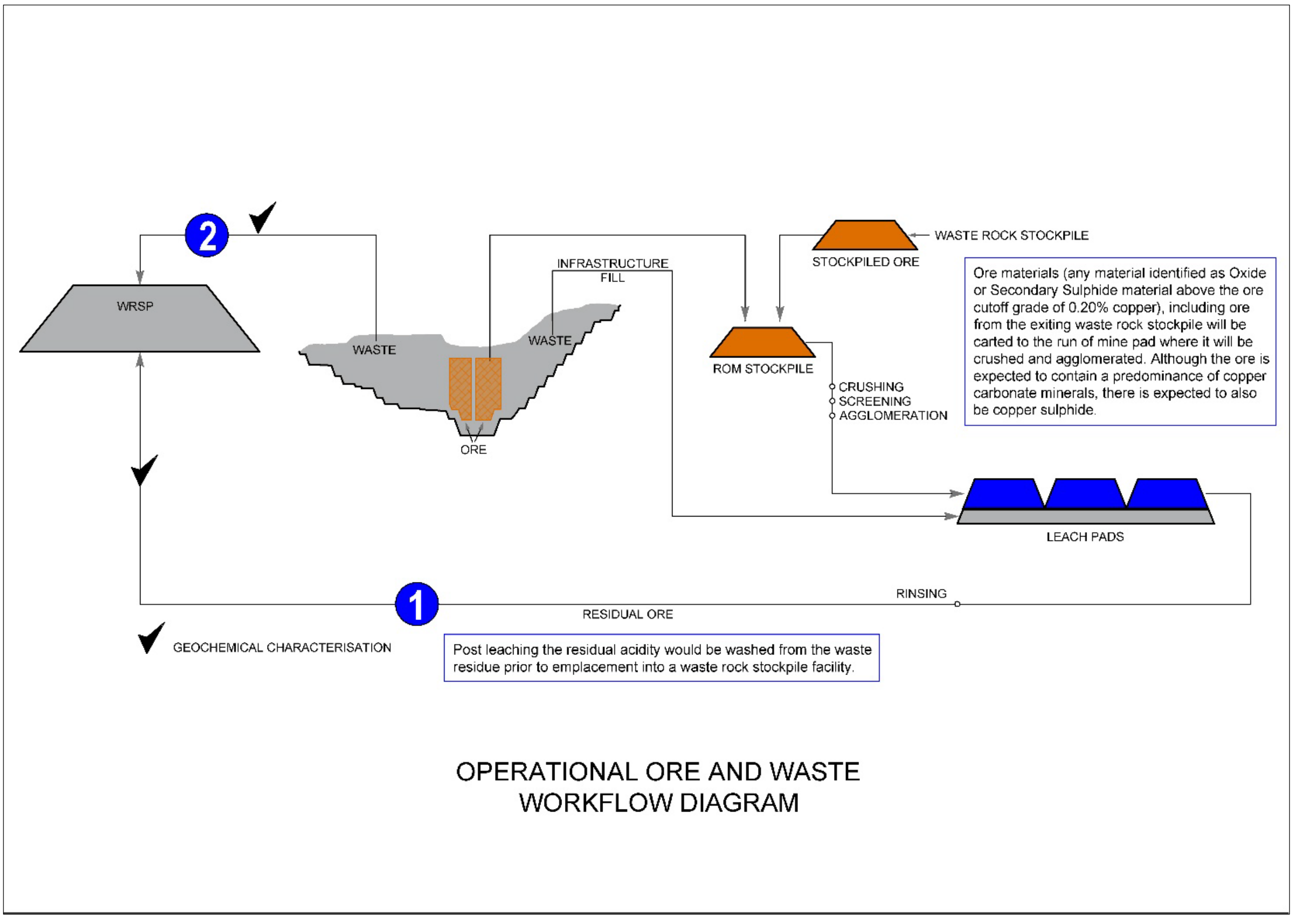

Figure 2 - Operational Ore and Waste Workflow Diagram

(Refer to Drawing No. J022.200.00-SKE-005.002-Combined_Ore_and_Waste_Workflow_Diagrams)

After mining has been completed, the material balance of the mine site is given in Table 2, below:

Table 2 - Material Balance After Mining

Item	Description	Quantity	Units	Tonnage
1	Copper Recovered On Site	14,640	T	14,640
2	Overburden used in construction:			
3a	Heap Leach Pads and Dams	375,000	ccm	787,500
3b	Building Pad for SX/EW Plant	60,000	ccm	126,000
3c	General Site Earthworks (ROM)	50,000	ccm	105,000
3d	Roadworks	50,000	ccm	112,500
4	Temporary Stockpiles			
4a	Waste Dump Interim Design Volume	1,323,000	m^3	2,664,745
4b	Reshaping drainage east of the pit.	100,000	m^3	201,300
4c	Spent Ore on Leach Pads	99,354	m^3	200,000
	Total Material Inventory during Operations		T	4,211,685

3.4. Movements at Cessation of Mining

Closure planning for the Dianne Copper project includes backfilling the pit with the mine waste rock, reshaping the out of pit Waste Rock Stockpile (WRS) to a stable landform, and capping both in accordance with the Statutory Guideline, Progressive Rehabilitation and Closure Plan 2019 and the Environmental Protection Regulation, 2019. This is detailed in the Final Landform and Cover Design Report.

Material flow in the closure plan is described in Figure 3. The material flow during closure includes:

- Removing the remainder of the spent ore from the Heap Leach Pads;
- Placing benign waste in the base of the pit (minimum 20m);
- Placing any PAF in the encapsulation zone with benign waste providing 20m cover between the edge of encapsulation zone and the pit shell;
- Filling the pit (minimum 20m cover above the encapsulation zone);
- Reshaping the waste rock stockpile to the final landform design;
- Reshaping heap lad pads, processing areas and dams to the final landform design;
- Respreading topsoil and subsoil; and
- Revegetation

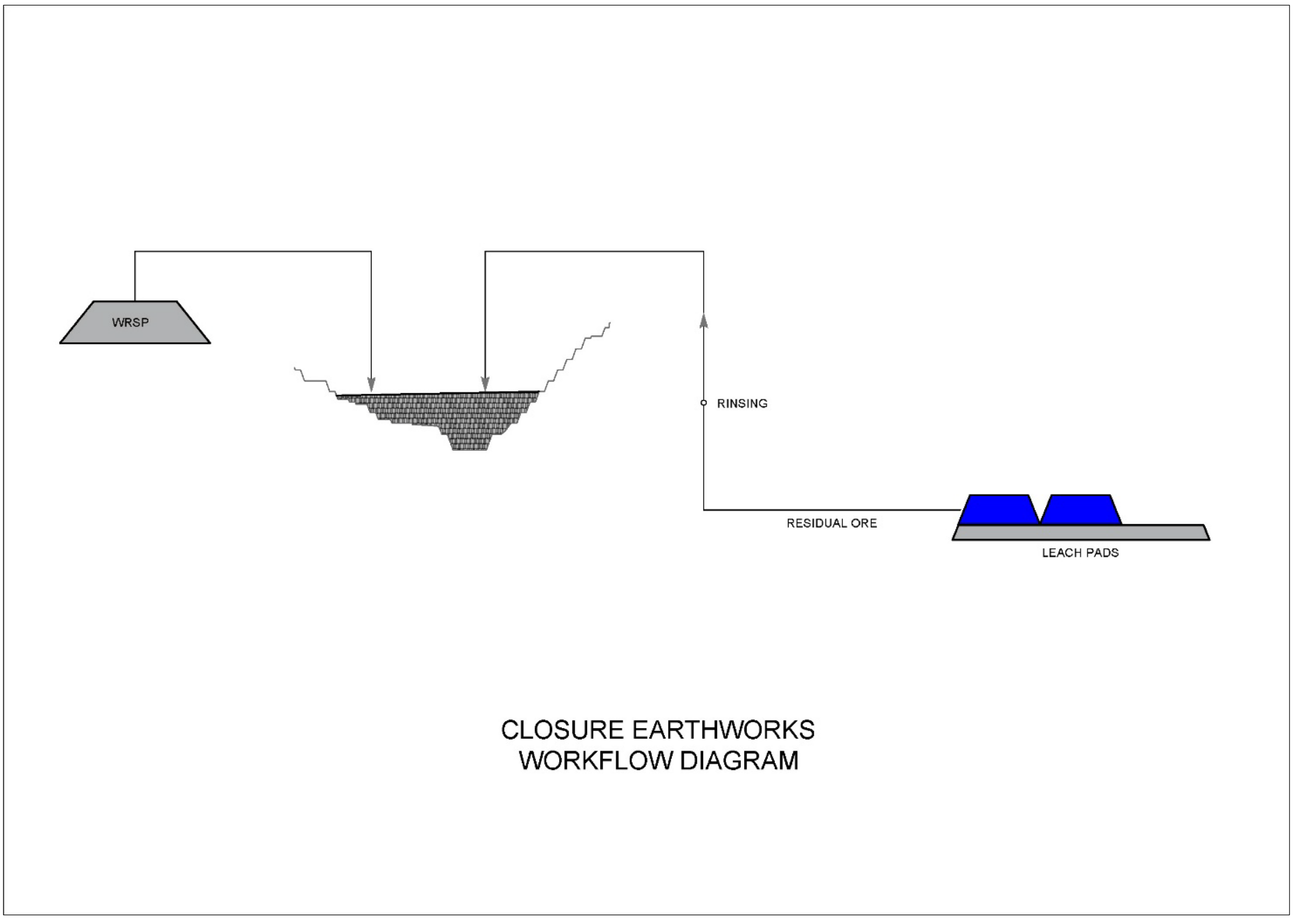

Figure 3 - Closure Earthworks Workflow Diagram

(Refer to Drawing No. J022.200.00-SKE-006.001-Closure_Earthworks_Workflow_Diagram)

3.5. Status at Mine Closure

The balance of waste material from the mine after closure is summarised in Table 3.

Table 3 - Material Balance at Closure

Item	Description	Quantity	Units	Tonnage
1	Copper Recovered On Site	14,640	T	14,640
2	Overburden used in construction:			
2a	Heap Leach Pads and Dams	326,187	ccm	684,992
2b	Building Pad for SX/EW Plant	60,000	ccm	126,000
2c	General Site Earthworks (ROM)	50,000	ccm	105,000
2d	Roadworks	50,000	ccm	112,500
3	Final Stockpiles			
3a	In Pit Dump	1,024,906	m^3	2,063,136
3b	Out of Pit Waste Dump Final Volume	548,500	m^3	1,105,417
	Total Material Inventory after Mine Closure		**T**	**4,211,685**

This is shown schematically in Figure 4, below and in more detail in the Waste Rock Dump Management Plan and Final Landform and Cover Design Report (Appendix 9 & 10 of the IR response respectively).

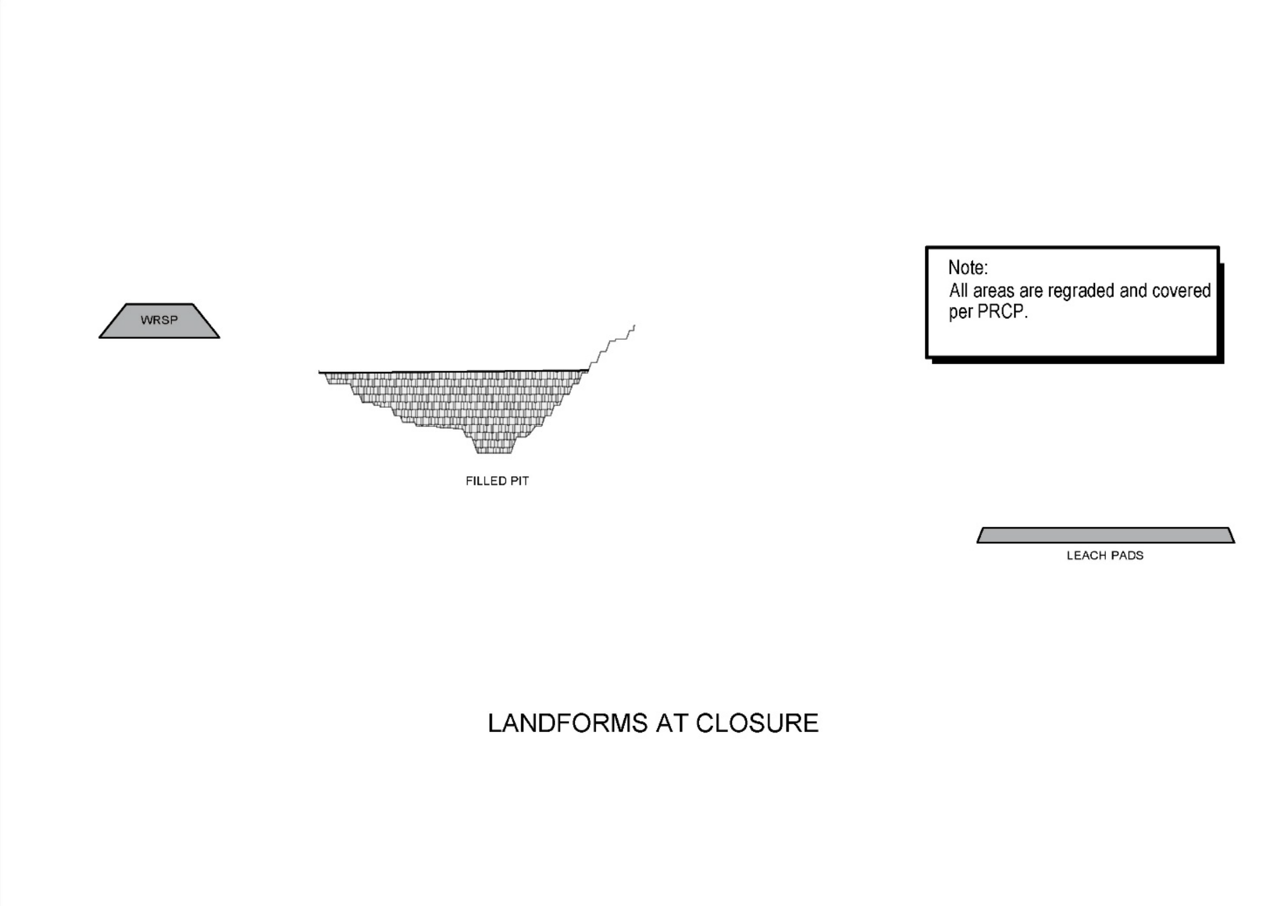

Figure 4 - Landforms at Closure

(Refer to Drawing No. J022.200.00-SKE-007.001-Landforms_at_Closure)

4. Processing Description

Figure 5 illustrates the complete copper recovery pathway for the Dianne Copper Mine. This process is designed to maximise copper extraction from the run-of-mine ore while making the most efficient water and reagents.

The circuit integrates several stages, including crushing, agglomeration, heap leaching, solvent extraction, and electrowinning, into a coherent closed-loop flow sheet.

Initially, run-of-mine ore is crushed and agglomerated with sulphuric acid to form stable aggregates. These agglomerated aggregates are placed on engineered lined pads and irrigated with recycled acidic raffinate. The acid dissolves the copper oxide minerals, while ferric iron oxidises secondary sulphides. The resulting solution is collected in lined ponds and is referred to as Pregnant Leach Solution (PLS).

The clarified PLS then feeds into the solvent extraction (SX) plant, where the copper is removed from the leach solution and concentrated into a pure electrolyte solution. This process is carried out through the use of an organic phase containing specific copper ion-selective reagents. The copper electrolyte is pumped into electrowinning cells where the copper is plated as a high-purity cathode. The anodic reaction generates acid, which is returned with the depleted electrolyte to the SX plant and subsequently transferred to the leach circuit via the raffinate stream.

The leaching and electrolyte solutions are both closed-loop circuits that are connected via the organic phase in the SX plant. This system allows for targeted rinsing of older heaps to manage residual solutions effectively.

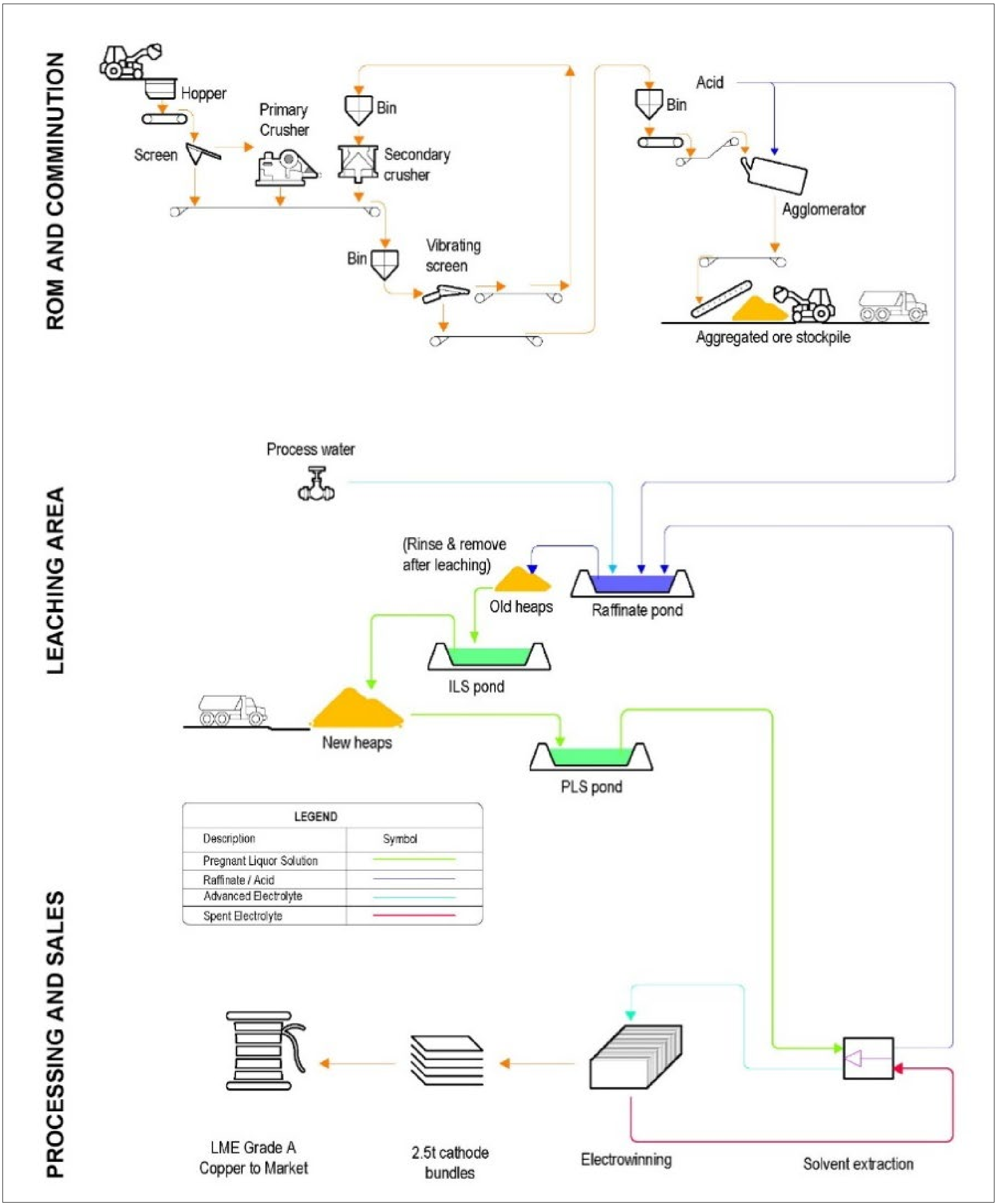

Figure 5 - Indicative Processing Flow Chart

(Refer to Drawing No. J022.200.70-DWG-001.01B-Indicative_Processing_Flow_Diagram)

4.1. ROM and Comminution

The comminution process begins with handling run-of-mine (ROM) ore, which is initially crushed via a primary (jaw) crusher, allowing only appropriately sized fractions to proceed to screening and secondary crushing. These crushers operate in succession to progressively reduce the particle size, producing a distribution suitable for further processing. This staged reduction aims to achieve optimal liberation of valuable copper while maintaining throughput and minimizing energy consumption. This early phase of ore preparation is critical for setting the foundation of the entire beneficiation circuit.

In the ore processing circuit, the vibrating screen is a key component for effective classification. As the crushed ore passes over the screen, its vibrating motion enables the separation of fine particles from coarser ones. This ensures that only the correctly sized fraction is directed to downstream operations, where further preparation or treatment occurs. Meanwhile, the coarse particles are returned to the secondary crusher for additional processing. This step is essential not only for improving the efficiency of the overall circuit but also for ensuring that each material stream is optimally prepared for its next stage. The vibrating screen thus plays a critical role in maintaining product quality and operational control.

The output of the screening circuit is targeted as D80 = 25mm (80% of crushed ore will be less than 25mm). Typical crushed ore is shown in Figure 6.

Figure 6 - Typical Crushed Ore

4.2. Acid Agglomeration and Ore Preparation

Following the comminution stage, the crushed ore undergoes acid agglomeration to prepare it for heap leaching. In this process, sulphuric acid is blended with the ore to initiate chemical conditioning. The purpose of this treatment is multifaceted: it enhances the permeability of the heap, allowing for more efficient solution flow; it reduces the migration of fine particles that could otherwise clog the heap structure; and it initiates early leaching of copper-bearing minerals such as oxides and carbonates. This step is critical for improving copper recovery rates and ensuring consistent heap performance.

- Copper (II) oxide leaching
  - *CuO(s) + H2SO4(aq) → CuSO4(aq) + H2O(l)*
- Copper (II) carbonate leaching (malachite)
  - *CuCO3(s) + H2SO4(aq) → CuSO4(aq) + CO2(g) + H2O(l)*
- Chalcocite (copper sulphide) oxidation
  - *CuS(s)+ 2H2SO4 +O2(g) → 2CuSO4(aq) +2H2O+S(s)*

The acid agglomeration process results in the formation of well-structured ore stockpiles composed of uniformly sized agglomerates. These agglomerated heaps exhibit improved mechanical stability, which is essential for maintaining heap integrity during irrigation and leaching. The uniformity of the agglomerates also contributes to consistent solution distribution throughout the heap, reducing channelling and enhancing contact between the leaching solution and the ore particles. This ultimately supports more efficient copper recovery and minimises operational issues related to fine particle migration or uneven flow.

4.3. Leaching Area

In the leaching area, both new and old heaps are irrigated with recycled acidic raffinate to initiate the dissolution of copper minerals. The agglomerated ore facilitates uniform percolation of the leaching solution, which extracts copper into a pregnant leach solution (PLS). Apart from the acid-driven reactions mentions previously, secondary sulphide leaching chemistry utilises the reduction of ferric ions. Chalcocite (Cu_2S), covellite (CuS), and bornite (Cu_5FeS_4) react with ferric ions (Fe^{3+}), releasing copper ions (Cu^{2+}), ferrous ions (Fe^{2+}), and elemental sulphur. The following simplified equations represent these reactions.

- Chalcocite
  - *Cu2S +4Fe+3 → 2Cu+2+ 4Fe+2+S*
- Covellite
  - *CuS + 2Fe+3 → Cu+2 +2Fe+2+ S*
- Bornite (overall, simplified)
  - *Cu5FeS4 + 16Fe+3 → 5 Cu+2+ 17 Fe+2 + 4S*

Ferric ions consumed in these reactions are regenerated within the heap or in ponds via oxidation by dissolved oxygen, as shown in the reaction

- 4Fe+2+ O2+4H+ → 4Fe+3 + 2H2O

After leaching, the resulting solutions are collected in designated ponds for intermediate and final processing. The Intermediate Leach Solution (ILS) pond receives solution from active heaps containing moderate dissolved Copper concentrations. In contrast, the Pregnant Leach Solution (PLS) pond collects copper-rich solution ready for transfer to the solvent extraction (SX) circuit. Before SX, the solution undergoes clarification through settling and filtration processes designed to reduce suspended solids. This step is critical for minimising the formation of crud, an unwanted emulsion that can interfere with phase separation in SX. The outcome is a clarified, copper-bearing aqueous stream that meets the quality requirements for efficient solvent extraction and subsequent electrowinning.

Figure 7 - Column Leach Testing at Brisbane Met Labs

Mineral Projects has undertaken extensive test work to demonstrate that this method of extraction is safe and efficient (see Figure 7). Based on this test work, ore is expected to leach for four months before terminal copper recovery is reached. Once copper extraction is complete, old heaps are rinsed to remove residual acidity and soluble contaminants, serving as an environmental control measure before heap removal.

The leachate generated from rinsing drains through the heap and is collected in the Process Water Dam. This rinse water for each heap is tested to ensure Water Quality Objectives before the ore is removed from the Heap Leach Pads (HLP). If determined by static sulphur assays on the ore in the leach stockpile (>0.2%) acid-base accounting will be conducted on the ore in accordance with the WRMP to characterise it as either PAF or NAF. PAF spent ore will be removed from the HLP to either permanent storage in the Encapsulation Zone (20m benign cover in all directions in the in pit WRS) or temporary storage in the northern corner of the interim waste rock stockpile.

4.4. Solvent Extraction (SX)

The Pregnant Liquor Solution (PLS) is pumped from the PLS pond into the SX plant. Here, an organic extractant (LIX-type oxime dissolved in kerosene) transfers copper into the organic phase. The loaded organic extract is stripped using sulphuric acid, producing a purified copper sulphate electrolyte. The raffinate is returned to the heaps, completing the leach circuit.

The organic phase is composed of:

- 10-15% oxime extractant (LIX-type) → active component binding to copper.
- 85-90% diluent (narrow cut kerosene) → carrier, lowers viscosity, and ensures phase separation

The main reaction in SX is ligand exchange

- $Cu^{+2} (aq) + 2RH(ORG) \rightarrow CuR_2(ORG) + 2H^+(aq)$

In the stripping stage of the SX process, concentrated sulphuric acid is used to recover copper from the organic phase and transfer it back into the aqueous electrolyte. This chemical reaction breaks the bond between copper and the organic extractant, forming copper sulphate in solution and regenerating the organic reagent. The reaction can be represented as

- $CuR_2(org) + H_2SO_4 (aq) \rightarrow CuSO_4 (aq) + 2RH (org)$

This copper-rich aqueous solution is then directed to the electrowinning circuit for final metal recovery. Meanwhile, the remaining raffinate acidic solution is recycled back to the heaps after SX is recycled, maintaining a closed-loop system that enhances process efficiency and minimises waste.

4.5. Electrowinning (EW)

The final stage of copper recovery is electrowinning (EW), where high-purity copper metal is plated onto cathodes from the stripped electrolyte. This process uses direct current and dimensionally stable anodes (DSAs), which are inert and facilitate consistent electrochemical reactions. At the cathode, copper ions in solution are reduced to solid copper metal according to the reaction.

- $Cu^{+2} + 2e^- \rightarrow Cu\downarrow$

Simultaneously, at the anode, water is oxidised to produce oxygen gas and protons, regenerating acidity in the electrolyte:

- $2H_2O \rightarrow O_2\uparrow + 4H^+ + 4e^-$

This dual reaction ensures that for every mole of copper deposited, protons are generated at the anode, maintaining the acidic balance of the electrolyte. The result is the production of high-grade copper cathodes suitable for commercial use, while preserving the integrity of the closed-loop hydrometallurgical system.

The indicative layout for the Solvent Extraction and Electro-winning plants is shown at Figure 8.

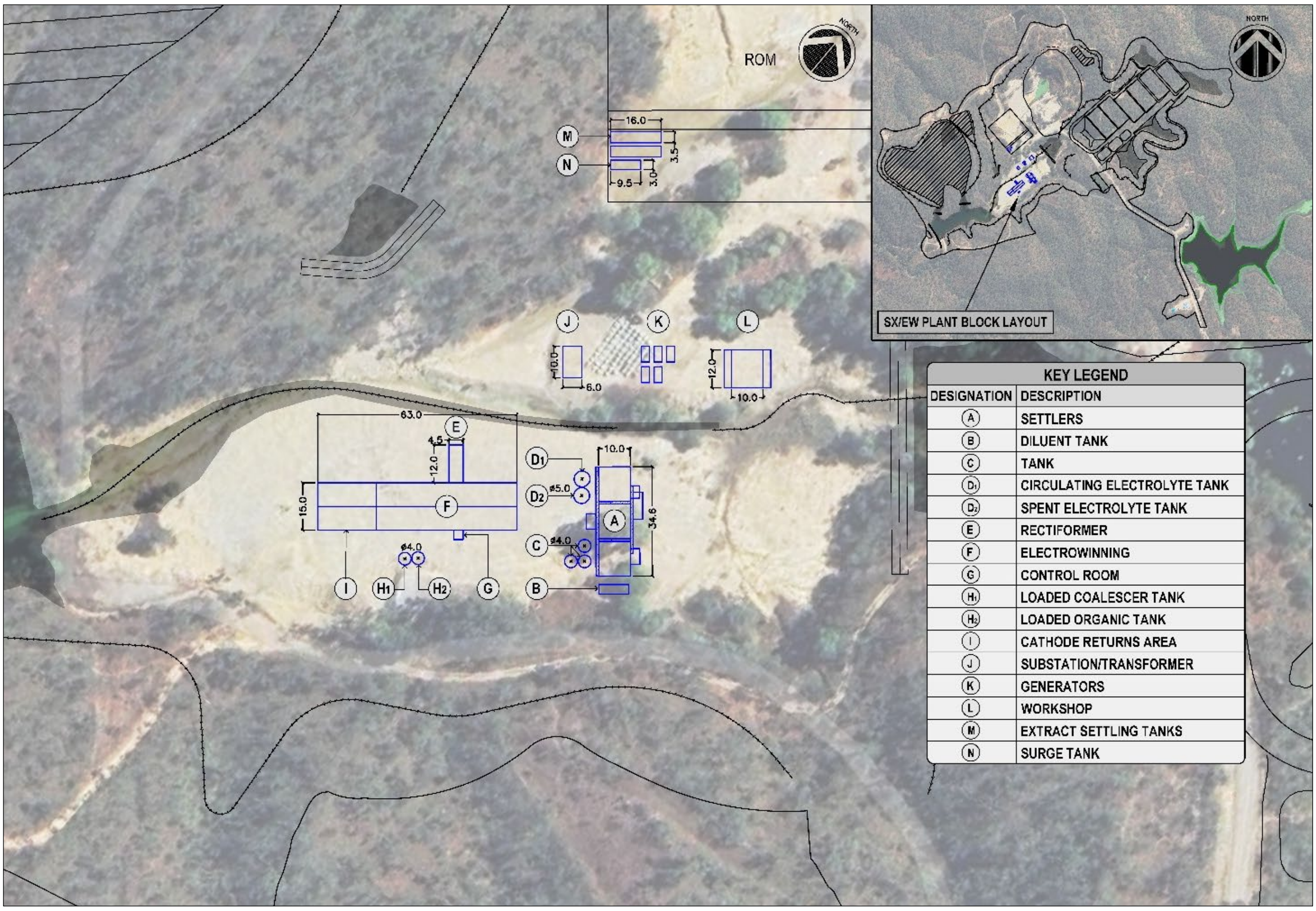

Figure 8 - Indicative Processing Infrastructure Layout

(Refer to Drawing No. J022.240.30-SKE-001.03C-SX_EW_Plant_Block_Layout)

4.6. Closed-loop Integration and Reagent Balance

The copper recovery circuit is designed as a closed-loop system to maximise reagent efficiency and minimise environmental impact. Two key loops operate in parallel: the **acid loop and the electrolyte loop**. In the acid loop, pregnant leach solution (PLS) from the heaps is processed through solvent extraction (SX), where copper is removed, and the resulting raffinate, now acidic but lean in copper, is recycled back to the heap irrigation lines. This continuous recycling maintains acid availability for leaching while reducing reagent consumption. In the electrolyte loop, copper-loaded electrolytes from SX are transferred to the electrowinning (EW) cells, where copper is plated onto cathodes. The spent electrolyte, now depleted of copper but still acidic, is returned to SX for reuse. Together, these loops ensure reagent balance and operational efficiency, reinforcing the self-contained nature of the hydrometallurgical process.

4.7. Water and Solution Management

Adequate water and solution management are essential for maintaining environmental compliance and operational efficiency throughout the copper recovery circuit. Process water is reused wherever possible, reducing freshwater demand and supporting sustainable resource use. A key aspect of this strategy involves rinsing depleted heaps before removal or closure. This rinsing step helps to minimise residual acidity and dissolved metal concentrations, preventing potential contamination of surrounding areas and ensuring that the site meets environmental standards. The operation reinforces its commitment to responsible resource management and long-term site rehabilitation by integrating water reuse and heap rinsing into the overall circuit.

The water balance in the leaching area is managed daily depending on the time of year and existing water levels. On the one hand, water levels will be preserved as much as possible during drier years to minimise the requirement for water from other water sources and on the other hand, water levels will be depleted as much as possible during wetter years to minimise the risk of overtopping. Controls which have been developed for this site include evaporators and acid irrigation with sprinklers during wetter years and dripper acid irrigation during drier years. Also, stormwater runoff from the leach pads can be diverted directly into the Process Water Dam and then transferred to the Overflow Dams (all of which are HDPE-lined) for reuse. During high rainfall events, the overflow dams may have sufficient water quality for release to the environment (via the release dam). More detailed information is provided in the Water Management Plan (Appendix 8 of the IR response).

5. Contaminants of Concern

5.1. Introduction

The following section provides a structured summary of key contaminants of concern (CoCs) relevant to the Dianne Copper Mine project, monitoring and mitigation measures that will be in place. This approach ensures that site-specific contaminant conditions are managed within Australian Standards and in accordance with the Statutory Guideline, Progressive Rehabilitation and Closure Plan 2019 and the Environmental Protection Regulation, 2019..

5.2. Contaminants Risk Assessment and Controls

5.2.1. Copper (Cu)

Copper is released primarily through the heap leaching process, where dilute sulphuric acid is used to extract the metal from ore. Residual copper may remain in spent ore or within the pregnant leach solution (PLS) ponds. If uncontrolled, copper can leach into surface or groundwater, causing ecological impacts and potential toxicity to aquatic species. To mitigate this, copper-bearing solutions are contained in lined ponds, and rinsing of spent ore occurs before disposal. Regular monitoring of copper levels is undertaken to confirm compliance with environmental guidelines.

Current Situation:

Monitoring data from South Creek sites indicated a copper concentration of 0.014 mg/L, which exceeds the guideline value of 0.0014 mg/L. Source: Appendix 3 (Groundwater and Surface Water Report, C&R 2024). Table 5: Interim EA Water Quality Objectives.

Development impact

The elevated concentration of copper (0.0014mg/l) relative to the EA guideline (0.0014mg/l) indicates a pre-existing exceedance at South Creek. Project development, particularly disturbance of ore and waste rock during construction and operation, has the potential to exacerbate copper mobilisation into the surface water and groundwater system. If not controlled, this mainly intensifies ecological risks, particularly to aquatic species sensitive to trace metals.

Likelihood of mobilisation

Given that the background concentration is already an order of magnitude higher than the regulatory objective, the likelihood of further mobilisation under disturbance scenarios is considered moderate to high. The risk is amplified in rainfall events, where runoff may transport copper-bearing particulates or leachates into Gum creek and shallow aquifers.

Mitigation measures

To manage these risks, the project will implement a multi-layered strategy:

- The copper-bearing process solution must be contained in fully lined ponds and leach pads to prevent seepage.

- Progressive rinsing of spent ore before disposal to reduce residual copper content.
- Bunding and surface water diversion structures to minimise stormwater ingress into contaminated areas.
- Routine monitoring of copper concentrations in accordance with Section 6 of the Hydrogeology Report (Appendix 5 of this IR response) and the Water Management Plan (Appendix 8 of this IR response).
- Adaptive management triggers, where any exceedance above the site-specific value will initiate corrective actions (e.g. enhanced treatment, additional containment).

5.2.2. Arsenic (As)

Arsenic occurs as a trace impurity in sulphide ores, especially those with pyrite associations. When sulphide ores oxidise, arsenic can be mobilised into drainage water, posing a risk to groundwater and surface water systems. The project mitigates this risk through geochemical characterisation, careful segregation of ore types, and encapsulation of potentially acid-forming material. Ongoing water quality monitoring will ensure that arsenic levels are controlled and comply with regulatory thresholds.

Current Situation:

Arsenic was measured at 0.002 mg/L, compared with the guideline of 0.013 mg/L. Source: Appendix 3 (Groundwater and Surface Water Report, C&R 2024). Table 5: Interim EA Water Quality Objectives.

Conclusion:

The situation is under control however routine monitoring will be carried out in accordance with Section 6 of the Hydrogeology Report (Appendix 5 of the IR response) and the Water Management Plan (Appendix 8 of this IR response).

5.2.3. Sulphate (SO4-2)

Sulphate is a by-product of sulphide oxidation and is strongly linked to acid mine drainage (AMD). Elevated sulphate levels can increase water salinity, making it unsuitable for ecosystems and downstream users. Within the project, sulphate generation is managed by encapsulating sulphide-bearing waste, using store and release covers, and conducting leach testing on waste materials to predict long-term sulphate release. These measures reduce the risk of uncontrolled sulphate leaching.

Current Situation:

Monitoring data show sulphate at 1.2 mg/L, compared with the default guideline value of 770 mg/L Source: Appendix 3 (Groundwater and Surface Water Report, C&R 2024). Table 5: Interim EA Water Quality Objectives.

Conclusion:

The situation is under control however routine monitoring will be carried out in accordance with Section 6 of the Hydrogeology Report (Appendix 5 of the IR response) and the Water Management Plan (Appendix 8 of this IR response).

5.2.4. Aluminium (Al)

Aluminium can be leached from rocks under acidic conditions, typically when AMD lowers the pH of seepage or runoff. Elevated aluminium concentrations may harm aquatic organisms and reduce water quality. To address this, the project minimises acid generation by carefully managing PAF materials, rinsing spent ore before removal from the leach pads, and applying progressive rehabilitation to reduce long-term acid release.

Current Situation:

Monitoring data show aluminium concentration of 0.3 mg/L, compared with the default value of 0.055mg/L. Source: Appendix 3 (Groundwater and Surface Water Report, C&R 2024). Table 5: Interim EA Water Quality Objectives**.**

Likelihood of mobilisation

Given that the background concentration is already much higher than the regulatory objective, the likelihood of further mobilisation under disturbance scenarios is considered moderate to high. The risk is amplified in rainfall events, where runoff may transport aluminium-bearing particulates or leachates into Gum creek and shallow aquifers.

Mitigation measures

To manage these risks, the project will implement a multi-layered strategy:

- Progressive rinsing of spent ore before disposal to reduce residual metal content.
- Bunding and surface water diversion structures to minimise stormwater ingress into contaminated areas.
- Routine monitoring of aluminium concentrations in accordance with Section 6 of the Hydrogeology Report (Appendix 5 of the IR response) and the Water Management Plan (Appendix 8 of this IR response).
- Adaptive management triggers, where any exceedance above the site-specific value will initiate corrective actions (e.g. enhanced treatment, additional containment).

5.2.5. Manganese (Mn)

Manganese naturally occurs in the project's host rocks and can be mobilised into groundwater and surface water under disturbed conditions. While manganese is generally considered a lower-risk contaminant, elevated levels may impact the aquatic ecosystem. Management measures include regular water quality monitoring, progressive rehabilitation of disturbed areas, and management of NAF according the WRMP (Appendix 9 of the IR response) to limit manganese.

Current Situation:

Monitoring showed manganese at 0.18 mg/L, compared with the 1.9 mg/L guideline.

Conclusion:

The situation is under control however routine monitoring will be carried out in accordance with Section 6 of the Hydrogeology Report (Appendix 5 of the IR response) and the Water Management Plan (Appendix 8 of this IR response).

5.2.6. Ferric Sulphate

Ferric sulphate is used in the extraction of secondary sulphide ores, particularly chalcocite. If not carefully managed, residues may contribute to acidity and heavy metal mobilisation. To mitigate risks, process solutions are fully contained within a lined system, and residues are rinsed before storage. Secondary sulphide ore handling is supported by geochemical testing and encapsulation strategies, ensuring ferric sulphate does not contribute to long-term contamination.

5.2.7. Unbalanced pH

Unbalanced pH is a direct outcome of acid mine drainage, which occurs when sulphide minerals oxidise in the presence of water and oxygen. A drop in pH can enhance the solubility of metals such as copper, iron, and aluminium, exacerbating contamination risk. The project addresses this by segregating potentially acid-forming materials, encapsulating them with benign rock, and applying engineered covers to minimise oxygen and water ingress. Water management systems ensure that drainage is monitored and neutralised where required.

Current Situation:

Monitoring data from South Creek shows pH levels around (7.2 to 8.1), compared with the guideline range of (6.0 to 8.0). These conditions indicate that pH levels are currently stable and under effective control. Source: Appendix 3 (Groundwater and Surface Water Report, C&R 2024). Table 5: Interim EA Water Quality.

Likelihood of Mobilisation

The proposed development may disturb potentially acid-forming (PAF) materials, increasing the risk of AMD generation and pH imbalance. If unmanaged, this could amplify metal mobilisation and degrade water quality, particularly in downstream aquatic environments sensitive to pH fluctuations. The likelihood of pH imbalance is considered moderate given the risk of PAF materials and the potential for oxidation during construction and operation. This risk is heightened during rainfall events, which may accelerate the oxidation process and transport acidic runoff into nearby water bodies.

Mitigation Measures

To manage pH-related risks, the project will implement a multi-layered AMD control strategy, including:

- Segregation and encapsulation of PAF materials using benign rock to limit exposure to oxygen and water.
- Installation of engineered covers over reactive zones to reduce infiltration and oxidation.
- Surface water management systems, including bunding and diversion structures, are used to control runoff and prevent contact with reactive materials.
- Routine monitoring will carried out in accordance with Section 6 of the Hydrogeology Report (Appendix 5 of the IR response) and the Water Management Plan (Appendix 8 of this IR response).
- Neutralisation protocols, where drainage is treated to stabilise pH before discharge.
- Progressive rehabilitation to reduce long-term acid generation and stabilise landforms.
- These measures are designed to maintain pH within acceptable limits, minimise metal mobilisation, and ensure compliance with environmental standards.

5.2.8. Iron (Fe)

Iron is commonly released from the oxidation of pyrite and during the ferric sulphate processing. Dissolved iron can discolour water, smother aquatic habitats, and contribute to Acid Mine Drainage. Pyritic waste rock is not expected to be encountered in the proposed mining operations.

5.2.9. Hydrocarbons

Hydrocarbons are used in the project mainly as diesel fuel and as process diluents in the SX plant, where narrow-cut kerosene is blended with oxime extractants for copper recovery. They are stored in bunded steel tanks with full spill and emergency controls. The operation also generates about 25,000 L of waste hydrocarbons and oil, either recycled or sent to licensed facilities for safe treatment and disposal. By applying Australian standards for storage, bunded containment, controlled transport, and progressive rehabilitation, the project ensures hydrocarbons are managed responsibly and potential impacts on water quality and the environment are minimised.

Current Situation

Hydrocarbons, including diluent and waste oils, are classified as hazardous substances under Australian environmental regulations. They are flammable, chemically reactive, and pose significant risks to soil and groundwater if improperly stored or handled. The project is expected to generate approximately 25,000 litres of waste hydrocarbons and chemicals, which will be recycled where possible and otherwise transferred to a licensed facility such as the Springmount Waste Management Facility. No waste will be received or burnt on site, and all handling will comply with the Waste Reduction and Recycling Act 2011 and EA conditions.

Development Impact

The development will involve the use and storage of hydrocarbons during the construction and operation phases. Activities such as fuel transfer, equipment maintenance, and SX processing increase the risk of spills or leaks. If unmanaged, these incidents could lead to contamination of land and water resources, requiring costly remediation and posing risks to ecological and human health.

Likelihood of Mobilisation

Given the volume and nature of hydrocarbons involved, the likelihood of mobilisation into the environment is considered moderate to high. This risk is elevated during rainfall events, equipment failure, or inadequate containment. Hydrocarbons are mobile in the subsurface and can rapidly impact nearby water bodies if not properly managed.

Mitigation Measures

To mitigate these risks, the project will implement a comprehensive hydrocarbon management strategy, including:

- Bunded storage systems compliant with AS1940 and AS/NZS 3833.
- Routine inspection and maintenance of tanks, pumps, and transfer lines.
- Spill response protocols and availability of spill kits.
- Training of personnel in hydrocarbon handling and emergency response.
- Licensed off-site disposal of waste hydrocarbons.
- Post-rehabilitation contaminated land investigation to confirm site suitability for the proposed post-mining land use (PMLU).

5.3. Bunding and Chemical Storage Compliance

All storage areas are equipped with bunds that have sufficient capacity to contain potential spills or leaks. The design meets the minimum requirement of AS1940 with a minimum of either 110% of the largest tank volume or 25% of the total volume stored, whichever is greater. The bunding for the SX and EW plants is shown in Figure 9, below.

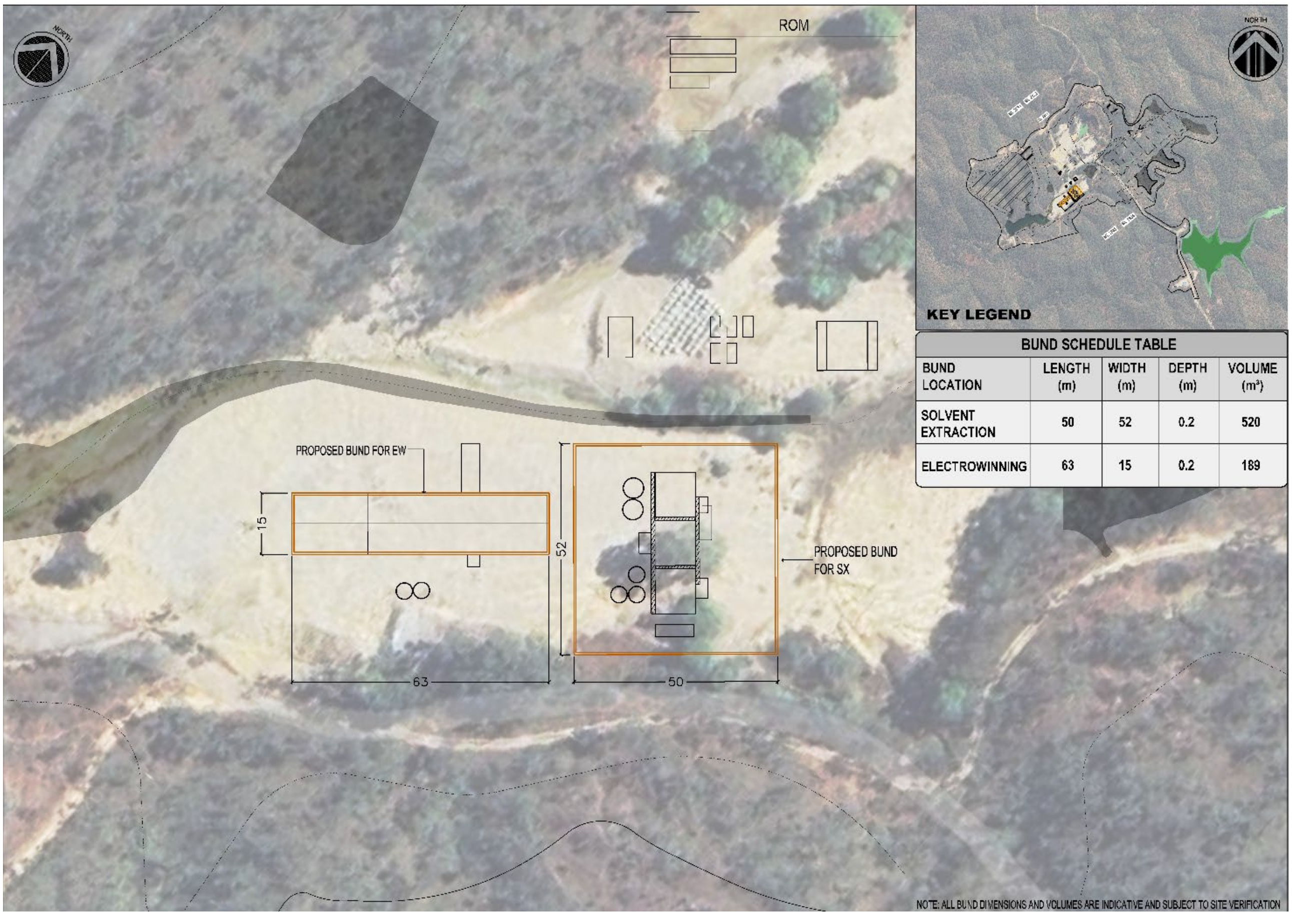

Figure 9 - Bund Capacity Layout

(Refer to Drawing No. J022.200.00-SKE-010-Bund_Capacity_Layout)

6. Design and Construction of the Heap Leaching Area

6.1. Background

The entire leaching area including leach pads, raffinate pond, pregnant liquor storage pond, intermediate liquor storage pond, process water dam and two overflow dams will be HDPE-lined, including all of the areas between these structures.

The operation of the dams and the ponds is provided in the Water Management Plan (Appendix 8 of the IR response).

The construction sequence will be:

- The whole area will be cleared, stripped of topsoil and reactive clays removed where necessary.
- The majority of the area will be filled, with small areas of cut in the overflow dams and the highest leach pad.
- The fill will be sourced from the early mining non-acid forming (NAF) waste and be placed as engineered fill under quality assurance (QA) control for moisture and compaction and then trimmed to tolerance.
- An ‘under-cushion’ will then be placed between the general fill and the liner. Subject to final design and laboratory testing, the under-cushion will consist of a minus 19 mm roadbase crushed onsite from NAF or a non-woven geotextile of the density indicate by testing.

- Subject to laboratory testing of the HDPE liner in the proposed raffinate, it will be a EVO-HDPE 1.5mm M-MARV Thickness high density polyethylene Geomembrane liner. In the event that testing indicates, a 2mm liner may be used. Strict quality control of liner welding will occur in accordance with design specifications.
- Geofabrics Megaflow sub-soil drains will be installed in a herringbone pattern on each of the pads and ponds. The exact pattern will be finalised after completion of laboratory testing. Due to the unique topography of the site, all the sub-soil drains can be run to 'daylight' and allow any leakage (if it does occur) to gravitate from the leak. For the pads, each drain will have an outlet to the next lower pad while drains for the ponds (ILS, PLS and Raffinate) and dams (Overflow Dams) will gravitate to a collection sump downslope near the Solvent Extraction plant. Drains will be kept separate and labelled so that if there is any outflow, the source of leakage can be readily identified and repairs implemented, as shown in Figure 10, below.
- A 300 mm 'over-cushion' (same material as 'under-cushion') will be placed everywhere that vehicular access and leaching is occurring.
- A groundwater monitoring bore will be installed after earthworks construction but before leaching commences up-strike/fabric from the heap leach site.

6.2. Design Requirements for Geomembranes

The recommended Liner based on Desktop analysis is Atarfil EVO-HDPE 1.5mm M-MARV Thickness Geomembrane. It contains specific additives for exposure and chemistry risk, as well as high Stress Resistance Values for potential overburden loads. A high ESCR>3000hrs value allows conservatism in terms of puncture and strain risk.

During detailed design, the Geofabrics GRID Laboratory will be used to undertake site specific risk analysis and testing to confirm this selection including:

- Desktop analysis based on historic testing of Geotextiles in the Heap Liquors. If any species indicate pH <3, potential Heavy Metals and other Oxidising agents a Laboratory immersion will be undertaken.
- Analysis of Subgrade and Cover Soil Damage Potential.
- Diffusion analysis to establish chemical risk of the Heap Chemistry.
- Confining Stress – The Heap depth is nominal 10m, therefore a confining stress of typically 300kPa has been assumed during operations.

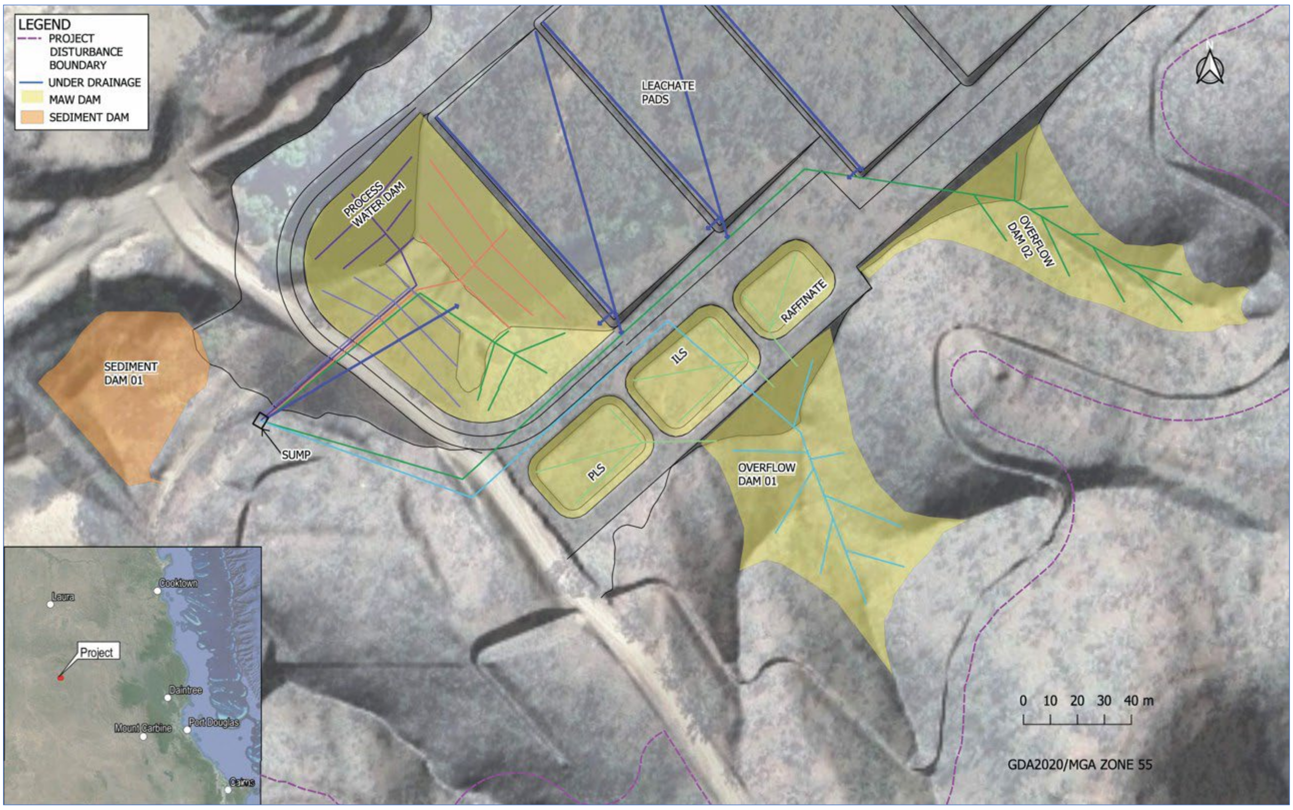

Figure 10 - HLP Sub-surface Drainage Arrangement

(Refer to Drawing No. J022.200.00-DWG-007-A-Stormwater_Management_Process Dams_under_drainage_arrangement)

6.3. Risk Assessment

Mineral Projects recognises that heap leaching can pose significant environmental risks if poorly managed. Tables 4 and 5 below provide a risk assessment for the heap leach pad design, construction and operation.

Table 4 - 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

Table 5 - Heap Leaching Risk Assessment

Hazard / Risk	Potential Impact	Risk Classification			Risk Treatment / Mitigation Plan	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
Overtopping of Process Water Dam	Release of contaminants	P	Mo	Hi	• Water management modelling indicates that the PWD will not overtop in 123 modelled scenarios. • Operational water management to mitigate risks during the wet season. • Storage of excess water within the pit as containment of last resort	R	Mo	L
Seepage through the liner	Mobilisation of contaminants into the groundwater	P	Mo	Hi	• Modelling and testing of required liner properties • QA/QC of liner installation • Liner underdrains installed and monitored in the event of seepage • Additional bores installed and monitored for contaminants	R	Mo	L
Ongoing discharge from residual ore	Ongoing contamination risk	P	Mo	Mo	• All residual ore will be removed from the leach pads to permanent storage	R	Mo	L

Hazard / Risk	Potential Impact	Risk Classification			Risk Treatment / Mitigation Plan	Risk Classification		
		Likelihood	Consequence	Classification		Likelihood	Consequence	Classification
					• Rinsing and testing of residual ores before removal			
Ongoing contamination of the leach pad site after closure	Mobilisation of contaminants into the surface water and groundwater	P	Mo	Mo	• All water within Water Quality Objectives will be released. • Water that does not meet WQOs will be either ameliorated prior to released, evaporated or transported to a licensed facility for disposal. • Salts will be vacuumed up and removed to a licensed facility for disposal. • Liner will be inspected for cleanliness before being removed from the ground cover. • Ground exposed after liner removal will be tested for contaminants.	R	Mi	L

7. Detailed Description of Power Infrastructure

A centralised power generation facility will manage the power reticulation system at Dianne Copper Mine. The station will supply electrical power to all major mining and processing facilities. The centralised setup will ensure adequate and reliable power supply across the site, except for some remote facilities that operate independently.

7.1. Central Power Generation Plant

Located at the centre of the mine infrastructure, as shown in EA Report Figure 11, the main power generation facility includes five 412 kW diesel generator sets, with one unit allocated as a spare to ensure continuous operation during maintenance or failure of any primary unit. These generators supply the Main Switchboard (MSB-1), which is located within the main switchroom.

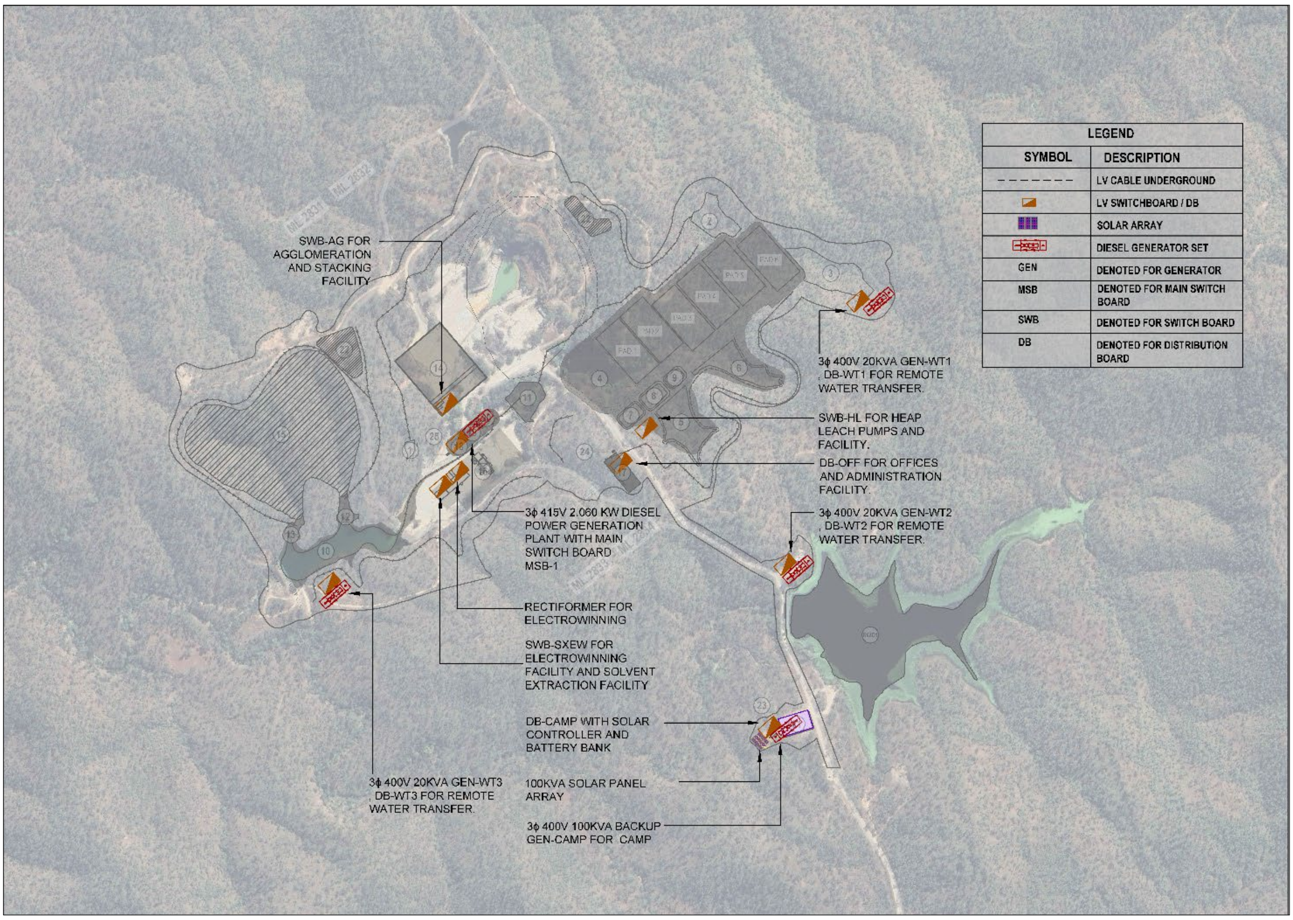

Figure 11 - Project Layout - Mine Electrical Reticulation

(Refer to Drawing No. J022.200.90-DWG-001.03-Mine_Electrical_Reticulation_Plan)

The total installed generation capacity will be 2,060 kW, designed to meet the combined power demand of all connected mining operations and infrastructure with spare capacity. The estimated power requirements for each facility are summarised in Table 6.

Table 6 - Total Estimated Power Requirement

Facility	Estimated Power Requirement
Agglomeration Facility (SWB-AG)	60 kW
Heap Leach Facility (SWB-HL)	240 kW

Solvent Extraction Facility (SWB-SXEW)	80 kW
Electrowinning Facility (SWB-SXEW)	120 kW
Electrowinning Rectiformer	1,050 kW
Offices and Workshop (DB-OFF / DB-WS)	100 kW
Total Estimated Demand	**1,650 kW**

7.2. Process and Mining Facilities Power Distribution

Power from the central plant will be distributed via MSB-1 to the following switchboards for mining and processing:

- **Agglomeration Plant:** Power will be distributed from MSB-1 to the Agglomeration Switchboard (SWB-AG), which will supply the agglomeration drum and related auxiliary systems that prepare ore for heap leaching.
- **Heap Leach Facility:** Power will be routed from MSB-1 to the Heap Leach Switchboard (SWB-HL), supplying all electrical loads associated with leach pad operations, including pumps and control systems.
- **Solvent Extraction and Electrowinning (SX/EW) Plant:** Power for the SX and EW processes will be supplied via SWB-SXEW, with a dedicated high-load supply directly feeding the rectiformer for the electrowinning tank house from MSB-1. This setup will guarantee stable voltage and current levels for the electrochemical copper recovery process.
- **Crushing and Screening Plant:** This facility will operate independently with a dedicated diesel generator set. It will not draw power from the centralised generation plant.

7.3. Auxiliary and Remote Installations

In addition to the main operational areas, the auxiliary and remote facilities will be powered by dedicated systems to ensure self-sufficiency and continuous service in isolated areas or during contingencies.

- **Remote Water Distribution Stations:** Three remote pump stations (WT1, WT2, WT3) for water control and distribution will be powered by individual 20 kVA standalone diesel generators, each connected to its local distribution board (DB-WT) to ensure autonomous operation in remote locations.
- **Administration and Workshop Facilities:** Power for offices and administration will be delivered through DB-OFF, with the workshop and associated storage areas being powered via the DB-WORKSHOP, all fed by MSB-1.
- **Accommodation Camp:** The workers' camp is powered by a solar PV generation system, supplemented by an emergency backup diesel generator to ensure continuous power availability during low solar generation periods or emergencies.

8. Landfill Design and Operation

The proposed on-site landfill is designed as a general waste compartment system engineered to provide long-term capacity and strong environmental safeguards. The rationale for the onsite landfill is to reduce haulage of waste offsite that could be satisfactorily managed onsite.

Figure 12 shows the general waste compartment cell 5,000 m³ capacity, bounded by engineered bunds that provide containment and stormwater control. Access is provided via Mine Access Road 02, with internal Waste Roads 01 and 02 and a designated general waste access ramp.

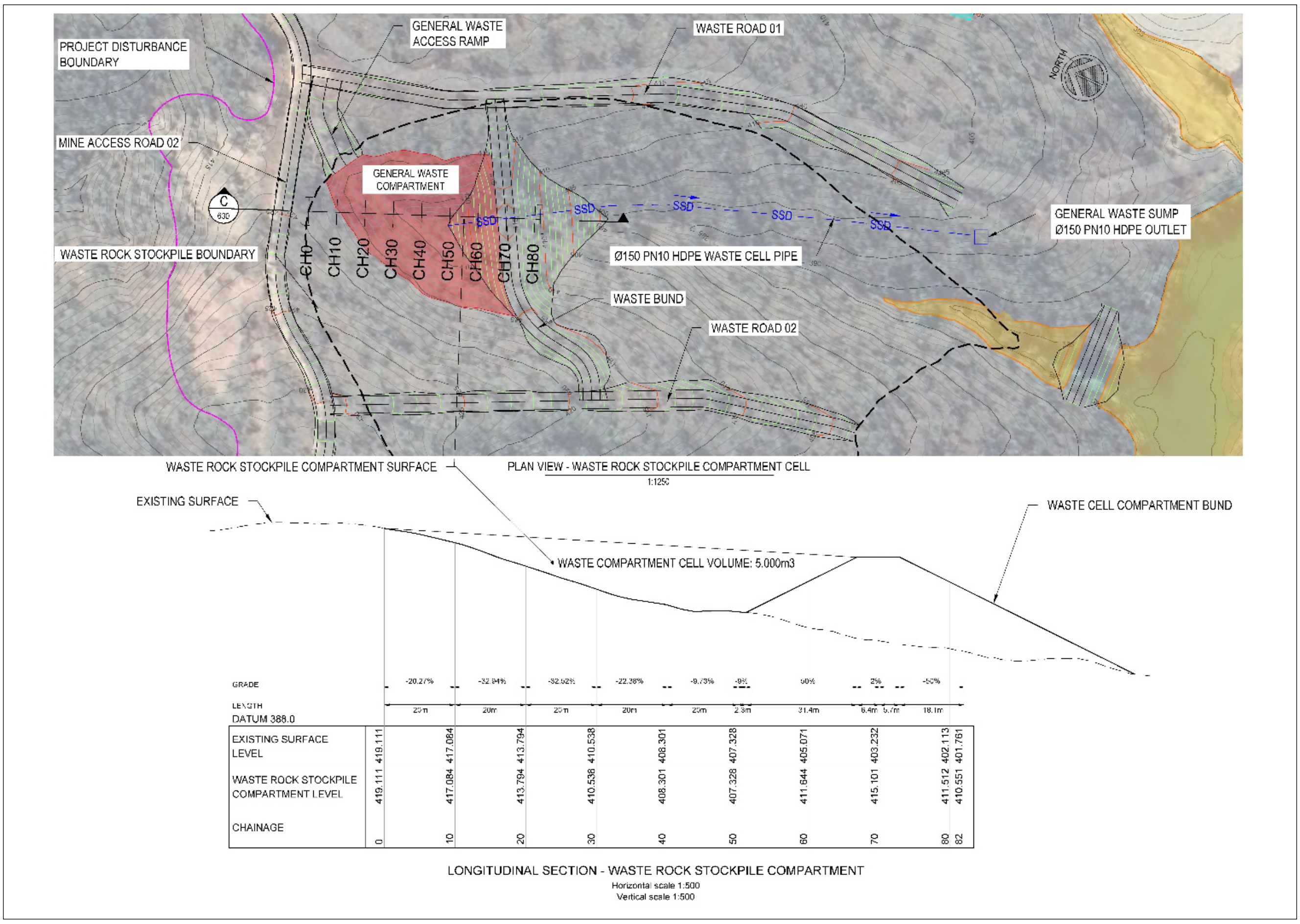

Figure 12 - Predicted Landfill Layout - Plan and Cross Section

(Refer to J022.210.30-DWG-006_00A-Waste_Rock_Stockpile_Compartment_Cell_Plan_&_Longsection)

Figure 13 expands the full site footprint, showing that the general waste footprint covers 5,930 m², while the total waste dump area extends over 47,545 m², with a maximum engineered capacity of approximately 548,466 m³. Within this area, Cell 01 (shaded red) is developed first as a staged approach, allowing progressive filling, monitoring, and closure before future cells are activated. This staged design improves leachate capture, dust control, and rehabilitation efficiency.

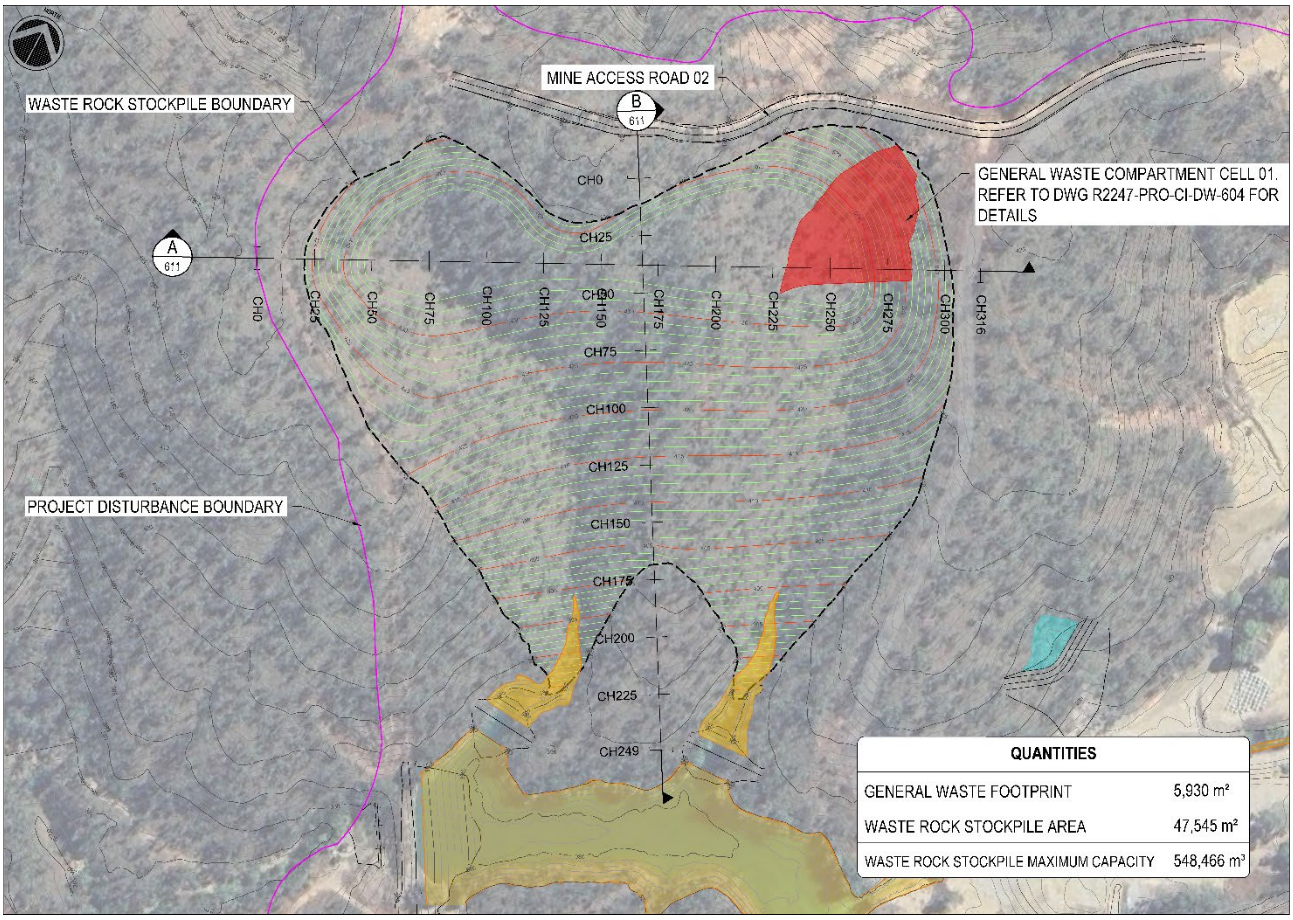

Figure 13 - Project Final Waste Rock Stockpile

(Refer to Drawing No. J022.210.30-DWG-004.00B-Waste_Rock_Stockpile_at_Closure_-_Layout_Plan)

Figure 14 (cross section) provides further technical detail, confirming that the landfill incorporates a geosynthetic liner (GCL), granular bedding, a perforated HDPE drainage system, and engineered capping layers at closure.

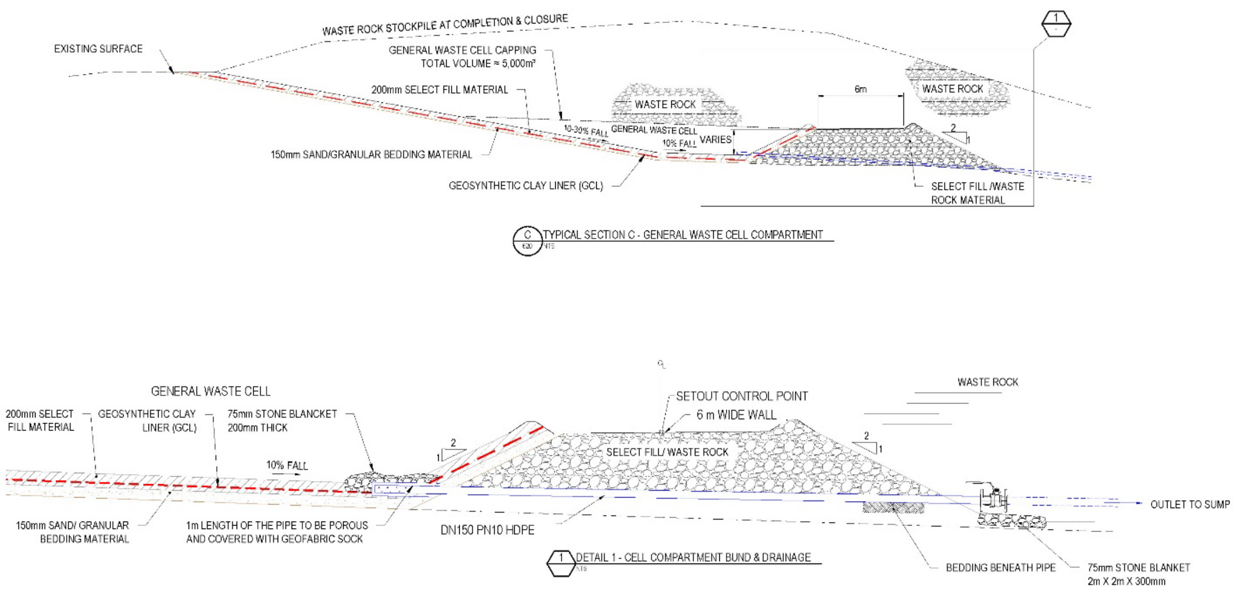

Figure 14 - Predicted Landfill Layout - Detailed Cross Section

(Refer to Drawing No. J022.210.30-DWG-007_00B-Waste_Rock_Stockpile_Typical_Sections_&_Details)

8.1. Waste Streams and Concrete Management

The Dianne Copper Mine landfill is engineered to manage diverse waste streams through categorised handling and disposal practices that prioritise environmental responsibility and resource recovery. Waste is classified into three primary categories: recyclable materials, non-recyclable waste, and non-hazardous inert waste.

Recyclable materials such as concrete rubble are crushed and repurposed for internal road construction and drainage layers, while scrap metals are segregated and sent off-site for recycling. Timber pallets and untreated wood are either reused within site operations or processed into mulch for landscaping or cover material.

Non-recyclable waste includes composite items such as laminated hoses, soiled packaging, and personal protective equipment (PPE) that cannot be reused. This category also encompasses insulation fragments, mixed debris, and contaminated plastics, which will be securely contained within the designated landfill cells. Other inert materials, such as glass, ceramics, and general office or canteen waste, are disposed of in accordance with site protocols.

Importantly, hazardous materials, including oils, batteries, and chemical containers with residual contents, are strictly excluded from landfills. They are managed separately under licensed hazardous waste streams to ensure compliance with environmental regulations and prevent contamination.

In terms of concrete management, cured concrete is crushed and reused as structural fill, haul road base, and bund wall material, contributing to circular resource use. Reinforcing steel embedded in the concrete is magnetically separated and recycled. Concrete washout water is contained in lined washout pits located away from the landfill footprint to prevent leachate generation. Liquids from these pits are either neutralised on-site or transported off-site for treatment, while hardened residues are reused as inert aggregate, further supporting sustainable construction practices.

8.2. Leachate Management

Effective leachate control is a cornerstone of the Dianne Copper Mine landfill's environmental protection strategy. The system is designed to prevent contamination of surrounding soil and groundwater, ensuring compliance with regulatory standards and long-term sustainability.

Base Lining (Figure 14)

The landfill cell base is engineered with a multi-layered containment system. At its foundation lies a Geosynthetic Clay Liner (GCL), which acts as a highly impermeable barrier to leachate migration. Above the GCL, a 200 mm layer of select fill material provides structural support and protection, followed by a 150 mm granular bedding layer that facilitates drainage and prevents clogging. This composite lining system minimises the risk of leachate infiltration into subsoils and underlying aquifers.

A robust network of DN150 High-Density Polyethylene (HDPE) perforated pipes, wrapped in geofabric socks, is embedded within a 75 mm stone blanket. This configuration ensures efficient leachate capture and filtration. The pipes are installed with a 10% gradient, promoting gravity-driven flow toward the general waste sump, where leachate is collected for further management. The system is designed to handle variable flow rates and prevent pooling or stagnation.

Once collected, leachate is managed through a combination of recirculation, on-site treatment, and off-site disposal, depending on its composition and volume:

- Recirculation onto active landfill cells enhances moisture content, accelerating biological degradation and evaporation and reducing leachate volume.
- On-site treatment may include neutralisation and metals removal, subject to leachate quality and operational capacity.
- Off-site transport to licensed treatment facilities is employed when leachate exceeds on-site treatment thresholds or contains contaminants requiring specialized processing.

8.3. Monitoring and Environmental Safeguards

To ensure system integrity and early detection of potential issues, the landfill incorporates:

- Flow meters and sump level sensors for real-time monitoring of leachate volumes.
- Inspection ports for routine maintenance and blockage detection.
- Groundwater monitoring bores provide independent verification of containment performance and ensure no off-site migration of contaminants.

8.4. Stormwater Control and Structural Stability

Stormwater management at the Dianne Copper Mine landfill is designed to minimise environmental impact through the strategic separation of clean and contaminated water flows. Clean water diversion is achieved via engineered drains and bunds that intercept upslope runoff and redirect it around the landfill footprint (Figures 12 & 13), preventing contact with waste materials. Within the landfill, the waste cell surfaces are constructed with a variable slope ranging from 10% to 30%, facilitating efficient rainfall runoff toward controlled drainage points. Upon closure, each cell is capped with a 200 mm fill layer and protected with rock, which mitigates erosion and enhances long-term surface stability (Figure 14).

Dirty water, or contact water, is directed into lined sediment basins where suspended solids are allowed to settle before monitored discharge. These basins are critical for controlling water quality and preventing downstream contamination. During long-term closure, a comprehensive capping system comprising 200 mm of fill material topped with a waste rock layer is installed to prevent infiltration. The total capping volume is approximately 5,000 m³, and progressive rehabilitation measures such as hydroseeding and batter covering are implemented to promote vegetation growth and slope stability over time (Figure 14).

To support stormwater control and landfill integrity, engineered bunds are constructed around the perimeter of each cell (Figures 12 & 14). These bunds, built from waste rock and select fill, serve multiple functions: they provide structural stability, act as erosion barriers, and maintain hydraulic separation between clean and contaminated runoff. The 6 m wide bund walls are a key design feature, ensuring the landfill remains secure and environmentally compliant throughout its operational and post-closure phases.

9. Sewage Treatment Plant

The STP will be located at the temporary accommodation village, as shown in Figure 15.

As part of the site development, STP will be adequate for the 40 FTE staff for the project operations, with an additional surge capacity of up to 50%, and will be able to comply with "Eligibility criteria and standard conditions Sewage treatment works (ERA 63)".

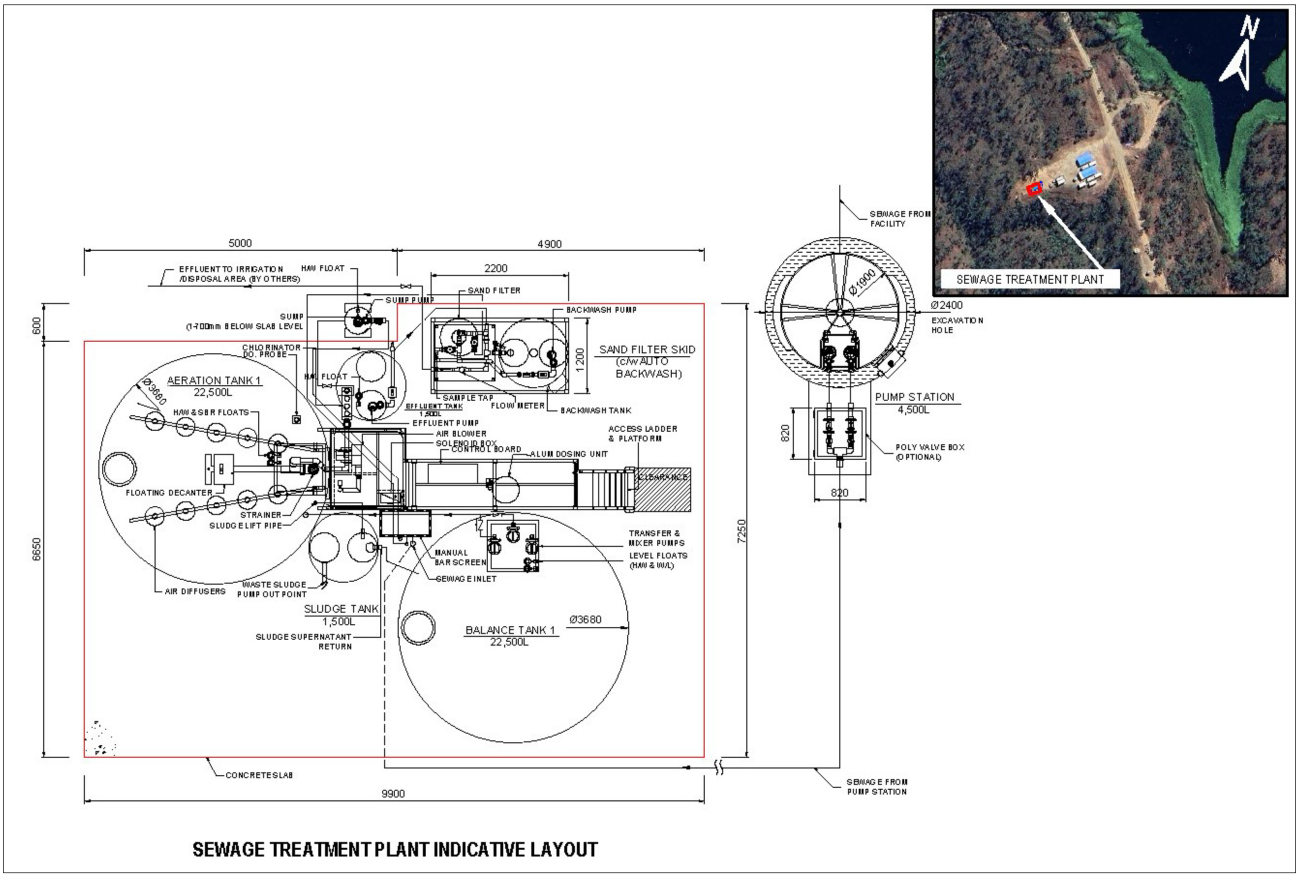

Figure 15 - Project Layout - Sewage Treatment Plant Location

(Refer to Drawing No. J022.260.10-DWG-001.02-STP_Layout_10kL)

9.1. Design Capacity

The main sewerage system handles the bulk of the wastewater from the central camp area. It is designed to handle peak flows, including a surge capacity of 50% to ensure it can manage increased usage during high-demand periods.

According to ERA 63 – Sewage Treatment, sewage treatment works with a total daily peak design capacity of **21 to 100** equivalent persons if treated effluent is discharged through an irrigation scheme.

According to research, an average person uses 150-250 litres of water daily. Using the average value of 200 litres per person per day, Table 7 shows the calculation of the total daily peak design capacity for 40 full-time employees.

Table 7 - Total Daily Peak Design Capacity

FTE	Average Daily Usage (L/person/day)	Additional 50% Surge Capacity	Capacity Per Day (L/day)
40	200	1.5	12,000

With reference to Figure 15, Ozzi Kleen recommended RP50A + 22kL Balance Tank, 10kL per day STP design.

- Average Daily Usage: 200 litres per person per day
- Design Capacity per day: 10,000L/day
- Equivalent Persons: 10,000L/day divided by 200L/person/day equals 50 equivalent persons.

Therefore, a 10,000 L/day STP design would satisfy the ERA-63 requirement, as it aligns with the prescribed capacity range for sewage treatment works serving 21 to 100 equivalent persons when the treated effluent is discharged through an irrigation scheme. This design ensures compliance with the eligibility criteria and standard conditions outlined in ERA 63, thereby supporting a streamlined application process for Environmental Authority under the standard provisions.

9.2. Detailed Description of the Sewage Treatment System

The DCM Sewage Treatment system is based on the Ozzi Kleen RP50A Advanced Secondary Treatment Plant, incorporating aluminium dosing, dissolved oxygen (DO) control, a manual bar screen, and a sand filter with automatic backwash functionality. Supporting infrastructure includes a 22,000-litre balance tank equipped with transfer and mixer macerator pumps managed by a commercial controller. Additionally, the system comprises two ST10 septic tanks (5,000 litres each), two RP10A+ Advance Secondary Treatment Systems, the installation and commissioning of an RP100A unit, and the commissioning of the RP10A+ systems.

9.2.1. Design Parameters

The performance of the sewage treatment plant will achieve advanced secondary effluent quality, provided the incoming wastewater parameters meet the following characteristics:

Table 8 - Design Parameters - Sewage Inlet

Parameter	Unit	Influent	Effluent
Biological Oxygen Demand (BOD5)	mg/L	≤ 350	≤ 10
Total Suspended Solids (TSS)	mg/L	≤ 350	≤ 10
Faecal Coliforms, FC	cfu/100 mL	-	≤ 10
Chlorine Residual	mg/L	-	0.5 ≤ 2.0
pH		6.0 ≤ 8.5	6.0 ≤ 8.5

9.2.2. Design Philosophy

The design philosophy of the OZZI KLEEN sewage treatment plant centres on delivering cost-effective, reliable solutions that minimise operational complexity and environmental impact. It employs an extended aeration process to reduce waste sludge production significantly compared to conventional systems. High-quality effluent is achieved using appropriate and advanced treatment technologies. Installation is streamlined by prefabricating the factory's tanks, electrical systems, and control panels, requiring only minor on-site work. The system is also designed for easy future expansion, allowing additional modules to be integrated with minimal disruption to ongoing operations. Automation is a key feature, with a programmable logic controller (PLC) ensuring precise, dependable treatment process control while minimising the need for operator intervention.

9.3. System Process

9.3.1. Sewage Collection and Delivery

The raw sewage is collected through the sewer lines and flows by gravity into the pump station and is then pumped to the bar screen in the sewage treatment plant. At DCM, there will also be two secondary sewage tanks in the mining and processing area. Sewage will be collected from these tanks with a vacuum tank and hauled Sewage Treatment Plant

9.3.2. Preliminary Treatment

- **Screening:** The screening device consists of a manual bar screen with 8mm spacing. The raw sewage is pumped onto the bar screen from the pump station and then drops into a balance tank.
- **Flow Balancing:** The pump station will be used for flow balancing. The PLC will control the rate of flow from the pump station to ensure correct treatment of the sewage. The excess volume of incoming sewage during the peak hours will be stored in the pump station for treatment during low flow periods. The raw sewage flows from the pump station through the bar screen into the main process tank.

9.3.3. Secondary Treatment

Sewage enters the aeration tank or Bioreactor, which contains a suspended growth, activated sludge. It undergoes a cyclic extended aeration process with intermittent settling and decanting. That is the sewage is processed in a series of batch phases within the Bioreactor to achieve the desired effluent quality.

The raw sewage in the balance tank is only pumped into the Bioreactor during the aeration cycle. The treatment operation in the bioreactor is automatically controlled by the PLC in a pre-determined cycle. The treatment can be operated at different cycle times to enable operational flexibility. For normal operation, the operation consists of the following cycles:

- **Aeration Cycle:** Aeration and oxidation by diffused air is supplied from the air blower as influent enters the aeration tank. Aeration is provided to meet the process oxygen demand for carbonaceous oxidation, nitrification and for mixing. As aeration takes place, an ideal aerobic environment is formed for microorganisms and a “humus” type activated sludge is formed. With this balanced aeration and a healthy activated sludge, digestion and oxidation of the organic waste occurs. A balance of aeration in relation to the organic/hydraulic load is maintained for a good steady reliable treatment process.
- **Settling Cycle:** Immediately after aeration, a settling condition is created to provide solids-liquid separation, which is a quiet period where the biomass has time to settle. As the biomass settles, it acts as a filter blanket trapping all the waste that is in suspension in the mixed liquor of the aerobic biomass and settles it to the floor. During the settling period there is further carbonaceous oxidation (anoxically), clarification, and denitrification. A zone of clear water is generated at the surface of the aeration tank.

- **Decant Cycle:** After a predetermined settling period decanting cycle takes place. The floating decanter/siphon draws off surface water to a predetermined level from an inverted pipe manifold. The anoxic treatment denitrification process continues as the system automatically decants treated, clarified effluent. The decanting continues until either the liquid level in the aeration tank reaches the standard operation level or the electronic process control puts the system back into the aeration cycle.

  Decanting ends as the control system restarts the blower causing air pressure to create an airlock in the floating decanter thereby stopping the flow of effluent through the decanter.

- **Chlorination:** The decanted effluent is disinfected as it flows from the aeration tank through the chlorinator and chlorine contact tank. Although the effluent is treated, it contains many types of human enteric organisms that are associated with various waterborne diseases. Disinfection can selectively destroy the disease-causing organisms in the treated effluent.

  The chlorinator uses tablet chlorine (TICA Trichloroisocyanuric Acid) and is self-compensating for variations in flow giving a dose rate residual chlorine in the effluent of between 0.5 to 2.0 mg/l of free chlorine prior to being delivered to the effluent storage tank or irrigation system. A chlorine contact time of 30 minutes during peak flow, is used in the system design to achieve disinfection.

  Dispersing of chlorine is done through a tablet chlorinator located alongside the chlorination chamber. The bottom tablet is submerged at all times to ensure sufficient chlorine is released during periods of low flow. During periods of high flow the water level in the chlorinator increases and more tablets are exposed. As these tablets dissolve more chlorine is released in sufficient quantities to ensure disinfection.

  When the liquid level is sufficient in the effluent contact tank, the effluent pump will operate and pump out the now disinfected effluent to the storage tank or irrigation/disposal system.

9.3.4. Tertiary Treatment

- **Dissolved Oxygen Controller:** The dissolved oxygen controller for dissolved oxygen (DO) monitoring and control plays an important role in optimising the aeration process, thus saving energy. The controller maintains the DO level in the aeration tank within predetermined set points, optimising treatment stages such as nitrification and denitrification, thereby reducing the air blower operation time.

  Along with providing blower control, the controller will provide a continuous reading of the dissolved oxygen level within the aeration tank for metering purposes. During maintenance or in the event of dissolved oxygen controller failure, the operation of the controller can be bypassed so that the system operates in a manual cycle mode. This is carried out by switching the “Dissolved Oxygen Meter By-pass Selector” to the “ON” position. In this mode, the air blowers will operate continuously during the “Blower on” cycle regardless of the dissolved oxygen levels.

- **Chemical Phosphorus Removal:** The dosing of Alum at a controlled rate is for phosphorus removal from the activated sludge. Phosphorus removal takes place within the mixed liquor of the aeration tank with the addition of flocculating chemicals (Aluminium Sulphate), which precipitates and binds to the sludge, which is then removed from the treatment cycle through the exercise of sludge wasting.

- **Sand Filtration:** Disinfected effluent from the chlorine contact tank is pumped through the sand filter via the filter pump, where it undergoes final effluent polishing prior to delivery to the reclaimed effluent holding tank. The sand filter has a unique automatic backwash feature. At the time of each service, the discharge from the backwashing of the filter is recycled back to the balance tank. A pressure switch located on the sand filter head controls the backwash cycle.

9.4. System Controls

The system relies on precise, automated control across multiple stages, made feasible by advancements in programmable logic controllers (PLCs) and computer technology. The PLC program adjusts operations based on flow rate and manages key components such as valves, blowers, and pumps to ensure high-quality treated effluent. An optional remote monitoring feature can send SMS alerts to up to three mobile phones when alarms are triggered.

9.5. Service and Maintenance

Regular service and maintenance of STP keeps pumps, filters, and chemical systems working properly, helping prevent leaks, spills, and system failures. Where water contamination can have severe ecological impacts, well-maintained treatment systems are essential for sustainable and responsible operations.

10. Water Rights

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. Underground water rights are proposed for the project throughout the pit area for dewatering activities. Per EP Act Section 126(A), a detailed description of groundwater aquifers, groundwater movement, interaction between groundwater and surface water, predicted quantities to be taken, impact on environmental values, impact on groundwater quality, and mitigation and management measures to be put in place for the project are described in detail in the Dianne Recommencement Project Environmental Authority Amendment Application Information Response Hydrogeology Report (Appendix 5) and Water Management Plan (Appendix 8). 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.

11. Water Management at Closure

The PRCP shows that all water storage structures except for Raw Water Dam 1 will be rehabilitated at closure. This rehabilitation is critical to ensure that water management infrastructure associated with heap leaching operations effectively mitigates environmental risks and achieves compliance with Water Quality Objectives (WQOs). Rehabilitation will be conducted sequentially down the catchment, beginning with upstream structures and progressing downstream to maintain control over water and contamination risks

11.1. Process Water Dams and Leach Pads

Rehabilitation will involve verifying water quality through comprehensive testing. Water that meets WQOs will be released in accordance with regulatory approvals, while non-compliant water will be treated on-site, evaporated in containment areas or transported to a licensed facility for disposal. Evaporated salts may be left on the surface of the liner, or brine within the ponds. Dry liner will be swept and salts vacuumed for removal to a licensed facility. Washing may also be required, and brines left at the end will be vacuum pumped and removed to licensed facility. Structural decommissioning will include progressively removing the liner from the upstream areas (highest leach pads), testing exposed subgrade for residual contamination and ameliorating or removing any contaminants reshaping embankments, and placing erosion control devices, respread topsoil and revegetating progressively in accordance with the PRCP. The HLP underdrains will remain active for each area until the liner for that area has been removed.

11.2. Sediment Dams

Sediment dams will be removed when they are receiving water in line with the WQO and are no longer required for managing sediment-laden runoff. Retaine sediment will be tested for contaminants and either removed to earthworks rehabilitation if benign or ameliorated/removed to a licensed facility if contaminated. Any retained water within sediment dams will be tested and managed similarly to PWDs. The dams themselves will be dismantled, natural drainage paths restored, and revegetation undertaken to stabilise soils and promote ecological recovery in accordance with the PRCP.

11.3. Clean Water Dams and Drains

Clean water dams, which are expected to contain water meeting WQOs, will still undergo precautionary testing prior to release. Any anomalies will be investigated and addressed. These structures will be deconstructed, with natural hydrology reinstated and surrounding areas revegetated. Clean water diversions will remain in place during rehabilitation of the heap leach pad and sediment structures to prevent clean water runoff from interacting with contaminated areas or disturbing revegetation. Once the HLP and sediment structures have been removed and the site is stabilised, the cleanwater diversion will also be dismantled, allowing natural flows to resume in accordance with the PRCP.

11.4. Monitoring

Throughout the rehabilitation process, monitoring infrastructure will remain in place. Surface water ground water sampling in accordance with Section 6 of the Hydrogeological Report (Appendix 5 of the IR response) will continue until rehabilitation is complete. All water releases and disposal actions will be documented, and independent audits will verify adherence to environmental obligations.

12. Revised Bounding Co-ordinates

The bounding co-ordinates for the project have been slightly modified since the EA Amendment Application in February 2025. This is due to ongoing design development to implement best practice environmental management for the project.

Table 9 - Total Disturbance Area

Rehabilitation Area	Disturbance Area (ha)
RA1 - Infrastructure	**0.93**
RA2 – Pit	**4.84**
RA3 – Waste Rock Stockpile	**4.74**
RA4 – Mine Water Management Dams	**7.77**
RA5 – Processing Area	**6.97**
RA6 – Other Disturbances	**24.77**
Total Disturbance Area	**50.02**

Table 10 - Total Disturbance Area Detail

Rehabilitation Area	Disturbance Area (ha)	Coordinates MGA Zone 55 GDA 2020	
		Easting	Northing
RA1 - Infrastructure	**0.93**		
Site Office	0.16	234642.677	8218408.609
		234662.179	8218424.295
		234683.395	8218357.987
		234702.881	8218373.687
Workshop	0.05	234390.098	8218432.954
		234409.079	8218449.224
		234402.593	8218418.376
		234421.575	8218434.646
Camp	0.15	234929.259	8217988.141
		234977.170	8218002.802
		234938.037	8217959.454
		234985.948	8217974.114
Main Roads and Access Roads	0.47	As Indicated on Schedule G: Figure 1 – Mine Infrastructure Layout	
RA2 - Pit	**4.84**		
Pit	4.8	234452.076	8218784.949
		234612.500	8218665.429
		234593.750	8218619.000
		234438.199	8218636.773
RA3 – Waste Rock Stockpile	**4.74**		
Waste Rock Stockpile	4.74	234157.830	8218591.617
		234234.333	8218404.911
		234069.598	8218351.495
		233964.150	8218466.431
RA4 – Mine Water Management Dams	**7.77**		
Clean Water Dam 1	0.16	234337.740	8218448.330
		234339.387	8218425.429
		234330.738	8218411.938
		234316.130	8218404.460
		234320.857	8218422.435
		234317.994	8218430.144
		234317.330	8218439.520
		234325.930	8218443.500
Clean Water Dam 2	0.41	234816.287	8218845.782
		234827.917	8218842.058
		234866.737	8218788.936
		234840.001	8218775.547
		234799.641	8218758.263

Rehabilitation Area	Disturbance Area (ha)	Coordinates MGA Zone 55 GDA 2020	
		Easting	Northing
		234787.871	8218778.022
		234779.883	8218800.593
		234784.261	8218801.706
Clean Water Dam 3	0.56	234937.500	8218755.670
		234968.500	8218704.730
		235013.510	8218687.580
		235073.310	8218676.700
		235060.830	8218724.030
		235007.570	8218738.650
Process Water Dam	1.31	234608.624	8218628.920
		234702.236	8218523.452
		234627.264	8218488.135
		234591.540	8218500.400
		234540.860	8218532.190
		234556.320	8218568.805
Overflow Dam 1	0.48	234784.292	8218541.184
		234785.700	8218486.440
		234826.552	8218462.073
		234798.565	8218403.611
		234742.240	8218441.000
		234717.024	8218481.393
Overflow Dam 2	0.41	234878.172	8218637.266
		234873.010	8218573.060
		234906.630	8218562.733
		234931.450	8218547.110
		234892.567	8218534.144
		234850.290	8218551.520
		234786.985	8218556.217
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	8218522.870
Raffinate Pond	0.09	234739.765	8218544.229
		234764.531	8218564.744
		234753.131	8218527.898
		234777.674	8218549.674
Raw Water Dam 1	3.46	234954.770	8218190.250
		235007.570	8218253.840
		235117.630	8218248.090
		235287.850	8218265.700

Rehabilitation Area	Disturbance Area (ha)	Coordinates MGA Zone 55 GDA 2020	
		Easting	Northing
		235251.820	8218053.340
		235073.880	8217986.580
		234958.480	8218120.480
Release Dam	1.32	234146.040	8218172.500
		234145.610	8218205.140
		234232.340	8218235.520
		234302.860	8218259.240
		234330.220	8218274.440
		234448.910	8218451.140
		234294.410	8218298.810
		234220.420	8218310.540
		234130.620	8218278.750
		234111.900	8218254.910
		234103.170	8218253.120
Sediment Dam 1	0.36	234486.600	8218477.610
		234524.394	8218454.313
		234534.251	8218498.811
		234539.680	8218533.620
		234516.549	8218538.645
		234473.576	8218512.675
Sediment Dam 2	0.09	234241.981	8218320.195
		234216.416	8218305.728
		234205.728	8218318.244
		234211.040	8218351.270
		234211.165	8218394.294
		234224.470	8218354.370
Sediment Dam 3	0.09	234146.782	8218285.926
		234130.373	8218269.622
		234117.290	8218288.276
		234127.570	8218308.460
		234133.150	8218351.190
		234153.260	8218310.080
RA5 – Processing Area	**6.97**		
Run of Mine	1.13	234301.267	8218572.974
		234374.400	8218635.590
		234377.679	8218483.623
		234450.799	8218546.227
Electrowinning & Solvent Extraction	0.96	234472.304	8218463.918
		234516.558	8218412.289
		234385.971	8218330.402
		234359.939	8218360.772
Heap Leach Pads	3.00	234695.577	8218535.176
		234772.188	8218603.271
		234786.895	8218589.584

Rehabilitation Area	Disturbance Area (ha)	Coordinates MGA Zone 55 GDA 2020	
		Easting	Northing
		234906.483	8218695.879
		234925.675	8218686.179
		234963.046	8218719.396
		234896.612	8218794.139
		234859.241	8218760.922
		234840.049	8218770.622
		234720.461	8218664.327
		234705.754	8218678.014
		234629.142	8218609.918
Processing Area	1.88	234890.595	8218807.142
		234969.862	8218718.138
		234679.388	8218447.944
		234608.637	8218628.924
RA6 – Other Disturbances	**24.77**		
Other Disturbance and Topsoil Stockpiles	24.77	Indicated on Schedule G: Figure 1 – Mine Infrastructure Layout	