Decision Report

Application for Licence

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L9324/2022/1
Applicant	Greenmount Resources Pty Ltd
ACN	607 613 650
File number	DER2022/000042
Premises	Mining Lease – M52/1070 CAPRICORN WA 6642 Shire of Meekatharra As defined by the premises maps attached to the issued licence
Date of report	29 August 2022
Decision	Licence granted

Carmen Standring

Digitally signed by Carmen Standring
Date: 2022.08.29 12:00:58 +08'00'

A/MANAGER, RESOURCE INDUSTRIES REGULATORY SERVICES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Table of Contents

1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of the prescribed premises. As a result of this assessment, licence L9324/2022/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Background

A Works Approval (W6143/2018/1) was granted in August 2019 for the construction, commissioning, and time-limited operations for ore processing activities associated with an open cut gold mine (two pits) within Mining Lease, M52/1070, Capricorn, Western Australia. Since then, two amendments were approved during this period relating to changes in the Tailings Storage Facility (TSF) design and Wastewater Treatment Plant (WWTP) system.

Ore mined from the pits will be transported to a Run of Mine (ROM) pad and then processed through a carbon-in-leach (CIL) processing plant, at a nominal rate of 3.75 million tonnes (Mt) per annum (Mtpa) for the first three years of production (for oxide material), reducing to 3 Mtpa for the remainder of the Life of Mine (LOM), when processing fresh, hard rock. Process waste (tailings) will be pumped to an integrated waste landform (IWL) Tailings Storage Facility (TSF).

The Works Approval related to the categories 5, 64, and 85 as defined in Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations).

Compliance requirements were met for the construction of the WWTP systems and ponds under Table 4 on 11 May 2021. Non-compliance was deemed under condition 2 of the works approval as the Environmental Compliance Report (ECR) was not provided within 30 days of the completion of the WWTP systems and ponds. Non-compliance was noted for condition 4 where commissioning commenced prior to the ECR submission and exceeded the six months commissioning period. The department recommended a works approval amendment be submitted to extend the expiry date and update commissioning / time-limited operations conditions ont the works approval.

The following items of infrastructure were deemed compliant:

- Process water pond (compliance was met on 25 May 2021);
- Stormwater management, inert and putrescible landfill including tyre landfill (compliance was met on 3 June 2021);
- Ore processing and processing reagents (compliance was met on 3 June 2021); and
- Ambient ground water monitoring and tailings storage facility (compliance was met on 11 June 2021).

Partial compliance was demonstrated for the time-limited operations on 14 February 2022. The applicant noted that several items of infrastructure are yet to be constructed and these are listed below:

- Construction of final landforms to be armoured with rip rap for stormwater management;

- Downstream construction for TSF Stage 2 (embankment level of 600.5 metres reduced level (mRL)) and Stage 3 (embankment level of 602.5 mRL and crest width of 24 m (minimum));
- Centreline construction for Stages 4 and 5 (embankment level of 608.5 mRL);
- Flow meters are to be fitted to the inlet pipeline into the Primary Stabilisation pond, and to the discharge pipeline prior to the evaporation/irrigation field;
- A mechanical pump is to be installed to discharge treated effluent from the Secondary Stabilisation pond evenly to the evaporation/irrigation field;
- Pipeline to irrigation field is to be constructed of high density polyethylene (HDPE);
- Pipeline to irrigation field is to be bunded along the entire route to ensure that any leaks are contained;
- Irrigation field is to be 3 hectares;
- Evaporation / irrigation area is to be enclosed by a 1.8 m high fence which is an effective barrier to livestock. Access to be provided through a locked gate; and
- Irrigation field is to be located greater than 500 m from sensitive water resources.

The items of infrastructure yet to be constructed with associated conditions under works approval (W6143/2020/1) will be transferred to the current licence as the works approval expires in August 2022.

2.3 Application summary

On 28 January 2022, the applicant submitted an application for a licence to the department under section 57 of the *Environmental Protection Act 1986* (EP Act).

The application is to seek a licence relating to the operation of an ore processing facility to process ore mined from two pits (Bibra and Southern Corridor pits) at the prescribed premises that is located within Mining Lease, M52/1070, Capricorn, Western Australia. The prescribed premises is located approximately 56 km south-east of Newman in the Shire of Meekatharra (shown in Figure 1 and Figure 2). The prescribed premises located on M52/1070 is owned by the Applicant, a wholly owned subsidiary of Capricorn Metals Limited.

The prescribed premises relates to the categories 5, 64, and 85 and assessed production / design capacity under Schedule 1 of the EP Regulations, which are defined in licence L9324/2022/1. The infrastructure and equipment relating to the prescribed premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in licence L9324/2022/1.

2.4 Legislative context

Table 1 summarises approvals relevant to the assessment

Table 1: Relevant approvals and tenure

Legislation	Number	Subsidiary	Approval
Mining Act 1978	Reg Id. 73030	Greenmount Resources Pty Ltd	Applicant submitted a Mining Proposal to DMIRS on 21 March 2018. The Mining Proposal with Mine Closure Plan was decided on 30 June 2018.
	Reg Id. 79636	Greenmount Resources Pty Ltd	Applicant submitted a revised Mining Proposal to the Department of Mines, Industry Regulation, and Safety (DMIRS) on 16 April 2019.
	Reg Id. 83962	Greenmount Resources Pty Ltd	Applicant received approval of Mining Proposal 16 January 2020.
Health Act 1911	NA	Greenmount Resources Pty Ltd	Applicant requires an approval to construct or install an apparatus for the treatment of sewage from the Department of Health.
RIWI Act	CAW 183479	Greenmount Resources Pty Ltd	26D licence was required to construct bores to provide the KGP water supply and facilitate the dewatering of the open pit.
	GWL201659	Capricorn Metals Ltd	Applicant obtained (19 July 2018) a 5C groundwater licence (GWL) for 4,000,000 kL from the Combined-Fractured Rock West-Fractured Rock Aquifer.
Part V of the EP Act	CPS7836/1	Greenmount Resources Pty Ltd	Native vegetation clearing permit was approved on 27 January 2018.
	W6143/2018/1	Greenmount Resources Pty Ltd	Works approval was approved on 20 August 2018.

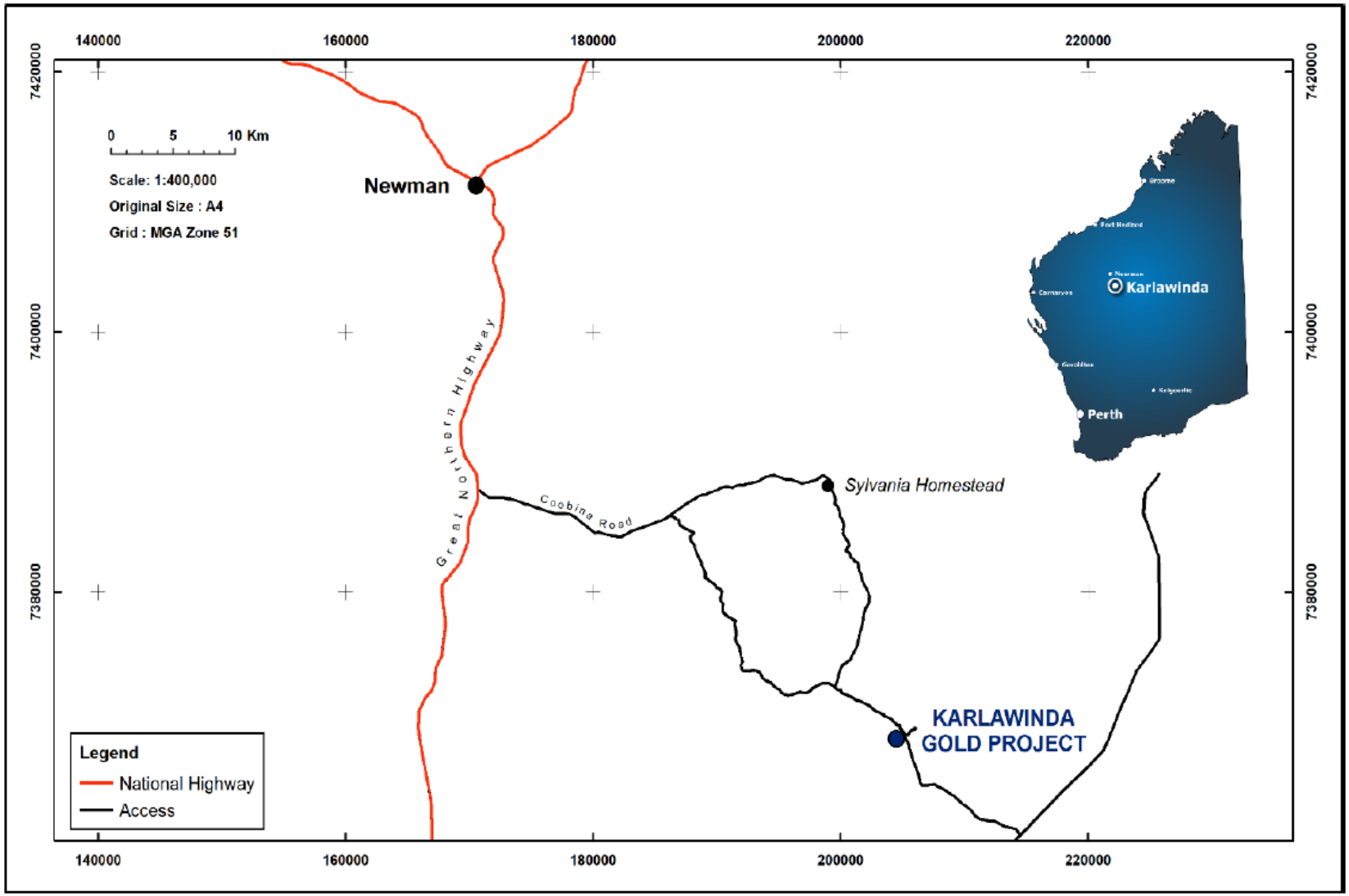

Figure 1: Site location

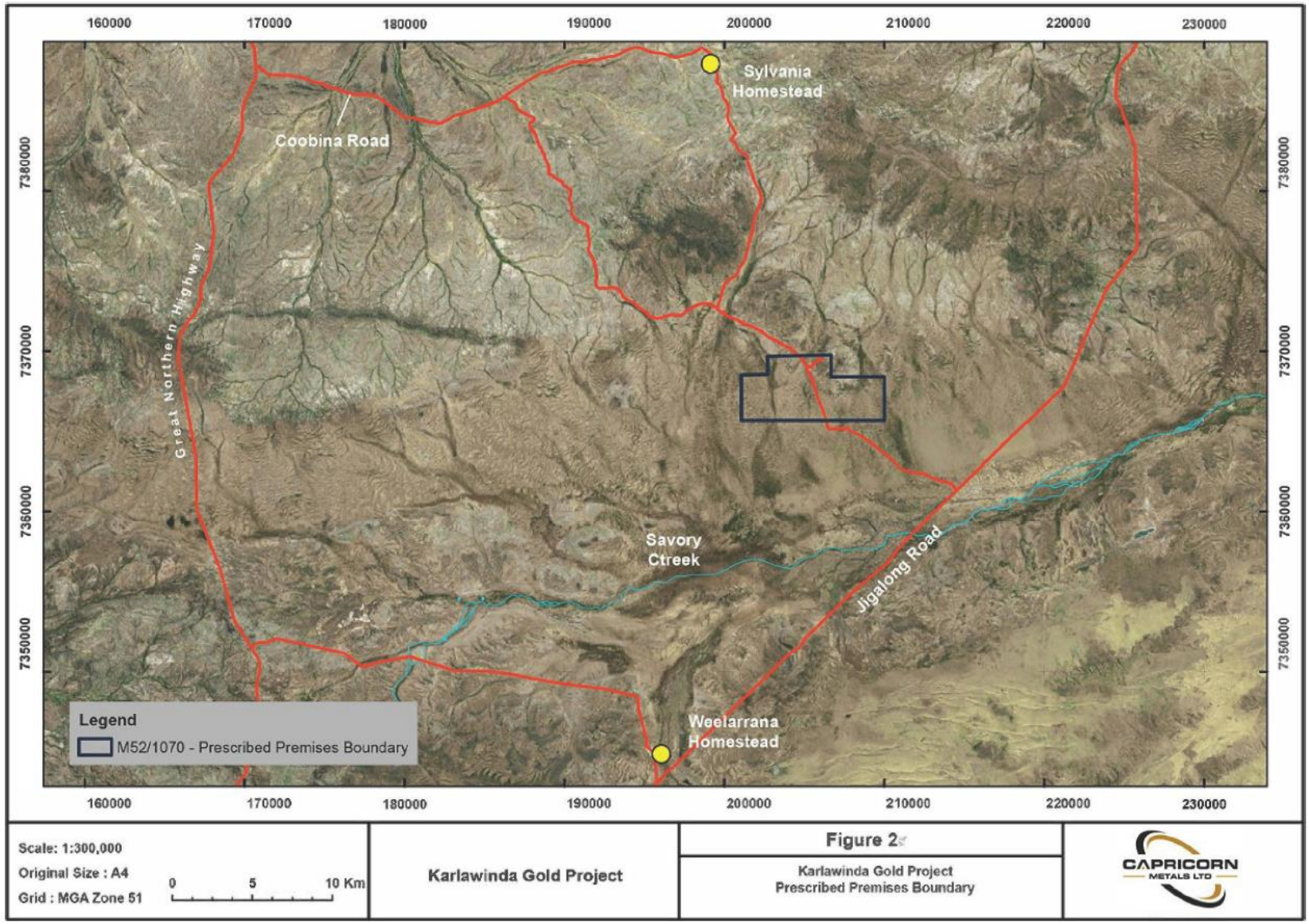

Figure 2: Prescribed premises boundary

Licence: L9324/2022/1

3. Overview of Premises

3.1 Operational aspects

The operational aspects as defined within the Application form (Greenmount Resources Pty Ltd (Greenmount) 2022a) and supporting documentation (Greenmount 2022b) are detailed below. Key project infrastructure is displayed in Figure 3.

3.1.1 Category 5 – Processing or beneficiation of metallic or non-metallic ore

Process Plant

The flowchart of the processing circuit is shown in Figure 4.

The stages of processing will comprise:

Crushing

Gold bearing ore from the pits are placed on a ROM pad located adjacent to a crushing plant. Segregation of stockpiles are undertaken according to ore source, ore type and gold grade. Ore is reclaimed from the stockpiles using a front-end-loader and is delivered into a 150-tonne capacity ROM Bin. An apron feeder withdraws ore from the ROM Bin, discharging over a vibrating grizzly. The grizzly separates the fines, nominally material passing 80 millimetres (mm), and discharges the oversize into the single stage primary jaw crusher. The jaw crusher operates with a closed side setting of approximately 150 mm. Vibrating grizzly undersize and primary crusher discharge reports onto a sacrificial conveyor, which discharges onto a stockpile feed conveyor, before discharging onto a 10,000-tonne total capacity, conical open stockpile.

Grinding

Crushed ore reclaimed from the stockpile is conveyed to the milling circuit. Approximately equal volumes of water sourced from the borefield, tailings return, and internal process recycle streams are added at the milling stage. Quicklime is then added to the ore feed to provide for an elevated pH in the downstream gold leaching stage.

The grinding circuit consists of a 4.8-megawatt (MW) semi autogenous grinding (SAG) mill as the first stage of grinding. The addition of ore feed and water to the mill is undertaken to achieve the optimum slurry density. Material exiting the SAG mill passes through a rotating trommel screen, with oversized material directed to a scats storage bunker during oxide ore processing. During fresh ore processing, SAG mill scats report to a pebble crusher via a series of conveyors. The crushed material is then recirculated back to the SAG mill with new feed.

Trommel undersize material reports to the cyclone feed hopper. Following water addition, the slurry is pumped to a nest of classification hydrocyclones located at the top of the grinding circuit structure. The cyclone underflow is split, with a portion feeding the gravity circuit and the remainder directed to a 4.8 MW ball mill for a secondary stage of grinding.

Gravity circuit

The cyclone underflow entering the gravity circuit is scalped over a horizontal vibrating screen, directing the coarse material to the ball mill feed. Scalping screen underflow is fed into a single stage gravity circuit consisting of two centrifugal concentrators operating in parallel. The centrifugal concentrators operate in a batch mode with gold concentrates discharged hourly to a storage hopper located in a secured area. Rejects from the centrifugal concentrators are returned to the ball mill feed for further grinding.

The gravity concentrate is collected for a 24-hour period. Each batch is leached with a concentrated cyanide solution. The leached solids are returned to the grinding circuit and the pregnant leach liquor sent to the gold room for electrowinning.

CIL circuit

The cyclone overflow stream from the grinding circuit reports via gravity to a trash screen before being pumped to the CIL circuit. The screen removes trash material (e.g., plastic, wood fibre, misclassified coarse particles).

Trash is collected in a bin for disposal or recycling. The screened slurry flows under gravity to the first of a series of eight mechanically agitated CIL tanks.

Cyanide and oxygen are added to the CIL circuit to propagate gold leaching. Each tank has a live volume of 1,970 cubic metres (m^3). As the gold leaches it simultaneously is adsorbed and concentrated onto granulated activated carbon particles mixed with the slurry. The gold adsorption process operates in a counter current direction to the gold leaching process. Slurry flows via gravity from the first adsorption tank progressively through the other seven adsorption tanks in series and over tailings/carbon safety screen. Carbon is batch pumped upstream, counter-current to the slurry flow, from the last to the first adsorption tank.

As the carbon is moved forward up the CIL train it becomes progressively more concentrated with gold. Loaded carbon is pumped from the first adsorption tank to the loaded carbon recovery screen where the slurry returns to the tank and the loaded carbon is discharged to the acid wash column.

Carbon stripping and goldroom circuit

This is an enclosed circuit whereby loaded carbon batches are initially washed with a hydrochloric acid solution at ambient temperature to remove non-organic contaminants and then rinsed with fresh water before being transferred to the elution column. A split Anglo-American Research Laboratories (AARL) elution process is used to remove the gold from the carbon and involves passing hot solution upward through the bed of activated carbon at a temperature of 120ºC. Once the temperature is achieved a “presoak” solution of cyanide and caustic soda is contacted with the carbon to solubilize the contained gold and then hot water is used to flush/elute the gold from the carbon in two stages. In the first stage, weak eluate from the previous elution cycle is used to generate the pregnant eluate. The resulting pregnant liquor generated is directed to a storage tank for electrowinning. During the second stage of the elution cycle hot water is used to complete the elution cycle, with the resultant weak eluate stored for use in the next elution cycle.

The barren carbon is cooled and either hydraulically transferred back into the last adsorption tank in the CIL circuit or sent to the regeneration kiln for reactivation. The liquefied petroleum gas (LPG) fired kiln heats the carbon to 650ºC, decomposing organic contaminants and increases its adsorption capacity. After cooling/quenching, the reactivated carbon is transferred to the last adsorption tank in the CIL circuit. The carbon is continuously recycled back through the CIL circuit and degrades over time. Minor addition of new carbon is required to maintain inventories and the gradation size of the carbon is maintained by screening and collection of fines. A portion of the fine carbon is recovered from the carbon safety screen.

Final gold recovery to physical form is carried out by electrowinning the pregnant liquors from both the gravity and CIL circuit pregnant solutions. The gold is plated onto cathodes of stainless steel in separate sludging electrowinning cells. The loaded cathodes are manually cleaned on a defined schedule, with the gold sludge being collected, filtered and dried before smelting into doré bars. The 500-ounce bars contain approximately 80% gold and 20% silver. Barren liquor from the electrowinning process is recycled back to the CIL to take advantage of residual reagent content and to recover any low-level residual gold.

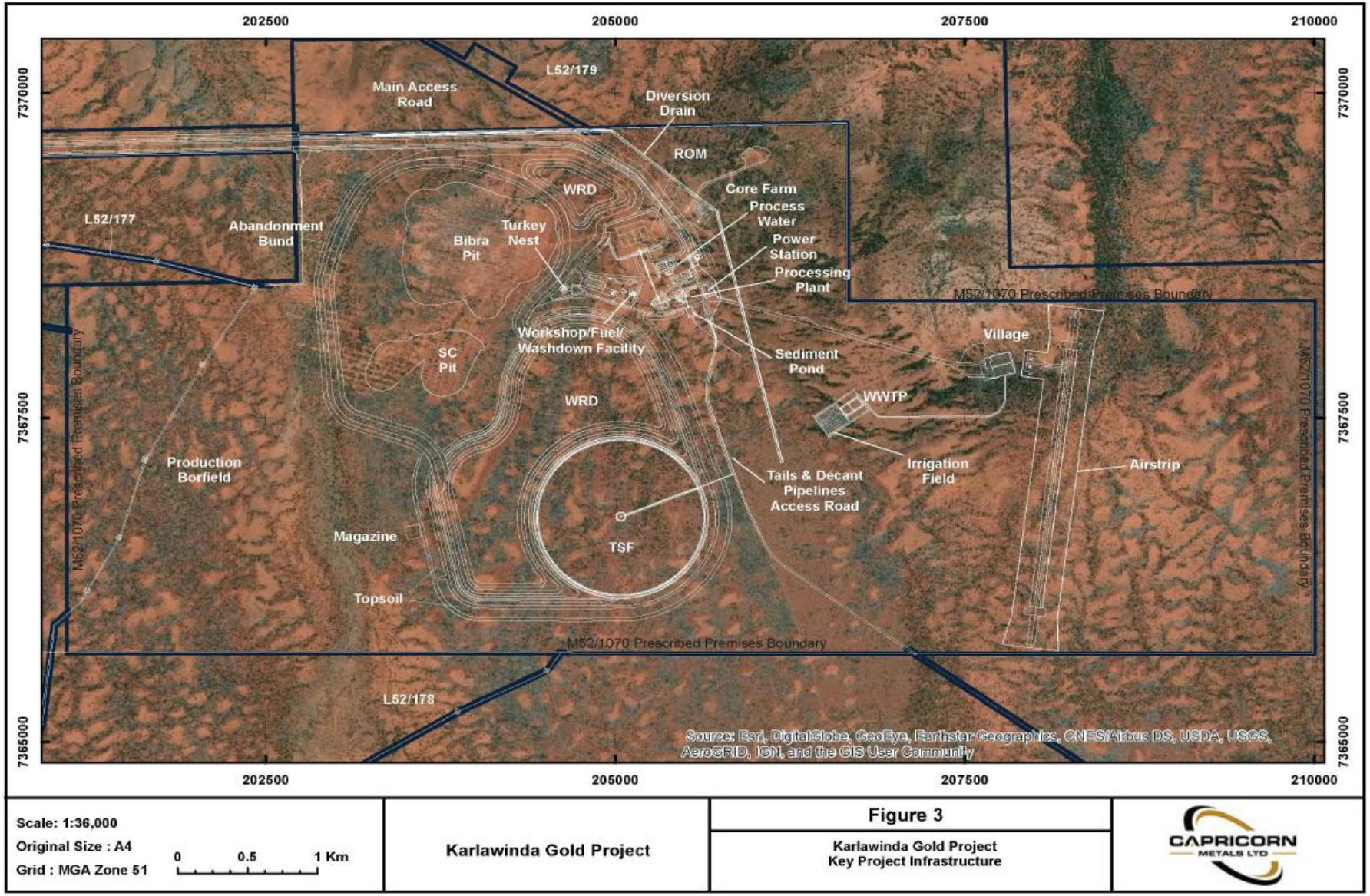

Figure 3: Key project infrastructure layout

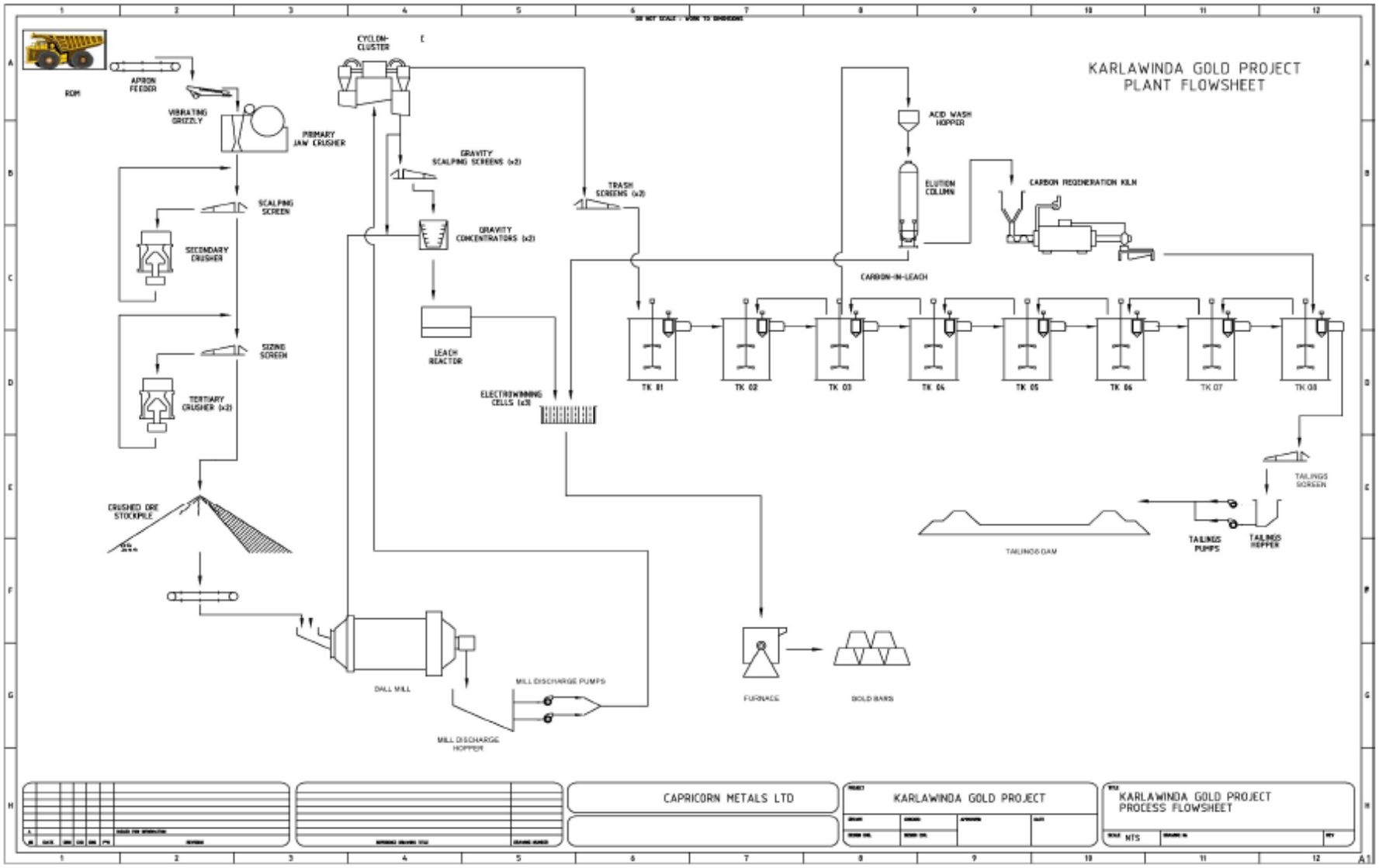

Figure 4: Processing circuit flowchart

Tailings Storage Facility (TSF)

The TSF is designed to comply with the Department of Mines and Petroleum's (DMP) *Code of Practice for Tailings Storage Facilities in Western Australia* (DMP 2013) and conform to *Guidelines on Tailings Dams* (ANCOLD 2012) and the *Guide to the preparation of a design reports for TSFs* (DMP 2015).

Tailings produced from processing ore are deposited into a surface IWL TSF. The TSF is a single cell circular facility located partially within the waste dump. The project was originally based on 21 Mt of ore being processed over a 6-year period. As a result of further exploration, the project now has increased ore to be processed up to 30 Mt with the LOM increased to 10 years.

Tailings in the form of slurry from the process plant are discharged sub-aerially and cyclically into the TSF. Deposition takes place via multiple spigots located on the upstream perimeter embankment crest. Spigotting is carried out such that the supernatant pond is maintained within and around the rock ring decant. The general configuration of the TSF (final stage) are shown in Figure 5.

Decant water is removed from the TSF by a submersible pump located within the rock-ring type central decant structure. Return water is pumped directly to the process water pond, which also receives water from mine dewatering. The water from the process water pond is distributed to various end use points in the process plant.

A starter embankment is constructed to provide nominally 1 year's storage life. The TSF was raised along with the surrounding waste dump to store the LOM tailings. The TSF embankments are raised in downstream stages against the waste dump, with downstream construction for Stages 1, 2 and 3 in those areas away from the waste dump followed by centreline construction for Stages 4 and 5. The staged embankment raises are nominally 5 m in vertical height. The estimated tailings storage areas, volume, and storage capacity of the IWL TSF is shown in Table 2.

Table 2: Estimated tailings storage areas and storage volume

Stage	Crest RL (m)	Area (ha)	Cumulative Volume (mm^3)	Cumulative Storage Capacity (Mt)	Cumulative Storage Life (years)
Starter	590.5	100	3.0	3.75	1.0
1	595.5	105	8.4	10.5	2.8
2	600.5	107	13.8	18.0	5.2
3	602.5	109	16.0	21.0	6.3
4/5	608.5	108	+6.4	30.0	10

Process Water Pond

Water is delivered to the Process Water Pond (PWD) (16,050 m^3 capacity) from:

- TSF decant return water; and
- Raw water pond overflow.

Raw water pond (2,100 m^3) is constructed with an overflow to the PWD. Decant water is returned from the TSF via the decant return pump. The process water is distributed from the PWD to various end use points within the process plant by the process water pumps that are installed in a duty/standby arrangement. A 500 mm freeboard is maintained in all ponds.

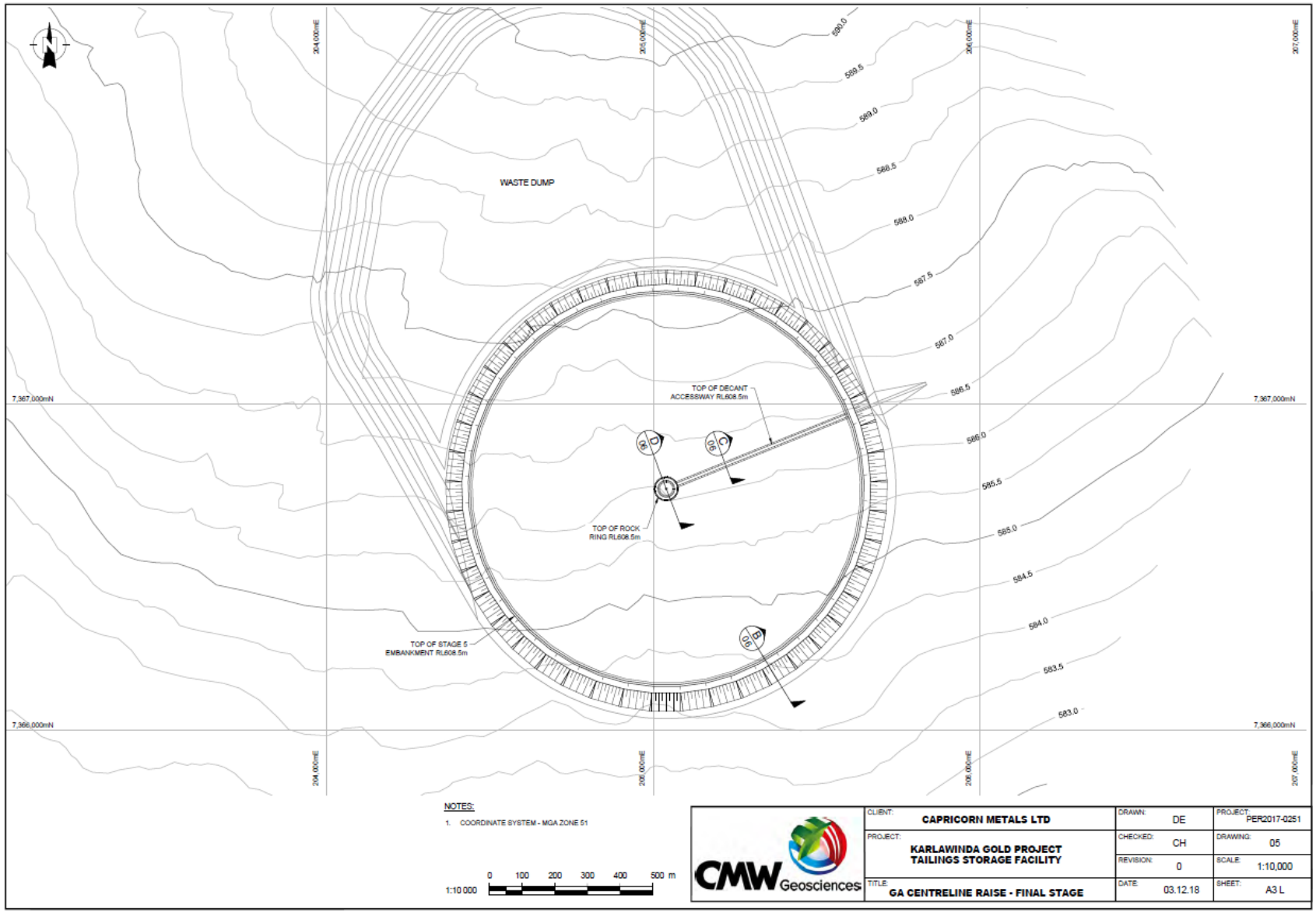

Figure 5: TSF general arrangement – Final stage

3.1.2 Category 64 – Putrescible landfill site

Two Class II landfills have been constructed within two waste rock dumps at the prescribed premises. One landfill accepts putrescible waste, inert waste type 1 and inert waste type 2 (plastics) and the second landfill only accepts inert waste type 2 (rubbers/tyres) in accordance with the *Landfill Waste Classifications and Waste Definitions* (DWER 2019).

3.1.3 Category 85 – Sewage facility

The WWTP consists of one macerator tank and primary and secondary stabilization ponds that are rated for 260 persons at 300 litres (L) per day. The WWTP system is located adjacent to the accommodation village to process wastewater streams from ablutions and other facilities at the accommodation village.

Effluent form the WWTP will be treated to as secondary level of treatment (Category C) in accordance with *National Water Quality Management Strategy (NWQMS) Australian Guidelines for Sewerage Systems – Effluent Management* (ARMCANZ and ANZECC 1997) with effluent achieving the specification detailed in Table 3. The treated wastewater will be discharged to the fenced evaporation ponds.

Table 3: Effluent specifications

Parameter	Units	Value
pH	pH units	6.5 – 8.5
Biochemical Oxygen Demand	mg/L	<30 mg/L
Total Suspended Solids		<40 mg/L
Total Nitrogen		<30 (10 mg/L reduction from influent value)
Total Phosphorus		7.5 mg/L
E. coli	cfu/100 mL	10^5 - 10^6

3.2 Infrastructure

The prescribed premises, as it relates to Category 5, 64, and 85 activities, is detailed in Table 4 and with reference to the key project infrastructure layout shown in Figure 3.

Table 4: Prescribed premises infrastructure

	Infrastructure	Location reference
Category 5		
Ore mine from the pit is transported to the Rom pad and then processed through the CIL processing plant. Tailings are pumped to an IWL TSF.		
1	ROM pad	ROM area
2	Primary crusher (ROM bin, apron feeder, vibrating grizzly, primary jaw crusher, and conveyors)	Processing plant area
3	Stockpiles	
4	Two stage grinding circuit (SAG mill and ball mill)	
5	Single stage gravity circuit consisting of two centrifugal concentrators operating in parallel	
6	Leaching and absorption (CIL circuit to propagate gold leaching. The gold absorption process (eight absorption tanks in series) will operate in a counter current direction the gold leaching process	
7	Carbon stripping (elution process, electrowinning, carbon regeneration / reactivation)	
8	Regeneration kiln	
9	Gold recovery (smelting)	
10	Processing reagents (quicklime, cyanide, sodium hydroxide, hydrochloric acid and activated carbon)	
11	Process water pond	Process water area
12	IWL TSF – tailings delivery and decant return water pipelines, rock-ring type central decant structure and cut-off trench	TSF, tails, and decant pipelines area
Category 64		
Putrescible waste, inert waste type 1, and inert waste type 2 (plastics and rubber) will be disposed of within two waste dump landfills. The prescribed premises is expected to produce up to 750 tonnes per annum of inert waste (including tyres) and up to 750 tonnes per annum of putrescible waste.		
1	Inert and putrescible landfill	Landfill
2	Tyre landfill	

	Infrastructure	Location reference
Category 85		
WWTP that consists of the macerator tanks and primary and secondary ponds processes wastewater streams from ablutions and other facilities at the accommodation village. The WWTP is rated for ~260 persons at 300 L per person per day.		
1	WWTP including associated pipelines	Camp and WWTP
Ancillary activities		
1	Workshop	Workshop and washdown facility
2	Washdown facility	
3	Turkey nest – water from mine dewatering is held here prior to being used for dust suppression or directed to the process water pond	Turkey nest
4	Raw water pond	Not shown on Figure 3, but located next to the process water area

3.3 Exclusions to the premises

The following activities / infrastructure will be occurring / located at the prescribed premises, which are not included in the scope of this assessment:

- Mining of ore from open pits;
- Abstraction of groundwater (production borefield) is regulated under the *Rights in Water and Irrigation Act 1914* (RIWI Act);
- Mine dewatering of the Bibra pit. This activity is not regulated by DWER as the mine dewater is not discharged to the environment, instead it will be used in the process plant and for dust suppression (Greenmount 2022a and 2022b);
- 18 megawatts (MW) gas-fired power station. This infrastructure is not regulated by DWER as it does not trigger category 52 or 84 of the EP Regulations;
- Fuel storage and dispensing compound (4 x 110 kilolitres (kL) self-bunded tanks). This infrastructure is not regulated by DWER as the applicant has stated that less than 1,000 m^3 in aggregate is planned to be stored on the prescribed premises. The applicant should note that the general provisions of the EP Act and *Environmental Protection (Unauthorised Discharges) Regulations 2004* apply, as does the *Dangerous Goods Safety Act 2004* and associated Regulations;
- A bioremediation pad is to be established within each of the two waste dumps. They will be approximately 1 ha and will comprise a compacted layer of waste material, with earthen bunds to control runoff. As the facilities do not receive liquid waste from other prescribed premises, it does not trigger a category 61A under the EP Regulations. The applicant should note that the discharge of hydrocarbons to the environment is an unauthorized discharge under the *Environmental Protection (Unauthorised Discharges) Regulations 2004* and the facilities are operated to comply with the *Assessment and management of contaminated sites* and the *ASC NEPM;*
- 260-person accommodation camp;

- Leach drain systems at the workshops and administration offices are not regulated by DWER;
- Explosive magazine;
- Administration offices; and
- Infrastructure corridors (roads and power corridors).

3.4 Siting

3.4.1 Climate

Climatic conditions in the region are dominated by tropical cyclones which can occur in all summer months, but predominately between late December and end of March (Greenmount 2022b). The nearest weather station to the prescribed premises is at Mundiwindi (Sylvania Station 7079) where mean and median annual rainfalls of 261 and 230 millimetres (mm) respectively are representative of conditions are the prescribed premises.

The mean annual pan evaporation of approximately 3,611 mm is considered to be representative of conditions at the prescribed premises (Greenmount 2022b). The 1 in 100-year Average Recurrence Interval (ARI), 72-hour storm event for the prescribed premises is approximately 3.4 mm per hour, or a 243 mm event. Figure 6provides the mean rainfall and maximum temperatures for Newman Aero (mean maximum temperature 1996-2022 and mean rainfall 1971-2022) (Bureau of Meteorology (BoM) 2022).

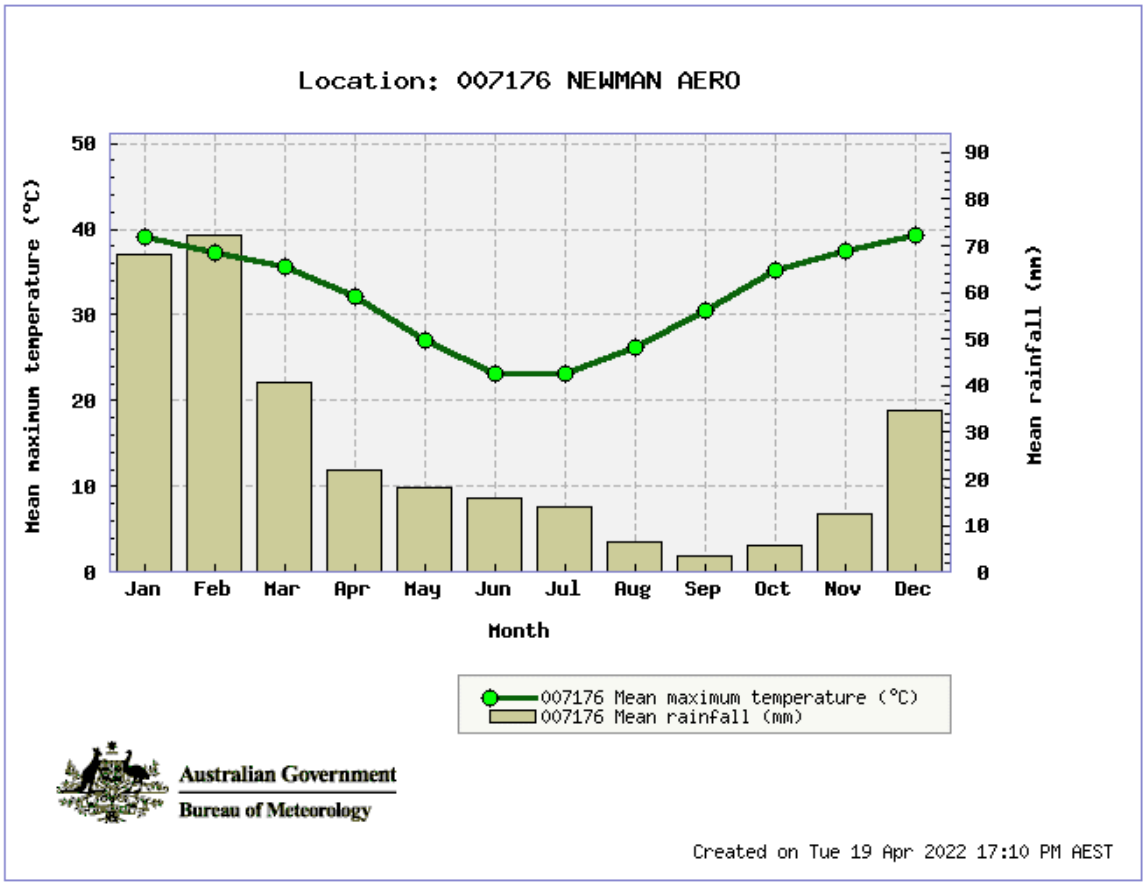

Figure 6: Mean temperature and rainfall data (BoM 2022)

3.4.2 Groundwater chemistry

The prescribed premises is locatedin the East Murchison Groundwater Area (Greenmount 2022b). Groundwater in the region typically occurs in the following units:

- Calcrete Aquifers: these likely occur to varying degrees along Savory Creek (to the south of the prescribed premises). Where developed, these aquifers are likely to be thin (less than 20 m or so in thickness), unconfined, and have limited areal extent away from the main Savory Creek channel. Although limited in size, they can form moderate to high permeability aquifers;
- Fractured Rock Aquifers: these form due to secondary permeability developing in basement rocks from faulting, fracturing and dissolution of soluble minerals in both the Archean and Proterozoic sequences. These aquifers can have moderate to high permeability, particularly when they intersect other main shear or fracture zones and are a major source of sustainable mine water supplies in the Pilbara and Goldfields regions, providing abstraction rates are managed. One such aquifer strikes north-north-easterly, a few kilometres to the west of Bibra (Easky Fault zone) and has been targeted as part of these water supply investigations; and
- Weathered Bedrock Aquifers: Aquifers: these result from secondary permeability developed dominantly from chemical weathering of basement rocks and various sedimentary units. These aquifers can have significant lateral extent but are often limited in thickness, depending on the depth of oxidation. In the Bangemall Group rocks to the west of Bibra, such an aquifer has developed in a weathered dolomite horizon. This aquifer (known locally as the dolomite aquifer) is around 30 m thick with drilling indicating it to be 3 km or more in length and around 2 km wide with consistent moderate to high permeability.

Five production bores KPB01 to KPB05 were test pumped to assess aquifer parameters and help build a conceptual model of the groundwater system in the KGP area. These bores are depicted in Figure 7 and coincide with groundwater monitoring bores KMB01 to KMB01. Samples for water quality analysis were collected and the results are tabulated in Table 12.

Results of the laboratory analysis indicate that the groundwater in the KGP area is of very good quality, with all analyses showing it to be consistently fresh with less than 500 mg/L of TDS, and neutral to slightly alkaline. Results for dissolved metals were low for most metals, although chromium was slightly elevated. The water is relatively soft with total hardness less than 250 mg/L as CaCO3 (Groundwater Resource Management (GRM) 2017).

3.5 Tailings waste materials characterisation

The bulk of the ore at the prescribed premises is located at the expanded Bibra open pit (resource of 38.2 Mt). A small, additional reserve is located at the proposed Southern Corridor open pit (resource of 4.1 Mt), which is approximately 200 m south of the Bibra pit as shown in Figure 3.

3.5.1 Bibra pit

Geochemical assessment of simulated process waste (tailings) samples was undertaken by Graeme Campbell & Associates Pty Ltd (GCA 2018). Further analysis was undertaken by Minelogix Pty Ltd (Minelogix 2018) to assess cyanide and arsenic concentrations in tailings leachate.

Two simulated tailings samples were analysed comprising:

- Oxide-ore tailings; and
- Primary-ore-tailings.

Static analyses were undertaken on both the solid tailings sample and the tailings slurry water.

Analysis comprised:

- Sulfide-S;
- Acid-Neutralisation-Capacity (ANC);
- Net-Acid-Generation (NAG);
- NAG-pH;
- pH and EC;
- Multi-element analysis; and
- 24-hour and 48-hour leach tests.

Based on the initial geochemical analysis (GCA 2018) and subsequent additional leach testing on simulated tailings samples (Minelogix 2018), the conclusions presented in Table 5are made regarding tailings streams at the prescribed premises (Greenmount 2022b).

Table 5: Tailings characterisation

Sample description	Characterisation
Oxide Bulk (Solids) Tailings Sample (results shown in Table 10 below)	• The sample contained "negligible-sulfides" (Sulfide-S value of 0.01%). • The sample was classified as Non-Acid Forming. • The sample had contents of major and minor elements typically below, or close to, those recorded for soils, regoliths, and bedrocks derived from unmineralized terrain. The exception to this was arsenic.
Oxide Tailings Water Leachate (results shown in Table 6 below)	Leachate from oxide tailings from the operating TSF is expected to be: • Alkaline, with a pH value of 10. • Fresh, with a TDS content of 896 mg/L. • Low in Weak Acid Dissociable (WAD) cyanide (less than 50 mg/L), following volatilization of cyanide in open tanks and discharge into the TSF. • Low in concentrations of cyanide-complexing metals (e.g., iron and zinc). • Low in concentrations of other elements, either below or close to the respective limit of detection, including low concentrations of arsenic (0.1 mg/L).
Fresh Bulk (Solids) Tailings Sample (results shown in Table 10 below)	The primary ore tailings sample contained "trace sulfides" (Sulfide-S value of 0.071%). • The sample was conservatively classified as potentially acid forming – low capacity (PAF-[LC]). • The sample had contents of major and minor elements typically below, or close to, those recorded for soils, regoliths, and bedrocks derived from unmineralized terrain. The exception to this was arsenic and molybdenum.
Fresh Tailings Water Leachate (results shown in Table 6 below)	Leachate from fresh tailings from the operating TSF is expected to be: • Alkaline, with a pH value of 10. • Slightly brackish, with a TDS value of 1,400 mg/L.

Sample description	Characterisation
	• Low in free cyanide (less than 50 mg/L), following volatilization of cyanide in open tanks and discharge into the TSF. • Slightly elevated in concentrations of cyanide complexing metals (namely, iron and copper). • Low concentrations of other elements, including low concentrations of arsenic (~1.2 mg/L) based on anticipated plant conditions of approximately 24-hour leach times (Minelogix 2018)*.

***Follow up metallurgical evaluation in January 2018 to assess arsenic solubility**

Table 6: Analysis results for tailings-slurry-water samples

ELEMENT/ PARAMETER	Oxide-Ore-Tailings (GCA11652)	Primary-Ore-Tailings (GCA11653)	ELEMENT/ PARAMETER	Oxide-Ore-Tailings (GCA11652)	Primary-Ore-Tailings (GCA11653)
Major-Parameters			*Cyanide-Complexing Metals (mg/L)*		
pH	9.9	10.3 (10.2)	Fe	0.15 (0.17)	34.0
pH (GCA)	10.0	10.4	Cu	1.88 (1.90)	11.6
EC (µS/cm)	1,742	2,485 (2,480)	Ni	0.42 (0.43)	1.28
EC (GCA, µS/cm)	1,771	2,350	Zn	0.81 (0.83)	0.06
TDS-(grav.) [mg/L]	896	1,363 (1,395)	Co	0.0961 (0.0933)	0.202
			Ag	0.14	<0.01
Major-Ions (mg/L)			*Minor-Ions (µg/L)*		
Na	268.7 (272.7)	457.7			
K	8.1 (8.0)	16.4	As	7.4 (8.1)	7,400
Mg	4.21 (4.16)	0.12	Sb	0.42 (0.42)	9.60
Ca	57.97 (58.06)	5.48	Se	1.0 (0.7)	0.5
Cl	560 (558)	648	B	<10 (<10)	70
SO4	40 (40)	110	Mo	117.2 (114.1)	6.48
HCO3 (as CaCO3)	<2	<2 (<2)	Mn	<10 (<10)	<10
CO3 (as CaCO3)	153	241 (241)	Al	0.23 (0.23)	0.44
OH (as CaCO3)	323	328 (328)	Cd	6.8 (7.5)	<0.5
F	0.2	0.8 (0.8)	Pb	4 (5)	<2
Si	1.59 (1.57)	10.23	Cr	60 (60)	<10
			Hg	1.3 (1.3)	<0.1
Nitrogen-Forms (mg/L)			Bi	0.006 (0.027)	<0.005
			P	<100 (<100)	<100
NH3-N	1.6	2.4	Ba	31.90 (31.27)	5.16
NO3-N	0.86	0.36	Sr	260.9 (263.4)	28
			Tl	0.02 (0.05)	<0.01
Cyanide-Forms (mg/L)			V	<10 (<10)	10
			Sn	0.5 (0.5)	<0.1
CNtot	307	369	U	0.106 (0.118)	0.236
CNwad	291	296	Th	0.011 (0.016)	<0.005
CNfree	290	268			
SCN	1.1	38.3			

Notes:
EC = Electrical-Conductivity; CNtot = Total-Cyanide; CNwad = Weak-Acid-Dissociable Cyanide; CNfree = Free-Cyanide
TDS-(grav.) = Total-Dissolved-Solids-(gravimetric)
Values in parentheses represent duplicate determinations.

3.5.2 Southern Corridor pit

The *Tailings Assessment – South Corridor* states that while there have been studies performed on the ore within the Bibra regolith in order to understand the tailings properties (both physical and chemical), (refer to section 3.5.1), little test work has been performed on the ore from the

South Corridor deposits. The Tailings Assessment – South Corridor also states that "*As the ore treatment flowsheet is unlikely to alter for the relatively small proportion of the overall blended plant feed and, that it is likely to be blended with a significant portion of Bibra ore during the first 3 to 4 years of operation, the tailings properties are unlikely to alter significantly from that previously observed for the Bibra ore*".

The Southern Corridor contains the same rock type as Bibra apart from the absence of the sandstone (ore) unit, which hosts the majority of the Bibra ore, and the addition of the Bangemall formation (waste rock) which overlays the Southern Corridor mineralisation. The main differences between the different pits are the weathering states, since the Southern Corridor will consist of 98% oxidised material compared to 59% at Bibra.

The proportion of the different rock types and weathering types by area are shown in

Table 7 and Table 8 (Southern Corridor Geology Memo 2018).

Table 7: Volumes and proportion of rock types in pit areas

	ORE (Material to Tails Dam)			
	Bibra		Southern Corridor	
ROCK TYPE	BCM	PROPORTION	BCM	PROPORTION
Cover	40,422	0.0		
Ultramafic			20,919	4%
Laterite	1,211,713	11%		
Amphibolite	3,540,544	31%	172,106	37%
Sandstone	5,307,444	47%		
Volcanoclastic Sandstone	1,177,581	10%	278,247	59%
Bangemall Formation			66	0%
TOTAL	11,277,703		471,338	

Table 8: Volumes and proportion of weathering types in pit areas

	ORE (Material to Tails Dam)			
	Bibra		Southern Corridor	
ROCK TYPE	BCM	PROPORTION	BCM	PROPORTION
Oxide	3,915,188	35%	189,431	40%
Transitional	846,922	8%	233,100	49%
Fresh	6,515,594	58%	48,806	10%
TOTAL	11,277,703		471,338	

The Southern Corridor mineralisation is contiguous with Bibra mineralisation, and at a lower cutoff grade, would become a single open pit.

Table 9 shows the chemical signature comparison of the Southern Corridor and Bibra deposit. The *Tailings Assessment – South Corridor* states that *"the analysis generally reflects the Bibra Oxide ore*", with lower concentrations for arsenic but higher concentrations for copper and nickel.

Table 9: Chemical signature comparison of Southern Corridor and Bibra Deposit – samples > 0.4 g/t Au

Analyte	Units	Assay Result					
		Bibra Fresh	Bibra Laterite	Bibra Oxide	Sth Corridor	Sth Corrdor >100m Deep	Sth Corrdor <100m Deep
Ag	ppm	0.3	0.6	0.9	0.31	0.35	0.27
As	ppm	340	80	80	46	40	54
Au	g/t	0.68	1.46	0.85	1.10	1.34	0.82
Cu	ppm	65	130	80	136	159	109
Ni	ppm	40	40	120	119	104	136
Zn	ppm	35	30	80	76	63	91

3.5.3 Tailings Supernatant Management Plan

A Tailings Supernatant Management Plan was submitted for Condition 14 under Works Approval (W6143/2018/1) on 13 November 2018. DWER's response on 12 February 2019 stated, "*DWER considers that the Tailings Supernatant Management Plan submitted does not comply with Condition 14, in that the the proposed Plan does not provide effective processes for reducing contaminant concentrations in the tailings supernatant such that the limits for arsenic and WAD cyanide will be met*".

The concern is wildlife in particular migratory bird species that may encounter these contaminants in supernatant are at risk and leachates at these concentrations (or even at an order of magnitude lower) present a risk to groundwater and the adjacent Savory Creek, the receptor for the underlying fractured and bedrock groundwater aquifers.

On 30 April 2021, DWER had confirmed that this Licence (L9324/2022/1) will stipulate the following limits, with continuous monitoring:

- pH 8 to 10;
- Copper <1 mg/L;
- Total Chromium <1 mg/L;
- Hexavalent Chromium <0.5 mg/L;
- Arsenic <1 mg/L; and
- WAD Cyanide <50 mg/L.

Any exceedances of these limits as indicated by the applicant will require the installation of detoxification technology and the implementation of arsenic reduction controls.

Table 10: Multi-Element-Analysis results for tailings-solids samples

GCA-SAMPLE NO.	TAILINGS TYPE	S	Ca	Mg	Na	K	Al	Fe	Si	As	Sb	Se	Mo	B	F	Ni	Cr	Co	Cu	Zn	Cd	Pb	Hg	Ag	Tl	Ba	Sr	Bi	P	Mn	Sn	V	Th	U
		%								mg/kg						mg/kg			mg/kg					mg/kg											
GCA11652	Oxide-Ore-Tailings	<0.01	1.1	1.08	1.84	0.46	6.20	9.15	27.9	72.2	0.88	0.10	8.9	<50	255	154	233	65.9	87	120	0.07	3.4	0.02	0.27	0.22	211.0	132.1	0.18	551	1,244	1.3	171	3.45	1.23
GCA11653	Primary-Ore-Tailings	0.84	3.2	1.66	2.68	0.58	5.96	7.79	29.6	248.0	0.52	0.23	38.6	<50	273	267	499	29.0	59	56	0.03	3.8	<0.01	0.06	0.15	152.1	125.0	0.13	724	870	1.5	112	3.91	1.05
	Average-Crustal Abundance (Bowen 1979)									1.5	0.2	0.05	1.5	10	950	80	100	20	50	75	0.11	14	0.05	0.07	0.6	500	370	0.05	1,000	950	2.2	160	12	2.4

Highlighted Assays:

signifies element content 10-100 times average-crustal abundance

signifies element content 100+ times average-crustal abundance

Reference: Bowen HJM, 1979, "Environmental Chemistry of the Elements", Academic Press, New York

4. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020a).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during prescribed premises operation which have been considered in this decision report are detailed in Table 11 below. Table 11 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 11: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operation			
<u>Category 5</u>			
Dust	Operation of process plant, movement of ore through conveyors in crushing and grinding circuit Stockpiling, vehicle and mobile equipment movements	Air and windborne Potential suppression of photosynthesis to vegetation and respiratory functions	• During strong winds, topsoil stripping and spreading activities will be restricted if dust cannot be adequately controlled • Progressive clearing within the prescribed premises will be undertaken to ensure short duration of exposed surfaces • Unsealed road surfaces will be regularly watered down • Vehicles and mining equipment will keep to designated roads • Vehicle speed limits will be applied to reduce dust generation • Water will be applied during ore handling at the ROM pad (if required) • Sprays will be used in the tipping area of the crusher during tipping / crushing activities • Daily inspections will be undertaken to evaluate effectiveness of point source dust control measures. Corrective actions will be implemented where required • Following completion of tailings deposition, the TFS will be rehabilitated to reduce dust generation • Disturbed surfaces will be progressively rehabilitated where practical to minimise exposure to wind erosion
Gold processing slurry with cyanide and metals in solution	Wet processing (leaching and adsorption, elution electrowinning and tailings disposal to tailings hopper)	Pipeline failure or tank/bund overflow causing spill to ground; flow to vegetation and drainage lines dependent on size Death or adverse impact to surrounding vegetation	• Flow sensors will be fitted to TSF and water return pipelines • Provision of spill kits will be around hydrocarbon and chemical storage areas and in other appropriate locations • Pipelines will be visually inspected daily for any visible leakage or damage

Emission	Sources	Potential pathways	Proposed controls
		Soil and/or groundwater contamination	
Decant return water containing cyanide and metals in solution, which could increase in concentration over time	PWD and associated pump and piping system	Overflow from PWD Seepage through liner Soil and / or groundwater contamination	• Sufficient freeboard (500 mm) will be maintained which also allows storage of rainfall from a 1% average exceedance probability (AEP) 72-hour event • Decant pond will be minimised by continuous solution reclamation and reuse in the processing plant • Decant water will be removed from the TSF by a submersible decant pump and pumped directly to the PWD • The minimum capacity of the water recovery system should not be less than 400 tonnes per hour excluding the additional capacity to recover water from design storm events • Tailings delivery and water return pipes and containment corridor will be visually inspected daily for any visible leakage or damage • Monthly monitoring will be undertaken of decant pond level and water quality as per the parameters in Table 12
Contaminated stormwater	All processing activities	Stormwater runoff Gravity flow overland Contamination to drainage lines with sediment laden stormwater Loss of riparian vegetation Soil and / or groundwater contamination	• Ore processing activities will be conducted within bunded, hardstand areas • Stormwater diversion and flood protection will be around operational areas • Run-off from disturbed surface areas with the plant will be directed to an unlined sedimentation pond • Contaminated stormwater and sediment will be collected in a concrete sump and washdown water treated via a process to separate solids and hydrocarbons from the water • Progressive rehabilitation will be undertaken of disturbed areas • Monthly inspections will be undertaken of the integrity of hardstands and bunds

Emission	Sources	Potential pathways	Proposed controls
Leaks and spillages of environmentally hazardous material (including cyanide, hydrochloric acid, hydrocarbons)		Seepage to land causing direct impacts to the ecosystem	• Ore processing activities will be conducted within bunded, hardstand areas • All chemical reagents will be stored within tanks in appropriately bunded facilities whereby 110% of the largest vessel is contained and 25% if the total volume is contained according to *Australian Standards AS1940 and AS1692* • Fuel delivery inlets / bowsers are on concrete or HDPE-lined pads to collect drips and spills being directed to a sump for the removal of collected material • Flood protection will be around operational areas • Vehicle maintenance will be undertaken in designated workshop areas on concrete pads where water is drained to a clean water recovery system • Vehicle maintenance outside the workshop will have any spillages or leakages captured and managed through use of drip trays and absorbent materials • Provision of spill kits will be around hydrocarbon and chemical storage areas and in other appropriate locations • Hydrocarbon contaminated water will be directed to an oil / water separating system • Soil contaminated by hydrocarbons will either be treated in-situ • Other contaminated material / waste (e.g., rags, vehicle filters, waste oil) by hydrocarbons will be collected and stored in bins, tanks or on bunded pallets and taken to an appropriated disposal facility offsite in Newman • Monthly inspections will be undertaken of the integrity of hardstands and bunds
Tailings overflows from the TSF	TSF	Direct discharges to land and seepage to soil and groundwater	• Sufficient freeboard (500 mm) will be maintained in the TSF to capture rainfall from a 1% AEP 72-hour event

Emission	Sources	Potential pathways	Proposed controls
		Soil contamination inhibiting vegetation growth and survival Direct impacts to the ecosystem	• Tailings discharge points, return water pump, beach, decant pond level and tailings level will be visually inspected twice every 24 hours to validate operation is in accordance with design and operational expectations and check for any evidence of embankment instability • Stormwater diversion and flood protection will be around operational areas • TSF internal walls will be inspected daily and TSF external walls will be monitored monthly during the operation of the TSF • Daily inspections to assess freeboard and supernatant pond capacity is available
Discharge of tailings through TSF embankment failure		Direct discharges to land and seepage to soil and groundwater Soil contamination inhibiting vegetation growth and survival Direct impacts to the ecosystem, particularly drainage lines	• Standing water level (SWL) monitoring will be undertaken monthly from the 14 monitoring bores (Figure 7) • Ambient groundwater monitoring will be undertaken quarterly as per the parameters in Table 12 • Seepage collection and recirculation will be undertaken if required
Tailings seepage		Seepage to groundwater adjacent to TSF Seepage from the TSF base and through sides with infiltration soils Groundwater mounding Inundation of vegetation root zones, resulting in poor vegetation health or death Groundwater contamination Soil contamination inhibiting	• Any recovered groundwater from the installed seepage recovery bores will be pumped back into the TSF onto the tailings beach where it will report to the decant system • SWL monitoring will be undertaken monthly from the 14 monitoring bores (Figure 7) • Ambient groundwater monitoring will be undertaken quarterly as per the parameters in Table 12

Emission	Sources	Potential pathways	Proposed controls
		vegetation growth and survival	
Spillage of tailings through leaks, pipeline ruptures or failure		Direct discharges to land and infiltration to soil and groundwater Soil contamination inhibiting vegetation growth and survival Direct impacts to the ecosystem	• Flow sensors will be fitted to TSF and water return pipelines • Provision of spill kits will be around hydrocarbon and chemical storage areas and in other appropriate locations • Pipelines will be visually inspected daily for any visible leakage or damage
Category 64			
Dust	Vehicle movement Equipment and cover material for trenches	Air and windborne Potential suppression of photosynthesis to vegetation and respiratory functions	• Progressive clearing within the prescribed premises will be undertaken to ensure short duration of exposed surfaces • Unsealed road surfaces will be regularly watered down • Vehicles and mining equipment will keep to designated roads • Vehicle speed limits will be applied to reduce dust generation • Daily inspections will be undertaken to evaluate effectiveness of point source dust control measures. Corrective actions will be implemented where required • Disturbed surfaces will be progressively rehabilitated where practical to minimise exposure to wind erosion
Direct discharge and leachate (including tyres)	Contaminated stormwater	Via soil, surface water, SWL and groundwater Groundwater and soil contamination	• Stormwater will be diverted away from the landfill area, where the landfill area is above ground and bunds protecting it from stormwater runoff
Windblown rubbish	Loose waste that is uncovered and become windblown	Direct discharge / movement by surface water following rainfall	• Tipping area of the landfills will not be greater than 30 m in width and 3 m in depth • Any waste washed or wind-blown outside the landfill area will be

Emission	Sources	Potential pathways	Proposed controls
		Air / windborne Soil contamination May attract vermin / other fauna	collected and returned to the tipping area • Waste in the landfill area will be covered with at least 150 mm of cover material (available from the waste rock dump) on a fortnightly basis • Landfill area will be inspected weekly, and any windblown waste observed will be collected • Relevant signage will be in place listing the type of waste facility and materials to be deposited
Category 85			
Sewage discharge from ruptured pipes / overtopping and storage tanks failure	Sewage pipes and holding tanks	Direct discharges to land, irrigation, surface water and groundwater Soil contamination inhibiting vegetation growth and survival Surface water and groundwater contamination	• WWTP will be maintained in accordance with the manufacturer's specifications • Effluent discharge quality monitoring will be undertaken on quarterly basis as per the parameters in Table 3 • Effluent discharge will be managed to prevent overflow from the evaporation ponds
Rainfall ingress into the WWTP and irrigation area becoming contaminated	Contaminated stormwater		
Treated effluent discharged to evaporation ponds	Discharge to ponds	Direct discharges to land and groundwater Movement by surface water following rainfall Increase in nutrient levels in soil and groundwater	
Ancillary activities			
Hydrocarbons	Workshop and washdown facility	Direct discharge and potential spillages	• Fuel delivery inlets / bowsers are on concrete or HPDE-lined pads to collect drips and spills being directed to a sump for the removal of

Emission	Sources	Potential pathways	Proposed controls
		Soil and / or groundwater contamination	collected material • Flood protection will be around operational areas • Vehicle maintenance will be undertaken in designated workshop areas on concrete pads where water is drained to a clean water recovery system • Vehicle maintenance outside the workshop will have any spillages or leakages captured and managed through use of drip trays and absorbent materials • Provision of spill kits will be around hydrocarbon and chemical storage areas • Hydrocarbon contaminated water will be directed to an oil / water separating system • Soil contaminated by hydrocarbons will either be treated in-situ • Other contaminated material / waste (e.g., rags, vehicle filters, waste oil) by hydrocarbons will be collected and stored in bins, tanks or on bunded pallets and taken to an appropriated disposal facility offsite in Newman • Monthly inspections will be undertaken of the integrity of hardstands and bunds

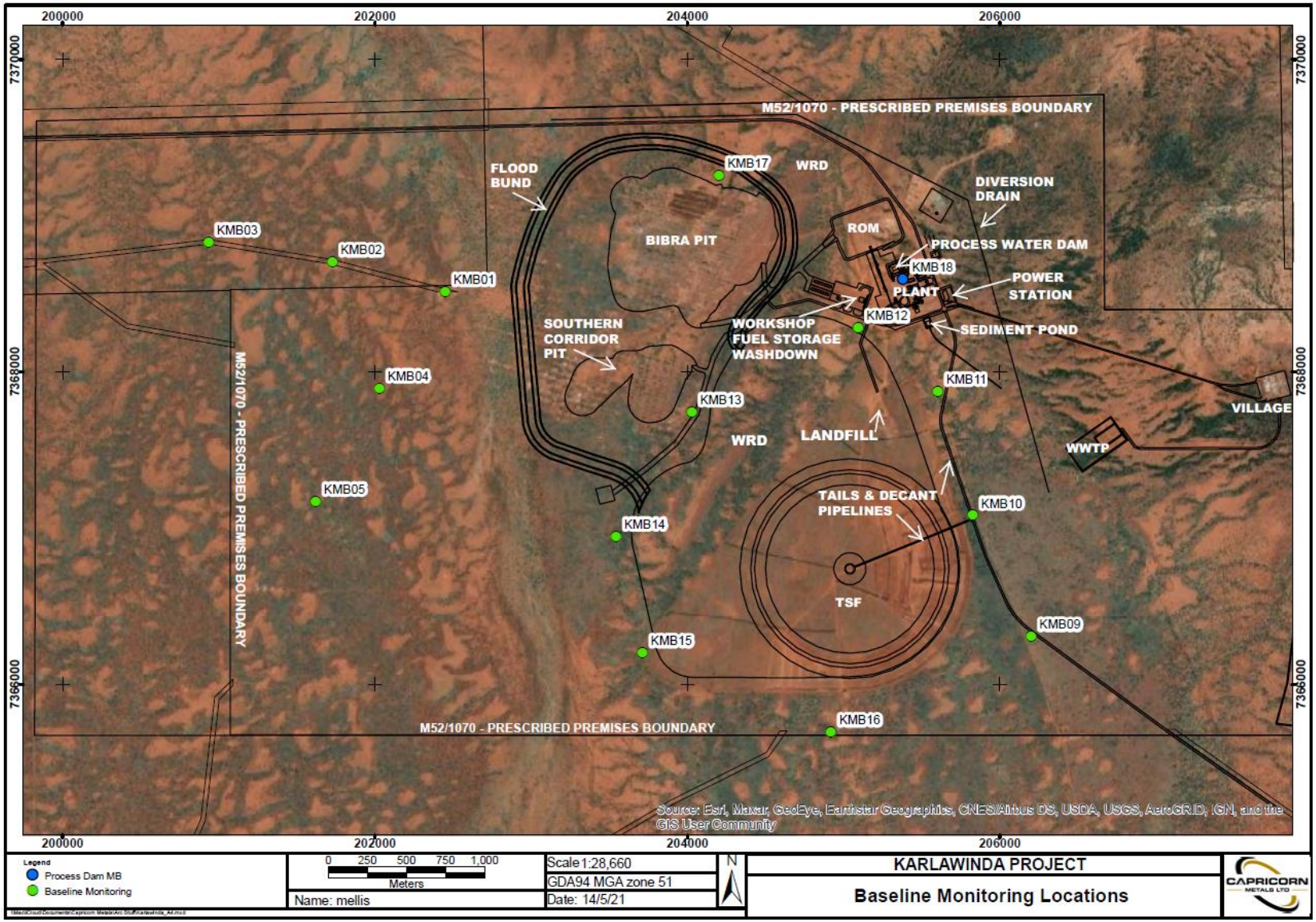

Figure 7: Monitoring bore locations

Table 12: Baseline and Ambient groundwater monitoring

Analyte	Units	Detection limit	*ANZECC 2000 Livestock* (mg/L)	*ANZECC 2000 Freshwater 95% guidelines* (mg/L)	Sample ID and Date						
					KBP01 8/06/17	KPB02		KPB03 27/05/17	KPB04 5/06/17	KPB05	
						30/05/17	25/04/18			2/06/17	10/04/18
pH	pH Units	0.01	NE	6 to 9	7.89	8.07	7.85	8.06	7.99	8.11	7.76
Electrical Conductivity @ 25ºC	µS/cm	1	NE	NE	507	614	610	612	595	614	643
Total Dissolved Solids @ 180ºC	mg/L	10	<5,000	NE	388	410	472	417	399	413	468
Total Hardness as $CaCO_3$		1	NE	NE	158	195	195	207	204	204	198
Bicarbonate Alkalinity as $CaCO_3$		1	NE	NE	74	92	102	95	108	102	110
Total Alkalinity as $CaCO_3$		1	NE	NE	74	92	102	95	108	102	110
Silicon as SiO_2		0.1	NE	NE	4.2	6.7	63.9	4.8	8	5.8	60.1
Silicon		0.05	NE	NE	33	30.3	-	29.4	29.1	31	-
Sulfate as SO_4 - Turbidimetric		1	1,000	NE	42	46	40	45	46	53	48
Chloride, Cl		1	NE	NE	58	72	90	75	70	72	76
Calcium, Ca		1	1,000	NE	32	37	37	40	39	39	38

Analyte	Units	Detection limit	*ANZECC 2000 Livestock* (mg/L)	*ANZECC 2000 Freshwater 95% guidelines* (mg/L)	Sample ID and Date						
					KBP01 8/06/17	KPB02		KPB03 27/05/17	KPB04 5/06/17	KPB05	
						30/05/17	25/04/18			2/06/17	10/04/18
Magnesium, Mg	mg/L	1	<600	ND	19	25	25	26	26	26	25
Sodium, Na		1	NE	NE	38	54	58	52	52	58	56
Potassium, K		1	NE	NE	8	8	9	9	9	9	9
Total Anions	meq/L	0.01	NE	NE	4.88	5.94	5.41	6.24	6.24	6.33	5.34
Total Cations		0.01	NE	NE	5.02	6.46	6.66	6.63	6.58	6.84	6.62
Ionic Balance	%	0.01	NE	NE	1.28	1.18	10.3	1.24	0.62	1.06	10.7
Ammonia as N	mg/L	0.01	NE	NE	0.07	0.13	-	0.4	0.1	0.03	-
Nitrate as N		0.01	400	NE	12.4	15.6	-	18	16	16.2	-
Nitrite as N		0.01	30	NE	<0.01	<0.01	-	<0.01	<0.01	<0.01	-
Total Kjeldahl Nitrogen as N		0.1	NE	NE	3.1	2.4	-	1.6	2.1	1.9	-
Total Nitrogen as N		0.01	NE	NE	15.5	18	-	19.6	18.1	18.1	-
Total Phosphorus as P		0.01	NE	NE	<0.05	<0.05	-	<0.05	0.07	<0.05	-
Reactive Phosphorus		0.01	NE	NE	<0.01	0.02	-	<0.01	<0.01	<0.01	-
Dissolved Oxygen	mg/L	0.1	NE	NE	8.2	9	-	9.1	8.6	8.7	-
Total Iron		0.05	NE	ID	1.92	0.94	<0.05	<0.05	<0.05	<0.05	0.06

Analyte	Units	Detection limit	*ANZECC 2000 Livestock* (mg/L)	*ANZECC 2000 Freshwater 95% guidelines* (mg/L)	Sample ID and Date						
					KBP01 8/06/17	KPB02		KPB03 27/05/17	KPB04 5/06/17	KPB05	
						30/05/17	25/04/18			2/06/17	10/04/18
Dissolved Mercury	mg/L	0.0001	0.002	NE	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Dissolved Metals											
Aluminium, Al	mg/L	0.01	0.01	0.055	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, As		0.001	0.5 to 5[1]	0.013 As V 0.024As III	<0.001	0.002	0.001	0.001	0.001	0.002	0.002
Cadmium, Cd		0.0001	0.01	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium, Cr		0.001	1.0	0.001 CrVI	0.005	0.015	0.015	0.015	0.015	0.016	0.015
Lead, Pb		0.001	0.1	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Manganese, Mn		0.001	NT	NE	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium, Se		0.01	0.02	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc, Zn-		0.005	20	0.008	0.011	0.01	0.010	0.01	0.012	0.008	0.218
Iron, Fe		0.05	ID	ID	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

[1] May be tolerated if not provided as a food additive and natural levels in the diet are low (*ANZECC 2000 Livestock*).

ND = Not determined. Insufficient background data to calculate (*ANZECC 2000 Livestock*).

NE = Not established (*ANZECC 2000 Livestock*).

NT = Not sufficiently toxic (*ANZECC 2000 Livestock*).

ID = Insufficient data to derive a reliable trigger value (*ANZECC 2000 95% Freshwater*).

Blue highlight indicates *ANZECC 2000 95% Freshwater* guidelines exceedance values.

4.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020a), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 13 and Figure 8 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020b)).

Table 13: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Sylvania homestead	Approximately 18 km north-east of the prescribed premises. **Screened out due to distance from the prescribed premises.**
Weelarrana homestead	Approximately 21 km south-west of the prescribed premises. **Screened out due to distance from the prescribed premises.**
Environmental receptors	**Distance from prescribed activity**
Nationally Important Wetland • *Lake Disappointment (Savory Creek) System*	Tributaries occur within the prescribed premises with two separate drainage lines flowing through on the eastern and western sides of the prescribed premises. This system has seasonal and intermittent rivers and associated drainage lines and saline lakes.
Threatened and Priority (P) Flora	1. *Eremophila pilosa* P1, approximately 700 m south-west outside from the prescribed premises boundary. 2. *Eremophila rigida* P3, recorded within the prescribed premises (Flora and Survey undertaken by 360 Environmental 2016). 3. *Rhagodia* sp. Hamersley (M. Trudgen 17794) P3, recorded within the prescribed premises (Flora and Survey undertaken by 360 Environmental 2016).
East Murchison Groundwater Area (RIWI Act 1914) • Groundwater in the region is typically fresh to brackish, with electrical conductivities (EC) generally less than 4000 µS/cm with neutral to slightly alkaline waters. • Potable water quality is less than 1000 mg/L Total Dissolved Solids. • Groundwater depth ranges from 7 to 10 metres. • Groundwater flow is southwards toward the Savory Creek system. • Nearest operating groundwater bore about 5 km from prescribed premises – Guildford bore (ref no. 120511289) used for livestock drinking water supply.	Occurs within the prescribed premises boundary.

Environmental receptors	Distance from prescribed activity
Pilbara Surface Water Area (RIWI Act 1914) • Surface water flows in rivers and floodplains recharge the alluvium through the riverbed during the wet season. • Rivers maintain by groundwater discharge, then start to decline where levels drop below the riverbed during the dry season.	Occurs within the prescribed premises boundary.
Hydrographic catchment • Lake Disappointment catchment an internally draining system. • Part of the Sandy Desert basin within the Western Plateau division.	Occurs within the prescribed premises boundary.

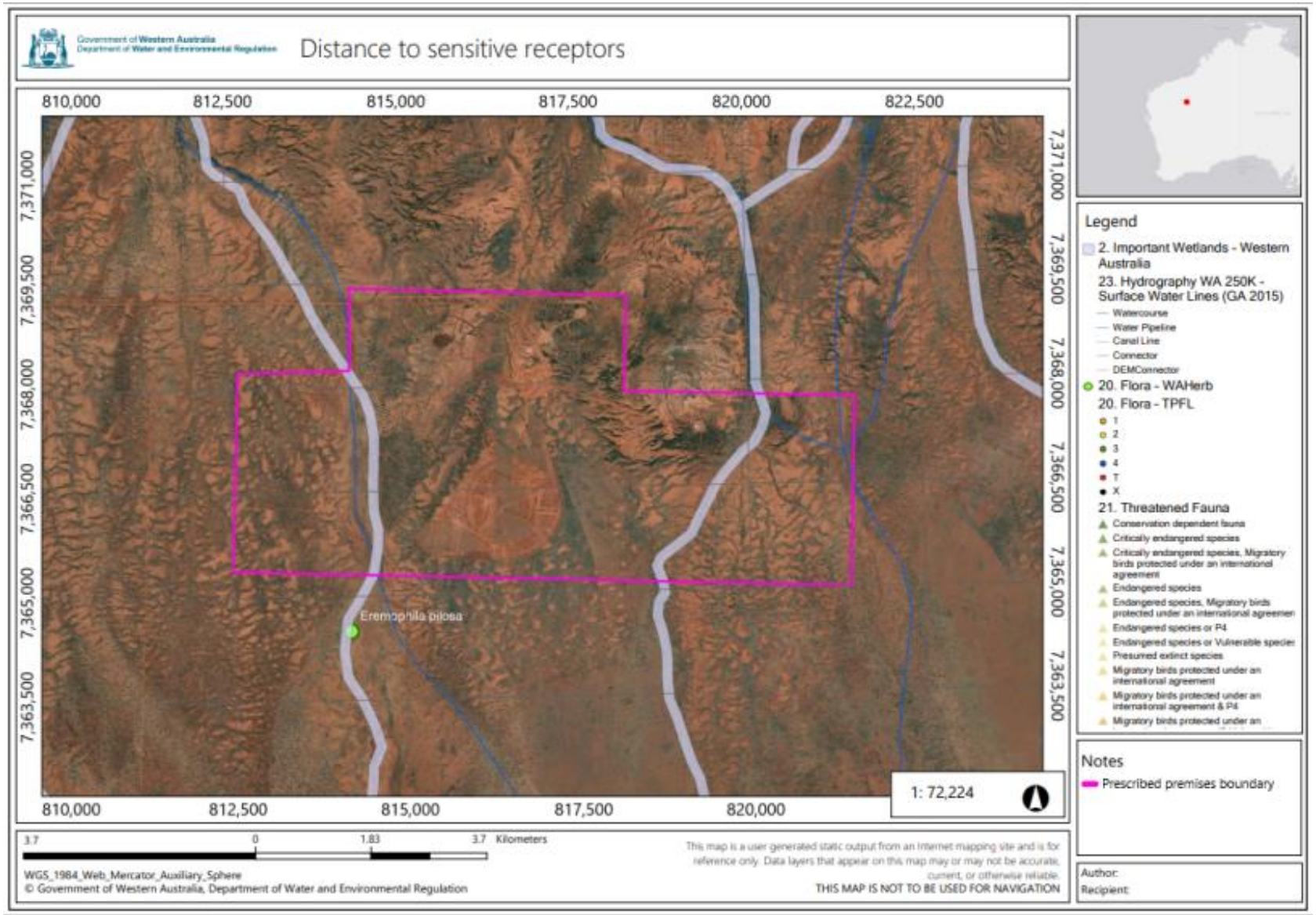

Figure 8: Distance to sensitive receptors

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 4.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 4.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 14.

Licence L9324/2022/1 that accompanies this decision report authorises emissions associated with the operation of the prescribed premises i.e., category 5, 64, and 85 activities.

The conditions in the issued licence, as outlined in Table 14 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 14: Risk assessment of potential emissions and discharges from the prescribed premises during operation

Risk events					**Risk rating [1]** **C = consequence** **L = likelihood**	**Applicant controls sufficient?**	**Conditions [2] of licence**	**Justification for additional regulatory controls**
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Operation								
<u>Category 5</u>								
Operation of process plant, movement of ore through conveyors in crushing and grinding circuit Stockpiling, vehicle and mobile equipment movements	Dust	Air and windborne Potential suppression of photosynthesis to vegetation and respiratory functions	Surrounding vegetation No residences in proximity	Refer to Section 4.1, Table 3	C = Minor L = Rare **Low Risk**	Y	Conditions 5 and 6	N/A
Wet processing (leaching and adsorption, elution electrowinning and tailings disposal to tailings hopper)	Gold processing slurry with cyanide and metals in solution	Pipeline failure or tank/bund overflow causing spill to ground; flow to vegetation and drainage lines dependent on size Death or adverse impact to surrounding vegetation Soil and/or groundwater contamination	Surrounding vegetation Drainage lines and associated riparian vegetation Soil Groundwater Surface water	Refer to Section 4.1, Table 3	C = Minor L = Unlikely **Medium Risk**	N	Conditions **<u>5</u>**, 6, 7, 8, 9, 10, and 11	Additional control included under condition 5, row 3 "*Implement Cyanide Emergency Plan (as required*)" and row 4 "*Operate and maintain as per TSF Operations Manual*"
PWD and associated pump and piping system	Decant return water containing cyanide and metals in solution, which could increase in concentration over time	Overflow from PWD Seepage through liner Soil and / or groundwater contamination	Surrounding vegetation Drainage lines and associated riparian vegetation Soil Groundwater Surface water	Refer to Section 4.1, Table 3	C = Minor L = Unlikely **Medium Risk**	N	Conditions 5, 6, 7, **<u>8</u>**, 9, 10, and 11	Additional control for emissions from the supernatant pond is monitored and managed as detailed in the *Tailings Supernatant Management Plan.*

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
All processing activities	Contaminated stormwater	Stormwater runoff Gravity flow overland Contamination to drainage lines with sediment laden stormwater Loss of riparian vegetation Soil and / or groundwater contamination	Surrounding vegetation Drainage lines and associated riparian vegetation Soil Groundwater Surface water		C = Minor L = Unlikely **Medium Risk**	Y	Conditions 5 and 6	N/A
	Leaks and spillages of environmentally hazardous material (including cyanide, hydrochloric acid, hydrocarbons)	Seepage to land causing direct impacts to the ecosystem		Refer to Section 4.1, Table 3	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 5 and 6	In addition to the infrastructure and operation requirements, provisions of the *Environmental Protection* (*Unauthorised discharges*) *Regulations 2004* apply for certain discharges to the environment, such as hydrocarbons.
TSF	Tailings overflows from the TSF	Direct discharges to land and seepage to soil and groundwater Soil contamination inhibiting vegetation growth and survival Direct impacts to the ecosystem	Surrounding vegetation Drainage lines and associated riparian vegetation Soil Groundwater	Refer to Section 4.1, Table 3	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 5 and 6, 7, and **12**	Additional control to monitor the water balance for the TSF on a monthly basis.

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
			Surface water					
	Discharge of tailings through TSF embankment failure	Direct discharges to land and seepage to soil and groundwater Soil contamination inhibiting vegetation growth and survival Direct impacts to the ecosystem, particularly drainage lines	Surrounding vegetation Drainage lines and associated riparian vegetation Soil Groundwater, which is used for livestock drinking water Surface water	Refer to Section 4.1, Table 3	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 5, 6, 7, 8, 9, 10, and 11	N/A
	Tailings seepage	Seepage to groundwater adjacent to TSF Seepage from the TSF base and through sides with infiltration soils Groundwater mounding Inundation of vegetation root zones, resulting in poor vegetation health or death Groundwater contamination Soil contamination inhibiting vegetation growth and survival		Refer to Section 4.1, Table 3	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 5, 6, 7, 8, 9, 10, and 11	N/A
	Spillage of tailings through leaks, pipeline ruptures or failure	Direct discharges to land and infiltration to soil and groundwater Soil contamination		Refer to Section 4.1, Table 3	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 5 and 6	In addition to the infrastructure and operation requirements, provisions of the

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
		inhibiting vegetation growth and survival Direct impacts to the ecosystem						Condition *Environmental Protection* (*Unauthorised discharges*) *Regulations 2004* apply for certain discharges to the environment, such as hydrocarbons.
Category 64								
Vehicle movement Equipment and cover material for trenches	Dust	Air and windborne Potential suppression of photosynthesis to vegetation and respiratory functions	Surrounding vegetation No residences in proximity	Refer to Section 4.1, Table 3	C = Minor L = Rare **Low Risk**	Y	Conditions 5 and 6	N/A
Contaminated stormwater	Direct discharge and leachate	Via soil and groundwater Groundwater and soil contamination	Surrounding vegetation Soil Groundwater	Refer to Section 4.1, Table 3	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 5 and 6	N/A
Loose waste that is uncovered and becomes windblown	Windblown rubbish	Direct discharge / movement by surface water following rainfall Air / windborne Soil contamination May attract vermin / other fauna	Surrounding vegetation Nearby fauna Soil Drainage lines Surface water Groundwater	Refer to Section 4.1, Table 3	C = Minor L = Rare **Low Risk**	Y	Conditions 5 and 6	N/A
Category 85								
Sewage pipes and holding tanks	Sewage discharge from ruptured pipes /	Direct discharges to land, irrigation, surface water and	Surrounding vegetation	Refer to Section 4.1,	C = Minor L = Rare	Y	Conditions 5 and 6	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	overtopping and storage tanks failure	groundwater Soil contamination inhibiting vegetation growth and survival Surface water and groundwater contamination	Soil Nearby drainage lines Surface water Groundwater	Table 3	**Low Risk**			
Contaminated stormwater	Rainfall ingress into the WWTP and irrigation area becoming contaminated			Refer to Section 4.1, Table 3	C = Minor L = Rare **Low Risk**	Y	Conditions 5 and 6	N/A
Treated effluent discharged to evaporation ponds.	Discharge to evaporation ponds	Direct discharges to land and groundwater Movement by surface water following rainfall Increase in nutrient levels in soil and groundwater		Refer to Section 4.1, Table 3	C = Minor L = Rare **Low Risk**	Y	Conditions 1 and 2	N/A
<u>Ancillary activities</u>								
Workshop and washdown facility	Hydrocarbons	Direct discharge and potential spillages Soil and / or groundwater contamination	Soil Groundwater	Refer to Section 4.1, Table 3	C = Minor L = Rare **Low Risk**	Y	Conditions 5 and 6	N/A

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020a).

Note 2: Proposed applicant controls are depicted by standard text. **<u>Bold and underline text</u>** depicts additional regulatory controls imposed by department.

5. Consultation

Table 15 provides a summary of the consultation undertaken by the department.

Table 15: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 18 April 2022	None received	N/A
Local Government Authority advised of proposal on 12 April 2022	None received	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 12 April 2022	None received	N/A
Applicant was provided with draft documents on 30 June 2022	The applicant's comments are detailed in Appendix 1.	The Department's responses are provided in Appendix 1.
Applicant was provided with 2nd draft documents on 1 August 2022	The applicant had no further comments.	-

6. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) and Australian and New Zealand Environment and Conservation Council (ANZECC) 1997, *National Water Quality Management Strategy – Australian Guidelines for Sewerage Systems – Effluent Management,* ARMCANZ and ANZECC, Australia.
2. Australian National Committee on Large Dams Incorporated (ANCOLD) 2012, *Guidelines on Tailings Dams – Planning, Design, Construction, Operation, and Closure.*
3. Bureau of Meteorology (BoM) 2022, *Climate Data Online*, access: http://www.bom.gov.au/climate/data/?ref=ftr, 19 April 2022.
4. Greenmount Resources Pty Ltd (Greenmount) 2022a, *Application form: Licence – Greenmount Resources Pty Ltd, Karlawinda Gold Project (KGP)*, 28 January 2022.
5. Greenmount 2022b, *Karlawinda Gold Project Environmental Licence Application, M52/1070 Supporting Documentation*, 28 January 2022.

6. Groundwater Resource Management (GRM) 2017, *Karlawinda Gold Project Hydrogeological Feasibility Study*, prepared for Capricorn Metals Ltd, West Perth, Western Australia.
7. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
8. Department of Water and Environmental Regulation (DWER) 2019, *Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)*, Perth, Western Australia.
9. DWER 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
10. DWER 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
11. Department of Mines and Petroleum (DMP) 2013, *Tailings storage facilities in Western Australia – code of practice: Resources Safety and Environment Divisions, Department of Mines and Petroleum, Western Australia*, 13 pp.
12. DMP 2015, *Guide to the preparation of a design report for tailings storage facilities (TSFs), Resources Safety and Environment Divisions, Department of Mines and Petroleum, Western Australia.*
13. Graeme Campbell & Associates Pty Ltd (GCA) 2018, *Karlawinda Project: Geochemical Assessment of Oxide- Ore-Tailings-Slurry and Primary-Ore-Tailings-Slurry Samples Derived from the Bibra Deposit – Implications for Process-Tailings Management*, prepared for Capricorn Metals Ltd, West Perth, Western Australia.
14. Minelogix 2018, *Karlawinda Tailings used for TSF studies Rev 2, 8 March 2018,* prepared for Capricorn Metals Ltd, West Perth, Western Australia.
15. Southern Corridor Geology Memo 2018, *Similarities of Bibra Geology to Southern Corridor Geology, Memorandum from Michael Martin to Peter Thompson and James Hesford, 6 December 2018*, Capricorn Metals Ltd, West Perth, Western Australia.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition / Section	Summary of applicant's comment	Department's response
Decision Report		
3.1.1 **Category 5** – Processing or beneficiation of metallic ore	Increase 3,750,000 tpa to max 5,000,000 tpa. On average over the life of mine Karlawinda would process 3.75mtpa however some years this will exceed up to 5mtpa. A TSF design change will occur to factor in additional throughput.	The Department has not made this change. The applicant has stated that to increase the throughput "*A TSF design change will occur to factor in additional throughput*". The Department has not assessed the increase in capacity to the TSF and this increase was not requested under this current licence application. A change to the throughput can be submitted as a future licence amendment application that will ensure a risk assessment is undertaken with the required amount of time.
3.1.1 (CIL circuit)	Correct number of CIL tanks, there is eight not seven	Updated to eight CIL tanks in section 3.1.1.
3.1.3 **Category 85** – Sewage Facility	WWTP needs updating from the containerized activated sludge bioreactor to the macerator tank and primary and secondary stabilization ponds as per approval in March 2020 (File Number DER2018/000442-1)?	Updated section as below: "*The WWTP consists of one macerator tank and primary and secondary stabilization ponds that are rated for 260 persons at 300 litres (L) per day. The WWTP system is located adjacent to the accommodation village to process wastewater streams from ablutions and other facilities at the accommodation village."* Removed Figure 6 the schematic of the WWTP process as was referring to the ASBR and treatment with chlorine.
3.2 Table 4 **Category 5** – Point 6	Correct seven absorption tanks to eight tanks	Updated to from seven to eight absorption tanks.
3.2 Table 4 – **Category 85**	Remove ASBR and treatment with chlorine	Updated as below: *"WWTP that consists of the macerator tanks and primary and secondary ponds processes wastewater streams from ablutions and other facilities at the accommodation village. The WWTP is rated for-260 persons at 300 L per person per day."* Removed ASBR and replaced with WWTP.
4 Table 11 – **Category 5**		
Dust	Daily inspections for dust	Updated to include inspection frequency as daily.

Condition / Section	Summary of applicant's comment	Department's response
Gold Processing	Daily inspections for pipelines	Updated to include inspection frequency as daily.
Decant return	Monthly monitoring of Decant pond level and water quality	Included inspection frequency as monthly.
Contaminated stormwater	Monthly inspections of hardstands and bund integrity	Updated to include inspection frequency as monthly.
Leaks and spillages	Contractor (Cleanaway) removes all contaminated material/waste and taken offsite to a appropriated disposal facility in Newman. Monthly inspections of hardstands and bund integrity	Updated to include the location Newman and inspection frequency as monthly.
Tailings overflow from TSF	Tailings discharge points is inspected twice daily TSF internal walls to be inspected daily however external walls to be inspected monthly	Applicant confirmed tailings discharge points are to be inspected twice daily. Updated to state that internal walls be inspected daily and TSF external walls will be monitored monthly.
Discharge of tails/seepage - Groundwater monitoring	Please confirm monthly or quarterly monitoring of the parameters in Table 12. Licence states monthly as the decision report states quarterly?	Ambient groundwater parameters will be quarterly monitoring and standing water level will be monthly monitoring, which has been amended under condition 5, Table 2 and condition 10, Table 6.
Leaks, pipeline ruptures or failure	All Tails pipelines will be inspected daily	Updated to include inspection frequency as daily.
4 Table 11 – **Category 64**		
Dust	Daily inspections for dust	Updated to include inspection frequency as daily.
Direct discharge and leachate	Landfill area is constructed above ground within the waste dump with bunds protecting it from stormwater runoff	Updated to include that the landfill area is above ground and bunds protect the area from stormwater runoff.
Windblown Rubbish	Landfill area will be inspected and collect windblown rubbish weekly	Updated to include inspection frequency as weekly.
4 Table 11 – **Category 85**		
WWTP	1.8m fence is constructed around entire WWTP and Irrigation area	Applicant has confirmed the construction of fencing around the WWTP and irrigation area.
4 Table 11 – **Ancillary activities**		
Hydrocarbons	Contractor (Cleanaway) removes all contaminated material/waste and taken offsite to a appropriated disposal facility in Newman. Monthly inspections of hardstands and bund integrity	Updated to include the location Newman and inspection frequency as monthly.

Condition / Section	Summary of applicant's comment	Department's response
4.2 Table 14 – **Category 5**		
Wet Processing	TSF Operations Manual and Cyanide Emergency Plans can be made available	Included under condition 5, row 3 "*Implement Cyanide Emergency Plan (as required*)" and row 4 "*Operate and maintain as per TSF Operations Manual*".
Licence		
1 Table 1 - WWTP	Pipeline to irrigation field to be bunded along entire route to ensure that any leaks are contained is not required. Pipelines in the irrigation area will only be active when operating and irrigation is in progress so the bund will only trap irrigated effluent causing it to pool.	No change to construction requirement to prevent contamination of stormwater / surface water runoff if are leak occurs.
5 Table 2 Ore Processing	Throughput increase to 5 mtpa as described above	As explained in the previous response, the Department has not made this change.
	Daily inspections logs of process water lines however only daily visual inspections of reagents, process solution, tanks and bunds with recorded inspections occurring monthly.	Amended operation requirement as "*Daily visual inspections logs with recorded monthly inspections of the following*".
5 Table 2 Seepage Recovery System	Cased bores fitted with low flow 1-2 L/s pumps when seepage is identified.	Updated to include "*when seepage is identified*".
5 Table 2 Irrigation Field	WWTP/Irrigation Field Fencing to be inspected monthly and daily inspections of any pooling of treated effluent when irrigation system is operating.	Updated inspection frequency to monthly for fencing and included "*when irrigation system is operating".*
10 Table 6	KMB06, KMB07 & KMB08 are not listed as monitoring bores and should be removed from the list. KMB18 is the monitoring bore for the PWP	Removed monitoring bores KMB06, KMB07, and KMB08 from condition 10, Table 6 and placed KMB18 under subheading 'Monitoring bore for the PWP' in Table 6.
Definitions Table 7	1st September to 31st August	Updated annual period dates.

Appendix 2: Application validation summary

<table>
<tr><th colspan="6">SECTION 1: APPLICATION SUMMARY</th></tr>
<tr><td colspan="6">Application type</td></tr>
<tr><td>Works approval</td><td>☐</td><td colspan="4"></td></tr>
<tr><td rowspan="5">Licence</td><td rowspan="5">☒</td><td>Relevant works approval number:</td><td>W6143/2018/1</td><td>None</td><td>☐</td></tr>
<tr><td colspan="2">Has the works approval been complied with?</td><td colspan="2">Yes ☒ No ☐</td></tr>
<tr><td colspan="2">Has time limited operations under the works approval demonstrated acceptable operations?</td><td colspan="2">Yes ☒ No ☐ N/A ☐
Partial compliance</td></tr>
<tr><td colspan="2">Environmental Compliance Report submitted?</td><td colspan="2">Yes ☒ No ☐
Partial compliance</td></tr>
<tr><td colspan="4">Date Report received:
14/12/21 – TLO Environmental Compliance Report (ECR)
10/09/21 – Workshop Washdown Facility ECR
9/06/21 – TSF ECR
1/06/21 – Ore Processing and Processing Reagents ECR
31/05/21 – TSF ECR
28/05/21 – Stormwater and Landfill ECR
24/05/21 – Process Water Pond ECR
17/05/21 – Ambient Groundwater ECR
29/04/21 – WWTP ECR
24/02/21 & 11/03/21 – TSF Seepage & Supernatant MPs</td></tr>
<tr><td>Renewal</td><td>☐</td><td>Current licence number:</td><td colspan="3"></td></tr>
<tr><td>Amendment to works approval</td><td>☐</td><td>Current works approval number:</td><td colspan="3"></td></tr>
<tr><td rowspan="2">Amendment to licence</td><td rowspan="2">☐</td><td>Current licence number:</td><td colspan="3"></td></tr>
<tr><td>Relevant works approval number:</td><td></td><td>N/A</td><td>☐</td></tr>
<tr><td>Registration</td><td>☐</td><td>Current works approval number:</td><td></td><td>None</td><td>☐</td></tr>
<tr><td colspan="2">Date application received</td><td colspan="4">28 January 2022</td></tr>
<tr><td colspan="6">Applicant and Premises details</td></tr>
<tr><td colspan="2">Applicant name/s (full legal name/s)</td><td colspan="4">Greenmount Resources Pty Ltd
(Capricorn Metals Ltd)</td></tr>
<tr><td colspan="2">Premises name</td><td colspan="4">Karlawinda Gold Project (KGP)</td></tr>
<tr><td colspan="2">Premises location</td><td colspan="4">M52/1070 (held by Greenmount Resources Pty Ltd)
Approximately 56 km south-east of Newman.</td></tr>
<tr><td colspan="2">Local Government Authority</td><td colspan="4">Shire of Meekatharra</td></tr>
<tr><td colspan="6">Application documents</td></tr>
<tr><td colspan="2">HPCM file reference number:</td><td colspan="4">DER2022/000042</td></tr>
<tr><td colspan="2">Key application documents (additional to</td><td colspan="4">220124_KGP_Licence_Attachment 1A_Proof of occupier status</td></tr>
</table>

application form):	220124_KGP_Licence_Attachment 1B_ASIC extract 220124_KGP_Licence_Attachment 2 Site Layout_Baseline Monitoring Locations 220124_KGP_Licence_Attachment 7_Specified Ecosystems 220128_KGP_Licence_Attachment 8_Environmental Licence Application_M52_1070_Supporting Document 220128_KGP_Licence_IR-F09_Application_form_licence_v14(2) Appendix 1_ KGP_GCA 2018_Waste Appendix 2_KGP_GCA 2018_Tailings Appendix 3_KGP_Minelogix 2018_Leach Analysis Appendix 4_KGP_LMGS 2018_TSF Cert Appendix 4_KGP_TSF_Design_Report_Rev_4_Final Appendix 5B_2019_W6143 IR-T04 Karlawinda Gold Project - TSF Amendment - Decision Report Appendix 5C_2020_W6143 - Karlawinda Gold Project - WWTP Amendment Report – Final Appendix 5D_2021_W6143_Karlawinda Gold Project_Expiry Date_Amendment Final
Scope of application/assessment	
Summary of proposed activities or changes to existing operations.	The project involves the operation of an open cut mine of a gold resource from two pits (Bibra and Southern Corridor pits), with a depth of about 250 m. Dewatering of these pits will have an estimated average inflow of 20L/s from a depth of about 10 m below surface. The mine water (less than 1000 mg/L Total Dissolved Solids) will be directed to a turkey's nest day prior to use in dust suppression and processing. Mined ore will be transported to a Run-of-Mine pad and then processed through a carbon-in-leach processing plant, at a nominal rate of 3.75 mtpa for oxide ore. Processing fresh ore reduces to 3 mtpa resulting in a 6 to 7-year life of mine. Process waste (tailings) will be pumped into a tailings storage facility that has been constructed from non-acid forming mine waste rock, made as an integrate waste landform. All personnel are housed in an onsite accommodation camp. Estimated operating period is 6.5 years of the project.

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation of metallic or non-metallic ore: premises on which – (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed; (b) tailings from metallic or non-metallic ore are reprocessed; or (c) tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.	3,750,000 tonnes per annum	N/A
Category 64: Class II or III putrescible landfill site: premises on which waste (as determined by reference to the waste type set out in the document entitled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer and as amended from time to time) is accepted for burial.	1,500 tonnes per annum	N/A
Category 85: Sewage facility: premises – (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters.	78 m^3 per day	N/A

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:

Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☒ Expiry: 23/11/2037 Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	CPS No: 7386 (Approved) No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: GWL201659
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)? Note: Prescribed premises occurs within the Pilbara Surface Water Area and the East Murchison Groundwater Area (*RIWI Act 1914*)	Yes ☐ No ☒	Name: N/A Type: Proclaimed Groundwater Area/Surface Water Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☐ Regional office: Mid-West Gascoyne
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	Dangerous Goods licence is required for the storage of explosives and other chemicals (e.g., hydrocarbons and cyanide) on site. *Health Act 1911* Sewage holding tanks and WWTP requires Approval to construct an apparatus for the Treatment Sewage.
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	

Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	Classification: N/A Date of classification: N/A