ENGENY

CAPRICORN COPPER PTY LTD

Capricorn Copper Mine

Esperanza Pit, Esperanza TSF and Mill Creek Dam Consequence Category Assessment

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1. INTRODUCTION

1.1 General

Capricorn Copper Pty Ltd (CCPL), a wholly owned subsidiary of 29Metals Limited, owns and operates the Capricorn Copper Mine (CCM) located in Gunpowder, North Queensland. CCM is operated under the approval of Environmental Authority EPML00911413 (EA) (dated 30 September 2022) managed by the Department of Environment and Science (DES).

The site manages mine affected water (MAW) through the use of water management infrastructure, including regulated structures licensed under the site's EA. CCM operate three (3) regulated structures including Esperanza Tailings Storage Facility (ETSF), Esperanza Pit (EPit), and Mill Creek Dam (MCD) in an integrated containment system for the purpose of sharing the Design Storage Allowance (DSA) volume across the system. The operation of the integrated containment system is described in the System Design Plan (SDP).

An update of the SDP has recently been completed (Engeny, 2023c). As part of the SDP update, Engeny has been engaged to update the consequence category assessment(s) (CCA) for the existing regulated structures comprising the integrated containment system. The CCA has been undertaken in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures Version 5.02* (DES, 2016) herein referred to as 'the Manual'. RPEQ Certification of the CCAs in accordance with the requirements of the EA and the Manual is provided in Appendix B.

A previous CCA was undertaken by GHD in 2021, a summary of key changes since the previous CCA are provided in Section 4.4.

A general arrangement showing the location of the regulated structures is shown in Figure 1.1.

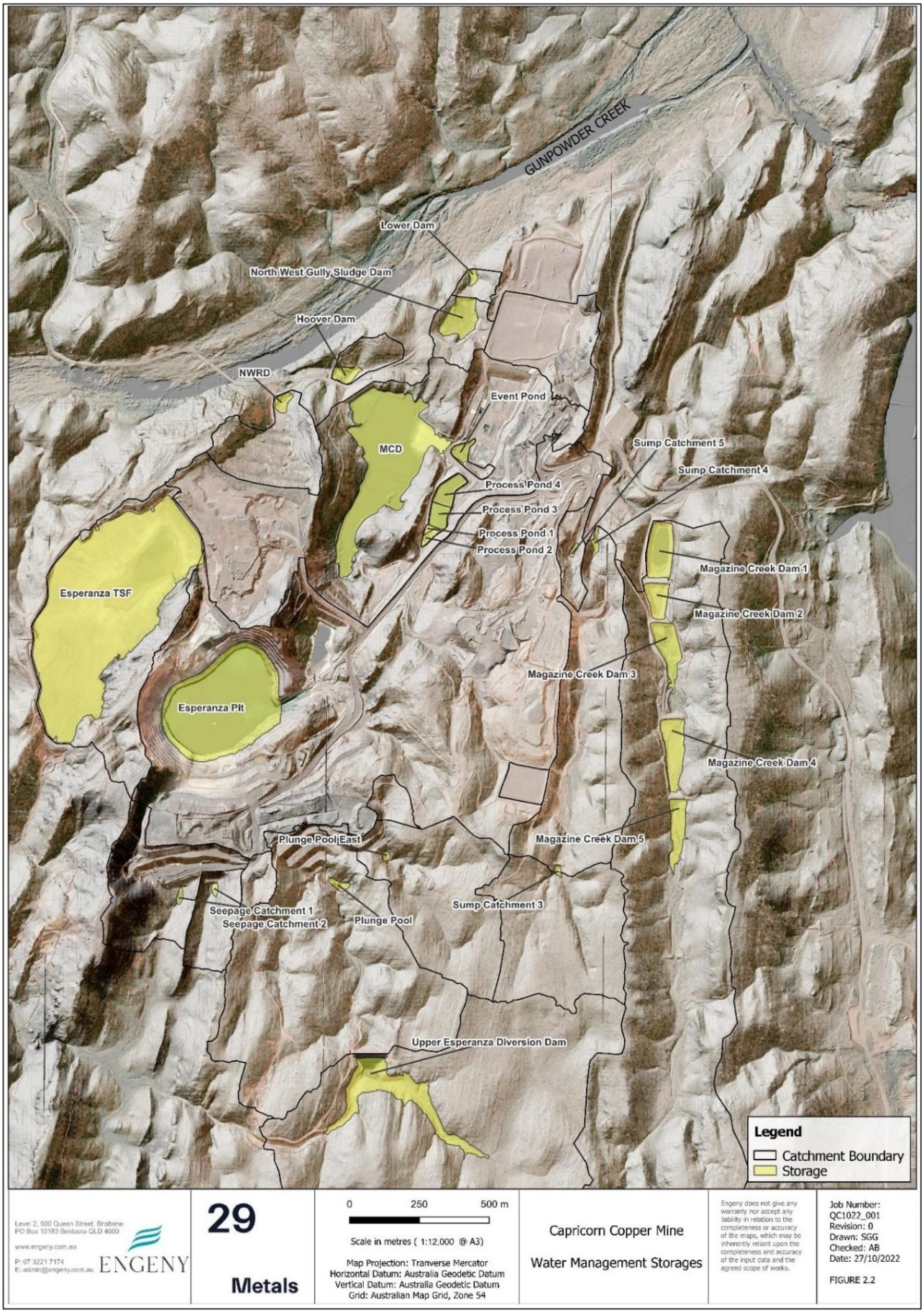

Figure 1.1: CCM General Arrangement Plan

1.2 DES / Environmental Authority Requirements

The requirements for consequence category assessment of structures at the CCM are defined in Conditions G1-1 to G1-3 of the *EPML00911413* (dated 30 September 2022).

(G1-1) The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933) at the following times:

(a) prior to the design and construction of the structure, if it is not an existing structure; or,

(b) prior to any change in its purpose or the nature of its stored contents.

(G1-2) A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.

(G1-3) Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933).

2. REGULATED STRUCTURE DETAILS

2.1 Overview

The three regulated structures EPit, ETSF and MCD form the integrated containment system for CCM for the purpose of sharing the DSA volume across the system. A summary of the structures includes:

- ETSF is an operational tailings storage facility and is required to maintain minimal volumes of water stored in the decant pond to minimise the risk of seepage. Therefore, ETSF containment requirements are shared between EPit and MCD. Tailings water and rainfall runoff from ETSF is transferred to EPit and bidirectional transfers can occur between EPit and MCD.
- EPit is a historical mining pit that has been used for tailings storage and bulk storage of MAW and has the largest capacity of the three regulated structures.
- MCD is a valley embankment dam and is the main water supply source for operational water demands.

The three storages also spill to each other before discharging offsite, with ETSF spilling into EPit, and EPit into MCD. If MCD were to overflow, water would be conveyed into Hoover Dam, and finally Gunpowder Creek.

Key features of each structure are provided in Table 2.1 below. Further details of each structure are provided in subsequent sections of this report.

TABLE 2.1: ETSF, EPIT AND MCD KEY FEATURES

	ETSF	EPit	MCD
Purpose	Tailings settlement and storage	Bulk storage for tailings and MAW (runoff and seepage)	Containment dam for mine affected runoff and MAW
Configuration	Zoned Earth and Rockfill embankments with filters	Former open cut mine workings	Earth and rockfill embankment with clay core with filters
Spill Level	280.9 m AHD	240 m AHD	219 m AHD
Maximum Operating Level (MOL) as per EA	284 m AHD	222 m AHD (Level where EPit Seeps to MCD)	219 m AHD (Spillway)
Available Storage to MOL at final tailings surface	Negligible water storage volume	1677.9ML (existing) 730.6 ML (post final tailings deposition)	771.5 ML (original capacity 1400 ML)
Floor Level	Varies from tailings deposition	Level of final tailings surface: 215.7 m AHD (varies) Level of deposited tailings: 200.8 m AHD (varies) Original pit floor: 90.0 m AHD	206.85 m AHD
Spillway			
Type	Broad crested weir	No Engineered Spillway, spill point at EPit Ramp	Excavated by wash
Crest Width	8 m	N/A - Natural Ground Profile	6 m

	ETSF	EPit	MCD
Spillway Capacity	24.32 m3/s for PMF AEP storm event while maintaining 1.05 m dry freeboard.	PMF	1:100,000 AEP + 1:10 AEP wave
Inflows and Outflows			
Inflows	• Direct rainfall and catchment runoff • Tailings slurry from the Processing Plant • Pumped seepage from the ETSF Saddles Dams 1 and 2	• Rainfall and catchment runoff • Overflows from ETSF • Groundwater inflows • Evaporators return water • Pumped seepage from NWRD sump • Underground Dewatering (Mammoth Underground and Esperanza Underground) • Saddle Dam 3 return water • Previously received brine from the RO plant – RO plant removed from site August 2023 • Seepage from Esperanza WRD • Seepage from Mammoth WRD • Pumped flows from MCD	• Rainfall and catchment runoff • Groundwater inflows • Overflow from EPit • Pumped inflows from EPit • Mammoth WRD and EPit Retention Pond seepage via Bat Cave • Previously received waste from WTP – WTP unserviceable since March 2023 flooding event • Pumped flows from Hoover Dam • Pumped seepage from Sump 6
Outflows	• Evaporation and seepage losses • Overflow to EPit • Pumped flows from decant pond to EPit	• Evaporation • Enhanced evaporation • Overflow and Seepage to MCD • Authorised pumped release to Gunpowder Creek • Pumped flows to MCD	• Evaporation and seepage losses • Supplies Pond 3 for water treatment via pumped outflows. • Overflow to Gunpowder Creek via Hoover Dam • Pumped flows to EPit

2.2 Esperanza Pit (EPit)

The EPit was operated as an open cut mine until 2005 and has served as a MAW storage facility since that time. In addition, during the period 2017 to early 2022, the EPit also served as a tailings deposition site.

The EPit is located approximately 2 km south-west of the CCM processing facility. The EPit floor is at approximately 90 mAHD elevation and daylights at the original surface at the lowest level at approximately 225 m AHD, although the maximum operating level has been set at 222 m AHD (known as the rock bar), as water above this level would be able to report to MCD via seepage via the EPit Overflow Pond (also known as EPit RAMP) which is elevated a further 18 m to 240 m AHD by the EPit Ramp. Should water rise in the EPit to 240 mAHD it would spill over an effective natural “spillway” into MCD, however the paste plant and adjacent vent shaft are below this level at approximately RL 230m AHD.

The EPit floor level rose due to the deposition of tailings between 2017 and early 2022 and currently has a lowest elevation of 200.8m AHD.

Previous works undertaken by GHD (2021a) reviewed seepage risk of the EPit, concluding that:

- The deep bedrock around the EPit had low permeability as evidenced by the lack of significant groundwater inflow to underground workings.

- Groundwater outflow was effectively prevented by a groundwater mound around the EPit; and,
- If any of the geological features through the site were more permeable than general bedrock (as seems not the case) then seepage would either be intercepted by the North Waste Rock Dump (NWRD) seepage interception trench or, more likely, the MCD.

Previous ground water modelling undertaken by GHD indicates that no physical evidence of seepage can be traced to the EPit (GHD, 2021a). Therefore, it is concluded that the EPit is effectively watertight up to the rock bar at RL 222. If water were to be stored above RL 222, seepage through the shallow fractured surface rock would enter MCD, after first passing through the EPit Overflow Pond. Historically, the EPit has stored MAW above RL 222m, and seepage rates did not impact MCD containment as the return pumping rate, and process demands are higher than the seepage inflow rate reported by CCM (13ML/day).

Engeny have recalculated the DSA for he regulated structures, with a reduction to DSA volumes to be applied to EPit. CCM propose to recommence deposition of tailings into the EPit, which ceased in January 2022. The DSA and MRL levels have been varied to RL217.2m (from RL207.7m and RL217.9m respectively), increasing the current tailing storage capacity by approximately 960,000m^3. The available tailings decant water storage below the DSA / MRL level is 233.8 ML and there is 496.8 ML water storage available above the decant storage to the MOL (RL 222, below the rock bar) for DSA/MRL.

The decant water on average is 2m depth and acts as a water cover across the tailings which are characterised as potentially acid forming (PAF). This water cover will prevent oxidation of the tailing's material, and generation of acid and metalliferous drainage.

The existing EPit storage characteristics developed from bathymetric and LiDAR Survey captured during June 2023 are presented in Figure 2.1., while the general arrangement plan of EPit is provided in Figure 2.2. Figure 2.2

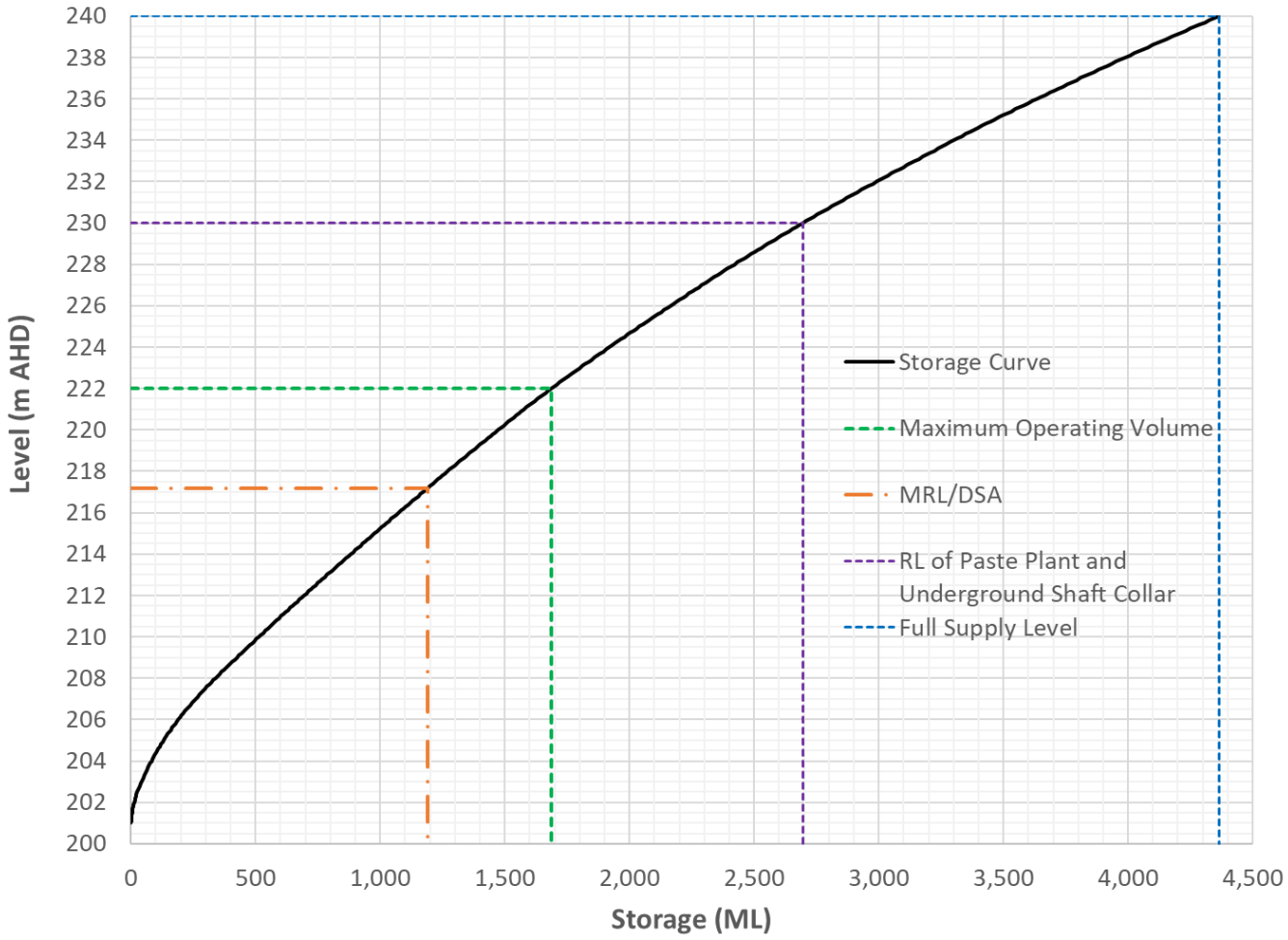

Figure 2.1:Esperanza Pit (EPit) Storage Characteristics

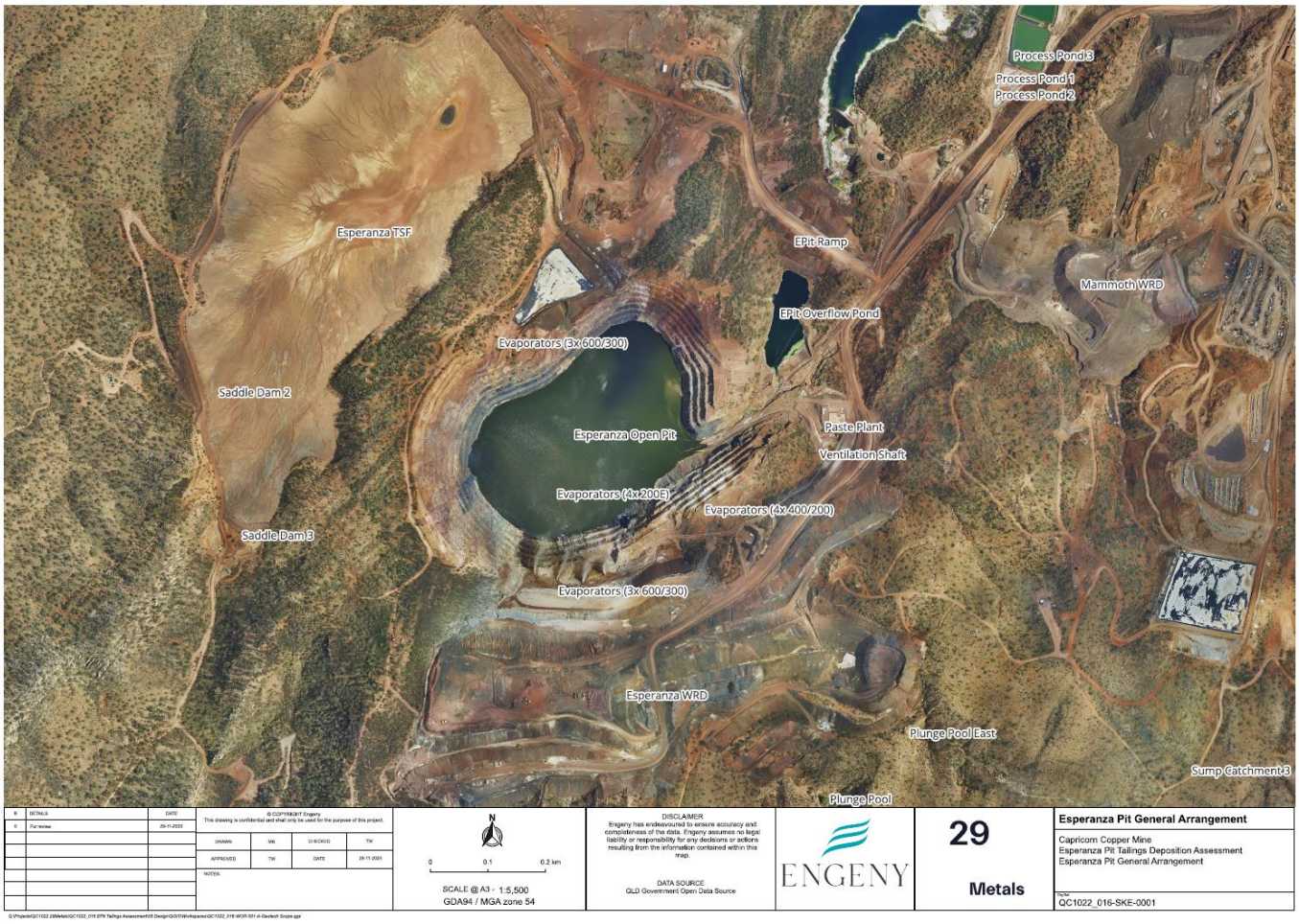

Figure 2.2: EPit General Arrangement Plan

2.3 Mill Creek Dam (MCD)

MCD is a purpose designed water management structure with an original design storage capacity of ~1,400 ML. The capacity of the MCD has been reduced to ~776ML through construction of an upstream saddle and the generation of sludges and sediment from the water treatment plant (WTP). The dam features a clay core with rockfill shells and includes a cement grout curtain in the foundations.

The MCD storage characteristics developed from bathymetric and LiDAR Survey captured during June 2023 are presented in Figure 2.3. A general arrangement plan of MCD is provided in Figure 2.5.

Since original construction, an embankment has been constructed to separate the MCD from the adjacent infrastructure (Workshop Area) from the main storage area. Relevant infrastructure has included the (now unserviceable) WTP, (no longer operational) process plant and a workshop/warehouse facility. However, the crest of this wall is lower than the MCD spillway, such that the Workshop Area floods before MCD spills. Overflows from MCD are controlled by an excavated spillway on the right abutment. Flow would first enter Hoover Dam then, (if sufficient flow continued) overtop Hoover Dam, and enter Gunpowder Creek. Seepage from MCD is minor (estimated at approximately 2mm/day (Engeny, 2023c)) and is intercepted by the downstream Hoover Dam and returned to MCD. If not collected it would flow to Gunpowder Creek.

In the event of a dam breach the total contents of MCD would report to Gunpowder Creek.

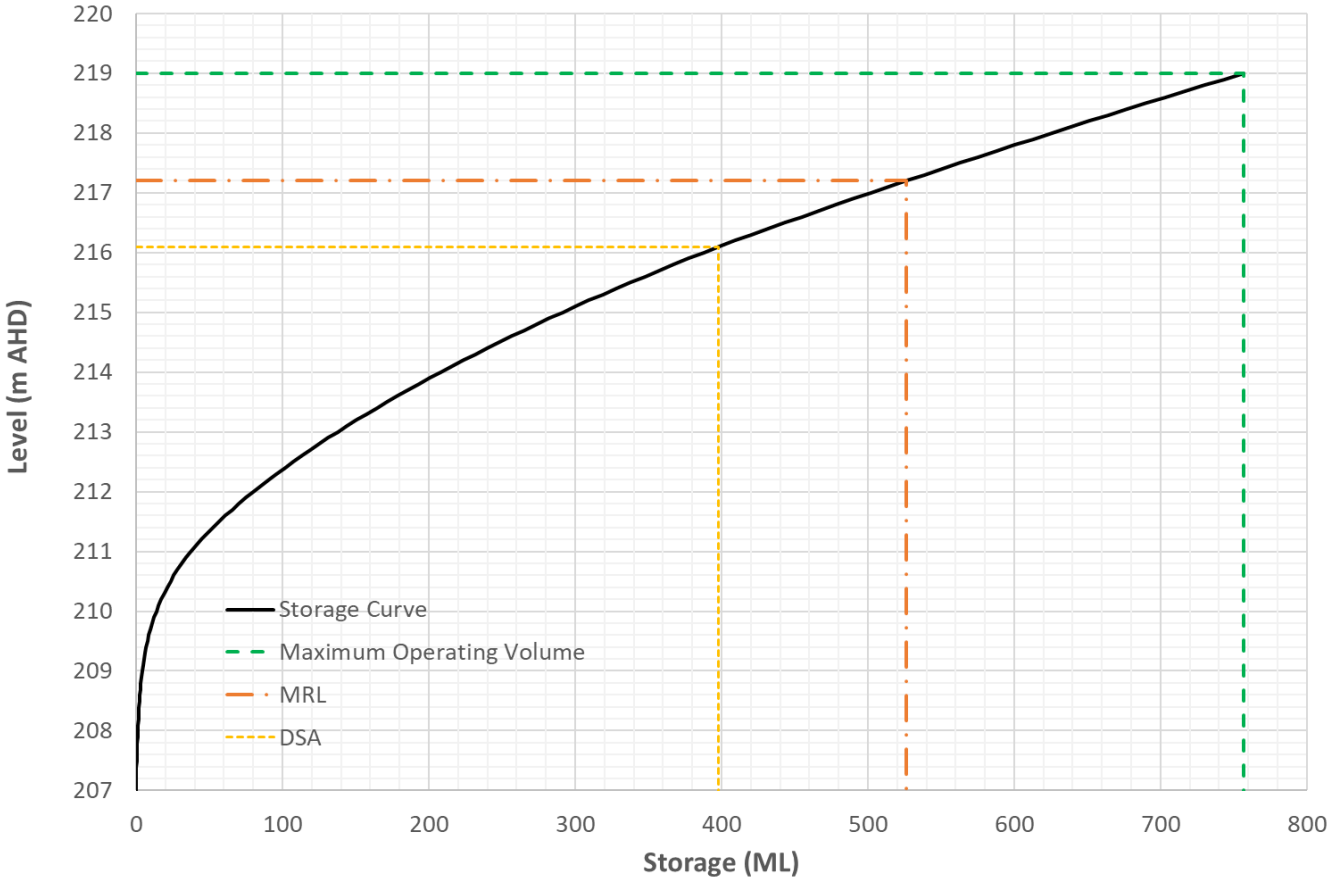

Figure 2.3: Mill Creek Dam (MCD) Storage Characteristics

Since original construction, an embankment has been constructed to separate the MCD from the adjacent infrastructure (Workshop Area) from the main storage area. Relevant infrastructure has included the (now unserviceable) WTP, (no longer operational) process plant and a workshop/warehouse facility. However, the crest of this wall is lower than the MCD spillway, such that the Workshop Area floods before MCD spills. Overflows from MCD are controlled by an excavated spillway on the right abutment. Flow would first enter Hoover Dam then, (if sufficient flow continued) overtop Hoover Dam, and enter Gunpowder Creek. Seepage from MCD is minor (estimated at approximately 2mm/day (Engeny, 2023c)) and is intercepted by the downstream Hoover Dam and returned to MCD. If not collected it would flow to Gunpowder Creek.

In the event of a dam breach the total contents of MCD would report to Gunpowder Creek.

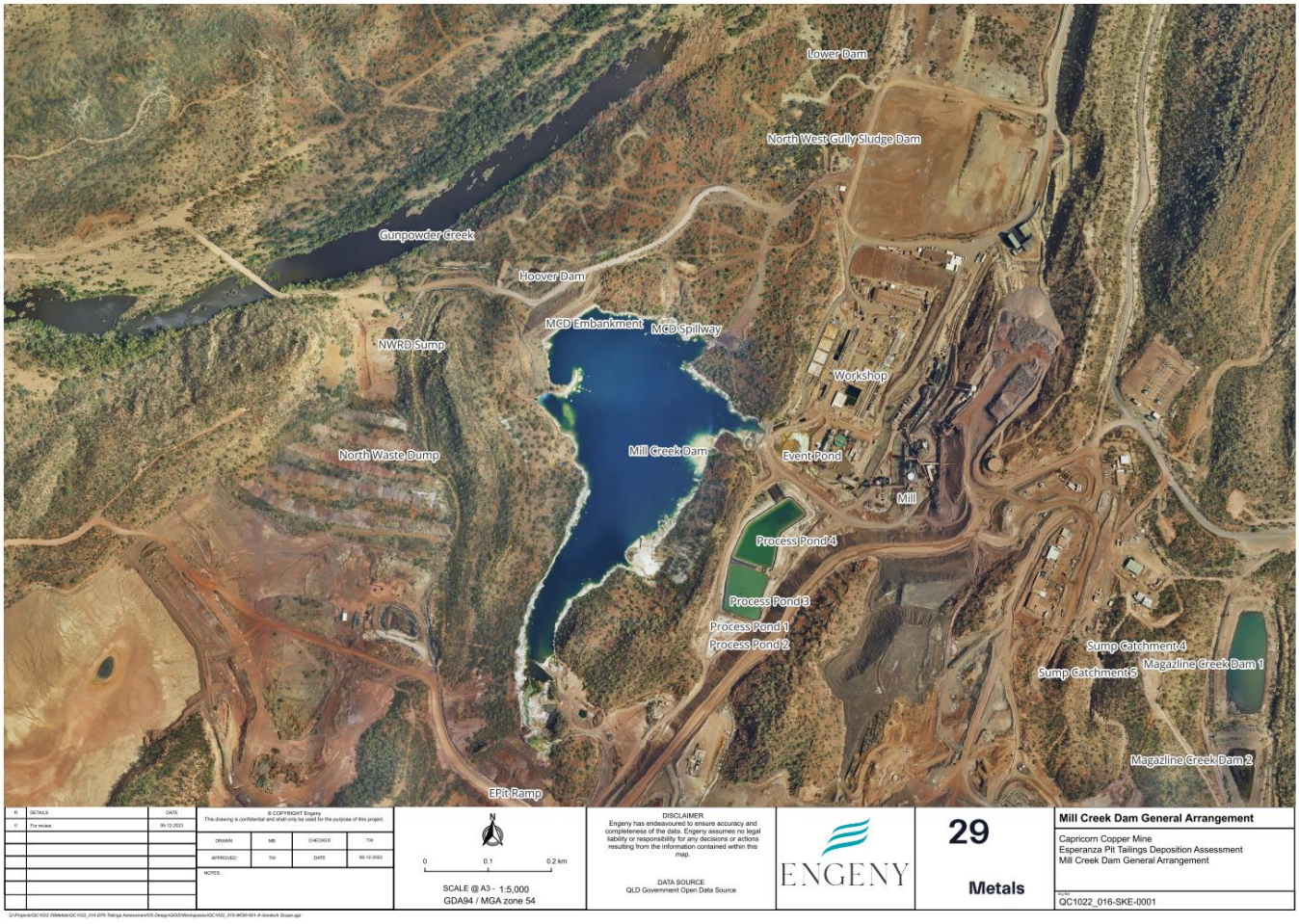

Figure 2.4: MCD General Arrangement Plan

2.4 Esperanza Tailings Storage Facility (ETSF)

The ETSF is located to the southwest of the CCM plant site in a valley to the east of Gunpowder Creek and to the west of EPit. The ETSF was originally constructed in 1998 and was used to store the tailings generated from the site under a previous owner, until 2013 when operations were suspended and the site placed in care and maintenance.

Multiple lifts of ETSF have taken place since its original construction, including raising of Saddle Dams 2 and 3 to RL277m in 2003, to RL280m in 2009, and to RL283m in 2012-2013 under a previous owner, and a further lift, referred to as Lift 1, in 2021 by CCPL.

Lift 1 comprised the construction of a raise of the Northern Embankments and Saddle Dams to provide approximately 12 months storage at the forecast production rate. The raise involved increasing the Northern Embankment and Saddle Dam 1 crest levels to 284 m AHD, Saddle Dam 1A crest level to 284.5 m AHD, and Saddle Dam 2 and Saddle Dam 3 crest level to 286 m AHD.

In 2013, seepage interception systems were installed to collect seepage from Saddle Dams 2 and 3, and from the NWRD. It is understood that seepage from the facility occurs through the fractured rock zone underneath Saddle Dams 2 and 3 and the main embankment wall. These seepage interception trenches intercept, recover, and return seepage water to the ETSF to prevent it interacting with Gunpowder Creek.

Groundwater modelling indicate that the main control on infiltration and seepage from the ETSF is the level of the pond on the ETSF and interception of seepage at the NWRD sump (Engeny & Pendragon, 2024) A higher pond level leads to a higher contact surface for infiltration and higher levels of saturation in the ETSF; hence a low (minimum) pond level is crucial to maintaining hydraulic conditions in the ETSF so that seepage cannot occur through the shallow, weathered and fractured shallow lithologies, while also reducing seepage underneath the northern embankment (Engeny & Pendragon, 2023).

During 2018-2019, the ETSF was used to enhance evaporation by transferring water from other structures and utilising the structure for water storage. This was found to cause a significant increase in seepage intercepted in NWRD Sump and the practice was subsequently ceased (GHD, 2021b). Following the cessation of use of the ETSF for additional evaporation, minimal decant water is stored in ETSF and the decant pond is situated at least 100m from the embankments, resulting in significant seepage reduction.

The estimated volume of tailings above the natural surface level of the saddles at 280.9m AHD to the 286m AHD is predicted to be approximately 1.4 million m^3 (based on previous GHD (2019) CCA) with limited water storage capacity. It is noted that no dam break study or failure modes analyses has been undertaken on this structure. However, in the event of dam-break tailings will be discharged to Gunpowder Creek.

A layout plan showing the ETSF embankment locations and spillway is presented in Figure 2.5.

Figure 2.5: ETSF Embankment Layout Plan

2.5 Water Quality Data

Historical (2014 to 2023) water quality monitoring data for the EPit, MCD and ETSF is summarised below in Table 2.2. For comparison purposes, the water quality monitoring data is presented alongside the following:

- Receiving Waters Contaminant Trigger Levels in the EA (Schedule C – Table 4 of EA).
- Stock watering (lower) limits from the ANZECC water quality guidelines (ANZECC, 2000).
- Background historical water quality data from the following upstream and downstream monitoring points (displayed in Figure 2.6)[1]:
  - Upstream monitoring points:
    - GPU1

[1] Data displayed in Tables 2.2 and 2.3 for this CCA is extracted from the Surface Water Quality Impact Assessment and Groundwater Impact Assessment undertaken by Engeny (Engeny, 2023a & Engeny & Pendragon, 2023), as well as client supplied water quality data.

- GPU2
  - GPU3
  - Gunpowder Creek Reference Site
  - Gunpowder Creek EPO
  - SS1
  - SW44
- Downstream monitoring points
  - GPD1
  - GPD2
  - GPD3
  - GPD5
  - SW45
  - WC04

The water quality monitoring data is also presented alongside the Groundwater contaminant trigger levels in the EA (Schedule C – Table 6) in Table 2.3. For the purpose of this assessment, non-detect values for analytes are reported as zero (due to the data provided containing data presented as zero concentrations).

The water quality parameters and analytes of the MCD, EPit and ETSF generally exceed trigger limits, contaminant limits and stock watering limits. This indicates that the water stored on site is of poor quality and has potential to negatively impact waterways and the environment downstream of the mine in the event of release to the environment.

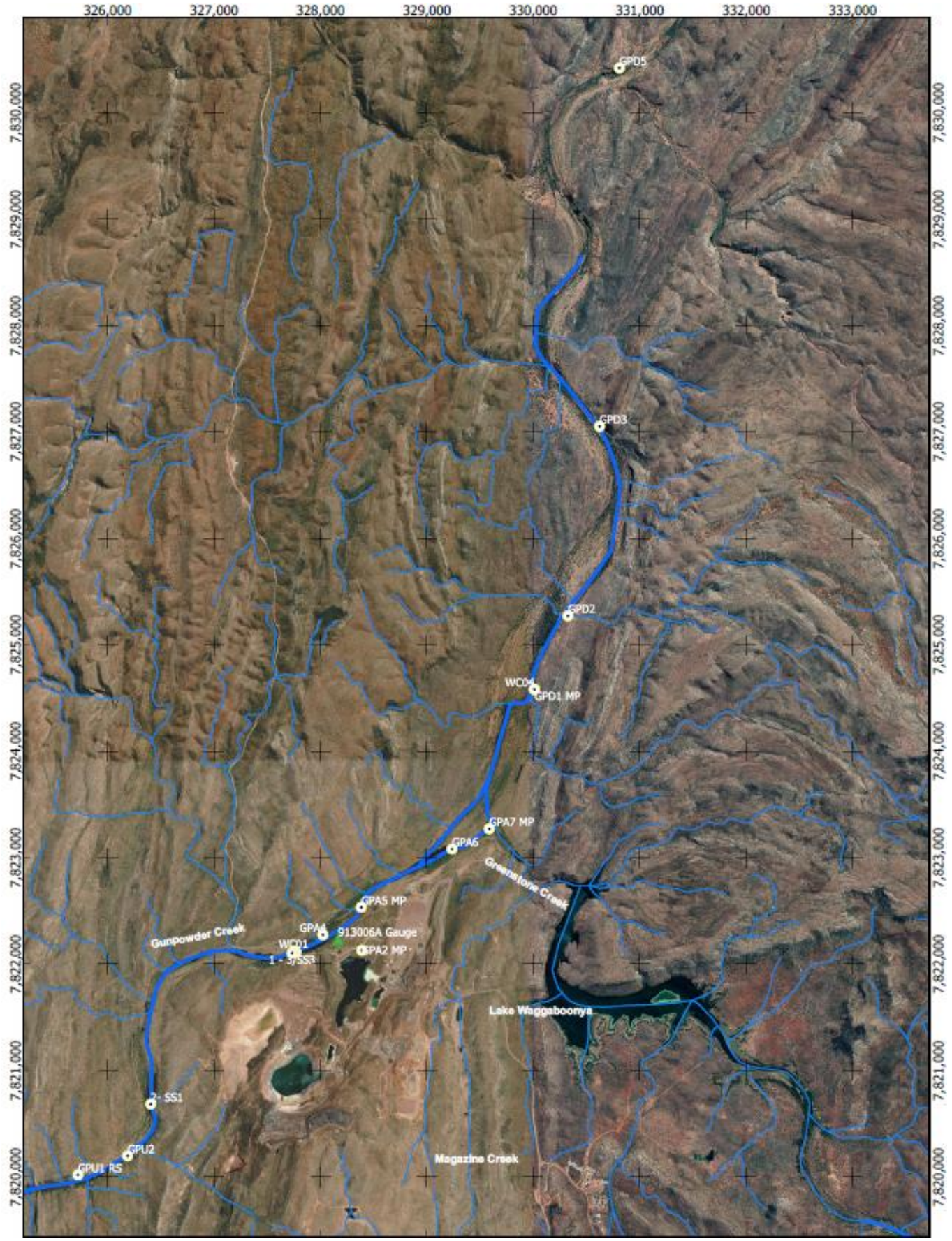

Figure 2.6: Monitoring Locations

Table 2.2: Water Quality (WQ) Monitoring Data vs Receiving Water Trigger Levels

Contaminant	Water Quality Monitoring Data 2014 - 2023												Surface Water Upstream Monitoring Points	Surface Water Downstream Monitoring Points	Trigger Level (TL) (µg/L) unless otherwise specified)	Contaminant Limit (CL) (µg /L unless otherwise specified)	Stock Water (SW) Trigger Level (ANZECC, 2000) (µg /L unless otherwise specified)
	EPit	Compliance (✗/✓)			ETSF	Compliance (✗/✓)			MCD	Compliance (✗/✓)							
		TL	CL	SW		TL	CL	SW		TL	CL	SW					
pH (pH units)	2.78 - 8.18 Average - 4.42	✗	✗	✗	2.5 - 8.85 Average - 4.67	✗	✗	✗	3.05 - 8.3 Average - 4.08	✗	✗	✗	5.1 – 10.0 Average – 7.57	4.54 – 9.69 Average – 7.64		6.0 - 8.5	6.5 – 9.0
EC (uS/fcm)	2840 - 8110 Average - 4622.78	✗	-	✗	2640 - 9340 Average - 4557.78	✗	-	✗	1620 - 7400 Average - 5463.33	✗	-	✗	56.00 – 2024.00 Average – 192.08	151 - 1390 Average – 691.19	435 uS/fcm	-	2000 uS/fcm
Sulphate (mg/l)	1780 - 7450 Average - 3961.18	✗	✗	-	1310 - 22000 Average - 6898.38	✗	✗	-	894 - 10900 Average - 5390.8	✗	✗	-	1 – 3156 Average – 19.46	0 – 5281 Average – 251.07	250 mg/L	1000 mg/l	-
Fluoride (mg/l)	0.1 - 6.4 Average - 1.29	-	✓	✓	0.1 - 13.5 Average - 2.48	-	✗	✗	0.1 - 17.2 Average - 2.22	-	✗	✗	-	-	-	2 mg/l	2 mg/l
Aluminum (µg/L)	10 - 252000 Average - 37662.3	✗	✗	✗	30 - 1700000 Average - 226338.62	✗	✗	✗	10200 - 150000 Average - 66525.42	✗	✗	✗	-	-	55	5000	5000
Arsenic (µg/L)	1 - 2260 Average - 42.64	✗	✓	✓	1 - 229000 Average - 13773.06	✗	✗	✗	2 - 11 Average - 4.18	✓	✓	✓	-	-	13	500	500
Boron (µg/L)	50 - 140 Average - 84.8	✓	✓	✓	50 - 400 Average - 140.45	✓	✓	✓	50 - 210 Average - 93.18	✓	✓	✓	-	-	370	5,000	5,000
Cadmium (µg/L)	0.1 - 3.3 Average - 0.99	✗	✓	✓	0.1 - 3.8 Average - 1.81	✗	✓	✓	0.1 - 3.8 Average - 1.58	✗	✓	✓	-	-	0.2	10	10
Chromium (µg/L)	1 - 129 Average - 21.77	✗	✓	✓	1 - 4050 Average - 526.08	✗	✓	✓	1 - 12 Average - 4.08	✗	✓	✓	-	-	1	1,000	1,000
Cobalt (mg/l)	0.055 - 34.5 Average - 5.44	-	✗	✗	0.005 - 36.5 Average - 13.03	-	✗	✗	0.023 - 28.7 Average - 12.1	-	✗	✗	-	-	-	1 mg/L	1 mg/L
Copper (µg/L)	14 - 298000 Average - 45965.21	✗	✗	✗	11 - 798000 Average - 146918.03	✗	✗	✗	2 - 219000 Average - 89873.82	✗	✗	✗	0.01– 0.114 Average – 0.01	0.002 – 20.9 Average – 0.14	1.4	1,000	40
Lead (µg/L)	1 - 8 Average - 2.5	✓	✓	✓	1 - 12 Average - 4.44	✗	✓	✓	1 - 3 Average - 1.66	✓	✓	✓	-	-	3.4	10	10
Manganese (µg/L)	282 - 108000 Average - 17822.72	✗	-	-	51 - 176000 Average - 56736.1	✗	-	-	111 - 109000 Average - 43305.92	✗	-	-	-	-	1900	-	Not sufficiently toxic
Nickel (µg/L)	24 - 7000 Average - 1340.57	✗	✗	✗	2 - 14700 Average - 4183.73	✗	✗	✗	5 - 5620 Average - 2699.34	✗	✗	✗	-	-	11	1,000	1000
Uranium (mg/l)	0.001 - 0.13 Average - 0.02	-	✓	✓	0.001 - 0.177 Average - 0.07	-	✓	✓	0.008 - 0.103 Average - 0.04	-	✓	✓	-	-	-	0.2 mg/l	0.2 mg/l
Zinc (µg/L)	6 - 6200 Average - 1165.94	✓	✓	✓	6 - 7740 Average - 2580.24	✗	✓	✓	15 - 6610 Average - 2687.71	✗	✓	✓	-	-	8	20,000	20,000

✓ *– Complies*

✗ *– Exceeds*

TABLE 2.3: WATER QUALITY (WQ) MONITORING DATA VS GROUNDWATER CONTAMINANT TRIGGER LEVELS

Contaminant	Water Quality Monitoring Data 2014 - 2023																
	EPit	Compliance (✕/✓)			ETSF	Compliance (✕/✓)			MCD	Compliance (✕/✓)			Groundwater Upstream Monitoring Points	Groundwater Downstream Monitoring Points	Groundwater Trigger Level (TL) (µg/L) unless otherwise specified)	Groundwater Contaminant (CL) Limit (µg /L unless otherwise specified)	Stock Water (SW) Trigger Level (ANZECC, 2000) (µg /L unless otherwise specified)
		TL	CL	SW		TL	CL	SW		TL	CL	SW					
pH (pH units)	2.78 - 8.18 Average - 4.42	✕	✕	✕	2.5 - 8.85 Average - 4.67	✕	✕	✕	3.05 - 8.3 Average - 4.08	✕	✕	✕	5.1 – 10.0 Average – 7.57	4.54 – 9.69 Average – 7.64		6.0 - 8.5	6.5 – 9.0
EC (uS/fcm)	2840 - 8110 Average - 4622.78	✕	-	✕	2640 - 9340 Average - 4557.78	✕	-	✕	1620 - 7400 Average - 5463.33	✕	-	✕	56.00 – 2024.00 Average – 192.08	151 - 1390 Average – 691.19	435 uS/fcm	1000 uS/fcm	2000 uS/fcm
Sulphate (mg/l)	1780 - 7450 Average - 3961.18	✕	✕	-	1310 - 22000 Average - 6898.38	✕	✕	-	894 - 10900 Average - 5390.8	✕	✕	-	1 – 3156 Average – 19.46	0 – 5281 Average – 251.07	250 mg/L	1000 mg/l	-
Fluoride (mg/l)	0.1 - 6.4 Average - 1.29	-	✓	✓	0.1 - 13.5 Average - 2.48	-	✕	✕	0.1 - 17.2 Average - 2.22	-	✕	✕	-	-	-	2 mg/l	2 mg/l
Aluminum (µg/L)	10 - 252000 Average - 37662.3	✕	✕	✕	30 - 1700000 Average - 226338.62	✕	✕	✕	10200 - 150000 Average - 66525.42	✕	✕	✕	-	-	55	5000	5000
Arsenic (µg/L)	1 - 2260 Average - 42.64	✕	✓	✓	1 - 229000 Average - 13773.06	✕	✕	✕	2 - 11 Average - 4.18	✓	✓	✓	-	-	13	500	500
Boron (µg/L)	50 - 140 Average - 84.8	✓	✓	✓	50 - 400 Average - 140.45	✓	✓	✓	50 - 210 Average - 93.18	✓	✓	✓	-	-	370	5,000	5,000
Cadmium (µg/L)	0.1 - 3.3 Average - 0.99	✕	✓	✓	0.1 - 3.8 Average - 1.81	✕	✓	✓	0.1 - 3.8 Average - 1.58	✕	✓	✓	-	-	0.2	10	10
Chromium (µg/L)	1 - 129 Average - 21.77	✕	✓	✓	1 - 4050 Average - 526.08	✕	✓	✓	1 - 12 Average - 4.08	✕	✓	✓	-	-	1	1,000	1,000
Cobalt (mg/l)	0.055 - 34.5 Average - 5.44	-	✕	✕	0.005 - 36.5 Average - 13.03	-	✕	✕	0.023 - 28.7 Average - 12.1	-	✕	✕	-	-	-	1 mg/L	1 mg/L
Copper (µg/L)	14 - 298000 Average - 45965.21	✕	✕	✕	11 - 798000 Average - 146918.03	✕	✕	✕	2 - 219000 Average - 89873.82	✕	✕	✕	0.01– 0.114 Average – 0.01	0.002 – 20.9 Average – 0.14	1.4	1,000	40
Lead (µg/L)	1 - 8 Average - 2.5	✓	✓	✓	1 - 12 Average - 4.44	✕	✓	✓	1 - 3 Average - 1.66	✓	✓	✓	-	-	3.4	10	10
Manganese (µg/L)	282 - 108000 Average - 17822.72	✕	-	-	51 - 176000 Average - 56736.1	✕	-	-	111 - 109000 Average - 43305.92	✕	-	-	-	-	1900	-	Not sufficiently toxic
Nickel (µg/L)	24 - 7000 Average - 1340.57	✕	✕	✕	2 - 14700 Average - 4183.73	✕	✕	✕	5 - 5620 Average - 2699.34	✕	✕	✕	-	-	11	1,000	1000
Uranium (mg/l)	0.001 - 0.13 Average - 0.02	-	✓	✓	0.001 - 0.177 Average - 0.07	-	✓	✓	0.008 - 0.103 Average - 0.04	-	✓	✓	-	-	-	0.2 mg/l	0.2 mg/l
Zinc (µg/L)	6 - 6200 Average - 1165.94	✓	✓	✓	6 - 7740 Average - 2580.24	✕	✓	✓	15 - 6610 Average - 2687.71	✕	✓	✓	-	-	8	20,000	20,000

✓ – *Complies*

✕ – *Exceeds*

3. DESCRIPTION OF RECEIVING ENVIRONMENT

3.1 Surface Waters

CCM is located in the Leichhardt River drainage sub-basin area in the Leichhardt Drainage Basin. The Leichhardt Drainage Basin has a total catchment area of 32,882.2 km^2.

The Leichhardt River rises in the Selwyn Ranges, 40 kilometres southeast of Mount Isa. It flows in a northerly direction, through the city of Mount Isa and Lake Moondarra, before passing through Julius Dam. It is joined by its major tributary, Gunpowder Creek, 15 kilometres downstream of Kamilaroi homestead. Another major tributary, Fiery Creek, joins the river 70 kilometres downstream of Lorraine. The Alexandra River enters the river from the east, just below Floraville, before the Leichhardt River finally passes through a vast coastal plain and enters the Gulf of Carpentaria 30 kilometres northeast of Burketown.

CCM is located directly east of Gunpowder Creek, which is an ephemeral system in the upstream reaches that receives licensed releases of mine-affected water that enters the creek system at the EA-nominated release point. At CCM dam break and or spillway flows from the ETSF report to the EPit which flows into MCD. Any overflows from MCD report to Hoover Dam then to Gunpowder Creek and toward Leichardt River.

Magazine Creek flows into Greenstone Creek, which flows into Gunpowder Creek downstream of the mining activities.

Gunpowder Creek flows into Leichhardt River, approximately 100 km north-east of CCM.

Receiving waterways downstream of CCM are shown in Figure 3.1 below.

Figure 3.1:CCM Receiving Waterways

3.2 Groundwater

Based on published data (Queensland Government, 2023), it is understood there are multiple bores within a 5km radius of CCM. CCM maintains approx. 35 monitoring bores on site.

Mapping indicates bores within a 5 – 10km are not listed as extraction bores for drinking purposes. It is understood that Lake Waggaboonya (the source of potable water for CCM) is not impacted by CCM operations.

Water bores located within 10km of CCM is displayed in Figure 3.2 below.

Figure 3.2: Ground Water Bores Located within a 10km radius to CCM (Queensland Government, 2023)

3.3 Environmental Values

The *Environmental Protection (Water and Wetland Biodiversity) Policy 2019* (EPP) does not list environmental values (EV) or water quality objectives (WQO) for the Leichardt River Basin, however, the *Capricorn Copper Mine 2023 Post-wet REMP Report* (Hydrobiology, 2023) reports on relevant environmental values for receiving waters in the vicinity of CCM (adopted from the 2022 REMP Report (NRA, 2022)) and are displayed Table 3.1.

TABLE 3.1: NOMINATED ENVIROMENTAL VALUES FOR GUNPOWDER CREEK AND GREENSTONE CREEK AS DEFINED IN PREVIOUS REMP (NRA, 2022) (TABLE ADAPTED FROM HYDROBIOLOGY, 2023)

Label	Environmental Value	Description	Gunpowder Creek (adjacent to CCM) [1]	Gunpowder Creek (downstream of CCM) [2]	Greenstone Creek (downstream of confluence with Magazine Creek)
	Aquatic ecosystem	The intrinsic value of aquatic ecosystems, habitat and wildlife in waterways, waterholes and riparian areas. For example, biodiversity, ecological interactions, plants, animals, key species and their habitat, food and drinking water.	Highly disturbed [3]	Moderately disturbed	Highly disturbed [3]
	Stock watering	Suitability of water supply for production of healthy livestock.	✓ [3]	✓	✓ [3]
	Secondary recreation	Health of humans during recreation which involves indirect contact and a low probability of water being swallowed. For example, wading, boating, rowing and fishing.	-	✓	-
	Visual appreciation	Amenity of waterways for recreation which does not involve contact with water. For example, walking and picnicking adjacent to a waterway.	✓ [3]	-	✓ [3]
	Industrial	Suitability of water supply for industrial use. For example, food, beverage, paper, petroleum and power industries, mining and minerals refining/processing. Industries usually treat water supplies to meet their needs.	Mining [3]	Mining	Mining [3]
	Cultural and spiritual values [4]	Cultural, spiritual and ceremonial values of water means its aesthetic, historical, scientific, social or other significance, to the past, present or future generations.	✓ [3]	✓	✓ [3]

Notes:

[1] Adjacent sites include GPA2, GPA4, GPA5 and GPA6. Although GPA2 is upstream of the causeway and the Mill Creek Dam release point, this site is likely to have been impacted by mining activities. This is likely to be due to backflow (Wood (1996) notes backflow occurs about 40 m upstream of the causeway – GPA2 is approximately 120 m upstream of the causeway) and/or pooling of mine-affected waters upstream of the causeway. For the purpose of EVs, site GPA2 is considered to be adjacent to the mine.

[2] The listed environmental values are subject to research and consultation with the Administering Authority and, as required, other stakeholders. Indications suggest the end of the mixing zone is nearer to 1 km downstream of the confluence of Greenstone Creek with Gunpowder Creek (NRA 2016).

[3] ANZG (2018) defines the mixing zone as an explicit area around effluent discharges where the management goals of the ambient waters do not need to be achieved and hence designated EVs may not be applied. The mixing zone for Greenstone Creek is considered to be from the confluence with Magazine Creek downstream to the confluence with Gunpowder Creek. The mixing zone for Gunpowder Creek is considered to extend from around the causeway to a point downstream of the confluence with Greenstone Creek. Impacts within this zone have occurred since the early 1970s, with seepage from the Old (Mammoth) TSF and contaminated flows into Gunpowder Creek via Mill Creek. It is not considered appropriate to assign aquatic ecosystem EVs in the context of regulatory compliance (although it is appropriate to derive relevant guidelines to serve as trigger values) to the Gunpowder Creek and Greenstone Creek mixing zones.

Environmental values are site-specific and dependent on local factors, including land use and the pre-existing condition of the catchment relative to its position on the pristine-to-highly degraded continuum.

3.4 Receiving Environment Monitoring Program (REMP)

Capricorn Copper Mine 2023 REMP Report, prepared by Hydrobiology for Capricorn Copper Pty Ltd, dated 4 August 2023 (Hydrobiology, 2023) considers groundwater quality in terms of interactions between surface water and groundwater, and influences of surface water quality on the receiving environment at CCM. The REMP report describes the annual results (July 2022 to June 2023) of the Receiving Environment Monitoring Program (REMP) and addresses conditions C4-1 to C4-3 of the EA for CCM.

The REMP report assesses stream flow, routine and release monitoring data for data collected during in the annual survey (undertaken in May). Data collected includes but is not limited to aquatic habitat, stream flow, water quality and biological indicators (macroinvertebrates). Survey sampling occurred at a series of test (located upstream, adjacent and downstream) and control (outside any influence from CCM) sites along Gunpowder, Magazine and Greenstone Creek.

The extract below summarises the conclusion of the 2023 REMP report (Hydrobiology, 2023):

Overall, the trends displayed in the current REMP period do not indicate any notable impact from CCM operations to the environmental values (EVs) (human use - livestock drinking and recreational aesthetics; and aquatic ecosystems) of the receiving environment. As such the current release limits stipulated in the EA are considered suitable to protect the EVs of the CCM receiving environment. Based on the chelex-labile and macroinvertebrate results, there is evident assimilative capacity within Gunpowder Creek.

The REMP therefore considers that current site operations are unlikely to be significantly impacting the environmental values of the receiving environment, with reported exceedances consistent with previous exceedances, indicating no new or emerging trends in impacts.

3.5 Land Use and Habitable Dwellings

There are two habitable dwellings approx. 22km downstream of CCM and 8 – 10 km westward of Gunpowder Creek (no evidence of extraction) (Queensland Government, 2023). The closest known potential receptors within the Gunpowder Creek flow path are located on the Leichhardt River approximately 150 km downstream of the site, being the Lorraine Airport (and associated residential land uses) and the nearby irrigated agricultural development (and associated residential land uses). There are no visible bridges, infrastructure or observed Population at Risk (PAR) in the Gunpowder Creek flow path for over 25 km downstream (considered conservatively the maximum extent of any credible breach scenario for loss of life, refer Table 4.5), excluding Gunpowder Road which is not trafficable during wet weather and for which CCPL can control access.

What appears to be lightly trafficked roads were observed in the area, however these are considered to have a transient PAR, with likely infrequent use.

Grazing is the dominant land use within the area between the mine and Leichardt River. Land use and habitable dwellings located downstream of CCM are displayed in Figure 3.3.

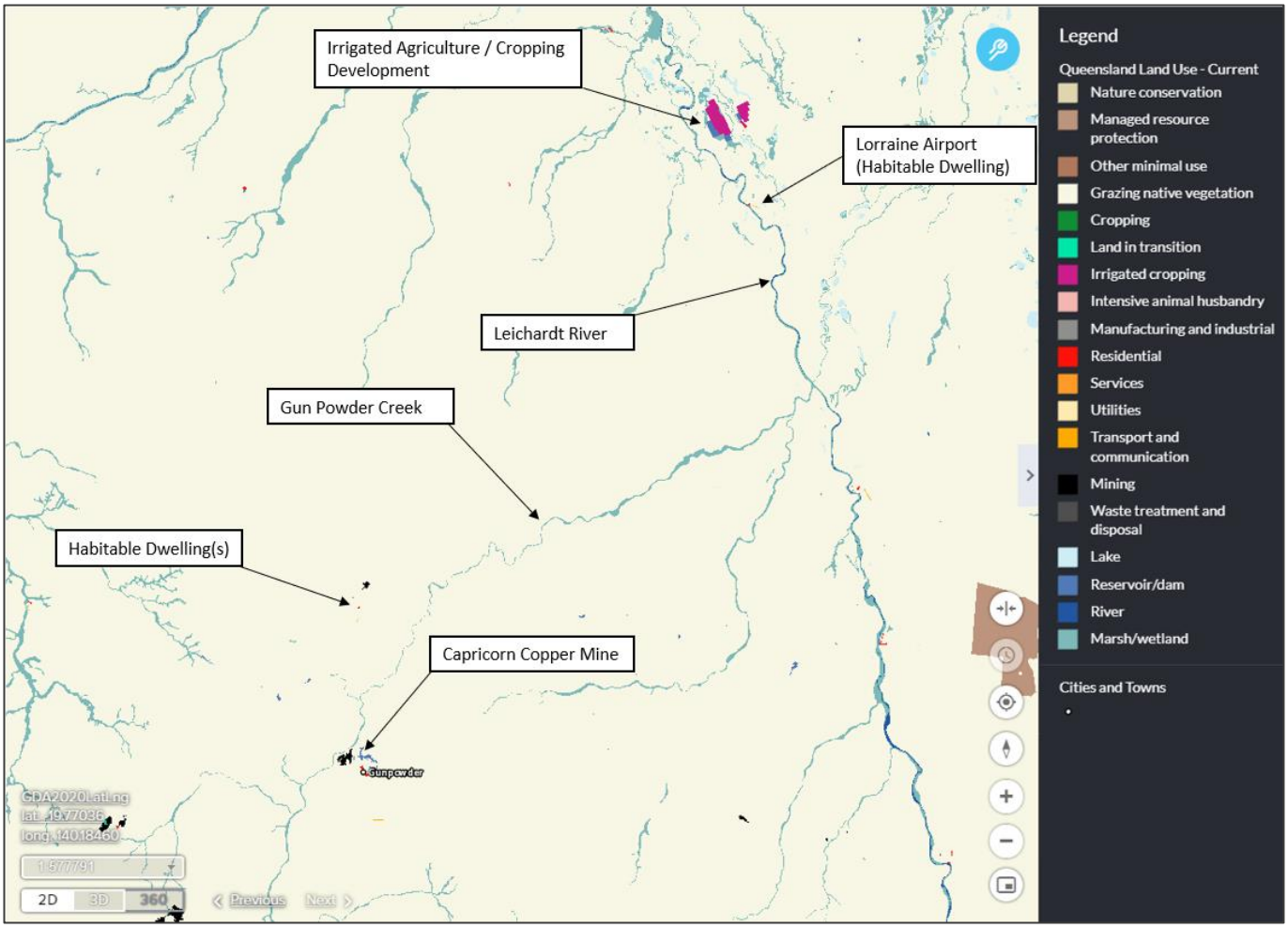

Figure 3.3: Downstream Land Use and Habitable Dwellings (Queensland Government, 2023)

3.6 Matters of State Environmental Significance

Matters of State Environmental Significance (MSES) are a component of the biodiversity state interest that is defined under the State Planning Policy (SPP). MSES include certain environmental values that are protected under Queensland legislation.

The matters given protection under Queensland environment laws and included as criteria for MSES are:

- Protected areas (all classes except coordinated conservation areas) – *Nature Conservation Act 1992.*
- Marine Parks (Marine National Park, Marine Conservation Park, Scientific Research, Preservation and Buffer zones) – *Marine Parks Act 2004.*
- Fish Habitat Areas (A and B) and Dugong Protection Areas – *Fisheries Act 1994.*
- High Conservation Value wetlands – *Environmental Protection Act 1994.*
- Wild River high preservation areas – *Wild Rivers Act 2005.*
- Threatened species (listed as 'endangered' or 'vulnerable') – *Nature Conservation Act 1992.*
- Threatened species essential habitat ('endangered' or 'vulnerable') – *Nature Conservation Act 1992* and *Vegetation Management Act 1999.*
- Regulated vegetation – Category A, B or C areas containing regional ecosystems (classified as 'endangered' or 'of concern'), wetlands and watercourses. Vegetation in Category R areas – *Vegetation Management Act 1999.*
- Legally secured offset areas – protected by a registered covenant, easement, agreement, or a development approval condition.

The following MSES are located within, and downstream of, the boundary of CCM mining leases and along the overflow path:

- Wildlife Habitat:

- Endangered or vulnerable wildlife.
- Regulated Vegetation:
  - Essential Habitat.

MSES located downstream of CCM in Figure 3.4 below.

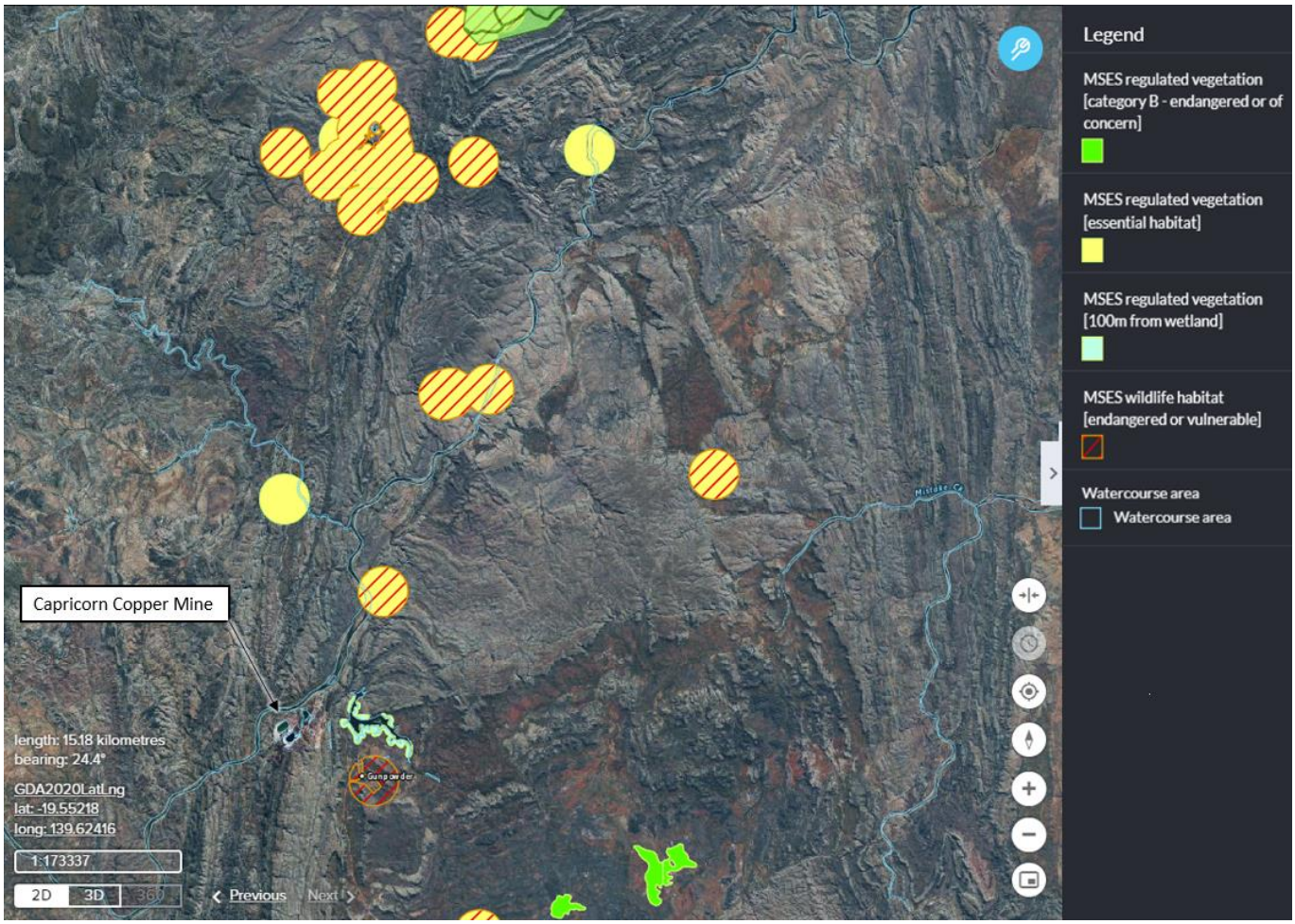

Figure 3.4: Matters of State and Environmental Significance (Queensland Government, 2023)

3.7 Matters of National Environmental Significance

For the purposes of the SPP biodiversity state interest, Matters of National Environmental Significance (MNES) are those natural matters given statutory protection under Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, including (DEHP, 2013a):

- World Heritage Areas properties listed for natural values.
- National Heritage Areas places listed for natural values.
- Wetlands of international importance (listed under the Ramsar convention).
- Migratory species (protected under international agreements).
- Listed threatened species.
- Listed threatened ecological communities.
- Great Barrier Reef Marine Park.
- Commonwealth marine areas.

Use of the Australian Government Department of the Environment Protected Matters Search Tool (http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf) indicates the following MNES are located within a 25km radius of CCM:

- 13 Listed Threatened Species, including the critically endangered Curlew Sandpiper (Calidris ferruginea).
- 12 Listed Migratory Species, including the critically endangered Curlew Sandpiper (Calidris ferruginea) and vulnerable Freshwater Sawfish (Pristis pristis).

4. CONSEQUENCE CATEGORY ASSESSMENT

4.1 Overview

A consequence category assessment was undertaken for the EPit, MCD and ETSF in accordance with Version 5.02 of the *Manual.* The Manual sets out requirements for consequence category assessment and certification of the design of regulatory structures, constructed as part of environmentally relevant activities (ERAs) under the *Environmental Protection Act 1994* (Qld). The term regulated structures includes land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity. Structures may be assessed using this Manual as being in one of three consequence categories: low, significant, or high. Where categories as a significant or high consequence, the structure is referred to as a regulated structure.

4.2 Methodology

The Manual for Assessing Consequence Categories and Hydraulic Performance of Structures requires the assessment of the consequences of the following failure event scenarios:

- 'Failure to contain – seepage' – spills or releases to ground and/or groundwater via seepage from the floor and/or sides of the structure.
- 'Failure to contain – overtopping' – spills or releases from the structure that result from loss of containment due to overtopping of the structure.
- 'Dam break' – collapse of the structure due to any possible cause.

For each failure event scenario, the consequences need to be assessed for the following categories of harm:

- Harm to humans.
- General environmental harm.
- General economic loss or property damage.

The consequence category for each type of harm is assigned based on the severity of harm as defined in Table 4.1.

TABLE 4.1: CONSEQUENCE CATEGORY ASSESSMENT CRITERIA[1] (TABLE 1 OF THE MANUAL)

Environmental Harm	Consequence Category		
	High	Significant	Low
Harm to Humans	Location such that people are routinely present in the failure path and if present loss of life to greater than 10 people is expected[2]. Note: The requirement to consider the location of people in the failure path is only relevant to the 'dam break' scenario.	Location such that people are routinely present in the failure path and if present loss of life to 1 person or greater but less than 10 people is expected[1]. Note: The requirement to consider the location of people in the failure path is only relevant to the 'dam break' scenario.	Location such that people are not routinely present in the failure path and loss of life is not expected[1]. Note: The requirement to consider the location of people in the failure path is only relevant to the 'dam break' scenario.
	Location such that contamination of waters (surface and/or groundwater[3]) used for human consumption could result in the health of 20 or more people being affected[4].	Location such that contamination of waters (surface and/or groundwater[2]) used for human consumption could result in the health of 10 or more people but less than 20 people being affected[3].	Location such that contamination of waters (surface and/or groundwater[2]) used for human consumption could result in the health of less than 10 people being affected[3].
General Environmental Harm	Location such that: a) Contaminants may be released to areas of MNES, MSES or HEV waters that are not already authorised to be disturbed to at least the same extent under other conditions of this authority subject to any applicable offset commitment (Significant Values); and b) Adverse effects[5] on Significant Values are likely; and c) The adverse effects[4] are likely to cause at least one of the following: i) Loss or damage or remedial costs greater than $50,000,000; or ii) Remediation of damage is likely to take 3 years or more; or iii) permanent alteration to existing ecosystems; or iv) The area of damage (including downstream effects) is likely to be at least 5 km^2.	Location such that contaminants may be released so that adverse effects[4] (that are not already authorised to be disturbed to at least the same extent under other conditions of the authority subject to any applicable offset commitment) either: a) Would be likely to be caused to Significant Values but those adverse effects[4] would not be likely to meet the thresholds for the High consequence category and instead would be likely to cause at least one of the following: i) Loss or damage or remedial costs greater than $10,000,000 but less than $50,000,000; or ii) Remediation of damage is likely to take more than 6 months but less than 3 years; or iii) Significant alteration to existing ecosystems; or iv) The area of damage (including downstream effects) is likely to be at least 1 km^2 but less than 5 km^2. or b) Would be likely to be caused to environmental values classed as slightly or moderately disturbed waters[6], wetland of general ecological significance[7], riverine areas, springs or lakes and associated flora and fauna (Moderate Values), and the adverse effects[4] are likely to cause at least one of the following: i) Loss or damage or remedial costs greater than $20,000,000; or ii) Remediation of damage is likely to take more than 1 year; or iii) Significant alteration to existing ecosystems; or iv) The area of damage (including downstream effects) is likely to be at least 2 km^2.	Location such that either: a) Contaminants are unlikely to be released to areas of Significant Values or Moderate Values; or b) Contaminants are likely to be released to those areas but would be unlikely to meet any of the minimum thresholds specified for the Significant Consequence Category for adverse effects[4].
General Economic Loss or Property Damage	Location such that harm (other than a different category of harm as specified above) to third party assets in the failure path would be expected to require $10 million or greater in rehabilitation, compensation, repair or rectification costs[8].	Location such that harm (other than a different category of harm as specified above) to third party assets in the failure path would be expected to require $1 million and greater but less than $10 million in rehabilitation, compensation, repair or rectification costs[7].	Location such that harm (other than a different category of harm as specified above) to third party assets in the failure path would be expected to require less than $1 million in rehabilitation, compensation, repair or rectification costs[7].

1.To be used for all failure event scenarios

2.'People routinely present in the failure path' could be considered to be people who occupy buildings or other places of occupation that lie within the failure impact zone. For the purposes of this Manual, this should refer to people other than site personnel engaged by the resource operation and located on the tenements and tenure associated with the resource operation; for other ERAs, it would be the 'premises referred to in the authority'. It should be noted that while this is appropriate for the assessment of consequence categories in accordance with this Manual, adherence to the requirements of this Manual does not limit, amend or change in any way, any other requirements to be complied with under relevant health and safety acts or legislation that requires the safety of site personnel to be considered.

3. When considering potential impacts on groundwater, it is not envisaged that a full hydrogeological assessment will be required in all cases. Any consideration of potential impacts on groundwater systems should consider the water quality of the potential receiving aquifer as well as the quality of fluid stored in the regulated dam. Existing groundwater drawdown in areas surrounding resource operations (e.g., drawdown as a result of mine pit or underground mine dewatering) can also be considered when assessing the consequence of dam seepage on groundwater systems.

4. 'An adverse effect on human health means a physiological effect on human health and does not include an impact on the quality of downstream water that merely negatively affects taste, and which is unlikely to cause persons to become physically ill.

5. Adverse effects includes chronic and acute effects where an acute effect is on living organism/s which results in severe symptoms that develop rapidly, and a chronic effect is an adverse effect on a living organism/s which develops slowly. In some instances, it may be necessary to carry out or reference existing ecological/toxicological studies to assess the impacts of contaminants on living organisms.

6. See Environmental Protection (Water and Wetland Biodiversity) Policy 2019 for definitions

7. Wetland of general ecological significance' means a wetland shown on a map of referable wetland as a 'general ecologically significant wetland' or 'wetland of other environmental value'.

8. This does not include the holder's own mine or gas production, on-site industrial or commercial assets, the holder's workers' accommodation, agricultural facilities on the holder's land such as a farm shed or farm dam or infrastructure solely for servicing the holder.

4.3 Assessment of Failure Scenarios

The failure event scenarios considered for the consequence category assessment for ETSF, EPit and MCD are summarised in Table 4.2, Table 4.3, and Table 4.4 respectively.

TABLE 4.2: FAILURE EVENT SCENARIOS CONSIDERED FOR ETSF

Failure Event Scenario	Potential Failure Causes	Comments
Failure to Contain - Seepage	Seepage through impoundment floor	Seepage from the ETSF is controlled and monitored.
	Seepage through perimeter walls and saddle dams.	Seepage occurs through the fractured rock zone underneath Saddle Dams 2 and 3 and the main embankment wall. Seepage losses are expected to be captured by the seepage interception system minimising impact to the surrounding environment. If discharge were to occur, MAW would be contained within local pools in Gunpowder Creek and concentrated by evaporation until being flushed out during significant flow events.
Failure to Contain – Overtopping	Large rainfall event causing overflow discharge.	Spillway discharge is possible and will report to the EPit, and any spill from the EPit would report to MCD. Therefore, the consequence of ETSF needs to be considered in respect of a spill from MCD.
	Operational failure of decant / dewatering pumping infrastructure during large rainfall event causing overflow discharge	Pump failure is possible. Spillway discharge will report to the EPit and any spill from the EPit would report to MCD. Therefore, the consequence of ETSF needs to be considered in respect of a spill from MCD.
Dam Break	Piping (internal erosion) failure through perimeter embankment	Stability or piping failure is possible through perimeter embankments and pit wall.
	Large rainfall events causing overtopping failure of the perimeter embankment	Overtopping failure is possible. Dam break flows will report to Gunpowder Creek.

TABLE 4.3: FAILURE EVENT SCENARIOS CONSIDERED FOR EPIT

Failure Event Scenario	Potential Failure Causes	Comments
Failure to Contain - Seepage	Seepage through impoundment floor	Seepage from the EPit is captured within the MCD.
	Seepage through perimeter walls and saddle dams.	The MOL of structure is set below the rock bar at RL 222 m. However, if water were to be stored above RL 222, it would report to the MCD or NWRD seepage interception trench. There has been no physical evidence of seepage that can be traced to EPit below RL 222, and this is supported by groundwater modelling which demonstrates that EPit is unlikely to be a source of seepage to Gunpowder Creek.
Failure to Contain – Overtopping	Large rainfall event causing pit overflow discharge.	Spillway discharge is possible and would report to MCD. Therefore, the consequence of EPit needs to be considered in respect of a spill from MCD.
	Operational failure of decant / dewatering pumping infrastructure during large rainfall event causing pit overflow discharge	Pump failure is possible. Spillway discharge would report to MCD. Therefore, the consequence of EPit needs to be considered in respect of a spill from MCD.
Dam Break	Piping (internal erosion) failure through perimeter embankment	Stability or piping failure is not considered credible if water is stored below RL222. If water is stored above this level, there is potential for the EPit Ramp to fail and water to release to the MCD, then Hoover Dam and subsequently Gunpowder Creek.
	Large rainfall events causing overtopping failure of the perimeter embankment	Overtopping failure is possible. Dam break flows will report to the MCD, then Hoover Dam and subsequently Gunpowder Creek.

TABLE 4.4: FAILURE EVENT SCENARIOS CONSIDERED FOR MCD

Failure Event Scenario	Potential Failure Causes	Comments
Failure to Contain - Seepage	Seepage through impoundment floor	Seepage losses are expected to be captured by the Hoover Dam and prevent interaction with Gunpowder Creek. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events.
	Seepage through perimeter walls and saddle dams.	
Failure to Contain – Overtopping	Large rainfall event causing pit overflow discharge.	Spillway discharge is possible and would report to Hoover Dam and subsequently report to Gunpowder Creek.
	Operational failure of decant / dewatering pumping infrastructure during large rainfall event causing pit overflow discharge	Pump failure is possible. Spillway discharge would report to Hoover Dam and subsequently report to Gunpowder Creek.
Dam Break	Piping (internal erosion) failure through perimeter embankment	Stability or piping failure is possible through perimeter embankments. Dam break flows would report to Hoover Dam and subsequently report to Gunpowder Creek.
	Large rainfall events causing overtopping failure of the perimeter embankment	Overtopping failure is possible. Dam break flows would report to Hoover Dam and subsequently report to Gunpowder Creek.

4.4 Summary of Changes from previous CCA

Consequence categories have been determined based on the Manual, and updating the previous CCA (GHD, 2021).

Since the previous CCA the following changes have been implemented and/or are proposed:

- MCD has reduced storage capacity from 1400 ML to 771.5 ML at full supply level (refer above).
- CCPL proposes to re-commence deposition of tailings to EPit (subject to regulatory approvals).
- CCPL has applied to modify the DSA and MRL for the EPit to RL217.2m.
- For the purposes of the aforementioned proposal to re-commence tailings deposition in the EPit, the EPit tailings deposition plan has been updated, to reflect the proposed DSA and MRL (refer above), increasing the current tailing storage capacity by approximately 0.96 million m^3. The available tailings decant water storage below the DSA / MRL is 233.8 ML and there is 496.8 ML water storage available above the decant storage to the MOL (RL 222, below the rock bar).

As part of the previous CCA by GHD (2021) a dam break assessment was undertaken to determine an estimated inundation extent and total PAR in the event of dam failure. The assessment was carried out by utilising an estimated discharge volume and qualitatively estimating the inundation extent (i.e., maximum credible breach scenario), and was used to inform the CCA in consideration to impacts downstream of the mine site.

A summary of the assessment with consideration to storage changes as of 2023 is displayed in Table 4.5 below:

TABLE 4.5: ETSF, EPIT TSF & MCD DAM BREACH ESTIMATED IMPACT

Structure	Volume	Material	Flow path
ETSF	1.4 million m³ (Ref. note 1)	Tailings (and decant water)	West, north-west or north, north-west via Saddle Dam(s) failure to Gunpowder Creek.
EPit	2,677.7 ML	EPit tailings (and decant water)	EPit Ramp wall failure (water stored above RL 222) with release to MCD. Spill from MCD to Gunpowder Creek (assumes MCD is at Full Supply Level of RL 240).
EPit TSF with MCD cascade failure	2,677.7 ML	EPit tailings (and decant water)	EPit Ramp wall failure (water stored above RL 222) with release to MCD. Spill from MCD to Gunpowder Creek (assumes MCD is at FSL).
	771.5ML	MCD (water)	
MCD	771.5ML	MCD (water)	MCD failure with release to Gunpowder Creek.

Notes:

[1] Assumed no changes have occurred in storage characteristics since previous CCA undertaken by GHD (2021).

It is noted that since 2021 the material stored and flow path remains the same, however, there has been changes to the volume of water and / or tailings for each structure.

For the purpose of this CCA, assessment of the maximum extent of any credible breach scenario for loss of life remains at 25km downstream of Gunpowder Creek, as per the previous CCA undertaken by GHD (2021).

4.5 Assessment Results

4.5.1 General

The consequence category assessment is detailed in Appendix A.

A summary of the consequence category assessment results is provided in Table 4.6.

Certification of the consequence category assessment by the suitably qualified and experienced person who performed the assessment is provided in Appendix B.

The overall consequence category of ETSF, EPit and MCD is ‘high’. All three structures are considered ‘regulated’ structures. Based on this assessment all three structures are required to comply with spillway hydraulic capacity criteria and containment hydraulic criteria (DSA / MRL) stipulated in The Manual.

TABLE 4.6: SUMMARY OF CONSEQUENCE CATEGORIES

Structure	Failure to Contain Seepage	Failure to Contain – Overtopping	Dam Break	Overall
ETSF	Significant	Significant	High	**High**
EPit	Significant	Significant	High	**High**
MCD	Significant	Significant	High	**High**

4.5.2 Spillway Capacity

Based on the outcomes of the DES consequence category assessments, the required spillway capacity of each structure is summarised below:

- 1:1,000 AEP to 1:100,000 AEP + 1:10 AEP wave run-up.

4.5.3 Containment Storage

Based on the outcomes of the DES consequence category assessments, the required containment of each structure is summarised below:

- Wet Season Containment (DSA): 1:20 AEP.
- Storm Event Containment (ESS): 1:10 AEP 72 hr duration.

5. REFERENCES

Capricorn Copper Pty Ltd (2022). OMS Manual: Esperanza Tailings Storage Facility.

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Engeny (2023c). Water Balance Model Report.

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Hydrobiology (2023). Capricorn Copper Mine 2023 Post-Wet REMP Report.

NRA. (2022). Receiving Environment Monitoring Plan 2021-2022

Queensland Government (2023). Queensland Globe. Retrieved from https://qldglobe.information.qld.gov.au/qldglobe

6. QUALIFICATIONS

(a) In preparing this document, including all relevant calculation and modelling, Engeny Australia Pty Ltd (Engeny) has exercised the degree of skill, care and diligence normally exercised by members of the engineering profession and has acted in accordance with accepted practices of engineering principles.

(b) Engeny has used reasonable endeavours to inform itself of the parameters and requirements of the project and has taken reasonable steps to ensure that the works and document is as accurate and comprehensive as possible given the information upon which it has been based including information that may have been provided or obtained by any third party or external sources which has not been independently verified.

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  (ii) Engeny considers it prudent to revise any aspect of the works in light of any information which becomes known to it after the date of submission.

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(g) This report does not provide legal advice.

APPENDIX A: CONSEQUENCE CATEGORY ASSESSMENT

Dam Consequence Category Assessment

Site: Capricorn Copper Mine
Structure Name: Esperanza TSF (ETSF)

Storage Details	
Current Dam Function	Store tailings, tailings supernatant water and rainfall
Type of Dam Construction	Zoned Earth and Rockfill embankments with filters
Storage capacity	Negligible water storage capacity
Maximum Embankment Height	~56 m
Catchment area	39.5 Ha
Water Quality	Mine Affected Water - elevated pH, Salinity, non - metal and metal concentrations. Water quality parameters generally exceed trigger limits, contaminant limits and stock water limits.
Receiving Waterways: Overtopping	EPit → Mill Creek Dam → Gunpowder Creek → Leichardt River → Gulf of Carpentaria

Scenario	Category of Harm	Details	Consequence Category	Scenario Consequence Category
Failure to Contain - Seepage	Harm to Humans	There is no known human consumption of groundwater within the vicinity of CCM. Seepage losses are expected to be captured by the seepage interception system minimising impact to surrounding groundwater.	Low	Significant
	General Environmental Harm	Seepage losses are expected to be captured by the seepage interception system and prevent interaction with Gunpowder Creek as long as the system is maintained. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Seepage to the environment could cause adverse effects on the Significant Values of the receiving waterways. However, is considered unlikely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage, cause permanent alteration to surrounding ecosystems or exceed 5km2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the Significant consequence category in Table 1 of the manual.	Significant	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events, minimising health effects on stock. Despite some historic seepage and spill incidents, neither historic nor current mine operators have been required to pay 3rd party damages for any economic losses from downstream stakeholders. Compensation / rehabilitation costs due to adverse health effects on stock are unlikely to be significant, however could cause general economic loss or property damage that would require more than $1 million but less than $10 million in rehabilitation, compensation or repair.	Significant	
Failure to Contain - Overtopping	Harm to Humans	Overflows from the ETSF would report to the EPit and any spill from the EPit would report to MCD. Therefore the consequence of ETSF needs to be considered in respect of a spill from MCD. Any overflows from MCD would report to Hoover Dam and subsequently report to Gunpowder Creek. Beyond the MCD there is no there is no known human consumption of surface water between the mine and Leichardt River. The only potential receptor is Lorraine Airport and an industrial agricultural development located 150km downstream of CCM, however the impact of overflows from the dam on the water quality of the Leichardt River is likely to be negligible given the significant dilution capacity of the large Gunpowder and Leichardt River catchments.	Low	Significant
	General Environmental Harm	Overflows from the ETSF would report to the EPit and any spill from the EPit would report to MCD. Therefore the consequence of ETSF needs to be considered in respect of a spill from MCD. Any overflows from MCD would report to Hoover Dam and subsequently report to Gunpowder Creek Beyond Hoover Dam, the values of the receiving waterways from the area are Significant Values, due to the MSES of endangered or of concern wildlife and essential habitat along Gunpowder Creek. Any discharge during significant rainfall event would be highly diluted before reaching areas of environmental significance. Overflows to the environment could cause adverse effects on the Significant Values of the receiving waterways. However, is considered unlikely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage, cause permanent alteration to surrounding ecosystems or exceed 5km2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the Significant consequence category in Table 1 of the manual.	Significant	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Compensation / rehabilitation costs due to adverse health effects on stock are unlikely to be significant, however could cause general economic loss or property damage that would require more than $1 million but less than $10 million in rehabilitation, compensation or repair.	Significant	
Dam Break	Harm to Humans	A dam break scenario of the ETSF would result in mobilisation of approximately 2 million tonnes of tailings downstream to Gunpowder Creek. The location of dam and dam failure paths are such that people are not routinely present in the failure path, minimising risk of loss of life. Beyond the mine there is no known human consumption of surface water between the mine and the Leichardt River. The only potential receptor is Lorraine Airport and an industrial agricultural development located 150km downstream of CCM.	Low	High
	General Environmental Harm	A dam break scenario of the ETSF would result in mobilisation of approximately 2 million tonnes of tailings downstream to Gunpowder Creek. The values of the receiving waterways from the area are Significant Values, due to the MSES mapping of endangered or of concern wildlife and essential habitat along Gunpowder Creek. Any discharge during a dam break scenario has potential to cause adverse effects on significant values due to the poor water quality and mobilisation of tailings. It is likely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage and cause permanent alteration to surrounding ecosystems or exceed 5km2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the High consequence category in Table 1 of the manual.	High	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If dam break were to occur MAW and tailings would flow downstream toward Gunpowder Creek. Given the poor water quality of ETSF the compensation / rehabilitation costs due to adverse health effects on stock are likely to be significant and could cause general economic loss or property damage that would be greater than $10 million in rehabilitation, compensation, repair or rectification costs.	High	

Overall Consequence Category Assessment	**High**

Dam Consequence Category Assessment

Site: Capricorn Copper Mine
Structure Name: Esperanza Pit (EPit)

Storage Details	
Current Dam Function	Store tailings, tailings supernatant water and rainfall
Type of Dam Construction	Excavated mining void
Storage capacity	1677.9 ML - existing storage capacity up to MOL 730.6 ML - post final tailings deposition
Maximum Embankment Height	N/A - no embankments
Catchment area	139.2 Ha
Water Quality	Mine Affected Water - elevated pH, Salinity, non - metal and metal concentrations. Water quality parameters generally exceed trigger limits, contaminant limits and stock water limits.
Receiving Waterways: Overtopping	Mill Creek Dam → Gunpowder Creek → Leichardt River → Gulf of Carpentaria

Scenario	Category of Harm	Details	Consequence Category	Scenario Consequence Category
Failure to Contain - Seepage	Harm to Humans	There is no known human consumption of groundwater within the vicinity of CCM. Seepage losses are expected to be captured by MCD, or if seepage were to develop as a result of storing water above RL 222 seepage would likely report to NRWD collection system or MCD.	Low	Significant
	General Environmental Harm	Seepage losses are expected to be captured by MCD and NRWD collection system and prevent interaction with Gunpowder Creek. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Seepage to the environment could cause adverse effects on the Significant Values of the receiving waterways. However, is considered unlikely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage, cause permanent alteration to surrounding ecosystems or exceed 5km2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the Significant consequence category in Table 1 of the manual.	Significant	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Compensation / rehabilitation costs due to adverse health effects on stock are unlikely to be significant, however could cause general economic loss or property damage that would require more than $1 million but less than $10 million in rehabilitation, compensation or repair.	Significant	
Failure to Contain - Overtopping	Harm to Humans	Overflows from the EPit would report to MCD. Therefore the consequence of EPit needs to be considered in respect of a spill from MCD. Any overflows from MCD would report to Hoover Dam and subsequently report to Gunpowder Creek. Beyond the MCD there is no there is no known human consumption of surface water between the mine and Leichardt River. The only potential receptor is Lorraine Airport and an industrial agricultural development located 150km downstream of CCM, however the impact of overflows from the dam on the water quality of the Leichardt River is likely to be negligible given the significant dilution capacity of the large Gunpowder and Leichardt River catchments.	Low	Significant
	General Environmental Harm	Overflows from the EPit would report to MCD. Therefore the consequence of EPit needs to be considered in respect of a spill from MCD. Any overflows from MCD would report to Hoover Dam and subsequently report to Gunpowder Creek. Beyond Hoover Dam, the values of the receiving waterways from the area are Significant Values, due to the MSES of endangered or of concern wildlife and essential habitat along Gunpowder Creek. Any discharge during significant rainfall event would be highly diluted before reaching areas of environmental significance. Overflows to the environment could cause adverse effects on the Significant Values of the receiving waterways. However, is considered unlikely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage, cause permanent alteration to surrounding ecosystems or exceed 5km2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the Significant consequence category in Table 1 of the manual.	Significant	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Compensation / rehabilitation costs due to adverse health effects on stock are unlikely to be significant, however could cause general economic loss or property damage that would require more than $1 million but less than $10 million in rehabilitation, compensation or repair.	Significant	
Dam Break	Harm to Humans	Majority of the storage within the EPit is located below ground, with a MAOL of RL 222 and in this configuration the structure does not pose a dam break risk. However, if water and / or tailings is stored above approx. RL 222 against the ETSF Ramp, there is potential for approximately 2678ML of tailings and water to become mobilised. In this case dam break would result in spilling into the paste plant and flooded vent shaft area causing MCD to be overtopped, subsequently releasing contaminated water into Gunpowder Creek. It is noted if cascade failure of the MCD were to occur an additional 772ML of water would be mobilised to Gunpowder Creek. The location of dam and dam failure paths are such that people are not routinely present in the failure path, minimising risk of loss of life. Beyond the mine there is no known human consumption of surface water between the mine and the Leichardt River. The only potential receptor beyond the mine is Lorraine Airport and an industrial agricultural development located 150km downstream of CCM.	Low	High
	General Environmental Harm	Majority of the storage within the EPit is located below ground, with a MAOL of RL 222 and in this configuration the structure does not pose a dam break risk. However, if water and / or tailings is stored above approx. RL 222 against the ETSF Ramp, there is potential for 2678ML of tailings and water to become mobilised. In this case dam break would result in spilling into the paste plant and flooded vent shaft area causing MCD to be overtopped, subsequently releasing contaminated water into Gunpowder Creek. It is noted if cascade failure of the MCD were to occur an additional 772ML of water would be mobilised to Gunpowder Creek. The values of the receiving waterways from the area are Significant Values, due to the MSES of endangered or of concern wildlife and essential habitat along Gunpowder Creek. Any discharge during a dam break scenario has potential to cause adverse effects on significant values due to the poor water quality and mobilisation of tailings. It is likely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage and cause permanent alteration to surrounding ecosystems or exceed 5km^2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the High consequence category in Table 1 of the manual.	High	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If dam break were to occur MAW and tailings would flow downstream toward Gunpowder Creek. Given the poor water quality of EPit combined with cascade failure of the MCD, the compensation / rehabilitation costs due to adverse health effects on stock are likely to be significant and could cause general economic loss or property damage that would be greater than $10 million in rehabilitation, compensation, repair or rectification costs.	High	

Overall Consequence Category Assessment	High

Dam Consequence Category Assessment

Site: Capricorn Copper Mine
Structure Name: Mill Creek Dam (MCD)

Storage Details	
Current Dam Function	Store tailings, tailings supernatant water and rainfall
Type of Dam Construction	Cross Valley Embankment
Storage capacity	771.5 ML (original capacity 1400 ML reduced from upstream embankment)
Maximum Embankment Height	12 m
Catchment area	70.4 Ha
Water Quality	Mine Affected Water - elevated pH, Salinity, non - metal and metal concentrations. Water quality paramters generally exceed trigger limits, contaminant limits and stockwater limits.
Receiving Waterways: Overtopping	Gunpowder Creek → Leichart River → Gulf of Carpentaria

Scenario	Category of Harm	Details	Consequence Category	Scenario Consequence Category
Failure to Contain - Seepage	Harm to Humans	There is no known human consumption of groundwater within the vicinity of CCM. Seepage losses are expected to be captured by the hoover dam and returned to MCD.	Low	Significant
	General Environmental Harm	Seepage losses are expected to be captured by the Hoover Dam and prevent interaction with Gunpowder Creek. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Seepage to the environment could cause adverse effects on the Significant Values of the receiving waterways. However, is considered unlikely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage, cause permanent alteration to surrounding ecosystems or exceed 5km^2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the Significant consequence category in Table 1 of the manual.	Significant	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Compensation / rehabilitation costs due to adverse health effects on stock are unlikely to be significant, however could cause general economic loss or property damage that would require more than $1 million but less than $10 million in rehabilitation, compensation or repair.	Significant	
Failure to Contain - Overtopping	Harm to Humans	Overflows from MCD would report to Hoover Dam and subsequently report to Gunpowder Creek. Beyond the MCD there is no there is no known human consumption of surface water between the mine and Leichardt River. The only potential receptor is Lorraine Airport and an industrial agricultural development located 150km downstream of CCM, however the impact of overflows from the dam on the water quality of the Leichardt River is likely to be negligible given the significant dilution capacity of the large Gunpowder and Leichardt River catchments.	Low	Significant
	General Environmental Harm	Overflows from MCD would report to Hoover Dam and subsequently report to Gunpowder Creek Beyond Hoover Dam, the values of the receiving waterways from the area are Significant Values, due to the MSES of endangered or of concern wildlife and essential habitat along Gunpowder Creek. Any discharge during significant rainfall event would be highly diluted before reaching areas of environmental significance. Overflows to the environment could cause adverse effects on the Significant Values of the receiving waterways. However, is considered unlikely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage, cause permanent alteration to surrounding ecosystems or exceed 5km^2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the Significant consequence category in Table 1 of the manual.	Significant	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If discharge were to occur MAW would be contained within local pools and concentrate by evaporation until being flushed out during significant flow events. Compensation / rehabilitation costs due to adverse health effects on stock are unlikely to be significant, however could cause general economic loss or property damage that would require more than $1 million but less than $10 million in rehabilitation, compensation or repair.	Significant	
Dam Break	Harm to Humans	Dam break of MCD would result in mobilisation of approximately 772ML of water. Dam break flows are expected to mobilise downstream and be contained within Gunpowder Creek (overtopping Hoover Dam). The location of dam and dam failure paths are such that people are not routinely present in the failure path, minimising risk of loss of life. Beyond the mine there is no known human consumption of surface water between the mine and the Leichardt River. The only potential receptor beyond the mine is Lorraine Airport and an industrial agricultural development located 150km downstream of CCM.	Low	High
	General Environmental Harm	Dam break of MCD would result in mobilisation of approximately 772ML of water. Dam break flows are expected to mobilise downstream and be contained within Gunpowder Creek (overtopping Hoover Dam). The values of the receiving waterways from the area are Significant Values, due to the MSES of endangered or of concern wildlife and essential habitat along Gunpowder Creek. Any discharge during a dam break scenario has potential to cause adverse effects on significant values due to the poor water quality and mobilisation of tailings. It is likely that remedial costs will be greater than $50,000,000, take more than 3 years to remediate damage and cause permanent alteration to surrounding ecosystems or exceed 5km^2 area of damage. The adverse effects on the Significant Values are expected to be in the range of effects defined for the High consequence category in Table 1 of the manual.	High	
	General Economic Loss or Property Damage	Given the land use downstream of the mine, the potential for general economic loss or property damage to third party assets in the failure path is considered to extend only to potential adverse health effects on stock that have access to the downstream receiving waterways. It is noted that there is potential damage to gunpowder road (managed by CCM). However based on aerial imagery it appears to be unsealed with limited infrastructure value. If dam break were to occur MAW would flow downstream toward Gunpowder Creek. Given the poor water quality of MCD the compensation / rehabilitation costs due to adverse health effects on stock are likely to be significant and could cause general economic loss or property damage that would be greater than $10 million in rehabilitation, compensation, repair or rectification costs.	High	

Overall Consequence Category Assessment	High

APPENDIX B: CONSEQUENCE CATEGORY ASSESSMENT CERTIFICATION

Form of Certification

Consequence Category Assessment for Esperanza Pit, Esperanza TSF and Mill Creek Dam at Capricorn Copper Mine

Name of Registered Professional Engineer providing certification:

Miles Tremlett-Johnstone

Address of Registered Professional Engineer providing certification:

L1 500 Queen Street, Brisbane QLD 4000

Statement of relevant experience

I hereby state that I am a Registered Professional Engineer of Queensland and meet the requirements of the definition of 'suitably qualified and experienced person'.

Statement of certification

All relevant material relied upon by me, including subsidiary certifications of specialist components, where required by the environmental authority, is provided in the attached report "Esperanza Pit, Esperanza TSF and Mill Creek Dam Consequence Category Assessment - Rev 0"– dated 14 December 2023.

I hereby certify that the attached report "Esperanza Pit, Esperanza TSF and Mill Creek Dam Consequence Category Assessment - Rev 0" – dated 14 December 2023 provides an assessment of the consequence category of Esperanza Pit, Esperanza TSF and Mill Creek Dam at Capricorn Copper Mine in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures published by the administering authority (ESR/2016/1933 Version 5.02, effective March 2016).

I, Miles Tremlett-Johnstone, declare that the information provided as part of this certification is true to the best of my knowledge. I acknowledge that it is an offence under section 480 of the Environmental Protection Act 1994 to give the administering authority a document containing information that I know is false, misleading or incomplete in a material particular.

Signed: _____

Miles Tremlett-Johnstone, RPEQ No. 30225

Date: 14 December 2023