



Application for Licence Amendment

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

Licence Number	L9155/2018/1
Licence Holder	Karora (Higginsville) Pty Ltd
ACN	108 547 217
File Number	APP-0032460
Premises	<p>Higginsville Gold Project</p> <p>M15/351, M15/289, M15/225, M15/642, M15/348, M15/31, M15/786, M15/506, M15/507, M15/620, M15/629, M15/639, M15/640, M15/580, M15/581, M15/597, L15/225, L15/288, L15/302, G15/19, G15/23, M15/528, M15/231, M15/748, M15/512, M15/352, M15/610, M15/375, M15/338, M15/1790, M15/1814, L15/282, L15/347, G15/26, G15/27, G15/29, L15/382, L15/389, M15/325, M15/681, M15/817, M15/1132 and L15/298</p> <p>As defined by the premises map on the revised licence</p>
Date of Report	28 May 2026
Decision	Revised licence granted

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1. Decision summary

Licence L9155/2018/1 is held by Karora (Higginsville) Pty Ltd (licence holder) for the Higginsville Gold Project (the premises).

This Amendment Report assesses potential environment and public health risks associated with the proposed changes to emissions and discharges from the construction and operation of additional infrastructure at the premises. As a result of this assessment, revised licence L9155/2018/1 has been granted.

The revised Licence issued through this amendment consolidates and supersedes the existing licence previously granted for the premises.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its regulatory framework and relevant policy documents, available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Overview of the premises

The Higginsville Gold Project is located 125 kilometres (kms) south of Kalgoorlie, within the Eastern Goldfields region. The premises comprises of multiple open pits and underground mining operations, with ore processed at the Higginsville processing plant. Processing involves conventional crush, grind, gravity carbon-in-leach (CIL) and carbon in pulp (CIP) methodologies with a throughput of approximately 1.5 million tonnes per annum.

Containment infrastructure at the premises includes a paddock-style tailings storage facility (TSF) (TSF2-4) and three in-pit TSFs (Aphrodite, Fairplay East and Vine). Mine dewatering is regulated and primarily generated from underground operations. This water is mostly recycled for use at the processing plant with any excess discharged to disused open pits or directed to an adjacent salt lake. The site is also licensed to operate sewage and landfill facilities.

2.3 Amendment summary

On 14 November 2025, the licence holder applied to the department to amend licence L9155/2018/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are sought:

- Administrative correction to the height of TSF2-4 Stage 3 and 4 embankments
- Increase in category 5 throughput from 1.5 to 1.7 million tonnes per annum (Mtpa)
- Construction and operations of TSF2-4 Stage 5 embankment raise

This amendment is limited to changes relating to Category 5 activities of the existing licence, as defined on the *Environmental Protection Regulations 1987* (EP Regulations). No changes to the other aspects of the existing licence have been requested.

2.4 Details of the proposed amendments

2.4.1 Administrative corrections and amendments to the licence

Previous correspondence between the department and the licence holder identified typographical errors on the licence relating to the construction and operating height of TSF2-4 Stage 3 and 4. Details of these errors, together with the corrected heights, are provided in Table 1.

The department considers these amendments administrative in nature and notes they do not alter

the risk profile of the premises. Risks associated with the construction and operation of each of these embankment stages were previously assessed.

As part of this application, the department has also reviewed the existing licence conditions, incorporating revisions and removing redundant conditions to align with current departmental standards. Numerical sequencing has been adjusted for consistency, and any clerical or inadvertent errors have been corrected. The full list of changes made to the licence conditions are detailed in Table 8.

During the comment period the licence holder requested the removal of the three in-pit TSFs from the licence, as they have now reached capacity and will no longer receive tailings. These in-pit TSFs will transition to closure management under the Mine Closure Plan. Licence conditions have been updated to reflect that these in-pit TSFs are now decommissioned. Groundwater monitoring requirements still remain on the licence.

Table 1:TSF2-4 licence typographical errors and corrections

Stage	Embankment height (mRL)	Operational height (mRL)	Embankment height (mRL)	Operational height (mRL)
	Currently on the licence		Corrected	
3	1320.0m	1319.7	320.0	319.7
4	1325.5m	1325.2	322.5	322.2

2.4.2 Increase in category 5 throughput

The Higginsville Processing Plant is located approximately one km west of TSF2-4 within mining tenement M15/348. The plant uses both CIL and a CIP methodologies to recover gold from ore. The ore processed consists primarily of fresh rock from the Beta Hunt and Two Boys underground operations, with a smaller oxide component from nearby open pits including Lake Cowan Mining Centre (LCMC) and paleochannel deposits.

The processing plant is currently not included in the licence, consistent with the regulatory framework at the time of approval. This amendment includes an assessment of the proposed throughput increase and incorporates the processing plant into the licence in accordance with current regulatory practices.

The licence currently authorises the processing of up to 1.5 million tonnes of ore per annum (Mtpa). During the 2024/25 reporting period the actual throughput was approximately 1.44 Mtpa. The licence holder anticipated that throughput in 2025/26 will increase to up to 1.67 million tonnes due to a higher proportion of weathered oxide ore which has improved milling efficiency.

The increased proportion of weathered oxide ore is expected to reduce acid generation potential relative to fresh ore, however, consideration of potential metal leaching remains relevant. A geochemical assessment of tailings at the premises was undertaken in 2025. A summary of the geochemical assessment is provided in section 2.6.

The ore blend is expected to remain relatively consistent during deposition into TSF2-4 Stage 5 height. However, as the LCMC oxide stockpiles are depleted, the proportion of fresh ore from the Beta Hunt Underground is expected to increase, commencing in the 2027 financial year.

The proposed throughput increase to 1.7 Mtpa will not require any additional infrastructure nor any modifications to the existing plant layout.

The processing plant comprises:

- an open three-stage crushing and screening circuit
- a milling circuit
- a gravity gold recovery circuit
- a CIL and CIP circuits

- an elution circuit

Supporting infrastructure includes reagent storage, a process water pond and a secondary containment overflow sump. The processing plant footprint sits within a compacted hardstand area and any risk of loss of containment from tanks is managed with the use of bunding.

Carbon fines generated within the CIL/CIP circuit are contained, recovered and transported off site for gold recovery. All potential emissions from the processing plant and applicant's proposed controls are outlined in Table 3.

A layout of the plant components is shown in Figure 1. Design drawings of the crushing and screening plant are presented in Figure 2 and Figure 3. Stormwater management infrastructure is shown in Figure 4. The Delegated Officer notes that Figure 4 is dated, nonetheless it still provides an overview of the infrastructure.

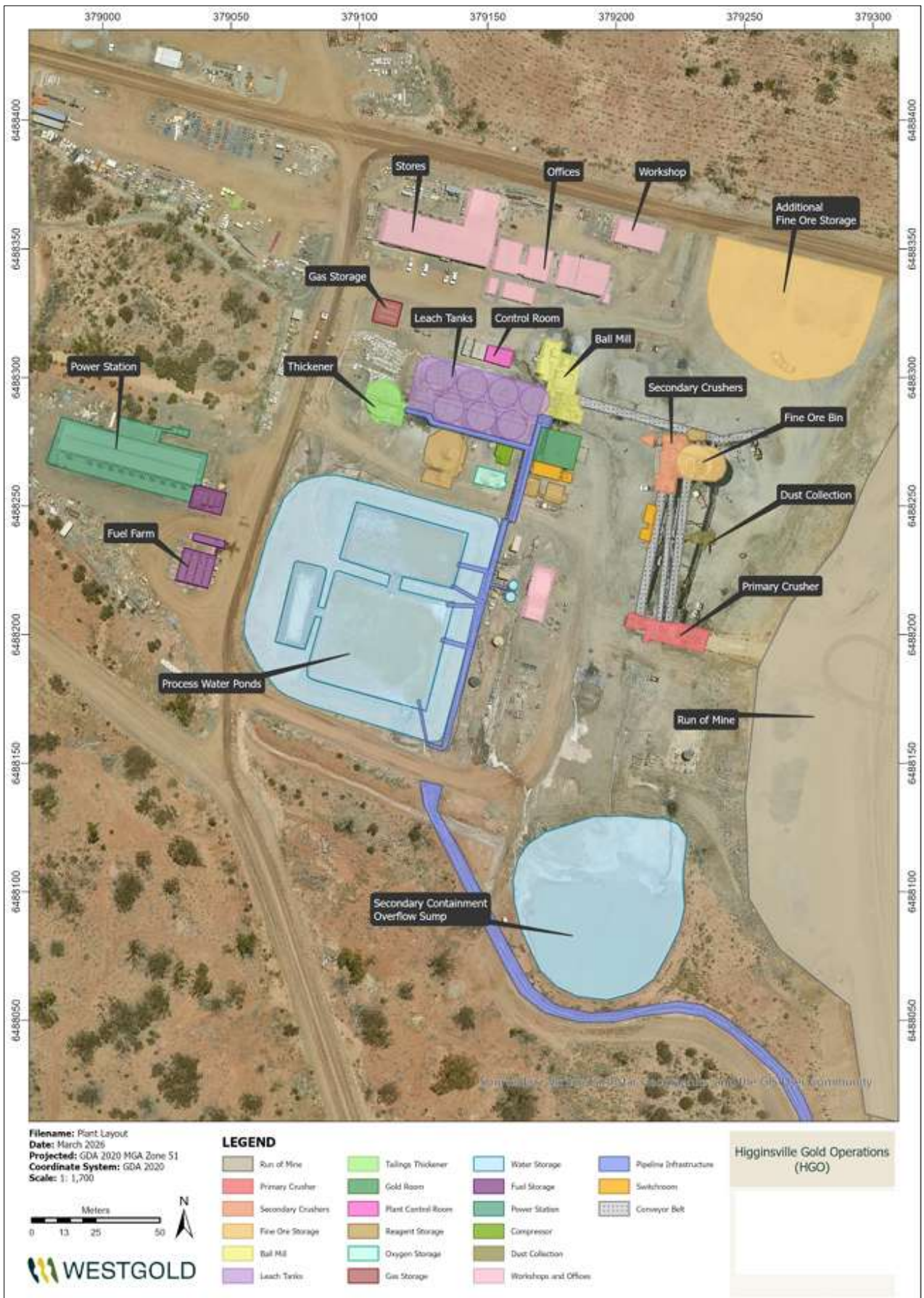


Figure 1: Processing plant layout and infrastructure

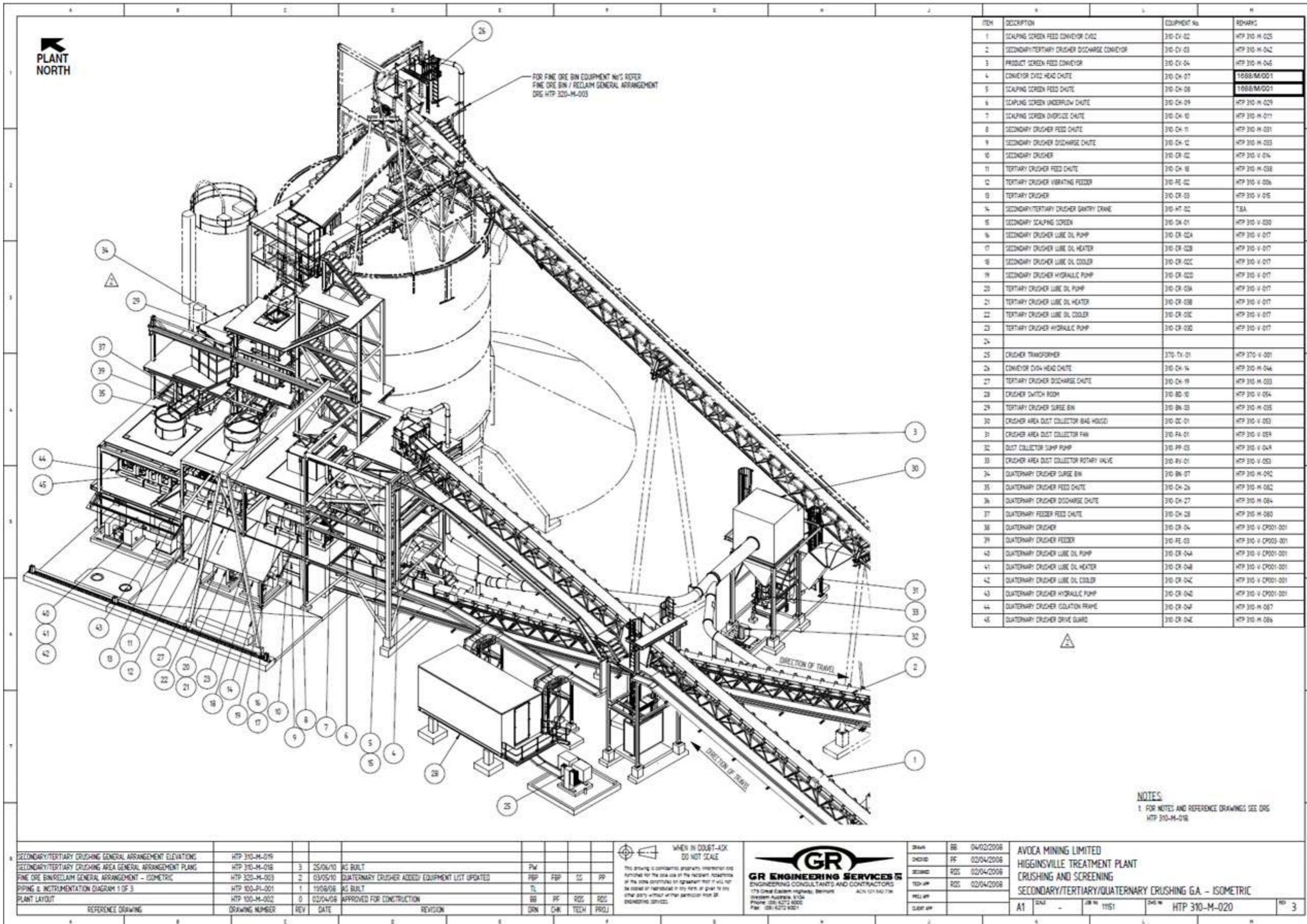


Figure 2: Fine Ore Bin and screening - Crushing and screening infrastructure

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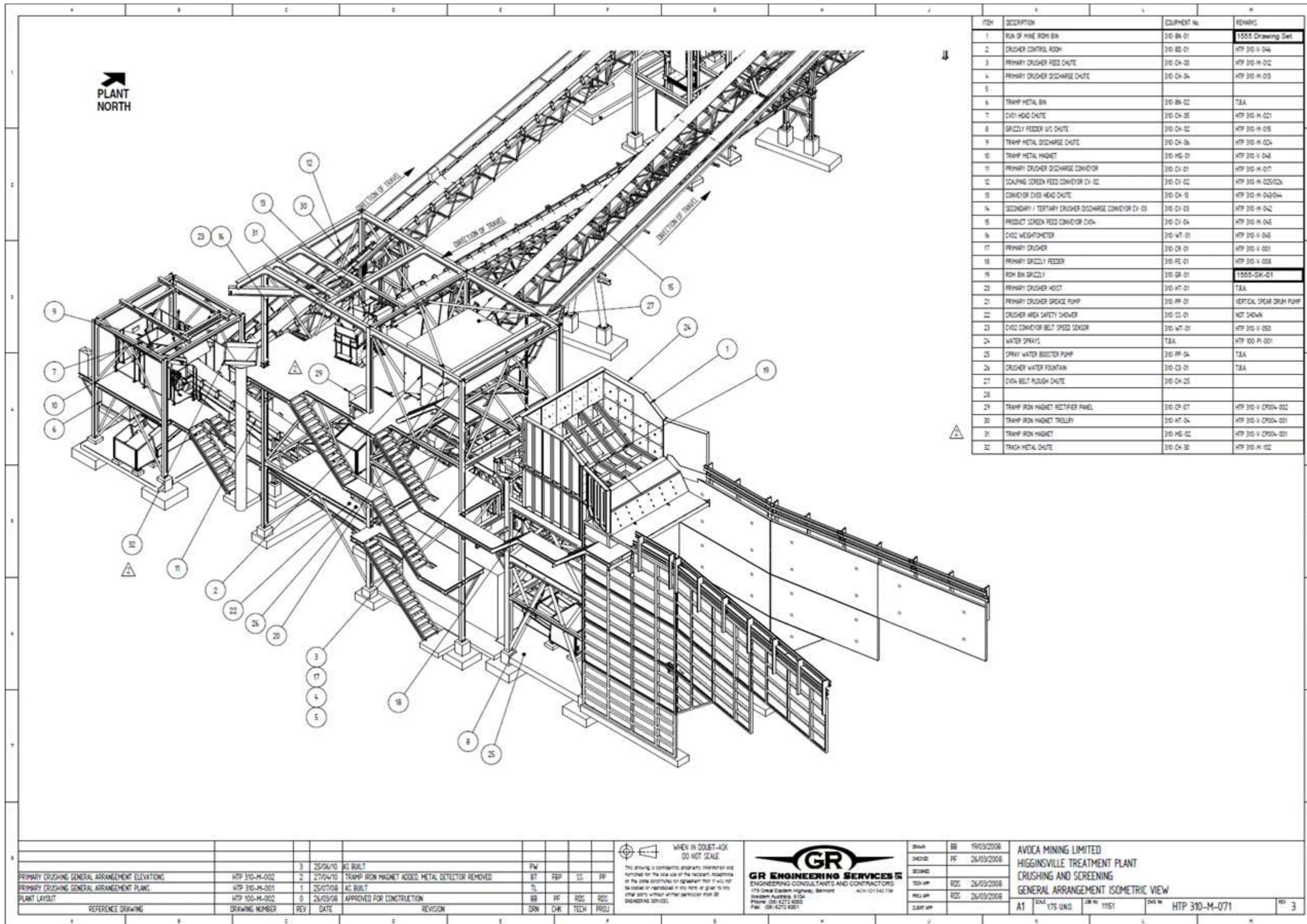


Figure 3: Crusher - Crushing and screening infrastructure

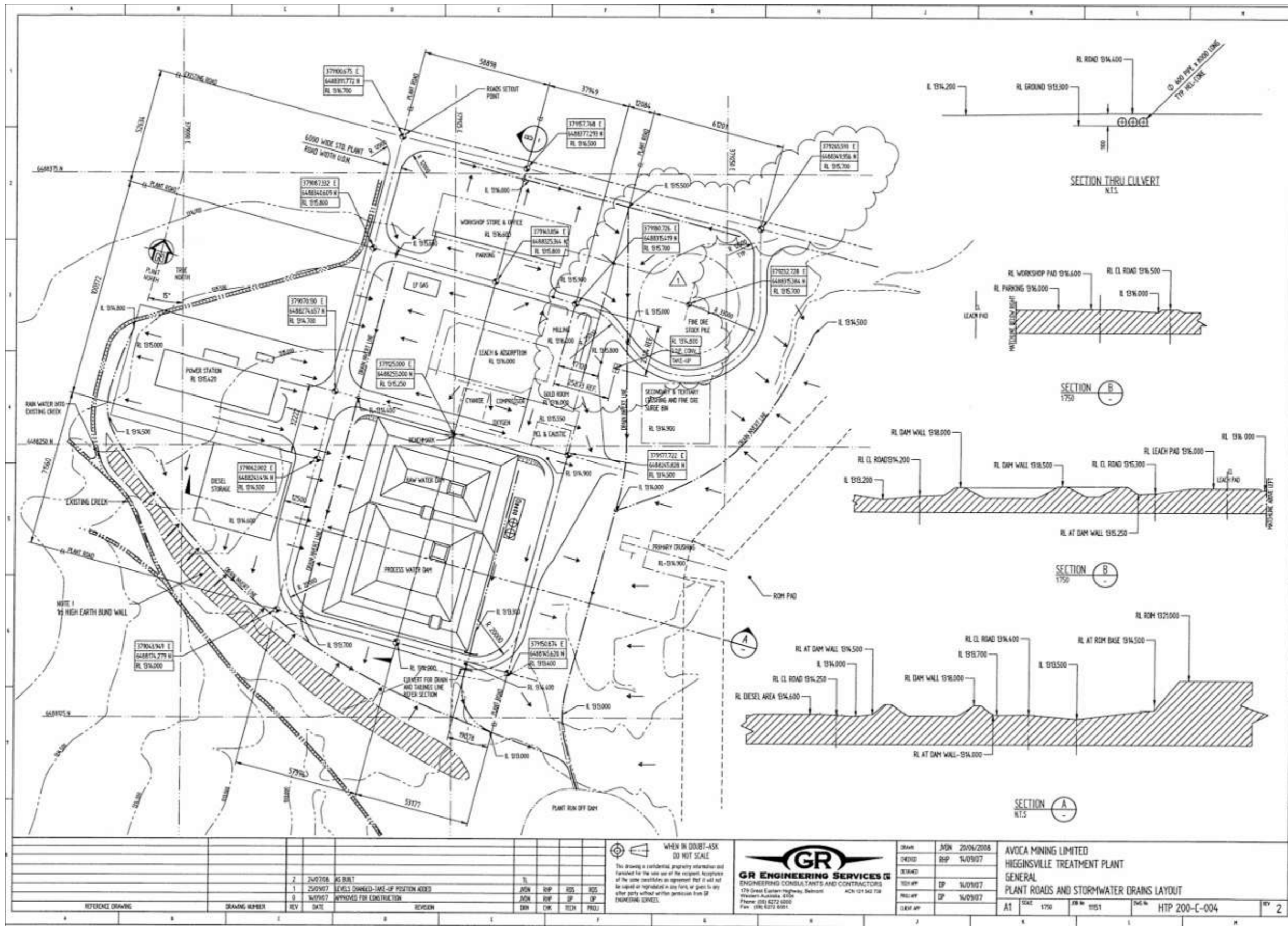


Figure 4: Processing plant stormwater management infrastructure

2.4.3 TSF2-4 stage 5 embankment raise construction and operations

Background

TSF 2-4 is located to the north-east of the premises (Figure 5) within mining tenements M15/348 and G15/19. Before amalgamation, TSF2-4 consisted of three separate TSFs (Figure 6) later combined into a supercell and subsequently raised in stages to a crest level RL322.5m. The latest raise (Stage four) was completed in January 2025, and deposition of tailings commenced the following month. The TSF is anticipated to reach full capacity in August 2026. To the northwest, abutting what initially were TSFs 2 and 3, TSF 1 remains separate. Operations of TSF1 ceased in 1994 and the TSF has been partially capped.

TSF2-4 is a paddock style TSF that occupies an area of approximately 72 hectares (ha). The TSF is rated Medium, *Category 1* based on the hazard rating criteria set the Department of Mines, Petroleum and Exploration (DMIRS, 2013), *Medium* based on the severity impact level classification and *Significant* under the Environmental Spill Consequence Category (DFCC) classification as set by Australian National Committee on Large Dams (ANCOLD).

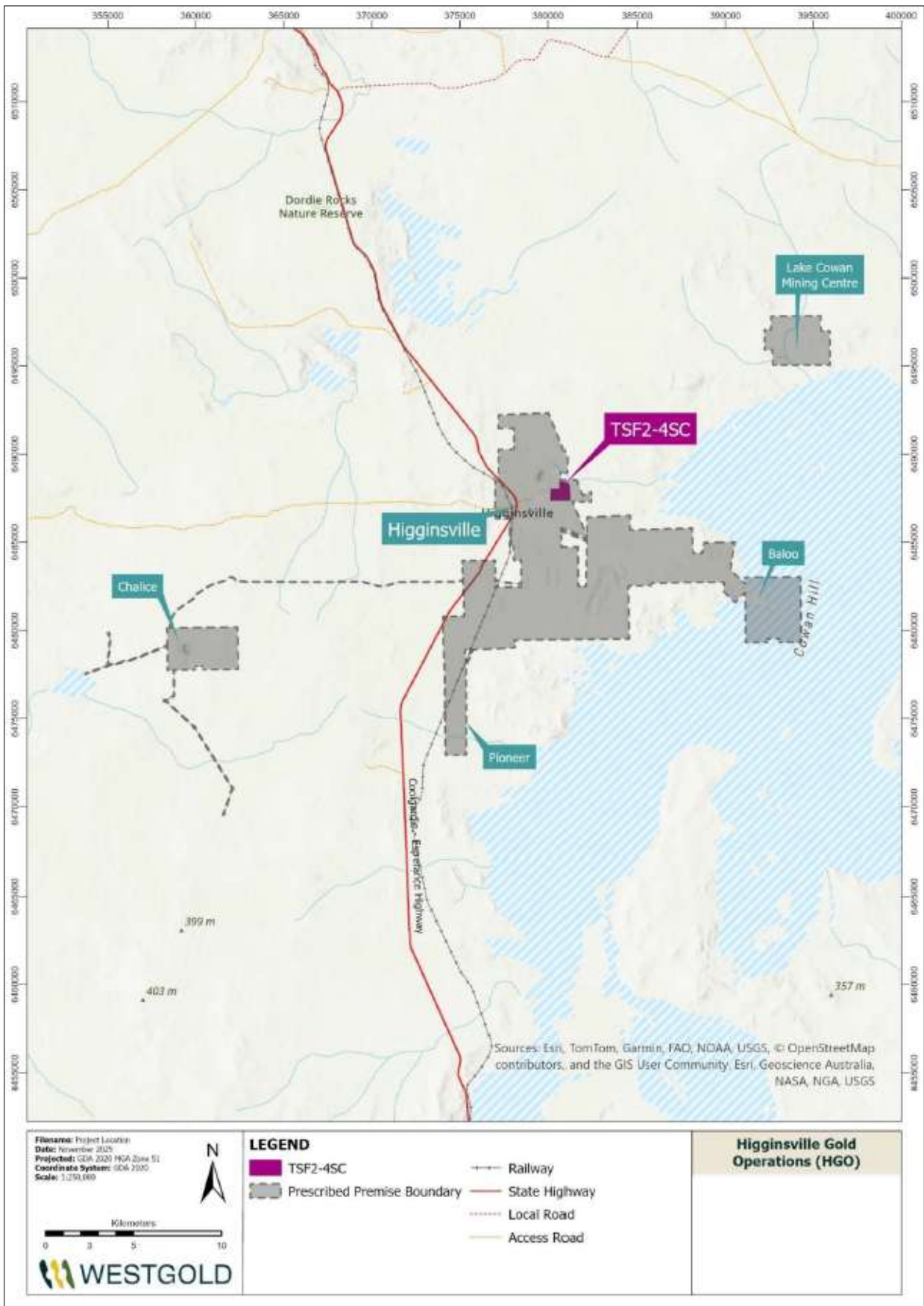


Figure 5: Location of TFS2-4 at the premises (indicated as TFS2-4SC)

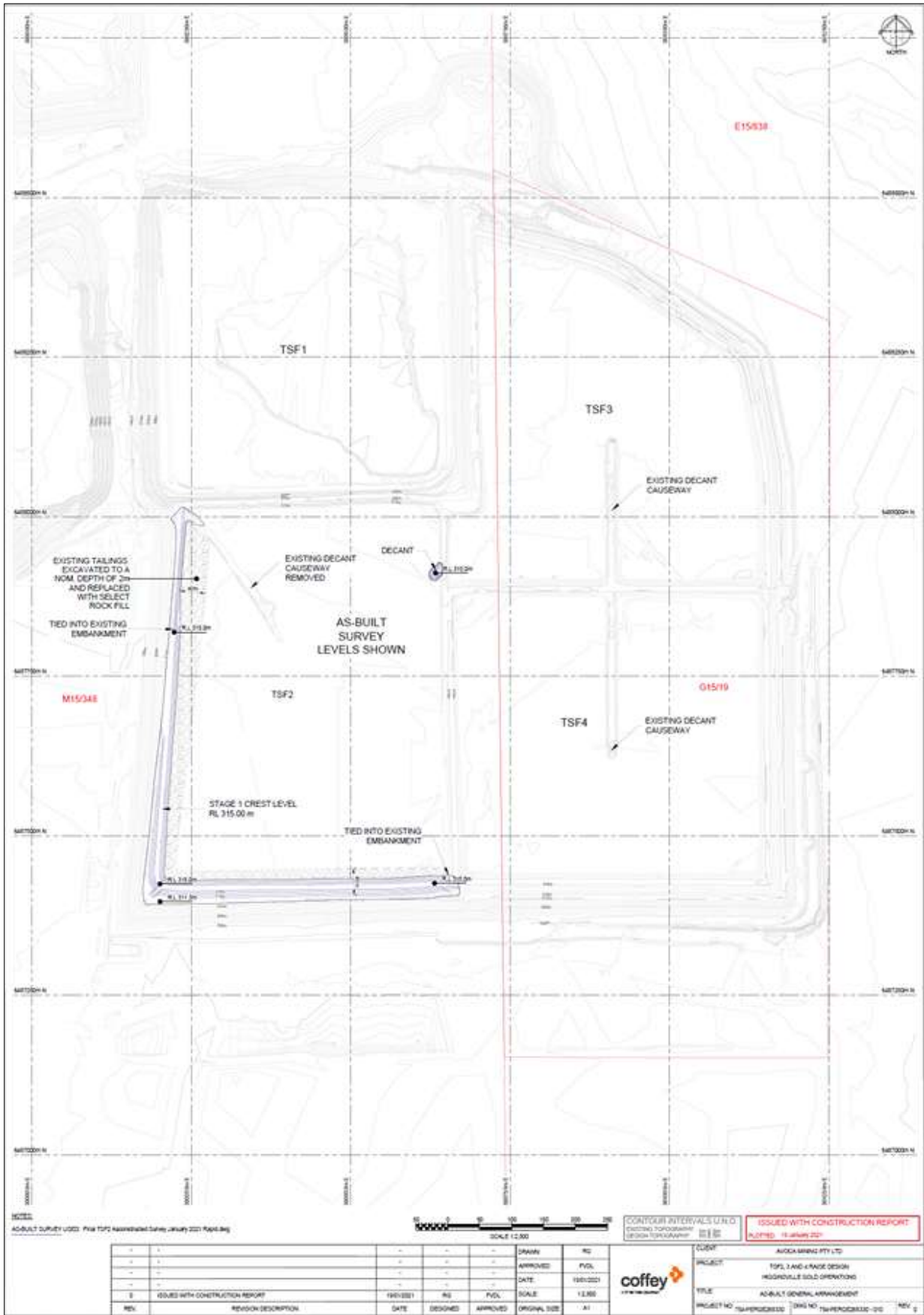


Figure 6: TSF2-4 prior to amalgamation (Coffey, 2021)

Embankment raise construction

Stage 5 embankment raise will increase the TSF embankment height by an additional 2.5 m and its storage capacity from 7.8 to 10.18 Megatonnes. The licence holder anticipates a storage life of 1.6 years based on the current rate of the deposition.

The raise will be constructed using an upstream construction method. Construction materials will consist of compacted oxide mine waste sourced from waste rock dumps at the premises. Oxide materials will be competent, non-acid forming and suitable for embankment construction. A waste characterisation assessment was undertaken at the premises in 2021 and reviewed in 2025 and demonstrated that most samples (8) were non-acid forming with one being of uncertain result. The material will be well-mixed to ensure a fines content greater than 15%. Moisture conditioning will be maintained between -2% and +3% of the Optimum Moisture Content, as determined in accordance with AS 1289 (2017). All fill will be placed in uniform horizontal layers not exceeding 300 mm loose lift thickness and compacted to achieve a minimum of 95% of Modified Maximum Dry Density. The final embankment slopes will be constructed at 1V:2.75H on the downstream side and 1V:2H upstream. The downstream batter will be stabilised with a final rock armour layer to prevent erosion caused by wind and rainfall.

The crest will be approximately 7 m wide and surfaced with a 100 mm crushed aggregate wearing course. A nominal 400 mm safety bund will be constructed on both sides of the crest, with regular breaks (approximately every 100 m) to enable the control of any surface water runoff. A 2% cross-fall at the crest will direct the runoff into the TSF.

Decant system and supernatant water management

The decant structure and accessway will be raised concurrently with the embankment using a centreline construction method. Materials will consist of mine waste sourced from the northern waste dump. The decant structure will continue to comprise vertically stacked slotted pre-cast concrete well liners within a surrounding rock ring. Final outer batter slopes will be formed at 1H:1V around the main circular structure and 1.5H:1V along the decant accessway. Consistent with the embankment design, the crest will be 7 m wide and will be surfaced in the same manner. A 2% cross-fall will be applied across the crest, directing runoff toward each side of the causeway.

Tailings and return water pipelines

Pipelines will be continue to transfer tailings slurry from the processing plant to the TSF and return water from the decant structure to the Process Water Pond for reuse. The pipeline configuration will remain unchanged, consisting of a nominal 250 mm-diameter high density polyethylene (HDPE) pipeline for tailings and a nominal 200 mm-diameter HDPE pipeline for the return water. Both pipelines will be equipped with telemetry systems and pressure sensors to allow for any leaks and failure detection, as well as automatic shut off mechanisms in the event of a pipe failure. The pipelines will be installed within the existing earthen-bunded corridors to ensure leaks and spills are contained within the bunded areas.

Seepage management infrastructure

The seepage management infrastructure at TSF2-4 comprises:

- A downstream seepage interception trench
- Thirteen seepage recovery bores
- An underdrainage system

The downstream seepage interception trench and associated pumps were constructed by the previous operator and remain operational. The trench borders the southern and eastern sides of the TSF, which then discharges to the seepage pond located to the south-east corner of the TSF.

Recovery bores consist of five bores along the eastern and eight along the southern perimeter of the TSF. Seepage recovered from these bores is directed to the lined seepage pond on the south-eastern side of the TSF. Pumping capacity differs between individual bores, with some

historically converted bores yielding minimal recovery (see Section 2.5 for additional information). As part of this amendment, the licence holder proposed to add five seepage recovery bores (PB14-18), two located to the northeast (PB14-15) and three equally distributed along the south perimeter of the TSF (PB16-18) (Figure 7). The licence holder stated that an upgrade to higher yield submersible pumps for some of the existing recovery bores may also occur to ensure more effective recovery.

An underdrainage system, consisting of an approximate 8 km long finger drain network, was constructed under TSF3 and TSF4 during the construction of the starter embankments, prior to amalgamation. The licence holder reported that the current operational condition of this underdrainage system is unknown and there is no plan to investigate its status. However, should the upgrades to the proposed seepage recovery bore network not sufficiently address seepage surrounding the TSF, a targeted condition assessment will be undertaken.

Groundwater monitoring

There are 10 groundwater monitoring bores constructed to the east and south of the TSF. The licence requires monthly monitoring of depth, pH and total dissolved solid and quarterly monitoring of electrical conductivity, weak acid dissociable (WAD) cyanide and a range of dissolved metals and metalloids. A standing water limit of 4 meters below ground level applies to six monitoring bores (HMB6, HMB7, HMB22A, HMB25A, HMB27A, HMB28A) and a 0.5 milligram per Litre WAD cyanide concentration applies to all monitoring bores.

The licence holder proposed to construct two additional monitoring bores. One (HMB30) to the west, where no groundwater monitoring is currently being undertaken, and one on the southeast corner of the facility (HMB29, two locations proposed).

Figure 7 shows the location of the current and proposed monitoring and seepage recovery bores. (Please note the two locations for HMB29, noted as HMB29 (alt)).

Stormwater infrastructure

No changes are proposed to the existing stormwater management infrastructure at the premises. Stormwater will continue to be managed through existing diversions, the TSF2–4 perimeter and toe drains located along the eastern and southern sides of the TSF, and the crest bunds.

During construction of the fifth embankment raise, exposed sections of the embankment will be compacted and progressively sheeted to minimise erosion. Runoff generated during construction is expected to report to the perimeter drain, while runoff from the crest of the embankment will drain into the TSF (refer to the *Embankment Raise Construction* section for further detail).

All stormwater management infrastructure will be routinely monitored and maintained to ensure it remains operational.

Operations of the TSF

Operations of the TSF will continue to remain consistent with the existing ones. Tailings deposition will occur subaerially using perimeter spigots spaced at an approximate distance of 20 meters. The discharge will be undertaken in layers approximately 300 - 400 mm thick. Tailings will be deposited at a low flow rate. This will reduce erosion and will allow the tailing finer material to separate from the coarser particle and flow towards the centre of the TSF. Spigotting will be rotated around the TSF to allow tailings to settle before further discharge. Over time, the sloped tailings beach will result in a depressed cone, with the supernatant pond located within a central depression.

The supernatant pond will continue to be maintained around the central decant structure with its size minimised to reduce seepage and evaporation.

The TSF will continue to be operated in accordance with the Operations Manual (Tetra Tech Coffey, 2025). A copy of the Manual was provided to the department with the application.



Figure 7: Proposed and existing monitoring and seepage recovery groundwater bores surrounding TSF2-4

2.5 Water management at the premises

Water Balance

A water balance on Stage 5 embankment raise operations was undertaken and considered the following parameters:

- Rainfall
- Slurry water inflow
- Evaporation
- Seepage
- Tailings retention

The following parameters and assumptions were applied in the analysis:

- Average annual rainfall: 279.6 mm (Norseman weather station, approximately 50 km from the premises)
- Average annual evaporation: 1,802 mm (Kalgoorlie-Boulder data, approximately 110 km from the premises)
- Slurry input: 1.5 million tonnes (45% solids) per year
- Runoff coefficient: 0.5 over the tailings surface and 0.3 for the catchment area
- Evaporation pan factor 0.75
- Storage area: 64 hectares
- Pond size: approximately 3.8 hectares (6% of the storage area)
- Running beaches area: 6.1 hectares (10% of the storage area)
- Retained moisture content: 45%
- Seepage flow through the embankment: 62.53 cubic meters per day

The calculation showed that the estimated average annual water return as a proportion of the of slurry inflow was 57% or approximately 1,040,000 cubic meters throughout Stage 5 operations.

The Delegated Officer notes that the pan factor of 0.75 shown in the above assumptions, generally applies to the rate of evaporation from the surface of a freshwater body. Research carried out by Newson and Fahey (2003) suggests that the average pan factor for hypersaline ponds on TSFs in the Goldfields region is approximately 0.45. The high pan factor may lead to an overestimation of the outputs, with a consequent underestimation of the water return.

Data provided by the licence holder on the operations of Stage 4 for TSF2-4 between January and December 2025 indicated that approximately 2,460,000 cubic meters of tailings were deposited into the TSF averaging approximately 205,000 cubic meters per month. Solids comprised 37% of the slurry by weight at the beginning of the year and increased to 43% later in the year, averaging approximately 40% for the year.

Seepage

History

Seepage surrounding TSF2-4 has been a longstanding issue, predating the amalgamation and recommissioning of the individual TSFs. Prior to amalgamation, TSF3 was the last operational TSF with deposition ceasing in December 2018.

A seepage assessment commissioned by the licence holder to support the amalgamation of the three cells in 2020 confirmed that since 2009 seepage from the TSFs had resulted in groundwater levels rising, an increase in TDS and WAD cyanide concentrations and a decrease in pH. Furthermore, the shallow groundwater had contributed to vegetation health decline east of the TSF adjacent to cells 3 and 4. It also predicted that seepage issues would reoccur once tailings deposition was to recommence after amalgamation.

In response to the findings in 2020 the licence holder proposed to:

- install four additional groundwater monitoring bores (HMB29–32), as some of the existing bores (HMB22, 25, 27 and 28) were inappropriately screened.
- retain the existing bores that had been partly used for water recovery (HMB1, 3, 4, 5, 6, 7) for long-term trend analysis
- construct a number of seepage recovery bores with the final number to be determined during construction
- implement a groundwater seepage recovery plan.

The departmental outcome of the amendment was that amalgamation could occur and deposition of tailings could recommence into the amalgamated TSF. Nevertheless, operations were to be limited to a maximum period of 12 months, pending evidence that seepage was adequately managed.

In April 2021, an amendment application to request continuation of deposition was submitted to the department. An updated Groundwater Seepage Management Plan submitted as part of the amendment and a seepage report submitted in July 2021 demonstrated that standing water levels at TSF2-4 bores had decreased across most monitoring bores as a result of the seepage recovery measures. Two exceptions remained: bore HMB22A and HMB28 located to the northeast and southwest of the embankment respectively, where standing water was still trending upwards. Nevertheless, as levels remained well below the threshold of 4 meters below ground level, the department granted the amendment allowing the licence holder to resume deposition.

Recent seepage behaviour and groundwater trends (2021-2025)

Since the 2021 amendment, seepage surrounding the TSF has continued to be an issue and management strategies have yielded limited results.

To support this amendment, the licence holder commissioned an updated Hydrogeological and Seepage Assessment Report (Rockwater, 2025). Noting that the report was issued in May 2025, the findings were as follows:

Standing water levels

- Following an initial recovery in groundwater depth at the beginning of 2021, standing water levels across most bores have steadily increased.
- The highest groundwater rates of rise were recorded at:
 - HMB5 (0.66 m/yr) - to northeast
 - HMB22 (0.60 m/yr) - adjacent to HMB5
 - HMB27 (0.53 m/yr) - south of the TSF near the boundary between what was TSF2 and TSF4.
- The only groundwater bore showing a decreasing trend was HMB25 (–1.02 m), to the east of the TSF near the boundary between what was TSF3 and TSF4. This trend is attributed to strong pumping from nearby seepage recovery bores PB3–PB4.
- As of November 2024 HMB3, 4 and 5 (southeast, and northeast of the TSF) recorded standing water level of less than 4m below ground level (mbgl). These bores do not currently have a standing water limit on the licence.
- Historically, monitoring bores converted to recovery bores (e.g., HMB14 now PB6 and HMB9, now PB10) performed poorly compared with purpose-built recovery bores.
- Based on the current findings it is anticipated that:
 - Without intervention HMB1 (southwest) and HMB27 (south-centre) may reach the 4 mbgl limit within approximately a 1 year
 - HMB22 (northeast) may reach the limit in approximately 4 years.

Water quality

- HMB22 and HMB27 showed elevated salinity in 2024 (310,000 mg/L and 100,000 mg/L respectively), consistent with mounding and seepage influence.
- The same bores (HMB22, HMB27) also exhibited low pH.
- HMB3 (southeast) shows unusually low salinity (7,500 mg/L), likely due to the seepage drain capturing surface water and rainfall.
- WAD cyanide was detected in several bores at the end of 2024, and while concentrations remained below the 0.5 mg/L limit imposed by the licence, the increase in concentration appears to be consistent with the spatial patterns of seepage migration. Figure 8 outlines the concentration of WAD cyanide at the end of 2024, showing the higher concentration occurring along the south and northeast of the TSF (from Rockwater, 2025).

Recovery bore performance

The effectiveness of the recovery bores was deemed to have mixed results partly due to the low yield (<1 L/s) of converted monitoring bores significantly limiting recovery effectiveness on the southern boundary (PB6 and PB10). Conversely, most purpose-built recovery bores had a higher yield (up to 6.7 L/s).

Influence of pumping

- Increased pumping from PB9 and PB11 in mid-2024 correlated with a measurable decline in standing water levels at HMB27.
- Sustained pumping from PB3 and PB4 was successful in lowering the groundwater level at HMB25, demonstrating the influence of groundwater bore when operated at higher, sustained rates.

Departmental assessment

During the assessment of this application, the department obtained standing water levels and seepage recovery volumes at the bores surrounding TSF2-4 for the period beginning in 2021. Trends for the period 2021–2025 are presented in Figure 9 and are consistent with the findings of the May 2025 report, which included data to the end of 2024.

The additional data collected during 2025 shows a continued rise in standing water levels across all bores but HMB25. HMB3, 4 and 5 remained above 4 mbgl for the duration of 2025. HMB27 exceeded the limit around mid-2023 and although standing water level decreased in the second part of 2024 and again in July 2025, the standing water levels subsequently increased and were just below the limit at the end of the year. HMB1 consistently hovered near 4 mbgl.

Figures 5 and 6 compare pumping volumes at PB9/PB11 and PB3/PB4 with standing water levels at adjacent monitoring bores HMB27 and HMB25, respectively.

Pumping at PB9 and PB11 was highly variable across the time interval. From late-2023 through mid-2024, there was a clear increase in recovery volumes, with multiple months in the ~600–1,200 m³/d range and a peak close to ~2,000 m³/d. Elevated pumping generally continued through 2025 (frequent months > ~600 m³/d). The mid-2024 increase in pumping at PB9 and PB11 appears to correspond with a measurable deepening in standing water levels at HMB27 (≈0.8–1.0 m). Similarly elevated pumping in early 2025 appears to correspond to HMB27 remaining deeper than during most of 2022–2023, acknowledging short-term variability.

From early 2024, recovery pumping at PB3 and PB4 increased in magnitude and persistence. Over the same period, standing water levels at HMB25 deepened by approximately 0.5–0.7 m, with the deepest levels recorded in late 2024. Elevated pumping continued through 2025 and HMB25 generally remained deeper than in 2022–2023, although short-term fluctuations (e.g., mid-2025) suggest additional influences and/or lagged responses.

It is noted that interpretation of these figures should be approached with caution, as seepage

recovery represents only one of several factors influencing the fluctuation in standing water levels.

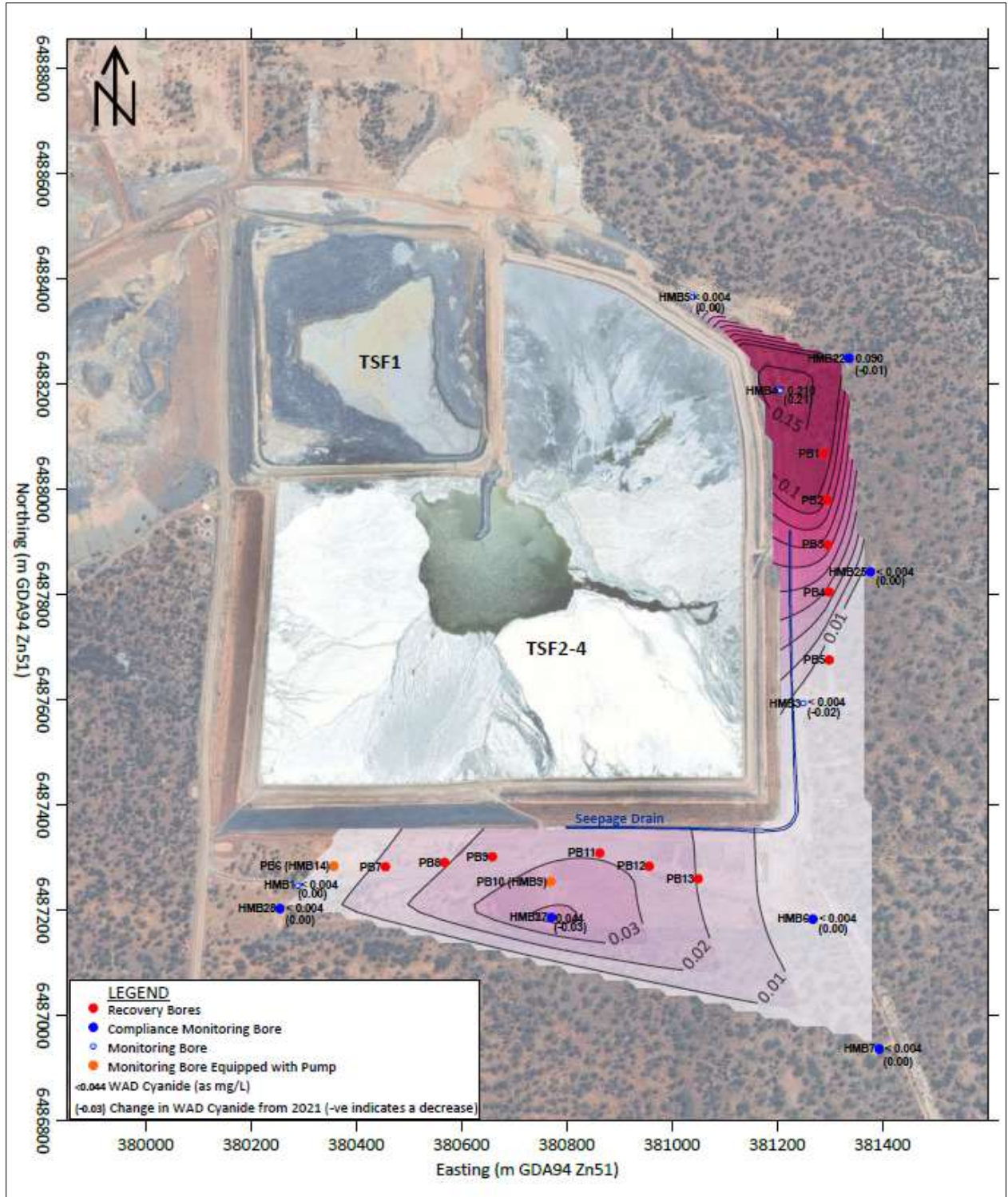


Figure 8: Concentrations of WAD cyanide in groundwater at the end of 2024 (Rockwater 2025).

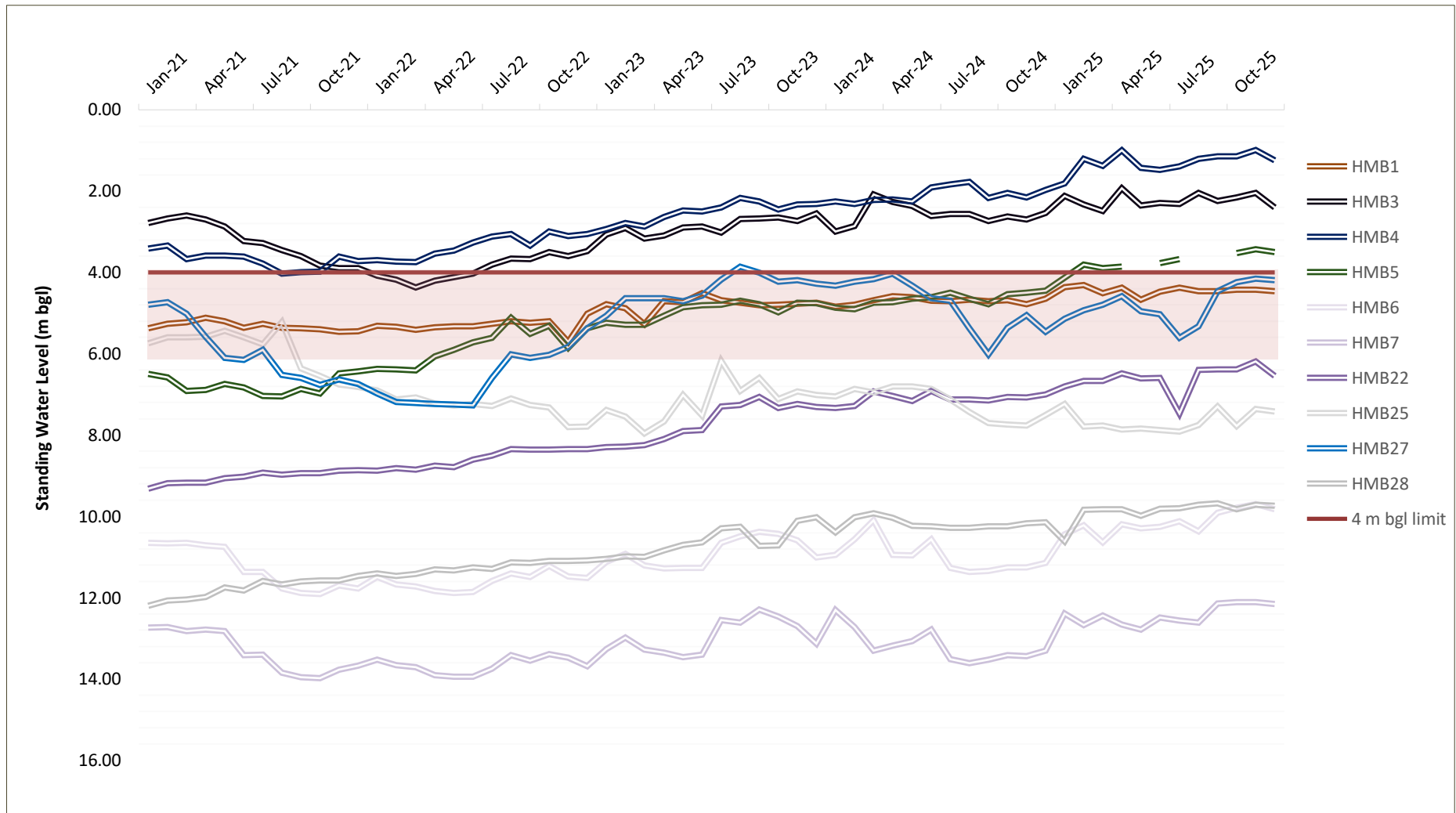


Figure 9: Standing water levels (m bgl) at the TSF2-4 monitoring bores between 2021 and 2025

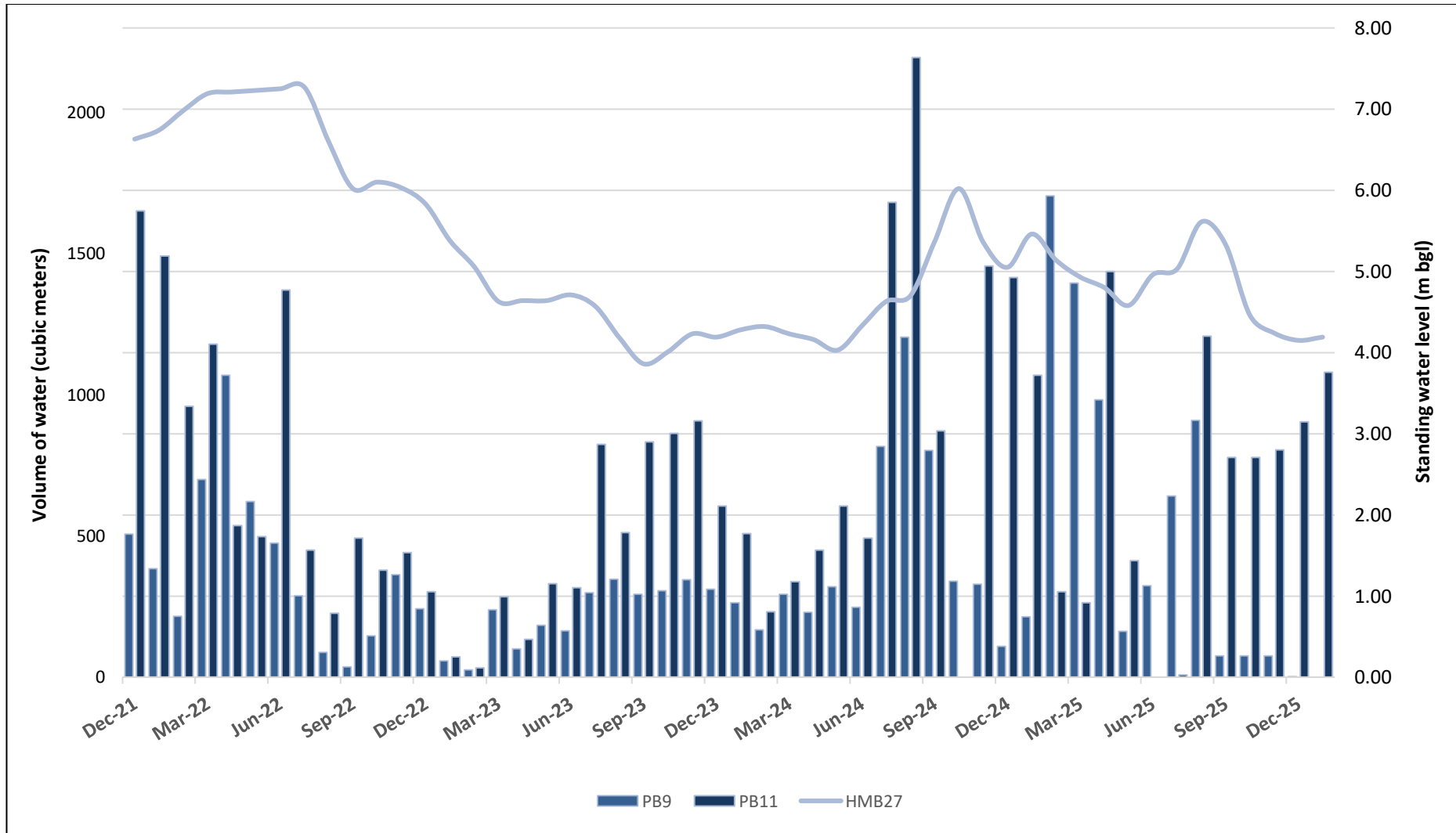


Figure 10: Monthly seepage recovery volumes at PB9 and PB1 (cubic meters) and standing water levels at HBM27 (in m bgl). Higher standing water levels values indicate a deeper water table.

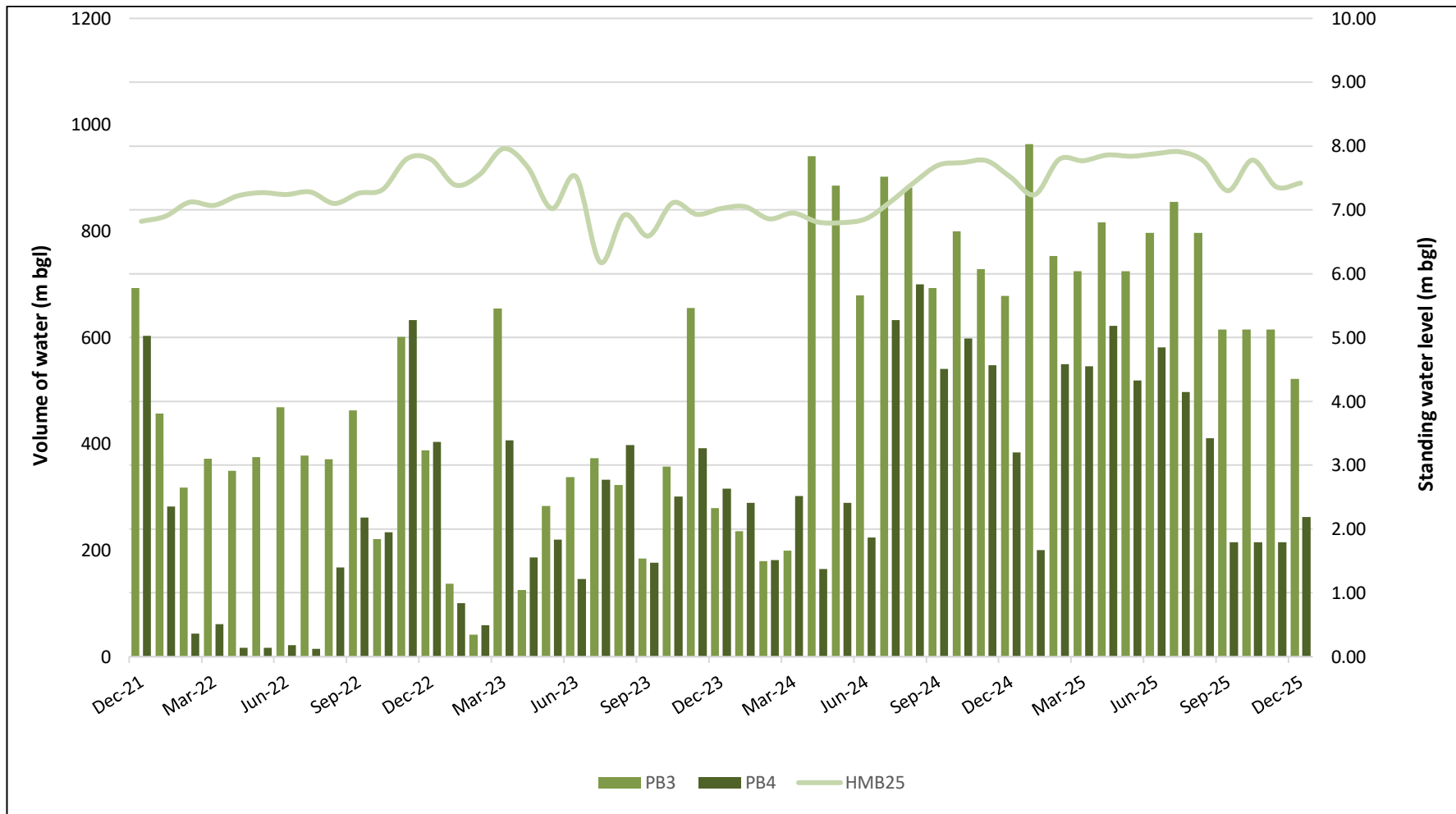


Figure 11: Monthly seepage recovery volumes at PB3 and PB4 (cubic meters) and standing water levels at HMB25 (in m bgl). Higher standing water level values indicate a deeper water table.

2.6 Tailings physical and chemical properties

Tailings discharged into the TSF will remain of similar geochemical composition of the existing ones. Tailings generated at the Higginsville processing plant are blend of different ore, with the majority being sourced from the Beta Hunt Underground Mine (Kambalda). Additional ore is sourced from the Two Boys underground mine at Higginsville. A summary of the geochemical assessment of the tailings undertaken in 2025 is presented in Table 2. The sample was obtained from the Higginsville Mill.

Table 2: Geochemistry of a tailings sample generated at the Higginsville Processing Plant

Component	Type of Analysis	Findings
Solids	Acid-Base Geochemistry	<ul style="list-style-type: none"> • Non-acid forming • Contained trace sulphides—mainly pyrite and pyrrhotite—hosted carbonates rich (greater than 10% by weight) matrix
	Multi-Element composition	Enriched with: <ul style="list-style-type: none"> • Arsenic (724.8 mg/kg) (As) • Manganese • Phosphorus • Barium
	Mineralogy	<ul style="list-style-type: none"> • Hornblende, plagioclases, quartz • Minor pyrite, pyrrhotite, calcite, ankerite, amphiboles, micas • Trace arsenopyrite
Slurry	Chemistry	<ul style="list-style-type: none"> • Alkaline (pH 8–9) • Hypersaline (~220,000 mg/L TDS)
	Cyanide forms	<ul style="list-style-type: none"> • Total Cyanide (CN) (89.5 mg/L) • Weak-acid dissociable CN (70.6 mg/L) • Free CN (47.1 mg/L) • Thiocyanate (75.19 mg/L)
	Minor elements	<ul style="list-style-type: none"> • Contained Iron and Copper, with minor Cobalt and Nitrogen

3. Other approvals

The licence holder submitted a mining development and closure plan to the Department of Mines, Petroleum and Exploration (DMPE) to raise TSF2-4 height of embankment (Registration ID 204906) in accordance with this application. The application had not been approved at the time of this assessment. Nonetheless, during consultation with DMPE for this amendment, DMPE confirmed that the geotechnical aspect of the construction outlined in the application was reviewed and deemed satisfactory.

The licence holder holds a groundwater licence under the *Rights in Water and Irrigation Act 1914* (RIWI Act) which allows the extraction of 3,150,000 kL of water annually from the pits and production bores at the Higginsville, Chalice, Baloo, Mt Henry and Wills Project areas (GWL 160795(8)).

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 2020).

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 the construction and / or operation of the additional infrastructure assessed in this Amendment Report are detailed in Table 3 below.

Table 3 also details the proposed control measures the licence holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Anticipated emissions and proposed licence holder controls

Emission	Sources	Potential pathways	Proposed / current controls
Construction activities			
Dust	Earthworks, construction of embankment lift, vehicle movement, removal and transport of borrow material	Air/windborne pathway	<ul style="list-style-type: none"> • Works will be temporarily ceased on windy days • Hauls road will be watered down • Speed limits on vehicles will be imposed.
Contaminated/ sediment laden stormwater after a rainfall event		Overland runoff / infiltration	<ul style="list-style-type: none"> • Perimeter drains, crest bunds and toe drains will direct uncontaminated surface runoff away from the operational area • Drainage infrastructure will be checked regularly and maintained as necessary • Exposed sections of the embankment will be progressively sheeted and

Emission	Sources	Potential pathways	Proposed / current controls
			compacted.
Hydrocarbons	Operations of heavy vehicles during construction	Overland runoff / infiltration	<ul style="list-style-type: none"> Spill kits will be located at all work areas and refuelling locations Immediate cleanup will occur after a spill Any contaminated waste material will be removed and directed offsite All stored fuel will be contained within a bunded area.
Operations			
<i>Processing plant (including crushing and screening) at higher throughput</i>			
Dust	Crushing, screening, stockpiling and conveying of crushed ore	Air/windborne pathway	<ul style="list-style-type: none"> Crusher and conveyor system are currently enclosed using appropriate guarding Water sprays will continue to be intermittently used when dust is visible Dust collection fans will continue to be used at crushing and screening transfer points An enclosed fine ore storage bin will continue to be used
Contaminated/ sediment laden stormwater after a rainfall event		Overland runoff/ infiltration	<ul style="list-style-type: none"> The use of bunding and elevated concrete hardstands throughout the Processing Plant footprint will continue to be used Contaminated stormwater will continue to be directed to a dedicated Plant runoff dam for temporary storage Erosion and sediment controls will continue to ensure all runoff is retained within the plant area, operating as a closed water management system All drainage infrastructure was designed to manage the 1-in-100-year storm event Sedimentation pond was sized to retain the 1-in-10-year, 24-hour storm event
Loss of containment	Operations of the CIL/CIP tanks, reagents storage tanks, process solution circuits	Overland runoff/ infiltration	<ul style="list-style-type: none"> The processing plant has been constructed on compacted hardstand CIL tanks are contained within a concrete bund of an approximate capacity of 1,152 cubic meters, sufficient to hold the estimated

Emission	Sources	Potential pathways	Proposed / current controls
			operating volume of 971 cubic meters. <ul style="list-style-type: none"> • Tanks are fitted with an auto shutoff valve and overflow pipes to the next tank. • Spills are directed to two sumps within the bunded area fitted with a spindle pump to retrieve the spillage and redirect it back into the milling process.
<i>TSF2-4 at the increased embankment height</i>			
Dust from tailings	Consolidation and drying of tailings within the TSF	Air/windborne pathway	<ul style="list-style-type: none"> • Rehabilitation of the TSF will occur when operations have ceased.
Contaminated / sediment laden stormwater after a rainfall event	Tailings deposition	Overland runoff / infiltration	<ul style="list-style-type: none"> • Perimeter drains, crest bunds and toe drains will direct any contaminated stormwater within the processing area • Diversion drains will direct uncontaminated stormwater away from the processing area • Embankments will be compacted to limit contaminated stormwater generation • Drainage infrastructure will be regularly monitored and maintained.
Seepage containing high concentrations of heavy metals, metalloids and salts		Infiltration from the base of the TSF and horizontal migration from the side of the embankment	<ul style="list-style-type: none"> • The supernatant pond will be centralised and maintained away from the sides of the embankment • Decant pump operations will be maintained adequately to reduce seepage • 2 additional monitoring bores will be constructed, and the same monitoring program will apply • 5 additional recovery bores will be constructed along the TSF perimeter, and current recovery bores may be upgraded with a higher yield submersible pump • A standby pump will be available at the premises and used should the pond size increase beyond predictions, or should seepage increase • The water balance and seepage recovery volume will be updated monthly and reviewed regularly • Visual inspections will occur regularly

Emission	Sources	Potential pathways	Proposed / current controls
			<p>and will include spigots, valves, deposition, condition of the water return pump</p> <ul style="list-style-type: none"> • Toe drains adjacent to the southern and eastern perimeter will be deepened if necessary • Integrity of the embankment • Phreatic levels near the embankment will be monitored with vibrating wire piezometers • Radius of the decant pond will not exceed 100m • Tailings will be deposited at a low flow rate, causing the heavier, coarser particles to settle out near the discharge point and the finer material to flow towards the centre of the TSF • Slurry spigots will be rotated around the TSF perimeter <p>Current regulatory controls on the licence:</p> <ul style="list-style-type: none"> • Monthly monitoring of volume of tailings deposited • Monthly monitoring of volume of water recovered from TSF • Monthly monitoring of volume of seepage recovered • Monthly monitoring of pH and WAD cyanide concentration at the tailings outfall and for the decant water • Monthly monitoring of standing water levels, pH and TDS at all TSF2-4 monitoring bores, decreasing to six monthly when in care in maintenance • Quarterly monitoring major ions and metalloids concentrations at all TSF2-4 monitoring bores, decreasing to annually when in care and maintenance.
<p>Tailings slurry containing high concentrations of heavy metals, metalloids and salts</p>		<p>Overland runoff and infiltration from overtopping</p>	<ul style="list-style-type: none"> • A freeboard of 1,300mm will be maintained between the crest of any water pond and the decant facility. This includes an operational freeboard of 300 mm, a beach freeboard of 200 mm and sufficient capacity to temporarily store a 1:100-year, 72 hour event (800 mm) • Cyclic deposition will form sloped

Emission	Sources	Potential pathways	Proposed / current controls
			<p>beaches</p> <ul style="list-style-type: none"> • The freeboard will be inspected daily • Increased inspections during high rainfall events • Water balance will be updated monthly and reviewed regularly. <p>Current regulatory controls on the licence:</p> <ul style="list-style-type: none"> • 300 mm from the top of the embankment • Minimum beach freeboard must be 200mm
Tailings slurry and supernatant water discharge	Operations of the pipeline	Overland runoff and infiltration	<ul style="list-style-type: none"> • All pipes will be inspected daily and appropriately maintained • Daily visual inspections of pipeline corridors will be undertaken • All pipelines will be bunded and contained within a sump. • Automated systems and sound alarms will be fitted at the discharge and return points to detect flow or pressure fluctuations Pipelines flow will be shutdown should a fault develop • Any leak or potential failure will be reported to the supervisory personnel immediately <p>Current regulatory controls on the licence:</p> <ul style="list-style-type: none"> • Pipelines containing tailings, effluent or saline water must be either: <ul style="list-style-type: none"> (i) equipped with automatic cut-outs in the event of a pipeline failure; (ii) equipped with telemetry; or (iii) are provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections • daily visual inspections of tailings and return water pipelines
Supernatant water containing high	Operations of the central supernatant pond within the TSF and the external	Direct contact	<ul style="list-style-type: none"> • Avifauna deaths will be monitored daily

Emission	Sources	Potential pathways	Proposed / current controls
concentrations of heavy metals, metalloids and salts	pond		
Hypersaline water with high concentration of some metals and metalloids	General operations and discharge to the seepage water pond and process water pond	Overland runoff and infiltration from overtopping	Current regulatory controls on the licence: <ul style="list-style-type: none"> • HDPE lining • 0.5m freeboard • Daily inspections of freeboard

4.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded 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 4 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 2020)).

Table 4: Sensitive human and environmental receptors and distance from the prescribed activity

Human receptors	Distance from prescribed activity
Human Receptors	No human receptors identified within 50km. The risk has been screened out due to the absence of a complete source–pathway–receptor linkage.
Environmental receptors	Distance from prescribed activity
Native vegetation	Directly adjacent to the TSF on all sides aside from the north-west Directly adjacent to the processing plant on the north, west and south.
Avifauna: 130 bird species including Peregrine falcon and the fork tailed swift (specially protected and migratory under the BC Act 2016)	In the surrounding area
Groundwater (non-potable purposes) – Proclaimed groundwater area under the Riwī Act. Background groundwater salinity concentration is approximately 16,000-45,000 mg / L TDS.	Underlying
Lake Cowan	Approximately 4.5 km east of the TSF

<p>Listed as a wetland of subregional significance in the DBCA biodiversity audit for the Coolgardie 3 Eastern Goldfields subregion (<i>Cowan 2001</i>).</p>	
<p>Surface water lines (hydrography WA – 250K)</p>	<p>Approximately 410 m north of the TSF and 850 m north of the processing plant, flowing in an east / southeasterly direction towards Lake Cowan.</p>

4.2 Risk ratings

Risk ratings associated with the emissions from the proposed amendment have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020). As identified in Section 4.1 each identified emission source considers a potential source-pathway-receptor linkage. Where this linkage is incomplete, the emission has not been considered further.

The final risk rating takes into account the licence holder's proposed, and existing mitigation measures and controls, as detailed in section 4.1.

Where the Delegated Officer considers the proposed controls critical to maintaining an acceptable level of risk, these controls will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the licence holder controls are not deemed sufficient. Any additional controls will be documented and justified in Table 5.

The Revised Licence accompanying this Amendment Report authorises emissions associated with the operation of the Premises.

Conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls/ DWER comments
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
Construction								
Construction of TSF2-4 fifth embankment raise, including earthworks, mobilisation and positioning of infrastructure and vehicle movement	Dust	Pathway: Air/windborne pathway Impact: Reduction in vegetation health	Native vegetation	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A	Some dust emissions during the construction of the embankment raise are expected; however, construction activities will occur over a relatively short period of time. Applicant's proposed controls including reduced speed limits, the ceasing of construction activities during windy conditions and the use of water carts, have been deemed acceptable in managing the risk event. The risk rating has been assessed as low from a slight consequence and an unlikely likelihood ratings. Licence holder's controls have been conditioned in accordance with <i>DWER Guideline: Risk Assessment</i> (DEWR, 2020). No additional regulatory controls are required.
	Contaminated / sediment laden stormwater	Pathway: overland runoff and infiltration Impact: Ecological disturbance including contamination of soil and surface water	Surface water, soil and native vegetation	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 1	The licence holder proposed controls including the progressive sheeting of exposed sections of the embankment during construction, the redirection of contaminated stormwater, and the monitoring of stormwater infrastructure, are considered acceptable in managing the risk. Noting that construction activities will occur for a relatively short period, the proposed controls have been deemed acceptable to manage the risk of contaminated stormwater affecting surrounding receptors. The risk rating has been assessed as low from a slight consequence and an unlikely likelihood. Licence holder's controls have been conditioned in accordance with <i>DWER Guideline: Risk Assessment</i> (DEWR, 2020). No additional regulatory controls are required.
Operations								
<i>Processing Plant (including crushing and screening)</i>								
Crushing / screening, stockpiling and transfer of ore at the increased throughput	Dust	Pathway: Air/windborne pathway Impact: Reduction in vegetation health	Native vegetation	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 7	The Licence Holder has implemented a range of dust control measures to manage potential emissions during operations, including enclosed crushers and conveyors, the installation of water sprays, localised dust extraction systems, and an enclosed fine ore storage bin. It is considered that the proposed controls (full list on Table 3) are adequate in maintaining an acceptable level of risk associated with the reduction of vegetation health from dust emissions. The risk rating has been assessed as low from a slight consequence and an unlikely likelihood rating. Licence holder's controls have been conditioned in accordance with <i>DWER Guideline: Risk Assessment</i> (DEWR, 2020). No additional regulatory controls are required.
Processing of gold ore at the increased throughput	Chemical reagents, cyanide bearing slurry	Pathway: direct discharge from loss of containment Impact: discharge to land, resulting in impacts to ecological health	Soil / Native vegetation / surface water	Refer to Section 3.1	C = Minor L = Rare Low Risk	N	Condition 7 Condition 10	A loss of containment associated with chemical reagents or cyanide bearing slurry at the processing plant could result in the release of hazardous substances, creating a contamination risk to soil, surface water and the surrounding vegetation. It is considered that the proposed controls integrated within the processing plant are generally adequate to mitigate the risk of a loss of containment impacting environmental receptors. However, to ensure early detection of any containment failures, ongoing integrity inspections and verification of containment systems will be required. The licence holder has developed a monthly inspection checklist for the premises; however, this checklist does not include monitoring specific to chemical reagent and cyanide slurry containment systems. It is therefore recommended that department specified monitoring requirements be incorporated into this inspection regime. An

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls/ DWER comments
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
								<p>additional weekly monitoring condition has been included in the amended licence.</p> <p>It is also noted that the Delegated Officer has introduced operational requirements for the processing plant under Condition 7 of the amended licence, noting that the processing plant was not previously regulated under the licence.</p> <p>Based on the ongoing and anticipated effectiveness of these controls, the Delegated Officer has deemed the risk event to be low risk as a result of a minor consequence and a rare likelihood.</p>
Daily operations of the processing plant including crushing and screening of gold ore at the increased throughput	Contaminated / sediment laden stormwater	<p>Pathway: overland runoff and infiltration</p> <p>Impact: Ecological disturbance including contamination of soil and surface water</p>	Surface water, soil and native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	N	<p>Condition 7 Condition 10</p>	<p>The premises is situated in a semi-arid climate, characterised by low rainfall and high evaporation rates. Rainfall typically occurs in the form of downpours and can result in flash flooding particularly between January and March. Contaminated / sediment laden stormwater runoff can have a detrimental effect on surrounding native vegetation and surface water, with its extent dependent on volume of runoff and receptors' exposure over time. An ephemeral surface line is located approximately 850 m north of the processing plant and native vegetation is adjacent to the facility on most sides.</p> <p>Existing measures for managing contaminated stormwater and diverting stormwater runoff will continue to be implemented at the premises. These measures include bunding, elevated hardstands, erosion and sediment controls and the creation of a closed water management system within the plant. As for the above risk event, an additional requirement will be added to the licence to monitor stormwater infrastructure including sumps and undertake ongoing maintenance (such as removal of sediments and debris) daily (when operating), and prior to and following a significant rainfall event. It is considered that ongoing regular inspections will provide the licence holder with the necessary oversight of the stormwater infrastructure performance.</p> <p>Based on the proposed and added controls the Delegated Officer deems the risk event rating to be medium risk from a minor consequence and an unlikely likelihood.</p>
Deposition of tailings at the higher throughput following the construction of TSF2-4 fifth embankment raise	Dust	<p>Pathway: Air/windborne pathway</p> <p>Impact: Reduction in vegetation health</p>	Native vegetation	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	N/A	<p>Solids concentration in tailings slurry is expected to be approximately 45% during deposition, therefore, dust emissions are anticipated to be minimal during this stage. As tailings settle and consolidate in the TSF, the potential for dust generation may increase, depending on factors including climatic conditions (prevailing winds, evaporation rates), tailings' materials characteristics and wetting and drying cycles.</p> <p>Noting that mine closure will be managed under the <i>Mining Act 1978</i> and considering the hypersaline nature of tailings and the high levels of evaporation typical of the region, the formation of surface crusting is likely to reduce the potential for dust emissions when deposition ends.</p> <p>Based on these factors and the expected low risk during operations, the Delegated Officer has deemed that no additional controls for dust controls at the TSF are required are this stage.</p> <p>The risk rating has been deemed medium from a minor consequence and an unlikely likelihood.</p>
	Contaminated / sediment laden stormwater	<p>Pathway: overland runoff and infiltration</p> <p>Impact: Ecological disturbance including contamination of soil and surface water</p>	Surface water, soil and native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	N	<p>Condition 1 Condition 10</p>	<p>The premises is situated in a semi-arid climate, characterised by low rainfall and high evaporation rates. Rainfall typically occurs in the form of downpours and can result in flash flooding particularly between January and March. Contaminated / sediment laden stormwater runoff can have a detrimental effect on surrounding native vegetation and surface water, with its extent dependent on volume of runoff and receptors' exposure over time. An ephemeral surface line is located approximately 410 m northeast of the TSF and native vegetation is adjacent to the facility on most sides.</p> <p>Existing measures for managing and diverting contaminated stormwater will continue to be implemented at the premises. These measures include perimeter drains, crest bunds and toe drains. The existing infrastructure is considered adequate for stormwater management. However, it is acknowledged that such infrastructure is effective in mitigating emissions only when it remains fit for purpose. Ensuring this requires the</p>

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls/ DWER comments
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
								<p>undertaking of appropriate inspections.</p> <p>Although the licence holder has stated that regular inspections will continue, the Delegated Officer considers it necessary to provide clarity on the frequency of inspections. Condition 11 specifies that inspections must be conducted daily.</p> <p>This condition, together with the applicant's proposed controls, have been deemed sufficient to maintain the risk acceptable. The risk rating has been deemed medium from a moderate consequence and an unlikely likelihood ratings.</p> <p>Licence holder's controls have been conditioned within the amended licence in accordance with DWER Guideline: Risk Assessments (DWER 2020).</p>
	Tailings seepage (high concentration of salt and heavy metals, metalloids and other contaminants of concern)	<p>Pathway: vertical infiltration and horizontal migration</p> <p>Impact: groundwater mounding, groundwater contamination and potential ecological disturbance</p>	Groundwater, native vegetation and potential migration to Lake Cowan	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	N	<p>Condition 1</p> <p>Condition 2</p> <p>Condition 3</p> <p>Condition 7</p> <p>Condition 10</p> <p>Condition 11</p> <p>Condition 24</p> <p>Condition 25</p> <p>Condition 26</p> <p>Condition 27</p>	<p>Tailings seepage through the base and the sides of the embankment was discussed throughout this report. Data provided and studies commissioned by the licence holder confirmed that groundwater levels and quality at the premises have been affected by current and historical TSF2-4 seepage. Furthermore, while the licence holder has attempted to address and reduce seepage, limited results have been obtained, and seepage remains an issue both to the northeast and south of the TSF. Groundwater mounding has resulted in the degradation of native vegetation to the east of the TSF.</p> <p>An increase in tailings input both from an increased plant throughput and operations at a higher TSF height, may exacerbate these ongoing seepage issues.</p> <p>The licence holder has proposed the construction of additional seepage recovery bores and further monitoring bores for better oversight of groundwater. It is noted that only limited results have been obtained from seepage recovery bores at the premises, partly due to inadequate pumping.</p> <p>The construction of seepage recovery and monitoring bores has been conditioned on the licence in accordance with <i>DWER Guideline: Risk Assessments</i> (DWER 2020).</p> <p>The Delegated Officer has also added the following additional regulatory controls to the amended licence:</p> <p>Condition 3:</p> <ul style="list-style-type: none"> Upgrading of existing recovery bores: PB7, PB8, PB9 and PB11 with higher yield submersible pumps. These bores have been noted by the licence holder as yielding low seepage recovery. <p>Condition 7:</p> <ul style="list-style-type: none"> Continuous operations of the decant pump to minimise the decant pond size as much as practicable. Maintaining a separation distance between the decant pond and the perimeter embankment greater than 200 m. <p><i>Note. Tetra Tech Coffey (2025) identified that this separation distance reflects the combined volume of a five-day slurry water pond and a 1-in-100-year, 72-hour stormwater event. It is acknowledged that maintaining this distance at all times is neither expected nor desirable, as doing so may adversely affect the stability of the TSF.</i></p> <ul style="list-style-type: none"> Continuous operations of the seepage recovery bores to draw down groundwater mounding around the TSF, supported by monitoring of pumping rates to assess that system performance is adequate. <p>Condition 25:</p> <p>The limit of 4 m bgl has been extended to HMB29 and HMB30. The Delegated Officer notes that while the same limit generally applies consistently throughout all bores within the same containment infrastructure, in 2020 it was deemed that HMB1, HMB3, HMB4 and HMB5 had been constructed too close to the embankment perimeter to truly reflect the actual extent of the mounding issues, therefore a decision was made to remove</p>

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls/ DWER comments
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
								<p>the limit from these bores.</p> <p>Condition 26: The licence holder must maintain an accurate water balance for the TSF, to ensure the facility remains stable and environmental impacts are minimised. This report must be submitted as part of the Annual Environment Report.</p> <p>Furthermore, to determine whether the additional measures (including those proposed) are effective in addressing the ongoing seepage issues, specified actions have been added to the licence (Condition 27). This condition requires the licence holder to carefully evaluate the effectiveness of the seepage management controls at TSF2-4 (please refer to the full condition for details)</p> <p>The risk rating (inclusive of the proposed and additional controls) has been deemed Medium from a possible likelihood and a moderate consequence.</p>
Tailings slurry / supernatant water discharge		<p>Pathway: overtopping resulting in direct discharge and infiltration</p> <p>Impact: ecological disturbance and contamination of soil</p>	<p>Soil</p> <p>Native vegetation</p> <p>Surface water</p>	Refer to Section 3.1	<p>C = Moderate</p> <p>L = Unlikely</p> <p>Medium Risk</p>	Y	<p>Condition 1</p> <p>Condition 7</p> <p>Condition 9</p> <p>Condition 10</p>	<p>An overtopping event has the potential to release contaminated water and tailings slurry into the surrounding landscape causing habitat degradation, and contamination of soil and surface water.</p> <p>Current controls on the licence include a 300 mm freeboard and a 200 mm beach freeboard. The licence holder also states that the TSF will have sufficient capacity to temporarily store a 1 in 100-year 72-hour stormwater event (800 mm).</p> <p>The proposed and current controls are considered acceptable in managing the risk event.</p> <p>The Risk rating has been deemed medium, from a moderate consequence (mid-level onsite and low-level offsite impacts) and an unlikely likelihood rating.</p> <p>Licence holder's controls have been conditioned within the amended licence in accordance with DWER Guideline: Risk Assessments (DWER 2020).</p>
		<p>Pathway: pipeline failure, resulting in direct discharge, overland runoff and infiltration</p> <p>Impact: Ecological disturbance, including impact to avifauna health, contamination of soil and surface water</p>	<p>Soil</p> <p>Native vegetation</p> <p>Surface water</p>	Refer to Section 3.1	<p>C = Moderate</p> <p>L = Unlikely</p> <p>Medium Risk</p>	N	<p>Condition 1</p> <p>Condition 8</p> <p>Condition 10</p> <p>Condition 11</p>	<p>Pipelines carrying tailings and return water to and from TSF2-4 are located within previously disturbed areas of the operational footprint, which reduces the likelihood of impacts to undisturbed land. However, spill events remain a credible risk and could result in contamination of soil and surface water, as well as ecological disturbance to transient fauna in the vicinity of the premises.</p> <p>The Delegated Officer considers that the existing pipeline controls are generally acceptable to continue to manage the risk of pipelines failure and associated risks.</p> <p>Nevertheless, a condition has been added to the licence to immediately recover, remove and dispose of spills and any environmentally hazardous materials. This relates to the site-specific operational history in which a tailings spills incident occurring at the premises in 2024 resulted in the release of 3,500 cubic meters of tailings slurry near the processing plant. This condition is intended to minimise the duration and extent of environmental exposure in the event of a spill and to ensure timely remediation.</p> <p>The risk event has been deemed medium risk from a moderate consequence and an unlikely likelihood rating.</p>

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls/ DWER comments
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
Operations of the supernatant pond, process pond and seepage recovery pond	Supernatant water, containing high concentration of salinity, cyanide and other contaminants of concern.	Pathway: direct access through ingestion Impact: deterioration of avian health including specially protected and migratory under the BC Act 2016)	Avifauna	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	N	Condition 25	<p>High concentrations of heavy metals, particularly cyanide, associated with the processing of gold ore, can be harmful to transient birds using the supernatant seepage and process ponds as drinking water sources. Water quality data provided by the licence holder indicates that salinity concentrations of the tailings slurry water was approximately 120,000 mg /L. This concentration is expected to render the water unpalatable to most birds. It is also expected that the salinity in the process pond would be similar to that of the decant, however there is currently no data available on the seepage recovery pond water quality as no monitoring of this pond is required under the licence.</p> <p>Total dissolved solids in mg/L has been added to the monthly monitoring parameters of pH and WAD cyanide for the tailings outfall and decant water to provide continued oversight into the likelihood of birds using the decant water as a source of drinking water (condition 25).</p> <p>The same parameters (albeit quarterly) have been extended to the seepage recovery pond (condition 25) as not previously monitored.</p> <p>With this continued oversight, the Delegated Officer considers the risk event to be medium from an unlikely likelihood and a minor consequence.</p>

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

Note 2: Proposed licence holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

5. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response / action
<p>The Shire of Coolgardie was advised of proposal 08 January 2026</p>	<p>The Shire of Coolgardie replied on 13 January 2026 advising that the proposal is located on land zoned for mining purposes and is consistent with local planning policies, with no interface with residential or urban areas.</p> <p>All material hauling will occur within the mine lease, resulting in no additional traffic impacts on Shire roads.</p> <p>There are no anticipated impacts to European Heritage Places, and while the area was a formally recognised native title, native title rights no longer legally exist.</p> <p>While no additional surface water discharges or vegetation clearing are not proposed, the potential groundwater impacts resulting from seepage remain an issue. It is noted that the licence holder intends to introduce additional infrastructure to manage seepage.</p> <p>The Shire of Coolgardie has no objection to the proposal provided that the environmental and hydrological risk, particularly related to the proximity to Lake Cowan are appropriately managed.</p>	<p>The department has noted the response by local government and have considered the comments in it's risk assessment</p>
<p>DMPE was advised of proposal 08 January 2026</p>	<p>On 20 January 2026 DMPE advised that MDCP Reg ID 204906 had been submitted seeking approval for the TSF2-4 Supercell (SC) Stage 5 embankment raise to a maximum height of 15 m (325 mRL), including the installation of additional groundwater monitoring and seepage recovery bores.</p> <p>DMPE advised that the Mining Proposal had undergone geotechnical review, and no questions or issues with the proposed activities had been identified as part of the</p>	<p>The department has noted the comment provided by the DMPE and have considered the comments in it's risk assessment</p>

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	<p>assessment. Nevertheless, the Mining Proposal was still under assessment and was awaiting a response from the proponent.</p> <p>A further enquiry was made to DMPE on 21 April 2026, and it was confirmed that the Mining Proposal remains under assessment, pending receipt of the requested information.</p>	
<p>Department of Planning, Lands and Heritage (DPLH) was advised of the proposal 08 January 2026</p>	<p>On 22 January 2026 DPLH advised that a review of the Register of Places and Objects, as well as the DPLH Aboriginal Heritage Database, concludes that the subject area does not intersect with any known Aboriginal heritage Places or Registered Sites. Thus, based on the current information held, no approvals under the Aboriginal Heritage Act 1972 (AHA) were required in this instance.</p>	<p>The department has noted the comment provided by DPLH and have considered the comments in it's risk assessment</p>
<p>Works Approval/Licence Holder was provided with draft amendment on 20 May 2026</p>	<p>Refer to Appendix 1</p>	<p>Refer to Appendix 1</p>

6. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a revised licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

6.1 Summary of amendments

Table 7 provides a summary of the proposed amendments and will act as record of implemented changes. Table 8 shows the consolidation of licence conditions. All changes have been incorporated into the revised licence as part of the amendment process.

Table 7: Summary of licence amendments

Condition no. / reference	Proposed amendments
Throughout the licence	References to other conditions updated for chronological order. Table numbers and captions amended in accordance with current department standards.
Cover Page	Amended Category 5 assessed production capacity in accordance with this Amendment Report.
Licence History	Updated with latest revisions.
Condition 1	TSF2-4 Stage 5 embankment raise construction requirements and location added, in accordance with this amendment.
Condition 2	Groundwater bores construction design and location requirements added, in accordance with this amendment.
Condition 3	Seepage bores construction design and location requirements added, in accordance with this amendment.
Condition 4	Condition phrasing updated in accordance with current standards and table numbers revised for consistency.
Condition 5	<i>Audit Report</i> replaced by <i>Environmental Compliance Report</i> in accordance for consistency with previous condition.
Condition 6	New condition added requiring the submission of a <i>groundwater monitoring and seepage recovery bore construction report</i> , in accordance with current departmental standards.
Condition 7	Condition reworded in accordance with current standard. Table 4: <ul style="list-style-type: none"> - Grouped <i>Containment</i> and <i>General infrastructure</i> Tables (1 and 5) into one table (4) with the items listed under the <i>Site Infrastructure and equipment</i> columns - <i>Infrastructure requirements</i> and <i>authorised to contain</i> columns merged into <i>Operational Requirements</i> column - Added <i>Processing Plant and associated infrastructure, TSF2-4 and TSF2-4 Seepage recovery bores</i> requirements in accordance with this amendment - Rephrased operational requirements for <i>Seepage water pond, Process water pond, Raw water pond</i> and the turkey's nests at the premises - Removed <i>Fairplay, Vine</i> and <i>Aphrodite</i> in-pit TSFs in accordance with this amendment.

Condition no. / reference	Proposed amendments
Condition 9	Condition reworded in accordance with current standards Table 5: <ul style="list-style-type: none"> - Table headings reworded for clarity - Updated details of construction elevations and operating heights in accordance with the administrative amendment forming part of this report.
Condition 10	Condition reworded in accordance with current standards Updated Table reference Table 6: <ul style="list-style-type: none"> - Formatted Caption and reworded column for clarity - Reworded type of inspection details for clarity - Replaced <i>containment infrastructure</i> with the individual items of infrastructure for clarity and consistency - Added inspections for <i>Processing Plant Containment, TSF2-4, and TSF2-4 interception drain and stormwater infrastructure</i> in accordance with this amendment.
Condition 11	Condition added for the management of spills at the premises.
Condition 21	Table 12: <ul style="list-style-type: none"> - Amended TDS units from <i>ppm</i> to <i>mg/L</i> for consistency with other parameters on the same table.
Condition 24	Table 14: <ul style="list-style-type: none"> - Removed <i>TSF2 (prior to amalgamation)</i> from infrastructure reference on the table as redundant - Removed <i>TSF2-4 (post amalgamation)</i> reference from infrastructure on the table as now redundant - Removed Aphrodite, Fairplay East and Vine in-pit TSFs in accordance with this amendment - Added <i>Volume of seepage water recovered from recovery bores and seepage recovery bores flow rates</i> to the parameter's column in accordance with this amendment.
Condition 25	Table 15: <ul style="list-style-type: none"> - Added note ¹ to pH parameter for tailings outfall and decant water consistent with current practices - Added <i>TDS¹</i> to tailings outfall and decant water monitoring point in accordance with the risk assessment undertaken in this Amendment Report - Added <i>Seepage water pond</i> parameters and monitoring frequency in accordance with the risk assessment in this Amendment Report - Added the proposed monitoring bores (HMB12 and HMB29) to the TSF2-4 monitoring bores SWL limit and monitoring requirements in accordance with the risk assessment in this Amendment Report - Removed A reference from HMB22,25,27 and 28 as redundant.
Condition 26	Condition added to undertake a monthly water balance in accordance with the risk assessment in this Amendment Report.
Condition 27	Specified action condition added to assess effectiveness of seepage management controls and propose additional controls where required within the established

Condition no. / reference	Proposed amendments
	timeframe.
Conditions 28, 29 and 30	Conditions added, as per current Departmental standards.
Condition 32	Table 17: <ul style="list-style-type: none"> - Formatted table and reworded caption - Updated condition or Table reference - Added requirement to submit TSF2-4 water balance of condition 26.
Condition 34	Table 18: <ul style="list-style-type: none"> - Formatted Table and reworded caption - Updated condition or table column as applicable.
Definitions	Table 19: <ul style="list-style-type: none"> - Term Rockwater (2025) defined - Term <i>Qualified geotechnical engineer</i> amended to <i>Suitably qualified geotechnical engineer</i> and definition amended in accordance with current standards.
Schedule 1	<ul style="list-style-type: none"> - Updated Figure 1 for clarity, no change was made to the prescribed premises boundary - Reworded Figures 7 caption for clarity - Removed redundant Figures - Added Figure 11 showing the location of the new groundwater monitoring and seepage recovery bores in accordance with this Amendment Report.
Schedule 2	Added to include TSF2-4 stage five embankment construction figures (Figures 12-16).
Schedule 3	Added to include Higginsville Processing and Crushing and screening plants (figures 17, 18 and 19).
Schedule 4	Reference updated.

Table 8: Consolidation of licence conditions in this amendment

Existing condition	Condition summary	Revised licence condition	Conversion notes
N/A	DWER File Number - DER2018/001153	DWER File Number - INS-0002054	Updated to current internal numbering format.
Condition 1	Pipeline management	Condition 8	Revised to current licensing format.
Condition 2	Discharge to containment infrastructure	Condition 7	Revised to current licensing format.
Condition 3	Staged construction and operation heights of the embankment	Condition 9	Revised to current licensing format.

Existing condition	Condition summary	Revised licence condition	Conversion notes
Condition 4	TSF operational requirements	Condition 7	Redundant. Amalgamated with condition 11.
Condition 5	Inspection of Infrastructure	Condition 10 - Inspection of Infrastructure	Revised to current licensing format.
Condition 6	TSF construction requirements	-	Redundant.
Condition 7	Infrastructure construction requirements	-	Redundant
Condition 8	Infrastructure construction requirements	Condition 1- Design and construction requirements	Revised to current licensing format.
Condition 9	Emission and discharge standard condition	Condition 12	No change.
Condition 10	Point source emissions to surface water	Condition 13	Revised to current licensing format.
Condition 11	Emissions to groundwater	Condition 14	Revised to current licensing format.
Condition 12	Emission limits to groundwater	Condition 15	Revised to current licensing format.
Condition 13	Emissions to land	Condition 16	Revised to current licensing format.
Condition 14	Emission limits to land	Condition 17	Revised to current licensing format.
Condition 15	Use of mine dewater in dust suppression	Condition 18	Revised to current licensing format.
Conditions 16 and 17	Monitoring Standards	Condition 19 and 20	Revised to current licensing format.
Conditions 18 and 19	Monitoring of point source emissions to surface water	Condition 21 and 22	Revised to current licensing format.
Condition 20	Monitoring of emissions to land and groundwater	Condition 23	Revised to current licensing format.
Condition 21	Process monitoring	Condition 24	Revised to update the monitoring point references and to current licensing format.
Condition 22	Ambient environmental quality monitoring	Condition 25	Revised to update the monitoring point references and locations and to current licensing format.
Condition 23	Recordkeeping	Condition 29 and 30	Revised to current licensing format.
Condition 24	Annual Audit Compliance Report	Condition 31	Revised to current licensing format.

Existing condition	Condition summary	Revised licence condition	Conversion notes
Condition 25	Complaints	Condition 28	Revised to current licensing format.
Conditions 26 and 27	Annual Environmental Report	Condition 32 and 33	No change.
Conditions 28, 29, 30, 31	Construction compliance documents	Condition 4 and 5	Amalgamated and revised to current licensing format.
Condition 32	Notification requirements	Condition 34	No change.
N/A	Definitions	Definitions	No change.
Schedule 1	Maps	Schedule 1	No change
Schedule 2	Reporting & notification forms	Schedule 4	No change

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Newson, T.A. and Fahey, M., 2003. Measurement of evaporation from saline tailings storages. *Engineering Geology*, **70**, 217-233.
5. Rockwater 2025, *Hydrogeological and Seepage Assessment: Report for WestGold Resources Limited*, Jolimont, Western Australia.
6. Standards Australia 2000, *AS 1289.0–2000: Methods of testing soils for engineering purposes—Part 0: General requirements and list of methods*, Sydney, Australia.
7. Tetra Tech Coffey 2025, *Higginsville Gold Operations: Tailings Storage Facilities – Operations Manual*, Perth, Western Australia.

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

Condition and / or reference	Summary of licence holder's comment	Department's response
2, Table 2	<p>A revised map of the monitoring bores has been provided. Duplication of HMB29 (HMB29 and HMB29 Alt) was due to the uncertainty regarding the viability of reinstating an existing monitoring bore, in the HMB29 area. A copy of Form 2, previously submitted to the department, has been provided as evidence of construction.</p> <p>The revised map also includes the renaming of HMB30 to HMB29.</p>	<p>Evidence of construction of HMB29 (now HMB12) has been provided; therefore, this bore has been removed from condition 2 of the licence requiring construction.</p> <p>Condition 25 has been updated to include HMB12 and to remove HMB30.</p> <p>The relevant figure (Figure 11) has been updated accordingly.</p> <p>No changes to the risk assessment have been deemed necessary.</p>
7, Table 4	<p>Please remove Aphrodite, Fairplay East, and Vine in-pit TSF from the licence. Operational capacity has been reached, and tailings will no longer be stored within these in-pit TSFs. The facilities are currently transitioning to closure management under the site Mine Closure Plan.</p> <p>Monitoring of the aquifer will continue to occur as prescribed by the licence.</p>	<p>Reference to the in-pit TSFs in table 4 have been modified to clarify that they are decommissioned. It is the department's preference for the TSFs to remain visible on the licence so it is clear that there are other tailings storage facilities at the premises, but have mentioned have been removed from the licence. Reporting requirements under condition 24 of the licence on volume of tailings delivery and return water have also been removed.</p>
Condition 3, Table 3	<p>Construction of the additional recovery bores has already been undertaken in accordance with the Hydrogeological and Seepage Assessment (Rockwater, 2025) recommendations, however given the close proximity of the recovery bores to each other, a decision was made not to construct PB15. Please remove PB15 from the construction and monitoring requirements and rename the recovery bores as indicated on the revises map (i.e., PB14-17).</p>	<p>PB15, as initially proposed, was to be located to the north of the TSF approximately equidistant from HMB5 to the north, HMB4 to the south and HMB22 to the east.</p> <p>The department acknowledges the licence holder comment. However, based on the Hydrogeological and Seepage Assessment Report (Rockwater, 2025), the northeastern area of the TSF experienced the greatest increase in groundwater levels between November 2021 and November 2024, including increases of 0.66 m/year at HMB5 and 0.60 m/year at HMB22. In addition, monitoring data indicate that standing water levels</p>

Condition and / or reference	Summary of licence holder's comment	Department's response
		<p>at HMB5 and HMB4 persisted at an average depth of approximately 3.5 and 1.5 mbgl, respectively, throughout 2025. On this basis, construction and operation of a recovery bore at this location is considered beneficial for managing groundwater mounding. PB15 has therefore been retained on the licence, included in the updated figure, and renamed PB18 to align with the revised bore naming convention.</p> <p>Recovery bores PB14 – PB17 have been retained in condition 3 so that a compliance report is submitted for the construction of these bores in accordance with condition 6.</p>
<p>Condition 25, Table 15</p>	<p>Please remove the 4 mbgl standing water level limit from HMB1. HMB1 SWL is currently approximately within 1 m of the proposed trigger.</p> <p>The limit was previously removed from HMB1, HMB3, HMB4, HMB5, and HMB9 during the 2020 amendment, as these bores were considered too close to the embankment.</p> <p>HMB28 will continue to be monitored and is considered to be more representative of the groundwater mounding in the northeast of the TSF.</p>	<p>The 4 mbgl standing water level limit has been removed for HMB1. A note documenting the rationale for not applying this limit has been included in the risk assessment table (Table 5).</p> <p>No changes to the risk assessment have been deemed necessary.</p>
<p>Condition 25, Table 15</p>	<p>Please replace the term <i>care and maintenance</i> with <i>decommissioned</i> for groundwater monitoring at the TSFs to clarify monitoring expectations. The licence holder defines <i>decommissioned</i> as having reached operational capacity and no longer receiving tailings.</p>	<p><i>Care and maintenance</i> differs from <i>decommissioned</i>, in that it refers to the temporary cessation of operations at the premises as a whole, rather than the status of individual containment infrastructure. Removing the reduced monitoring requirement and to apply it to only a decommissioned status means the reduction in monitoring frequency will be lost for C&M phases.</p> <p>To prevent this, the C&M wording has been retained. The reduced monitoring frequency has been applied to the decommissioned in-pit TSFs by the addition of the word 'decommissioned'. A reduction in monitoring frequency has been deemed appropriate for the decommissioned TSFs.</p>