Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

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

Licence Number	L5206/1987/10
Applicant	Wiluna Operations Pty Ltd
ACN	166 954 525
File number	2012/006906-1
Premises	Wiluna Mine Site WILUNA WA 6646 Mining tenements: M53/30, M53/32, M53/468, L53/62, L53/20, M53/64, G53/18 and G53/19 and part tenements M53/40, M53/44, M53/50, M53/26, M53/6, M53/95, M53/96, M53/200, M53/69, M53/24 L53/50 and L53/77 As defined by the coordinates in Schedule 4 of the licence.
Date of report	13 March 2025
Decision	Revised licence granted

Kang Tam
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A/MANAGER, RESOURCE INDUSTRIES
INDUSTRY REGULATION (STATEWIDE DELIVERY)

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

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during operations of the premises. As a result of this assessment amended licence L5206/1987/10 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 Overview of premises

2.2.1 Overview of the operations

Wiluna Mine Site (the premises) is located 5 kilometres (km) southeast of the town of Wiluna and approximately 950 km northeast of Perth in the Goldfields-Esperance region of Western Australia (Figure 1). Current operations of the premises started in 1984 but alternated with extended periods of care and maintenance under different ownerships. Wiluna Mining Corporation Pty Ltd (the licence holder), previously Matilda Operations Pty Ltd, a wholly owned subsidiary of Blackham Resources, acquired the premises in 2014 and has been in voluntary administration under the control of FTI Consulting Pty Ltd since 2022.The premises comprises mining leases and miscellaneous licences within the East Murchison Mineral Field.

Operations at the premises include open and underground gold mining regulated under several instruments. A Carbon in Leach (CIL-OA) cyanidation circuit located in the southern side of the premises is currently operational. A BIOX® processing plant to process sulphide ore operated at the premises but was decommissioned as its refurbishment proved to be unfeasible.

Works approvals W6371/2020/1 and W6660/2022/1 were granted in 2020 and 2022 to construct stages one and two of a new sulphide ore processing plant, respectively. Construction of stage one occurred however, the plant ceased to operate after the licence holder entered administration.

On 11 February 2022, works approval W6615/2021/1 was granted to construct the Wiltails Plant for the reprocessing of historic and sulphide tailings excavated at the premises. Construction of the plant was completed on 10 November 2023 and an environmental compliance report was submitted and assessed by the department.

The premises also includes sixteen open pits, twelve waste rock landforms, several underground portals, seven in-pit tailing storage facilities (TSFs) and five paddock style TSFs. Currently, only one TSF, TSF K, to the northeast of the premises, is actively used for tailings deposition and storage.

Wiluna Operations Pty Ltd holds a licence issued under the *Rights in Water Irrigation Act 1914* to extract groundwater for mining purposes. Water demands at the premises are met through several onsite production bores and dewatering of open pits and underground mines. Where mine water exceeds the premises demand, it is discharged into West Creek, one of Lake Way's largest tributaries, located approximately 10 km south of the premises.

All activities at the premises are regulated under licence L5206/1987/10, works approval W6660/2022/1 and W6615/2021/1 and registration R2025/2008/1.

The prescribed premises boundaries, including the discharge point on Lake Way are shown on

Figure 2. The general layout and containment infrastructure with respective emissions are illustrated in Figure 3.

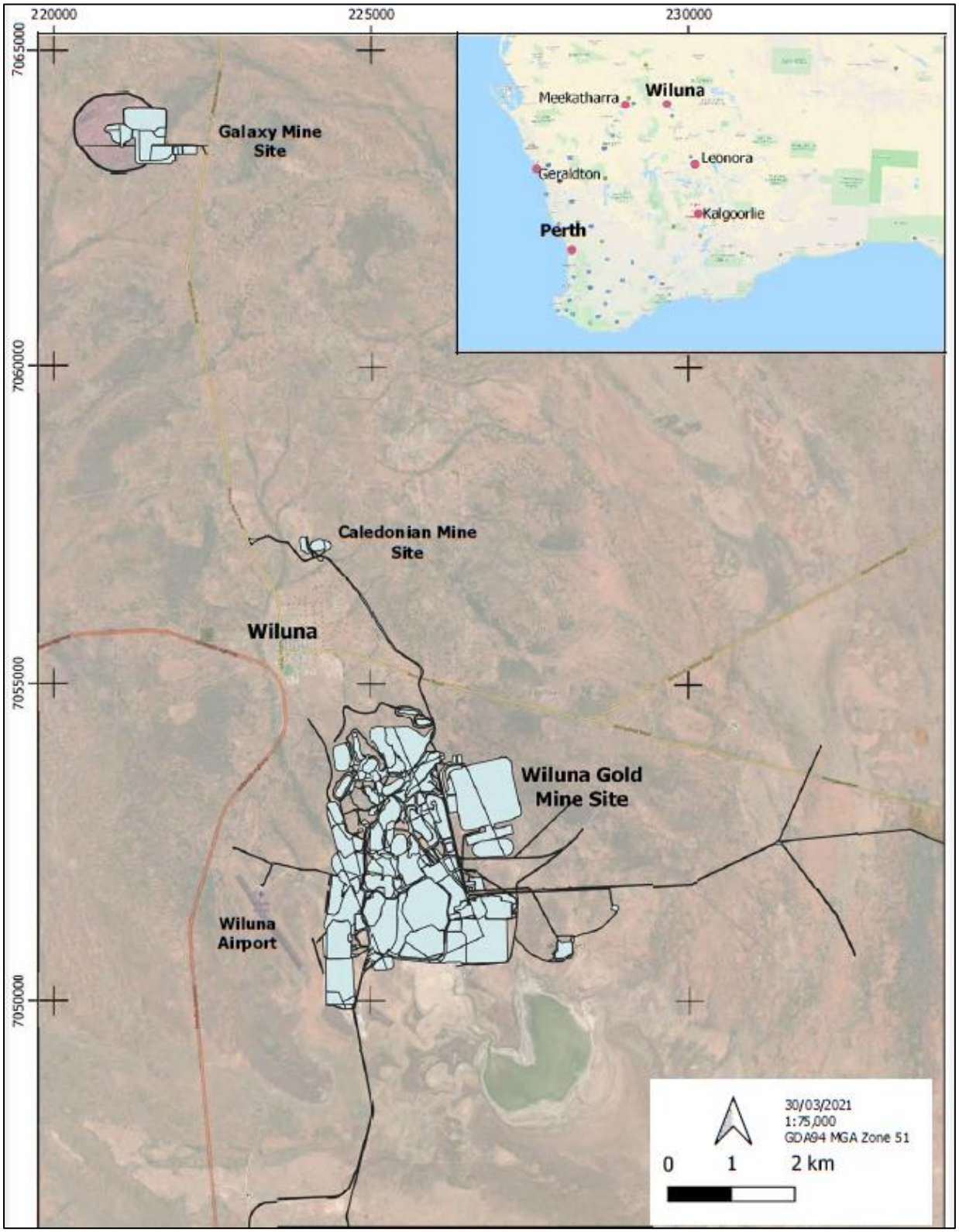
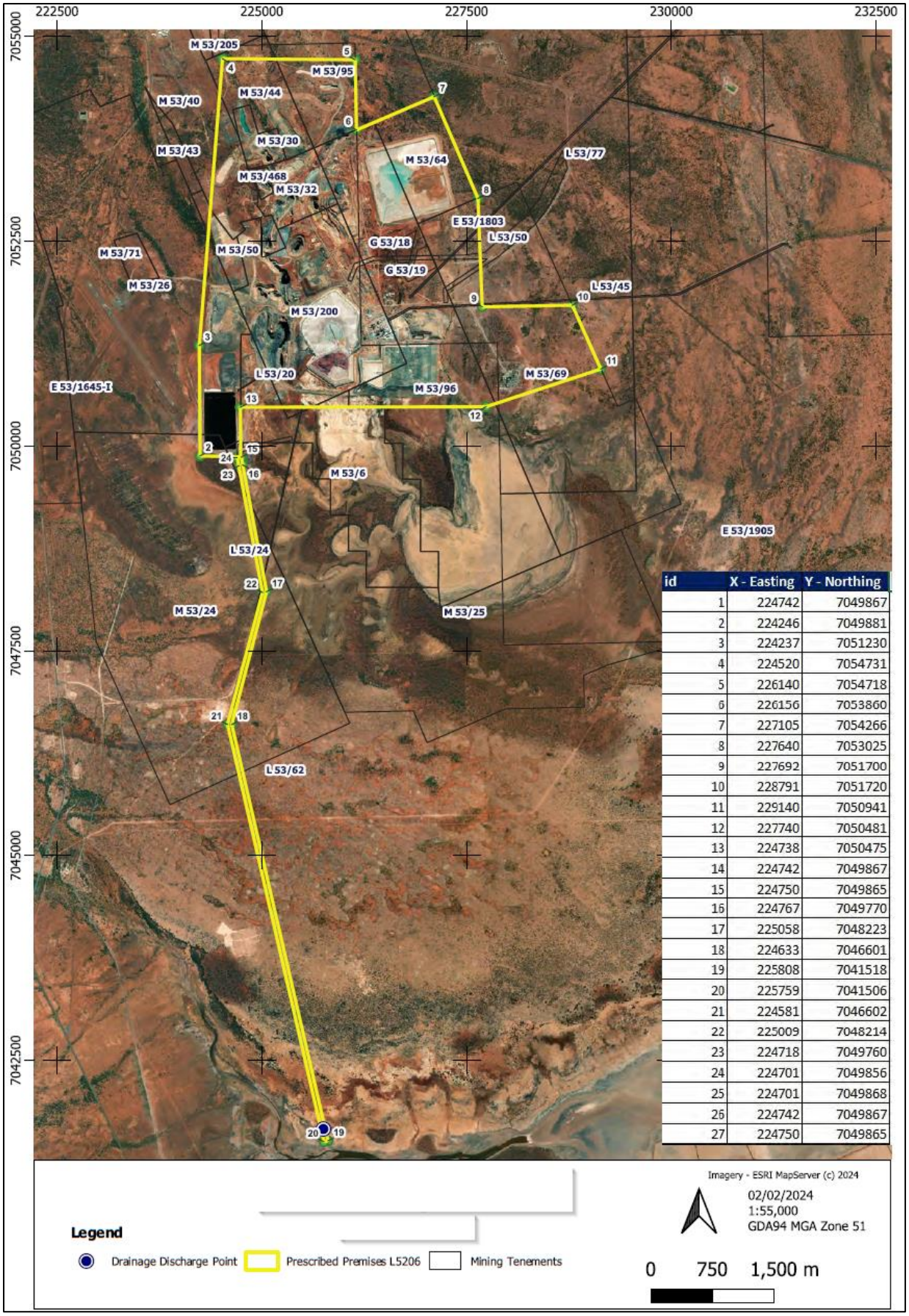


Figure 1. Regional location of Wiluna Mine Site



id	X - Easting	Y - Northing
1	224742	7049867
2	224246	7049881
3	224237	7051230
4	224520	7054731
5	226140	7054718
6	226156	7053860
7	227105	7054266
8	227640	7053025
9	227692	7051700
10	228791	7051720
11	229140	7050941
12	227740	7050481
13	224738	7050475
14	224742	7049867
15	224750	7049865
16	224767	7049770
17	225058	7048223
18	224633	7046601
19	225808	7041518
20	225759	7041506
21	224581	7046602
22	225009	7048214
23	224718	7049760
24	224701	7049856
25	224701	7049868
26	224742	7049867
27	224750	7049865

Figure 2. Prescribed premises boundaries including Lake Way discharge point

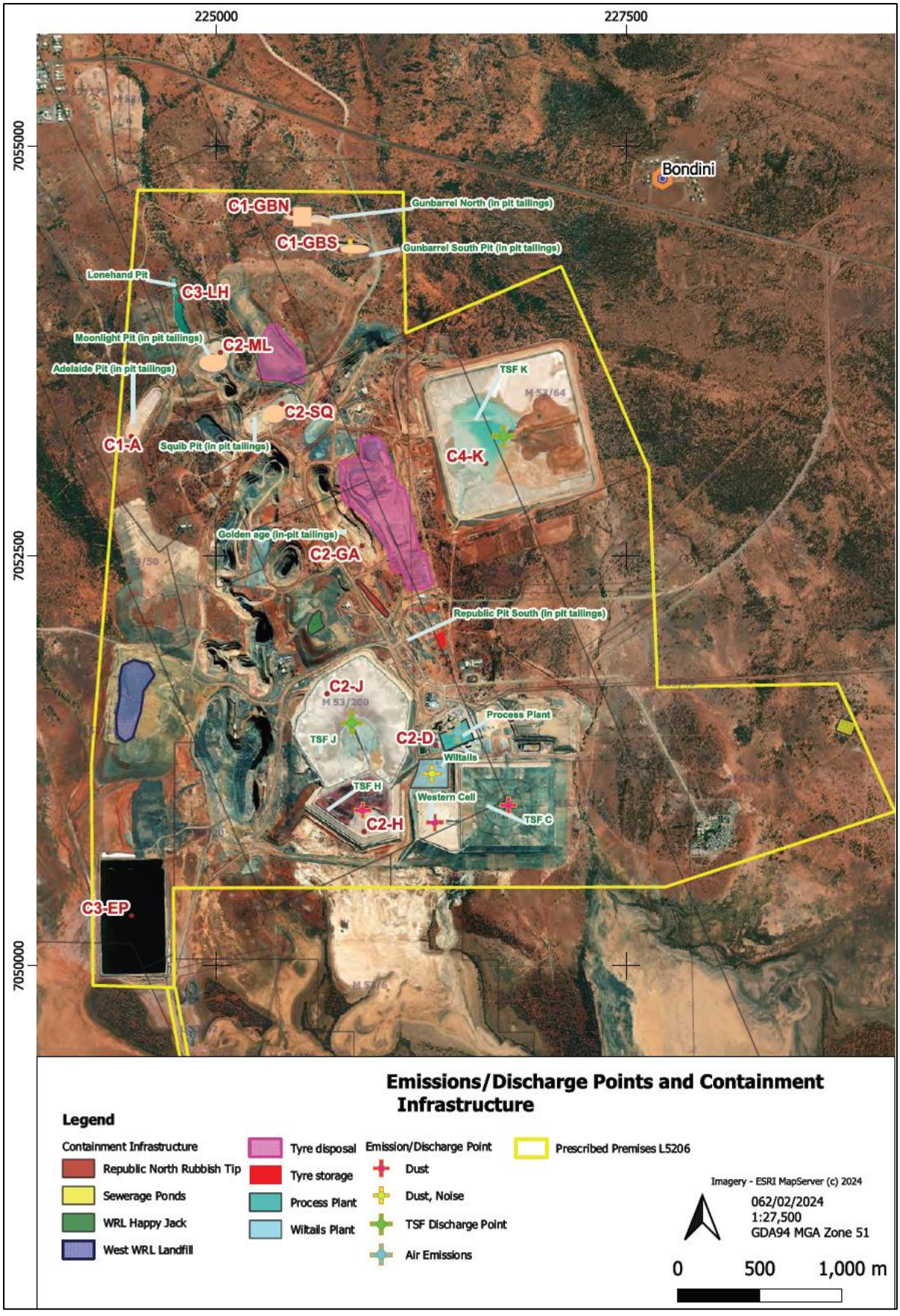


Figure 3. Prescribed premises general layout including containment infrastructure with respective emissions

2.2.2 Overview of the local environment

Geological setting and association with potential contaminants of concern

The premises is situated within the northern part of the Norseman-Wiluna greenstorne belt of the Yilgarn Craton (Hargemann *et al.,* 1992). Gold deposits at the premises lie within archean age mafic and ultramafic rock. The ore is associated with sulfide minerals such as pyrite, arsenopyrite and stibnite (Hargemann *et al*., 1992). Sulfide minerals physical and chemical structure make them highly reactive. If undisturbed they pose no risk to the environment, however, mining processes such as excavation and dewatering, expose these minerals to air. The reaction with oxygen can release acidity and lead to the mobilisation of significant amounts of metals such as arsenic and antimony into the mine water.

Deposits of gold ore at the premises are of orogenic origin. Deposits were formed by the intrusion of hydrothermal fluids into host rocks along fault lines. Based on the age and the origin of the hydrothermal fluids, host rocks can become enriched in several elements of environmental concern including mercury, silver, tellurium and tungsten (Goldfarb and Pitcairn, 2023). Significant oxidation of sulfide minerals during mining operations, including dewatering activities may lead to these contaminants of potential concern being released into the mine water.

Lake Way

Salt lakes in Western Australia are poorly studied, however, once thought of insignificant ecological value, they have been found to consist of complex interactions with both groundwater and surrounding wetlands within the catchment. Wetting and drying cycles occurring throughout the year support biological, chemical and physical functions and allow unique communities of organisms to thrive in a niche and harsh environment dominated by extremes.

Lake Way (the Lake) is an ephemeral salt lake situated approximately 8.5 km south of premises. The lake has a surface area of approximately 250 square km and flows in a south-easterly direction. Lake Way is just one in a series of lakes in the *Salinaland*, an area of ancient river systems stretching between Wiluna and Kalgoorlie (Timms, 1992). It lies on weathered Archean bedrock overlain by alluvium and colluvium. Depth to the water table differs in the different areas of the lake and is as low as less than one metre (m) in some areas.

Recharge of Lake Way occurs mainly through episodic rainfall. Surface flow from the nearby Lake Violet to the north and channel runoff further contribute to the recharge. Periods of Lake inundation vary depending on the extent of the rainfall event and can span from one week to a month. During the summer period when rainfall decreases, and evaporation increases Lake Way can dry out completely. These wet and dry phases lead to wide fluctuations in salinity (5,000 to 300,000 mg/L total dissolved solids) and concentrations of other chemical compounds within the lake.

Lake Way was identified in the past as having a key role as a feeding, breeding and refuge site for a variety of migratory birds who rely on the shrimp population booming after a rainfall event (Williams 1998). Some of these species are protected under several international agreements such as China Australia Migratory Bird Agreement (CAMBA), the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals) and the Japan Australia Migratory Bird Agreement (JAMBA).

Lake Way has been subject of discharge and/or adjacent to mining activities for several years and regulatory requirements drove a need for vegetation and fauna surveys. A brief summary of the studies and respective findings undertaken from 2002 is shown below:

- an early baseline study in 2002 (Outback Ecology Services) found nine identifiable reptile species, one amphibian and one mammal species. Twelve bird species were also recorded through opportunistic sightings;
- surveys of the lake fringing and playa vegetation undertaken by Bennett in 2002 and

Outback Ecology Services in 2004 found several species including chenopods, *Halosarcias* (Samphire), acacia shrubland or woodland. Vegetation condition was determined to be be *mostly in very good condition;*

- aquatic studies, in 2004 and 2005 (OES) on the Lake playa, identified around twenty benthic algae species and a further five diatoms species. All species were salt tolerant and well adapted to extended periods of dry conditions, however, some of these species were heavily reliant on the presence of fresh water for hatching;
- the latest baseline study was commissioned by the licence holder in 2017 to comply with an improvement condition introduced on the licence on the same year (details of the study are discussed on section 2.3.3). Baseline results found that hatching trials yielded approximately 569 animals with species typically expected in a salt-lake environment. The baseline study found 56 specimens of the brine shrimp *Parartemia laicaudata* living within the lake with the most abundant taxon being the *Cyprididae.* This species of seed shrimp belongs to a class of ostracod unique to Lake Way. It should be noted that hatching trials are likely to underestimate the complexity of the invertebrate fauna assemblages (Focus Vision, 2017). Low to moderate abundance of *Bdelloidea* rotifer were also found near the discharge. This type of zooplankton constitutes a food source for many species within the lake. Diatoms were also found to be highest near the historical discharge point, with 228 of the total 274 diatom specimens recorded. Other sections of the lake were more representative of salt lakes, with diatoms abundance and richness being low. With respect to vegetation, the surveyed sites surrounding the lake consisted mainly of Chenopod shrublands and Acacia dune vegetation with one site near the discharge point only consisting of samphire. Reference sites had overall better mean health scores compared to impact sites likely due historic discharge.

Heritage listing

Lake Way is a registered Aboriginal heritage site (Place ID 37676) for ceremonial purposes and sections of the lake are only accessible by male Traditional Owners. The registered prescribed body corporate in the region is the Tarlka Matuwa Piarku.

2.3 Application summary

On 24 January 2024, the department received an application to amend licence L5206/1987/10 under section 59B of the *Environmental Protection Act 1986* (EP Act) requesting the following:

- inclusion of operations of the Wiltails Plant and the lime dosing system constructed under works approval W6615/2021/11;
- increase of category 5 throughput from 2,200,000 to 3,400,000 tonnes per annum; and
- amendment of Lake Way sediments and ambient water quality monitoring points.

Categories and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) as well as the infrastructure and equipment relating to the premises category and any associated activities are defined on the licence subject to this amendment.

2.3.1 Proposed inclusion of Wiltails Plant operations

Background

The emergence of modern metallurgical techniques and gold recovery optimisation have allowed the licence holder to reprocess historic tailings to extract residual gold. The reprocessing of historic tailings occurs through the Wiltails plant. Construction of the Wiltails Plant was undertaken after works approval W6615/2021/1 was granted on 11 February 2022. An environmental compliance report was submitted on 30 December 2023 and was assessed during this amendment. Compliance with the conditions of the works approval was demonstrated. Under the works approval, time limited operation of the Wiltails plant was authorised. The plant has been operating since January 2024 with a total throughput of 1,143,271 tonnes of historic tailings to June 2024.

The throughput of the Wiltails plant is expected to be 2 million tonnes per annum, potentially increasing to 3.4 million tonnes during peak production, with operations to last for approximately 15 years. Over this time, the licence holder aims to extract 660,000 ounces of gold from reprocessed tailings. All the Wiltails plant throughput including the tailings stream undergoes additional processing at the nearby CIL plant.

The scope of this amendment includes the addition of the Wiltails plant to the licence but will only consider phase 1 of the reprocessing of historical tailings, that is tailings sourced from the above-ground TSFs (TSF C, H and the Western Cell). The Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) has approved mining proposals registration ID 103882 and 122144 for the excavation of the Western cell and TSF C and H, respectively. Risks associated with the excavation activities including TSFs stability implication are not considered in this report as they are regulated by DEMIRS under the *Mining Act 1978* and *Mine Safety and Inspection Act 1994*. A mining proposal under the *Mining Act 1978* for the excavation of other historical TSFs at the premises has yet to be obtained by the licence holder.

As noted in section 2.2.1, construction of stage 1 of the sulphide ore processing plant was approved under works approvals W6371/2020/1. Environmental compliance with the construction conditions was assessed by this department however, environmental commissioning of the plant never took place as the licence holder went into administration and the plant stopped operating. As conditions of the works approval have not yet been met and the plant has been in care maintenance, the reprocessing of sulphide tailings through the Wiltails plant is not within the scope of this amendment.

Operations description

Moisture content readings of tailings within TSF H, C and the Western Cell obtained at the Wiltails Plant feed belt between March and July 2024 show that on average, tailings moisture content is approximately 19%. Moisture levels sampling will continue to occur during the Wiltails

plant operations. Uncovered trucks transport historic tailings from TSFs C, H and the Western Cell to a run of mine (ROM) pad situated beside the Wiltails Plant. Any visible dust emission during operations is managed with water carts around the stockpile area and water sprays fitted on the plant transfer points.

A front-end loader loads the stockpiled material onto a feed hopper and then onto a short conveyor belt to the plant. At the plant the dry tailings, supernatant water and process water, are mixed to generate a slurry, with scats expelled into a scats bay and transported to TSF K for disposal. The resulting slurry is pumped to the lime dosing circuit at the CIL plant. Slurry pumps are Weir MCU® or MCR® pumps fitted with expeller sealing and isolation valves. Pumps speed is controlled and maintained through the level setpoint at the CIL feed surge tank within the Wiltails area. All pipes between the Wiltails, and the CIL plant are contained within earthen bunding to limit the impact of spills. The Wiltails plant is constructed on a raised concrete pad with a 71 cubic meter concrete bund. Should the biggest 130 cubic meter tank fail, effluent not contained within the bund will be directed to an adjacent storage pond with the use of a sump pump fitted with a float activation switch. Hose stations will allow the cleanup of the area. Individual components of the Wiltails Plant are shown on Figure 4.

At the CIL plant, the Wiltails plant slurry undergoes a lime dosing process. Individual components of the lime circuit are shown in Figure 5. Quicklime stored in an existing silo is discharged into a lime slaking ball mill through a screw feeder. Water is added to maintain a constant temperature of around 70 to 90 degrees Celsius with additional water added to the mill as required. A ring main system transfers the lime slurry from the slaked lime storage tank to the TK0 tank where the slurry from the Wiltails plant is also pumped. An existing probe records the pH of the discharged Wiltails plant slurry. The lime slaked storage has sufficient capacity to provide a buffer during routine descaling processes. The lime slaking infrastructure is contained within the same concrete bund as the CIL plant. The concrete bund is constructed in accordance with AS1940 and has sufficient capacity to contain the volume of fluid of the largest storage vessel.

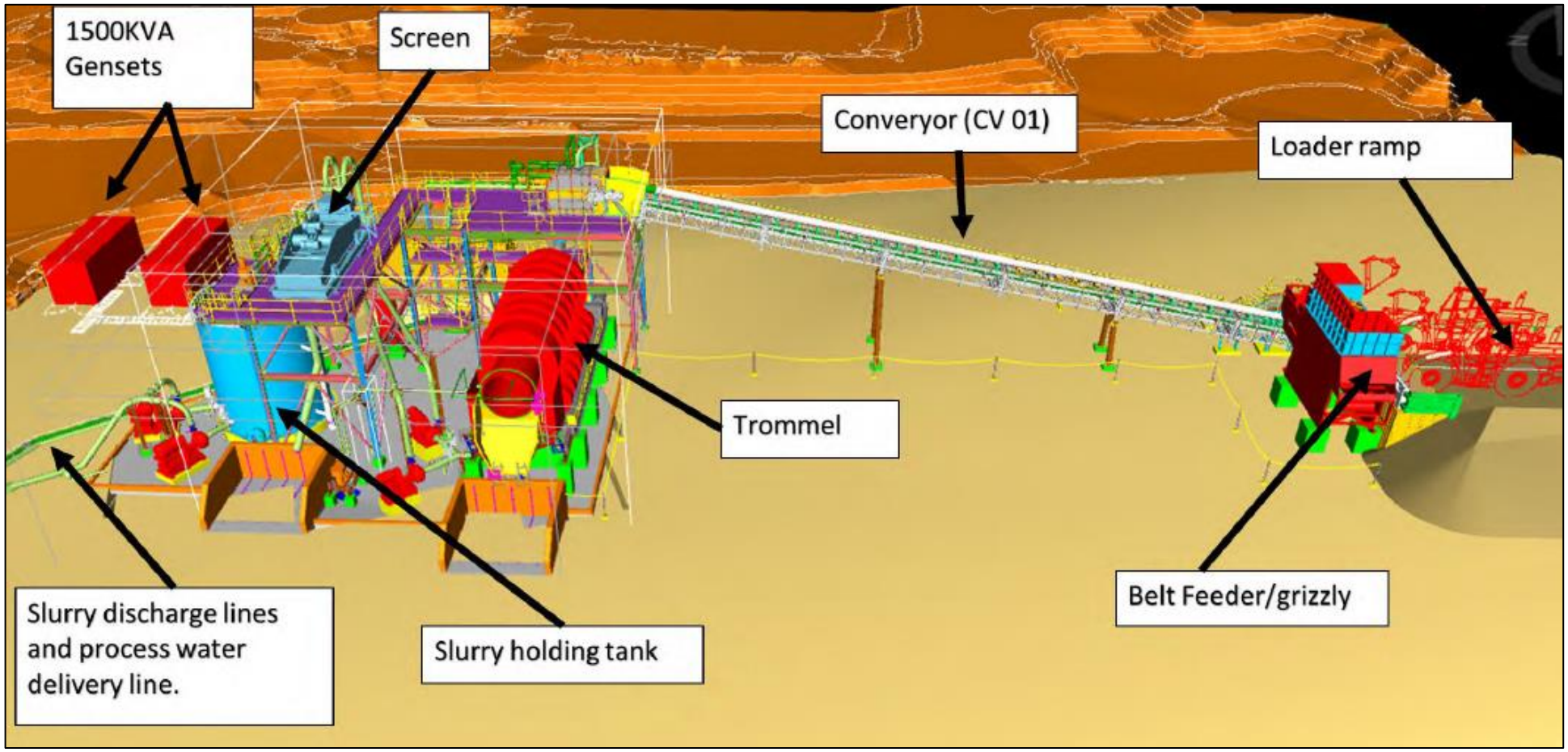


Figure 4. Details of the Wiltails plant and associated infrastructure

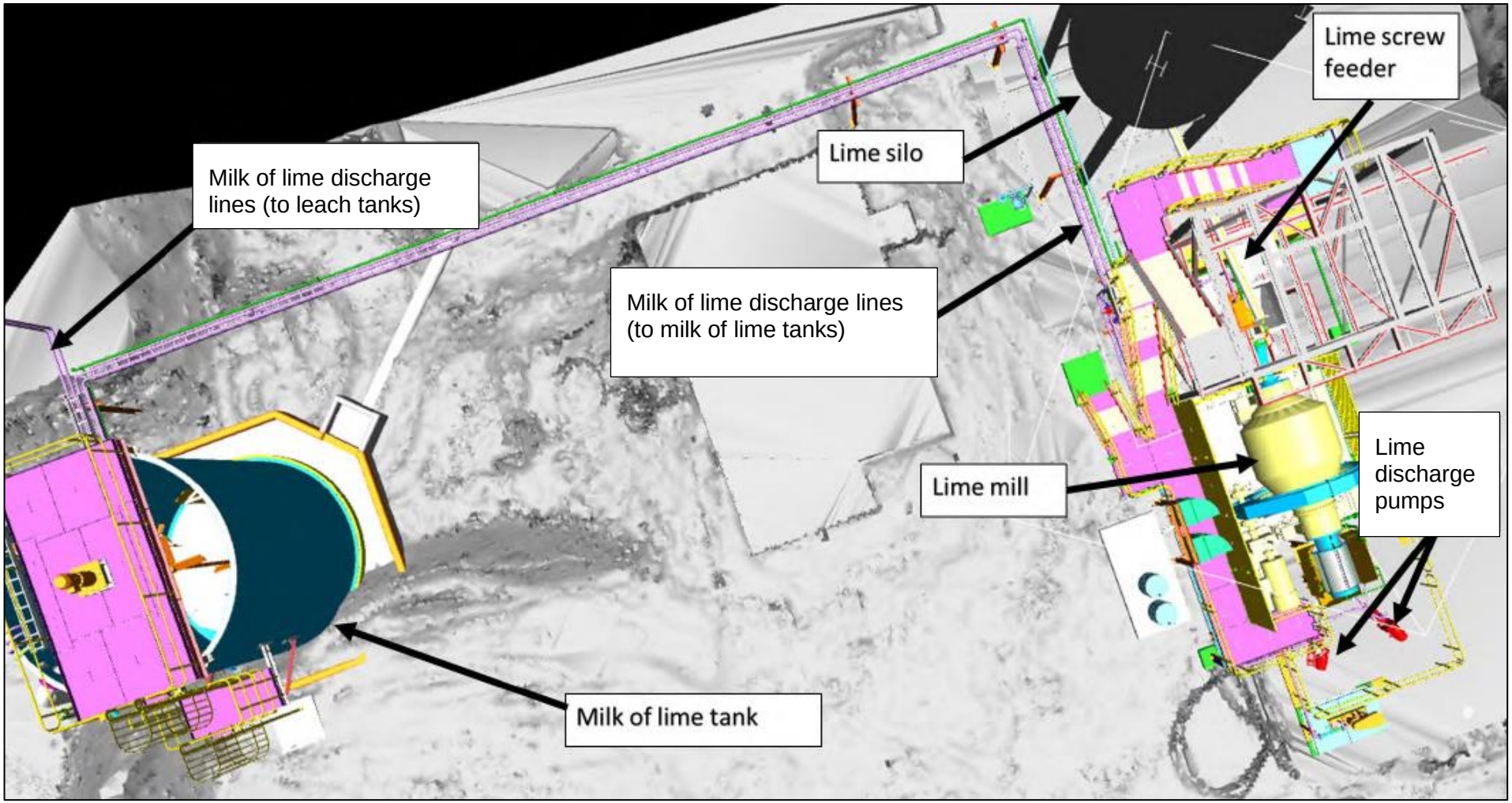


Figure 5. Lime process area and associated infrastructure

Storage of waste material and TSF K licensing history

All tailings streams processed at the Wiltails Plant are directed to the CIL plant for further processing. Waste material from the CIL plant and oversized scats from the Wiltails plant are stored within TSF K, the only active TSF at the premises. TSF K was historically used to store oxide tailings streams.

Risks to sensitive receptors associated with the construction and time limited operations of TSF K were assessed under works approval W6248/2019/1 in 2019 and continued operations of TSF K were authorised under the 2020 licence amendment. Stage 2 construction of a 6-metre centreline embankment raise was approved by the department in 2021. Construction of the raise was completed in May 2023 and an environmental compliance report was submitted by the licence holder on 16 August 2024. The environmental compliance report relating to the construction of the TSF K Stage 2 embankment raise was assessed during this amendment and is discussed in section 2.4.1.

Geochemistry of tailings

The section below describes the geochemistry of historic and oxide tailings, currently being processed and/or generated at the premises.

Historic tailings

Testing of geochemical components of historic gold tailings in TSF H was undertaken by Knight Piesold Consulting in 2016. It is reasonable to consider the geochemical components of TSF H tailings are representative of TSF C and the Western Cell. Historic tailings from these facilities are being excavated and reprocessed at the Wiltails Plant. A summary of the geochemical characteristics of the tailings are shown below:

- Overall, the total sulphur content was high. Over 90% of the sulphur content was found as sulfate, likely resulting from a lengthy exposure to air. Sulfide content may increase on the sub-layers of the TSFs.
- Maximum potential acidity was low, acid neutralising potential was high due to a high carbonate minerals content. No significant acid was produced under extreme oxidising conditions. Given the very low net acid producing potential and the high neutralising potential the sample was considered acid consuming.
- The samples were found to be highly enriched in arsenic, antimony, and selenium with moderate enrichment in sulfur.
- Testing of the supernatant water showed an exceedance of the Australian and New Zealand guidelines (ANZG) default guideline values for livestock drinking water for arsenic, weak acid dissociable (WAD) total and free cyanide, total dissolved solids and sulfate.

Oxide tailings

Oxide tailings have been historically stored within TSF K, which is currently operational and accepting tailings. To inform the assessment for the construction and operation of TSF K (under works approval W6248/2019/1), geochemical testing of tailings from TSF J were undertaken, which was thought to contain similar tailings slurry (Golder 2019a), where the following was found:

- Tailings samples were overall non-acid forming with an excess of neutralisation capacity compared to acid generation potential. The acid neutralisation capacity is mainly attributed to carbonate minerals with a small portion attributable to less available non-carbonate minerals.
- Leach testing indicated that most metals would leach the most at the lowest pH tested (2 pH unit), with arsenic also leaching the most also under alkaline conditions (14 pH

unit). At the lowest pH, concentrations of aluminum, cobalt (Co) and lead (Pb) would exceed the ANZG livestock drinking water guidelines At the time of deposition, it was expected that pH would not be as low as pH 2 nor as high as pH 14.

- Where the tested pH was between 4 and 12, leaching of metals remained within the ANZG livestock drinking water guidelines.
- Slurry pH was overall alkaline with values between 9 and 9.4. The slurry electrical conductivity value was high, (> 18,000 µS/cm in all samples) with concentrations of sulfate, up to three times those recommended under the ANZG livestock drinking water guidelines.
- Tailings supernatant analysis showed an overall alkaline pH, with a high salinity and high concentrations of the major ions such as sulfate, calcium, chlorine and sodium. Sulfate content was between two- to three-times the ANZG livestock drinking water guidelines in the sample analysed. Copper (Cu) exponentially exceeded the ANZG livestock drinking water guidelines in all samples tested at pH 9, likely caused by cyanide complexation. However, these concentrations are not expected to seep through the TSF due to attenuation processes and cyanide breakdown over time.

Sulphide tailings

As discussed in section 2.3.1 of this amendment report, the processing of sulphide tailings through the Wiltails plant has not been included within the scope of this amendment, however, the Delegated Officer notes that while completion of phase 1 of the plant occurred, evidence of a commissioning phase was not submitted. Evidence of compliance with the commissioning phase of works approval W6371/2020/1 (now expired) will be required should the licence holder resume operations of the sulphide plant.

2.3.2 Proposed increased of category five throughput

Under the current licence, the maximum throughput for the processing or beneficiation of metal ore is 2,200,000 tonnes per annum. The licence holder proposes to increase the throughput to 3,400,000 tonnes per annum. This allows the throughput of the Wiltails plant to be accounted for. All throughput of the Wiltails plant will subsequently be processed through the CIL plant. The CIL plant throughput will ultimately include any of the following streams:

- A concentrate from the Wiltails Plant (historic tailings);
- Tailings generated from the Wiltails Plant;
- Oxide ores; and
- A concentrate from the sulphide processing plant (not within the scope of this amendment).

The CIL plant has a design capacity of 4 million tonnes and therefore can process the additional material. The licence holder also confirmed that the size of the ROM pad is sufficient to accommodate the additional throughput.

While the additional throughput will lead to an increase in water requirements at the premises, calculations undertaken by the licence holder show that mine dewatering will remain within the approved production capacity (existing Part V licence) and groundwater drawdown within the approved allocation (groundwater licences GWL 57622 and 159247).

The Delegated Officer notes that with the additional throughput from the Wiltails Plant, tailings deposition into TSF K will increase. As discussed in section 2.4.1 of this report, an increase in the volume of tailings deposited into TSF K will require approval from DEMIRS before it can be undertaken. It is the licence holder's responsibility to ensure all approvals have been obtained prior to undertaking relevant activities.

2.3.3 Amendment to Lake Way monitoring points

Background

Dewatering activities at the premises maintain dry mining conditions. Where possible, the mine water is used for onsite operations, supplementing bore water use. When the mine water supply exceeds demand, it is discharged into West Creek, one of Lake Way's tributaries. Sources of the mine water are the Happy Jack open pit, as well as the Bulletin and East underground mines.

Prior to reuse or discharge, suspended solids in the mine water are reduced through a settlement process. Mine water is deposited into abandoned pits and an evaporation pond. Bulletin mine water undergoes an additional settlement of suspended solids through deposition into the Lonehand pit. Following settlement, excess mine water is transported to West Creek via a 10 km pipeline.

An energy dispersion channel lined with imported competent rock reduces any potential for erosion at the discharge point. Discharge into Lake Way has been occurring for several years including prior to the current licence holder operating the premises. Discharge of mine water into Lake Way is regulated under the existing licence.

Details of the proposed amendment

Ambient environmental quality monitoring under the existing licence is undertaken for surface water and sediments at 21 monitoring sites to the north, west and east sides of Lake Way.
In 2021, the licence holder contacted the department stating that several monitoring locations surrounding Lake Way were no longer accessible due to a request from the Traditional Owners to protect the cultural values of this registered aboriginal cultural heritage place (section 2.2.22.2.2). The department advised that an amendment of the licence should be sought to avoid non-compliance with the conditions of the licence. The licence holder now seeks to address this issue and proposed a reduction of the licensed monitoring locations from 21 to 16, as shown in Table 1. The proposal includes the removal of five and the addition of one monitoring locations. The locations of the proposed monitoring locations (impact and background) is shown in Figure 6. A figure outlining the areas that cannot be accessed due to cultural sensitivities was requested during the course of the assessment. However, the licence holder states that clear boundaries between accessible and non-accessible areas could not be obtained from the Traditional Owners.

Table 1. Proposed and current environmental quality monitoring point references around Lake Way

	Current monitoring reference	Proposed monitoring reference
Impact Sites	LW-A1	LW-A1
	LW-A2	LW-A2
	LW-A3	LW-A3
	LW-A4	LW-A4
	LW-A5	LW-A5
	LW-A6	-
	LW-A7	-
	LW-A8	-
	LW-A9	LW-A9
Background Sites	LW-B1	LW-B1
	LW-B2	LW-B2
	LW-B3	LW-B3
	LW-B4	-
	LW-B5	LW-B5
	LW-B6	LW-B6
	LW-B7	LW-B7
	LW-B8	-
	LW-B9	LW-B9
	LW-B10	LW-B10
	LW-B11	LW-B11
	LW-B12	LW-B12
	-	LW-B13

Figure 6. Lake Way proposed monitoring locations

2.4 DWER initiated amendments

Concurrent to the assessment of this application, the department has initiated an amendment to address the following matters:

- assessment of TSF K seepage issues identified following Stage 2 embankment raise (section 2.4.1); and
- review of historical environmental monitoring undertaken at Lake Way to date, as detailed in section 2.4.2.

The relevant controls for these DWER-initiated amendments (including existing and any new/proposed controls) are provided on the risk assessment table (Table 5) and section 3.3 (detailed risk assessment) of this amendment report.

The following administrative amendments were also undertaken to ensure the licence is consistent with current licensing format:

- revised licence condition numbers, removed any redundant conditions and realigned condition numbers for numerical consistency;
- corrected any clerical mistakes and unintentional errors.

Details of specific amendments as they relate to the revised licence are detailed in section 5.1.

2.4.1 Assessment of TSF K seepage issues

Background (Stage 2 embankment raise environmental compliance)

During the assessment of this application, the department identified that an environmental compliance report on the construction of TSF K Stage 2 raise had not been submitted since its completion. Alongside the environmental compliance assessment, the department also considered the ongoing potential impacts of tailings seepage on sensitive receptors. The decision to further consider these impacts was made on the grounds that tailings deposition into TSF K will continue to occur for several years owing to the ongoing operations and proposed tailings reprocessing at the Wiltails Plant. The purpose of the DWER-initiated amendment is to determine whether TSF Stage 2 raise construction meets the conditions of the licence and whether the existing controls are still effective in managing the risk of seepage and groundwater mounding in the area surrounding the TSF.

The assessment of the environmental compliance report for TSF K Stage 2 embankment raise, identified several departures from the approved design on the licence. Departures included, but were not limited to, changes in construction material used for the embankment raise and overall design specifications (i.e., slope grading and crest elevation). Additionally, it was unclear whether the stormwater diversion drain and the existing standpipe piezometers infrastructure had been extended to the Stage 2 requirements. The purpose of stormwater diversion drain was to minimise and divert northern catchment flow in an easterly direction around the northeast of TSF K.

A request for further information showed that piezometers complied with the relevant conditions of the licence but that the licence holder did not construct Stage 2 stormwater diversion drain. This was due to insufficient construction material available at the premises driven by the lack of mining since 2022.

Structural stability and potential implications of any TSF failures are beyond the scope of this assessment and fall within the competence of the DEMIRS. Based on technical advice from DEMIRS, it is understood that no significant departures were made in the construction of the Stage 2 embankment raise compared to the approved design. DEMIRS also advised that stability of the TSF relies on quality of construction and continuous operational management, rather than design alone.

Furthermore, DEMIRS advised that evidence of seepage, previously reported by the licence holder, was observed during a site inspection. Excessive seepage was likely caused by a malfunction of the decant recovery pump at TSF K (as well as a lack of operational piezometers) in April 2024, resulting in no decant water recovery and the expansion of the decant pond size. While the pump has since been replaced, the pond area was still approximately 15% above the design specifications in July 2024, when DEMIRS inspected the premises. At the time of inspection, seepage was observed in the toe drain located at the south embankment of the TSF, with vegetation stress and death occurring in the adjacent area. Since the inspection, the following tenement conditions have been imposed by DEMIRS to ensure that the facility is managed as per the approved design:

- staff to be trained on TSF K inspections;
- daily inspection report to have flowmeter readings for discharge and return water;
- flowmeters to be installed and operational for the monitoring of tailings discharge and return decant; and
- operating manual to incorporate an emergency plan.

Additionally, DEMIRS stated the following:

- seepage is currently collected in a trench and diverted to a sump on the opposite side of the access road. This containment measure appears to be adequate however, recording of seepage must be undertaken for future review;
- the affected embankment has sufficient factors of safety, despite the seepage;
- the approved design discharge into TSF K is 2.2 million tonnes of tailings per annum, with up to 220 tonnes per hour of decant return water expected. Any increase to these quantities must be approved by DEMIRS;
- elevated groundwater was observed in monitoring bore TD19K in March 2024. Fortnightly monitoring must be undertaken when elevated groundwater level is recorded (i.e., less than 4 (metre below ground level (mbgl)). The licence holder must consult with an Engineer of Record when standing water levels do not decrease during the next monitoring event (i.e., within two weeks).

Groundwater flow

Historically, groundwater levels ranged from approximately 10 mbgl in the mining area to 2 mbgl near Lake Violet to the south. The natural groundwater flow direction beneath TSF K pre-mining was in a north-to-south direction (KH Morgan, 2018). However, studies undertaken at the premises in 2018 showed that cones of depression in groundwater levels, due to pit dewatering and pit lake evaporation in the Bulletin and Happy Jack pits, resulted in the groundwater flow direction to change to a more west-south-west direction (KH Morgan, 2018).

Existing environmental monitoring requirements under the licence

Four monitoring bores, two to the north (TD17K, TD18K) and two to the south (TD19K and TD20K) of TSF K were installed to monitor potential groundwater mounding and changes to groundwater quality. The current licence requires standing water level and chemical parameters to be monitored, with limits specified for soluble arsenic and weak acid dissociable (WAD) cyanide. A limit of 4 mbgl for standing water level was included in the 2021 licence amendment, following signs of groundwater mounding at monitoring bores TD19K and TD20K.

Under condition 1.2.10 of the current licence, the licence holder must also provide a monthly water balance, comprising water inputs and outputs from each operational TSF, to the department as part of the Annual Environmental Report (AER).

Seepage increase during the 2023 reporting period

Monitoring results from the most recent AER (2023) showed a significant increase in monthly seepage losses from TSF K from approximately 29,000 to 224,000 cubic meters. This is likely due to a doubling in the monthly volume of tailings deposition from January to December 2023 (i.e., an increase in the volume of water added to the facility), with no measured increase in the volume of water recovered from the decant pond throughout the year (Table 2).

Summary standing water level monitoring data at TSF K

A review of the existing groundwater monitoring data was undertaken by the department to assess historical water levels and determine the risks associated with the deposition of additional tailings into TSF K.
Standing water levels from quarter two of 2020 to quarter three of 2024 are shown on Figure 7. Groundwater monitoring bores TD19K and TD20K located to the south of the TSF show clear upward trend. Groundwater levels at monitoring bores TD19K breached the 4 mbgl in quarter three of 2023 and the first three quarters of 2024. Monitoring bore TD20K groundwater levels on the other hand were breached the 4 mbgl limit in quarter two of 2024. While a slight upward trend could also be observed at monitoring bore TD18K, located north-east of the premises, though water levels remained relatively deep. This suggests that groundwater mounding is prevalent to the south-east of the facility.

Table 2. TSF K monthly water balance (2023)

Month	Deposited wet tailings (m^3)	Rainfall (mm)	Evaporation rate (mm/month)	Pond Area (m^2)	Total evaporation loss (m^3)	Decant Recovery Volume (m^3)	Estimated Volume of Dry tailings deposited (m^3)	Estimated volume of seepage losses (m^3)
January	200,742	1.4	611	196,210	76,451	36,750	58,283	29,258
February	168,215	13.2	473	196,210	56,807	28,270	49,136	34,003
March	181,673	150	400	196,210	20,798	38,097	49,955	72,823
April	185,140	46.2	291	196,210	27,477	34,473	39,371	83,818
May	209,246	0	216	196,210	27,124	39,070	47,976	95,076
June	223,358	3	131	196,210	15,862	34,770	64,003	108,724
July	213,591	0	141	196,210	17,706	38,160	64,151	93,574
August	220,065	10.4	187	196,210	21,442	34,380	64,410	99,833
September	260,916	3.4	263	196,210	32,359	30,279	62,913	135,365
October	373,017	0	397	196,210	49,853	23,006	90,323	209,835
November	353,227	1	451	196,210	56,438	28,185	89,990	178,614
December	451,555	0	511	196,210	64,169	50,640	112,498	224,248

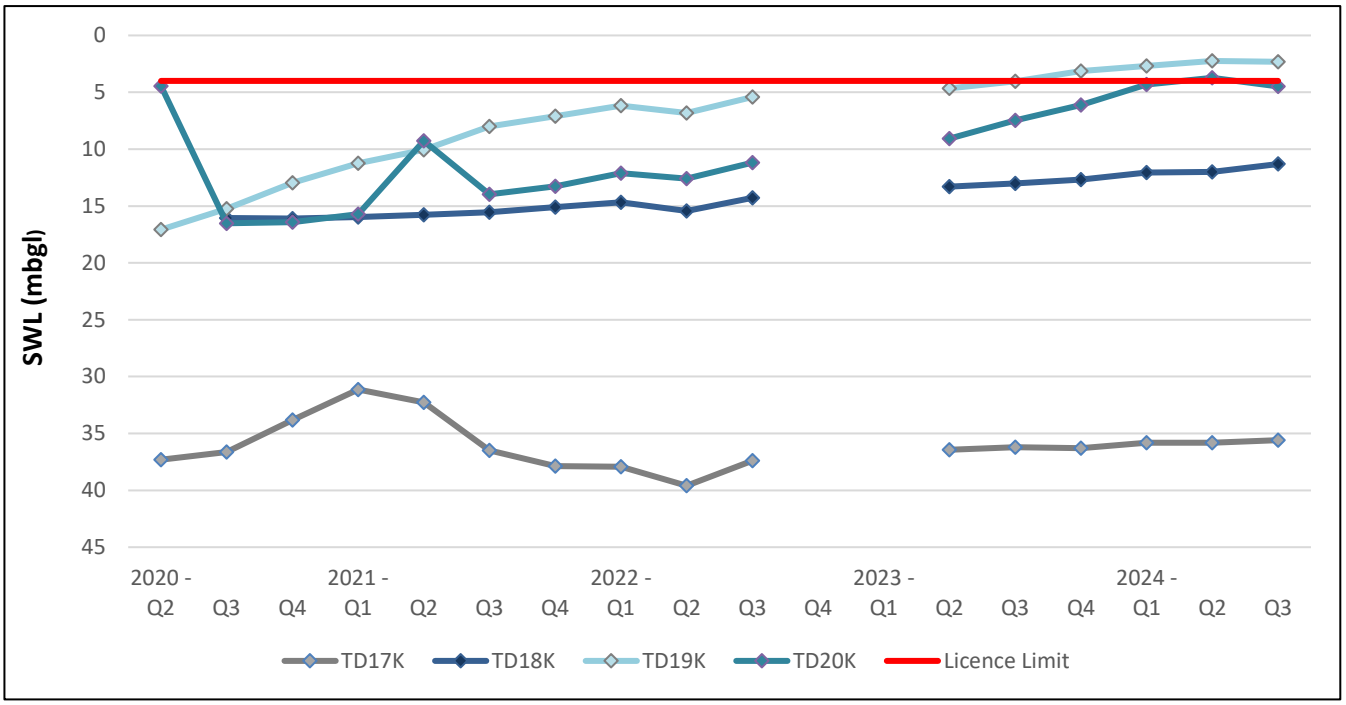


Figure 7. Standing water levels monitoring data between 2020 and 2024

2.4.2 Lake Way environmental monitoring review

Discharge at the Lake has been occurring under the current licence holder since 2019. The purpose of the CEO-initiated amendment was to review the risk associated with the discharge and quantify any impact on the lake ecology and its receptors to determine whether the conditions on the licence are still effective in ensuring that the risk remains acceptable.

As previously discussed in section 2.2.1, the licence holder has been in administration since 2022. In a meeting with a licence holder representative, it was raised how the overall uncertainty surrounding future operations resulted in staff shortages that contributed to inconsistent environmental monitoring. This is especially true for monitoring at Lake Way, where these challenges were exacerbated by the monitoring locations accessing issues (as outlined in Section 2.3.3). Monitoring at the lake has been overall inconsistent and data provided have been at times contradictory. Nonetheless a review of the available monitoring data, was undertaken and is summarised below.

Existing environmental monitoring requirements

Regulatory controls on the existing licence consist of an environmental monitoring program to monitor the volume and quality of the mine water discharge (condition 3.2.1) and the overall condition of Lake Way on the basis of ambient surface water and sediment quality (condition 3.4.1). Monitoring of the mine water during the discharge period includes throughput, pH, total suspended and dissolved solids and several metals and metalloids concentrations (*point source*) on either a monthly or quarterly basis (depending on the parameter). Monitoring of the Lake water and sediments includes the same analytes monitored on a biannual basis (*ambient environmental quality*). Currently, a limit to the total suspended solids at the discharge point applies (80 mg/L) (condition 2.3.2). No other limits apply to the mine water discharge quality on the licence. Monitoring results are submitted to the department yearly through the AER.

In 2016, an improvement condition was added requiring the licence holder to develop a monitoring program assessing the impact of the discharge to Lake Way. Similarly to a previous study undertaken in 2009, an ecological monitoring plan was developed and agreed with the department. The plan established six sites for the monitoring of invertebrates, diatoms, water

chemistry and sediments. Of the six sites, three were in proximity of the discharge (impact sites) and three were in an area of similar topography but outside the direct influence of the discharge (background sites). It should be noted that the monitoring sites under the licence, while in similar areas to those in the annual dewatering discharge report, are independent of each other. Monitoring locations for the annual dewatering discharge report were selected based on previous similar studies. A vegetation condition monitoring was also included as part of the monitoring plan and considered six transects along the north, northwest and eastern sides of Lake Way.

After the program was agreed upon by the department, an annual reporting requirement was introduced (condition 3.4.3). However, as no discharge to Lake Way was planned between 2017 and 2019, the department agreed to only receive ambient monitoring data after discharging recommenced. Discharge at the premises resumed in 2019, and monitoring results under the improvement condition were first submitted in 2020.

The existing condition on the licence does not require the annual ecological monitoring report to be submitted within a specific timeframe. Nonetheless complete monitoring, as agreed on in 2016, has not occurred around Lake Way since 2021. In 2023, a memo was submitted to the department stating that appropriate permission from the Traditional Owners had not been obtained and an attempt to undertake the monitoring in November 2022 was stopped. As of March 2023 (the date of the memo), no further attempts had been made. A report on the two sample sites monitored in November 2022 was submitted as part of the annual environmental report in 2024.

Environmental quality monitoring summary

Key findings of the environmental quality monitoring between 2021 and 2023 have been summarised below:

Point source discharge

- Discharge of mine water has been overall well under the prescribed limit of 2,365,000 tonnes per annum, with an average volume of approximately 262,000 tonnes per annum being discharged between 2021 and 2023.
- Record of total suspended solids (TSS), pH and dissolved arsenic at the discharge point were not monitored during the 2023 annual period. Historical records up to the most recent monitoring event in August 2022, showed that TSS results remained below the prescribed limit of 80 mg/L specified by the licence.
- Mine water dissolved arsenic concentration ranged between 1.1 and 1.4 mg/L between January 2020 and June 2022. No monitoring occurred during the 2023 annual period.

Environmental quality monitoring

- Similarly to the point source discharge there are large data reporting gaps on the environmental quality monitoring, including:
    - partial surface water monitoring, including less than half the overall number of impact sites. Even excluding the inaccessible sites that were detailed in Table 1, many impact sites were left unmonitored;
    - partial or no monitoring of background sites, for instance all background monitoring sites remained unmonitored for arsenic during the 2023 annual period. Additional information on the data gaps are also mentioned in the detailed analysis below.
- Irrespective of the volume of mine water discharged, the department observed elevated concentrations of some heavy metals and metalloids in surface water and sediments at the impact sites, when compared to background sites.

- The highest concentration difference between impact and background sites in the ambient environmental monitoring is that of arsenic in sediments. Sediments at monitoring point LW-A1, the nearest monitoring location to the discharge point, contained arsenic concentrations of 120 mg/kg in 2022 and 155 mg/kg in 2023, compared to 21 and 68 mg/kg respectively at the background monitoring site LW-B1. High concentrations of arsenic were also recorded at three of the impact sites recorded LW-A3, A5 and A9 in 2023, with an average concentration of 205 mg/kg among the three sites. Background sites concentrations were of <5, 12 and 46 mg/kg at the respective background sites (LW–B3, B5, B9).

- Consistent with observed sediment quality, arsenic concentrations measured in surface water were also high. In the 2022 annual period, an average arsenic concentration of 0.898 mg/L was measured across five impact sites, with the highest concentration being 1.2 mg/L at LW-A1. In the 2021 annual period, average arsenic concentration across six impact sites was 0.68 mg/L, with the highest concentration being 1.4 mg/L at LW-A1. Background sites remained mostly unmonitored for arsenic throughout the 2021, 2022, and 2023 annual period. Given the lack of monitoring data of background sites, the department referred to historical monitoring data from 2016, where background sites (LW-B1, LW-B2, LW-B8 and LW–B11) showed an average surface water arsenic concentration of only 0.06 mg/L, with the highest arsenic concentration detected at LW-B1 (0.16 mg/L).

Annual ecological monitoring reporting program (discharge report)

- As mentioned earlier in section 2.4.2, no complete monitoring program was undertaken since 2021. The data presented in 2024 for the partial monitoring program undertaken in 2022, included only one of six vegetation transect. Further, sediment, aquatic invertebrates and diatoms were only sampled at two of the six required locations. The reasoning provided was a lack of access during the site visit. Surface water was sampled at only one of six locations, though reason for the lack of surface water monitoring was the lack suitable pools of water available for sampling.
- During the 2022 annual period, metals concentrations in sediments near the discharge point are higher than the background sites and appear to be accumulating over time. Chromium and arsenic were the parameters detected at the highest concentrations. Both concentrations exceeded the Australian *Interim Sediment Quality Guidelines (ISQG) guidelines* (ANZECC & ARMCANZ, 2000) at the two impact sites monitored. Significant negative correlations have been shown between the location of each monitoring location relative to the discharge point and the concentration of contaminants, such as arsenic, cadmium, chromium, copper, nickel, lead and zinc.
- During the 2022 annual period, concentrations of cobalt, arsenic, copper and zinc in the water exceeded the ANZECC 0.002 mg/L guideline trigger values for 80% of marine species.
- Measurements of pH and electrical conductivity have been inconsistent, and it is difficult to determine any significant trends over time. However, the report for the 2022 annual period indicated that increased salinity and acidity is occurring around the discharge point. The report also established that "s*ampling in 2022 yielded the lowest invertebrate fauna abundance (65) and species richness (3) since monitoring began in 2016*" and that "*the increase in salinity and acidity of the water around the mine discharge area may also contribute to the low number [of invertebrate fauna] as most crustacean species do not like acidic water*". It should be noted that, during the 2022 annual period, none of the background sites were monitored.
- Diatoms assemblages displayed some changes over time however concrete patterns of

variability were also difficult to establish between impact and background sites. Additionally, an overall comparison of abundance and species richness at impact sites against previous years is likely unreliable as only two sites were monitored compared to three sites during the previous years.

- A summary of the concentration of metals and metalloids in sediments between 2016 and 2022 (Focus Vision, 2023) is shown in Figure 8. Australian ISQG low and high concentration guideline values are shown as a reference. Low and high guideline values provide an indication of the risk to biota, with the low value establishing the concentration above which some adverse effect may start to occur and the high value indicating an increase of that risk where significant adverse effects are expected. Figure 9 shows the inverse correlations between the concentration of heavy metals and metalloids and the distance to the discharge point.

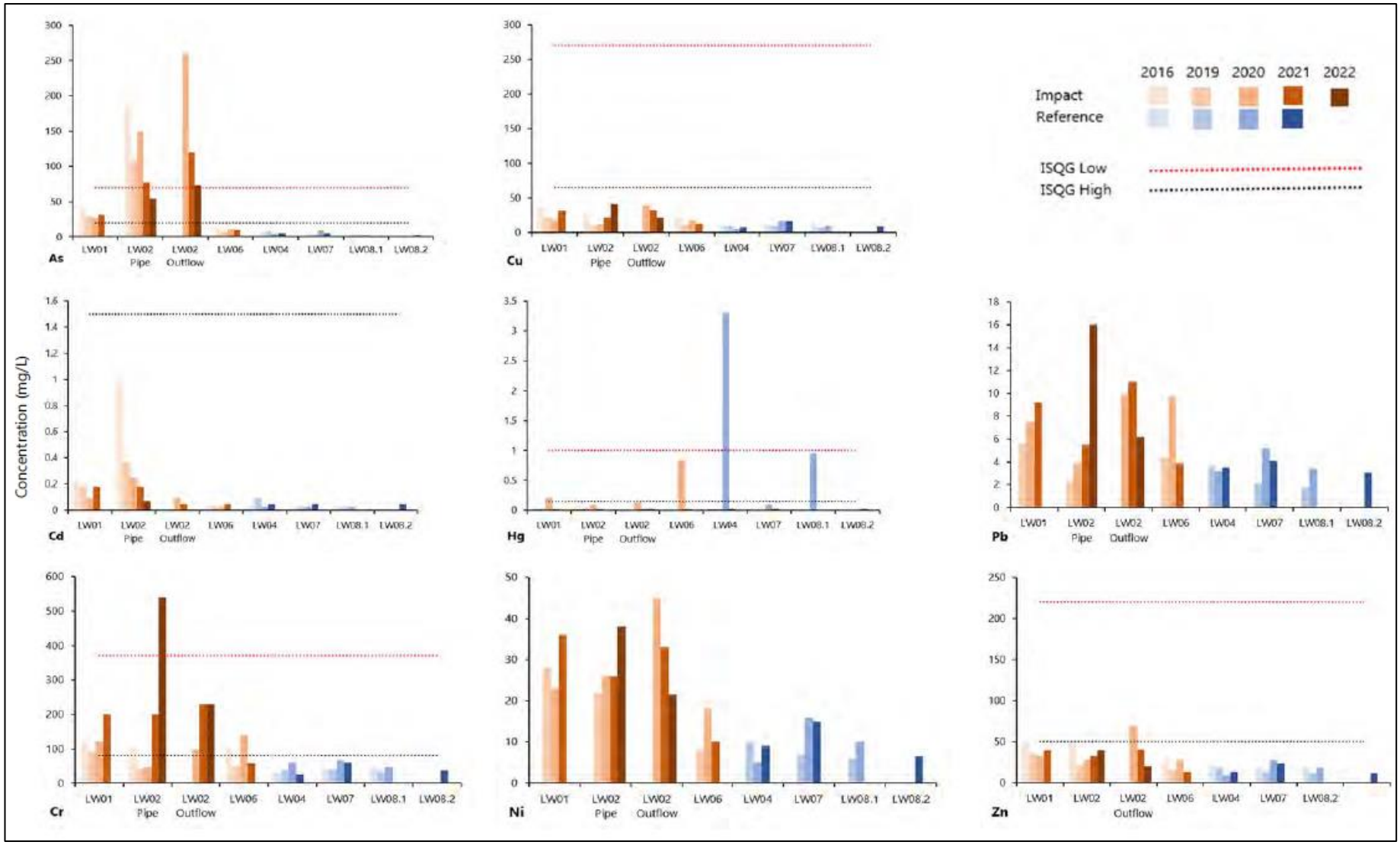


Figure 8. Concentration of metals and metalloids in sediments of impact and reference sites between 2016 and 2022 (Focus Vision, 2023). Horizontal bars indicate the Australian Interim Sediment Quality Guidelines low and high concentration values

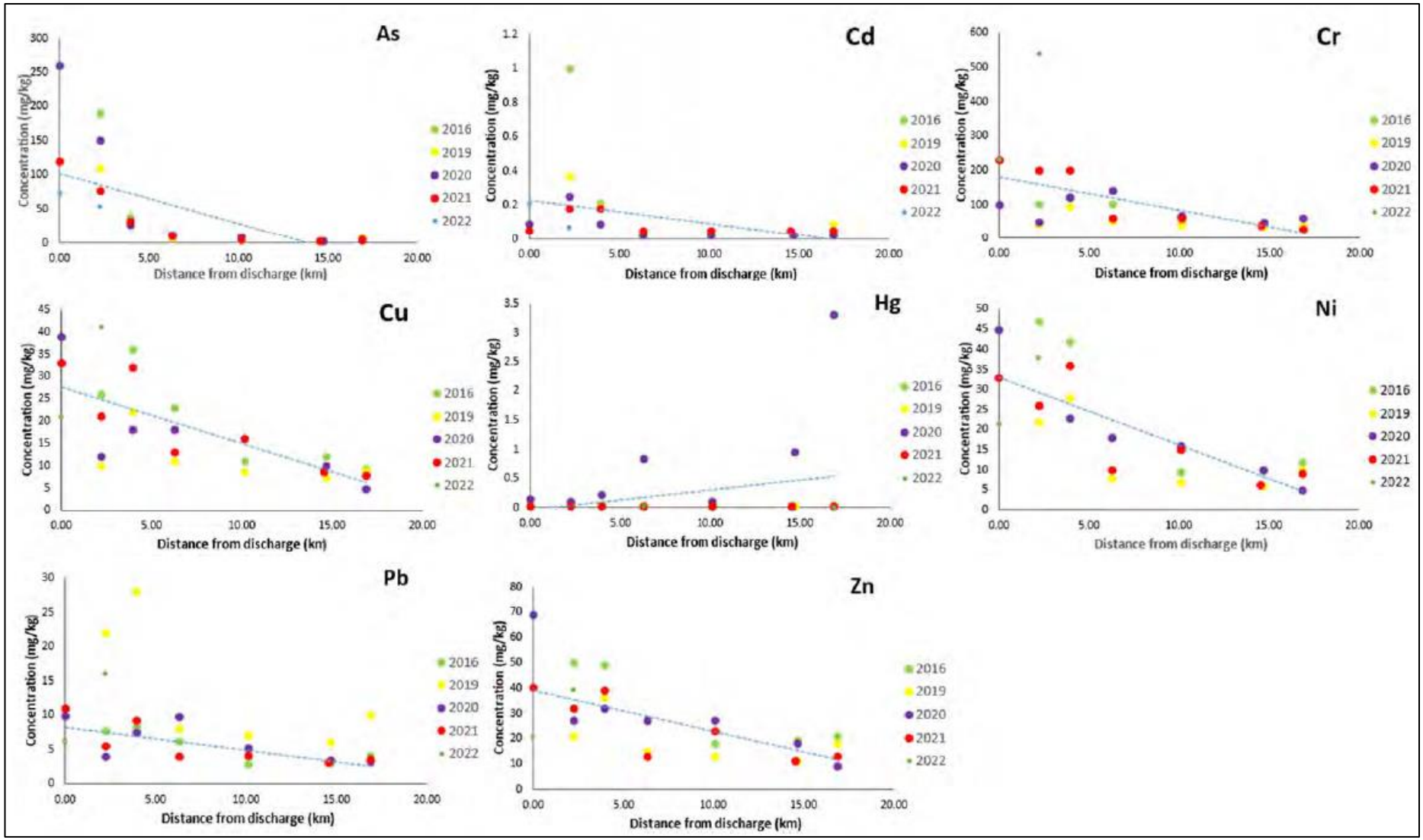


Figure 9. Correlation between concentration of heavy metals and metalloids over time and the distance from the discharge point. The dotted blue line indicates the Pearson's correlation (r)

3. 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 exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor, from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

Table Table 3 shows the key emissions and associated actual or likely pathway considered in this amendment report during the premises operations. Table 3 also includes the control measures the applicant has proposed to control these emissions.

Table 3: Emissions, pathways and proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operations			
Dust	Transport of historic tailings from TSF Wiltails plant operations including lime dosing	Air / windborne pathway	The licence holder proposed the following controls: • Visual monitoring of stockpiled tailings will be carried out during operations; • Where necessary water carts will be used for dust suppression purposes; • Vehicle speed will be controlled; • Drop height between excavators and trucks will be minimised; • Tailings moisture levels of approximately 17 to 21% will be maintained during excavation and reprocessing; • Earthen material and tailings contributing to airborne dust will be removed; • If required, incidents will be reported through the incident management process.
Noise	Plant operations and mining of historic TSFs	Air / windborne pathway	The licence holder proposed the following controls: • Compliance with the *Environmental Protection (Noise) Regulations 1997* will be maintained; • Machinery and equipment will be compliant with Australian standard specifications;

Emission	Sources	Potential pathways	Proposed controls
			• Maintenance schedules on vehicles and equipment will be as per manufacturer recommendations; • Mufflers will be fitted on internal combustion engines and maintained in good working order; • Only qualified personnel will operate earth moving machinery.
Process material / tailings	Spill of tailings from pipeline leak or break Spill of process material within the plant area	Direct discharge to soil or vegetation; potential seepage to groundwater	The following controls were proposed and were already implemented during time limited operations of the Wiltails plant • It is contained within a 71 m^3 concrete bunded area compliant with AS1940 to capture overflow and spillage; • It is equipped with a sump pump with float activation switch to direct any major spill to the nearby 3,750 m^3 pond for containment; • A spillage pump with multiple hose stations has been installed to address and clean any spill; • Pipelines connecting the Wiltails plant and CIL plant are contained within earthen bunds; • Hazardous Materials and Spill Management Plan will be followed for all spills. The licence holder will continue to implement the following existing controls: • **Condition 1.2.6** - All pipes to be fitted with telemetry systems and pressure sensors or an alternate containment measure to address spills; • **Condition 1.2.7** - Visual inspections to be conducted in accordance with Table 1.2.4.
Contaminated storm water	Historic tailings excavation and transport, day to day operations of the plant	Runoff	The following controls were proposed and were already implemented during time limited operations of the Wiltails plant • A 71m^3 concrete bund compliant with AS1940 to surround the Wiltails plant; • Any surface water to be directed to a run-off pond for reuse; • Surface water external to the Wiltails plant to be diverted; • Surface water within the excavated

Emission	Sources	Potential pathways	Proposed controls
			TSFs to be captured within an excavation bench with a 2.5 m perimeter bund. Benches to be sloped to drain towards drop chutes and then into a sump. Drop chutes and bench drains to have sufficient capacity to hold 1% Annual Exceedance Probability rainfall event; • Standing water within the sump will be removed and transferred to the processing plant.
Groundwater mounding from the additional storage of the processed historic tailings.	TSF K	Seepage (infiltration)	The licence holder will continue to implement the following existing controls: • **Condition 1.2.11** – Monthly water balance for each active TSF, including TSF K, to estimate volume of seepage losses to the environment. • **Condition 3.4.1 -** Existing quarterly groundwater monitoring requirements, a limit of 4 meters below ground level and quarterly sampling of bores to establish water levels. The licence holder will also implement additional tenement conditions imposed by the Department of Mines, Energy, Industry Regulation and Safety to limit seepage.
Decant water containing cyanide	Decant pond on TSF K Spills and leaks from pipelines	Direct discharge from spills and leaks Fauna access to the decant pond	The licence holder will continue to implement the following existing controls: • **Condition 1.2.3** – Minimum freeboard of 500mm at all times**.** • **Condition 1.2.6** - All pipes to be fitted with telemetry systems and pressure sensors or an alternate containment measure to address spills. • **Condition 1.2.7** - Visual Inspections conducted in accordance with Table 1.2.4 including recording of wildlife visitation.
Mine water containing elevated metals and potential low acidity and high salinity	Dewatering discharge to Lake Way	Direct discharge	The licence holder will continue to implement the following existing controls: • **Condition 2.3.1** – Designated discharge point via the Lake Discharge pipeline. • **Condition 2.3.2** – Existing TSS limit of 80 mg/L. • **Condition 3.2.1** – Monthly/quarterly monitoring of lake way discharged mine water.

Emission	Sources	Potential pathways	Proposed controls
			• **Condition 3.4.1** – Biannual monitoring of ambient surface water and sediment quality. • **Condition 3.4.3** – Annual mine dewater discharge report on the impact of the discharge on Lake Way Ecology.

3.1.2 Receptors

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

Table 4 provides a summary of potential human and environmental receptors that could be impacted by the emission and discharges at the prescribed premises. For avoidance of doubt, all receptors within and surrounding the premises that may be reasonably thought of, have been listed. However, in accordance with *Guideline: Environmental Siting* (DWER 2020) where a potential or likely pathway to exposure does not exist, said receptors have not been considered further on the risk assessment table (Table 5). The reasoning behind the exclusion is explained on Table 4.

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

Human receptors	**Distance from prescribed activity**
Bondini Aboriginal community	Approximately 1 km north- east of TSF K (where the tailings waste material will be deposited). Approximately 3.5 km from the Wiltails plant and the TSFs where historic tailings will be loaded for transport. Given the separation distance, it is unlikely that the community will be affected by the activities. As an actual or likely source-pathway-receptor linkage does not exist, these potential receptors have not been considered further in this assessment.
Wiluna Townsite	Approximately 2 km north-west of TSF K and 4.5km from the Wiltails plant and TSFs to be mined. Given the separation distance, it is unlikely that the townsite will be affected by the activities. As an actual or like source-pathway-receptor linkage does not exist, these potential receptors have not been considered further in this assessment.
Cultural Receptors	**Distance from prescribed activity**
• Tjanapi: A registered heritage place for creation/dreaming narrative (Place ID 2182)	400 m west of TSF K.
• Women's ceremonial track: A registered heritage place for ritual/ceremonial purposes (Place ID 1370)	Within the premises boundary, adjacent to TSF K
• Lake Way: A registered restricted heritage place for creation/ dreaming narrative and ritual/ ceremonial purposes (Place ID 37676), with restrictions along its banks.	Active discharge point for mine water.
Environmental receptors	**Distance from prescribed activity**
Surface Water	
• Lake Violet: Intermittent salt lake	500 m south of the Western Cell, TSF H and C where historic tailings are loaded for transport and approximately the same distance to the Wiltails Plant. 2.5 km from TSF K.
• Lake Way: Ephemeral salt lake approximately 270 m^2 in size.	Active discharge point for mine water approximately 9 km south of TSFs to be mined and the Witails plant and 11 km from TSF K.

Environmental receptors	Distance from prescribed activity
Groundwater	
• Proclaimed East Murchison Groundwater area under the *Rights in Water and Irrigation Act 1914* (RIWI Act) Regional groundwater is typically saline to hypersaline (2,000 mg/L to 200,000+ mg/L) with lower salinity (500 – 2,000 mg/L) in isolated recharge cells associated with alluvial fans and calcrete systems. Groundwater abstraction licences are held by several mining/exploration companies, Water Corporation and the Shire of Wiluna.	Underlying the premises, including TSF K and Lake Way.
Fauna	
• Specially protected migratory bird Up to 14 species protected under international agreements	Sighted within a 3km radius of TSF K.
• *Merops ornatus* (Rainbow Bee eater) and *Sminthopsis longicaudata* (long-tailed dunnart) (considered likely to occur)	Sighted within and surrounding the premises
• *Macrotis lagotis (*greater bilby)	Sighted within a 3km radius of TSF K.
• *Dasycercus blythi* (Brush-tailed mulgara) Vulnerable under the *Environmental Protection and Biodiversity Conservation Act 1999*.	Sighted within a 3km radius of TSF K.
• Stygofauna assemblages associated with Lake Violet Calcrete System. The stygofauna includes six priority ecological communities.	Lake Violet is located 500m south of the Western Cell, TSF C and H. It is anticipated that the mining and transport activities at these TSFs will not have an impact on the stygofauna. As an actual or like source-pathway-receptor linkage does not exist, these potential receptors have not been considered further in this assessment.
Flora	
• Native pre-European vegetation. Mulga and other Wattle Atriplex species, Maireana species and a number of Acacia species. Remnant native vegetation at the premises is highly disturbed from ongoing mining activities.	Within the premises and surrounding the TSFs
• Chenopod shrubland transitioning to Acacia Dune vegetation and Halophyte communities including *Halosarcia* species	Surrounding Lake Way

3.2 Risk ratings

Risk ratings associated with the emission from the proposed amendment have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020). As identified in section 3.1 each identified emission source takes into account a potential source-pathway-receptor linkage. Where linkages are incomplete, they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. If the Delegated Officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, the same proposed controls 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, a justification will be provided in Table 5.

The revised licence that accompanies this amendment report authorises emissions associated with the operation of the premises.

The conditions in the issued licence, as outlined in Table 5 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 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**				
Mining and transport of historical tailings material Operation of the Wiltails Plant	Tailings dust with elevated concentration of arsenic	**Pathway:** Air / windborne pathway **Impact:** Degradation of vegetation health, soiling and discoloration	Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition 1.2.1 **Condition 2.1.3 – Requirement for no visible dust from mining or transport of tailings material to cross the premises boundary.** Condition 2.1.4	Given the moisture content of tailings likelihood of dust generation during transport is unlikely. However, as the consequence is moderate, a medium risk of dust emissions impacting sensitive receptors remains. Consistent with works approval W6615/2021/1, an outcome-based condition has been included in the amended licence L5206/1987/10 to ensure that dust emissions beyond the premises is minimised and the overall risk of impact to receptors remains acceptable. Licence holder's controls have been conditioned within the amended licence in accordance with DWER *Guideline: Risk Assessments* (DWER 2020).
	Noise	**Pathway:** Air / windborne pathway **Impact**: Impact to amenity	Heritage sites (for ritual and ceremonial purposes)	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	Regulated under *Environmental Protection (Noise) Regulations 1997*.
	Dried tailings Reprocessed tailings Process materials	**Pathway:** Direct discharge from spills, with possible infiltration **Impact:** Ecological disturbance, contamination of soil and water	Soil Native vegetation Surface water Groundwater	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	Condition 1.2.1 Condition 1.2.6 Condition 1.2.7 **Condition 2.1.2 – Requirement to recover, remove and dispose of spills**	While there is a lower risk of impact from the spillage of dried tailings during transport for a TSF to the Wiltails Plant, a medium risk of impact exists for the potential spillage of reprocessed tailings and other process materials. Consistent with works approval W6615/2021/1, a condition has been included in the amended licence L5206/1987/10 to ensure that any emissions that may arise from spillages is adequately managed and the overall risk of impact to receptors remains acceptable. Licence holder's controls have been conditioned within the amended licence in accordance with DWER *Guideline: Risk Assessments* (DWER 2020). Spills of certain process material may also be regulated under the *Environmental Protection (Unauthorised Discharge) Regulations 2004*.
	Contaminated stormwater following rainfall events	**Pathway:** **O**verland **r**unoff and infiltration **Impact:** Ecological disturbance, contamination of soil and water	Soil Native vegetation Surface water Groundwater	Refer to Section 3.1	C = Minor L = Possible **Low Risk**	Y	Condition 1.2.1	Applicant's controls have been conditioned within the amended licence in accordance with DWER *Guideline: Risk Assessments*
Continued tailings deposition within TSF K (Stage 2 embankment raise)	Tailings seepage	**Pathway:** Infiltration from TSF K **Impact:** Groundwater mounding, contamination of groundwater and potential ecological disturbance	Groundwater Native vegetation	None specified Refer to Section 3.1 for existing controls	C = Moderate L = Possible **Medium Risk**	N	Condition 1.2.3 Condition 1.2.11 Condition 3.4.1 **Condition 4.1.1 – Specified actions to undertake a groundwater mounding characterisation and monitoring bore review and prepare a groundwater management plan**	As discussed in section 2.4.1, a seepage incident at TSF K reported in 2024 resulted in DEMIRS imposing tenement conditions to ensure its decant pond size was reduced to meet its design specification and the reduce tailings seepage emissions. Based on groundwater monitoring data provided by the licence holder (discussed in section 2.4.1), standing water levels around TSF K have been increasing, particularly to the south of the facility with the relevant limit of 4 mbgl, specified in the existing licence, being exceeded during monitoring events in 2024. Noting the previous seepage incident, as well as the continued tailings deposition into TSF K (Stage 2 embankment raise), the department has determined that additional regulatory controls are required to manage the potential risk of impact on sensitive receptors. The department has included a target limit of 6 mbgl for the TSF K bores and specified action requirement to prepare and implement a groundwater management plan to manage groundwater levels around TSF K to ensure that the specified standing water level limit is not exceeded as a result of continued tailings deposition at TSF K. The department also requires the licence holder to investigate the current extent of groundwater mounding around TSF K, as well as assess the existing groundwater monitoring

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**				
								bore network and determine whether existing bores provide sufficient coverage for monitoring and responding to groundwater mounding.
	Tailings slurry	**Pathway:** Overtopping, resulting in direct discharge and infiltration **Impact:** Ecological disturbance and contamination of soil	Soil Native vegetation	None specified	C = Moderate L = Unlikely **Medium Risk**	N/A	Condition 1.2.3	Existing controls on the existing licence are adequate for managing the risk of overtopping. No additional regulatory controls are required.
	Tailings slurry Hypersaline decant water	**Pathway:** Pipeline failure, resulting in direct discharge and infiltration **Fauna:** Ecological disturbance, including impact to avifauna health, and contamination of soil	Soil Native vegetation Native fauna, including avifauna	None specified	C = Moderate L = Unlikely **Medium Risk**	N/A	Condition 1.2.3 Condition 1.2.4 Condition 1.2.6 Condition 1.2.7	Existing controls on the existing licence are adequate for managing the risk of pipeline failure resulting in leaks and spills. No additional regulatory controls are required.
Discharge of mine water into Lake Way	Mine water, containing elevated levels of metal and metalloids and high acidity	**Pathway:** Direct point source discharge to Lake Way and infiltration **Impact:** Ecological disturbance, including impact to avifauna health, and contamination of sediment and water	Sediment Native vegetation Native fauna, including avifauna Surface water Groundwater	None specified	C = Moderate L = Possible **Medium Risk** Refer to Section 3.3	N/A	**Condition 2.3.2 (amended)** **Condition 3.1.1 (amended)** **Condition 3.2.1 (amended)** **Condition 3.4.1 (amended)** **Condition 4.1.1 (Items 3 and 4 of Table 4.1.1)** Refer to Section 3.3.	Refer to Section 3.3.

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

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

3.3 Detailed risk assessment: Discharge of mine water to Lake Way

Salt lakes in Western Australia are under threat from a drying climate. Shorter hydroperiods in salt lakes may result in higher salinity loads for longer periods, consequently disrupting the natural drying and wetting phases. Processes of acidification, secondary salinity and oxidation of sulfide minerals occurring during mining activities can compound the risk of disruption to ecological processes. Salt lakes in the Wheatbelt region of Western Australia and on the Eyre Peninsula of South Australia have already seen a decrease in biotic communities because of anthropogenic activity (D'Arcy Lawrie, Chaplin & Pinder, 2021).

Lake Way has been the recipient of mine water discharge for several years, including prior to the licence holder's tenure at the premises. Annual monitoring results were reviewed as part of this detailed risk assessment (in accordance with DWER (2020) *Guideline: Risk* assessments). Overall, monitoring information submitted to the department on the mine water discharge and ambient water and sediment quality at Lake Way have been inconsistent (refer to section 2.4.2) and the licence holder has not completed the monitoring program as required by the licence.

Nevertheless, the limited monitoring information has indicated that high concentrations of arsenic and other heavy metals have been observed in both surface water and sediments at Lake Way, especially at impact sites located closer to the discharge point (Figure 8). In contrast, the concentrations of these contaminants are significantly lower at background sites, with concentrations decreasing with distance away from the discharge point (Figure 9). Consistent with this, higher discharge rates recorded during the 2020 annual period corresponded to higher arsenic enrichment measured in sediments at impact sites near the discharge point. It is likely that the enrichment of contaminants is a result of the mine water that is discharged into Lake Way.

Due to poor monitoring record, the potential ecological impacts of the mine water discharge (and enrichment of surface water and sediments) to Lake Way have been difficult to assess and quantify. Monitoring of invertebrate fauna, diatoms and vegetation have not identified significant trends, though it is noted that the reduced sampled effort reduces confidence in the dataset.

3.3.1 Risk assessment

Risk event: increase in concentration of metals and metalloids with potential adverse effect on aquatic and non-aquatic environment

The geological setting and the potential contaminants associated with the Wiluna gold deposits were discussed in section 2.2.2. Monitoring data since 2016 suggested that accumulation of metals and metalloids may be occurring, particularly arsenic and cadmium (section 2.4.2 for discussion). Heavy metals and metalloids are non-biodegradable and when released into the environment they bioaccumulate across the different trophic levels of the ecosystem. Toxicity of the heavy metals have been shown to affect aquatic organisms through the disruption of protein structure and inhibition of the metabolic functions (Kakade et al., 2023).

Additionally, waterbirds reliant on aquatic organism as a source of food may be affected. Utilisation of lake water as a drinking water source may represent another potential exposure pathway for fauna, though it is not known whether it is significant due to the hypersaline characteristics of the water, which affects its palatability. As such, the Delegated Officer has determined the consequence of this risk event as **moderate**.

Monitoring data to date have been inconsistent and insufficient to quantify the impact caused to the lake ecology. Furthermore, the level of tolerance of aquatic organisms within the Western Australia salt lakes has been poorly studied. The impact of elevated concentrations of arsenic and other metals detected is currently not known. Nonetheless, there is evidence that elevated concentrations of heavy metals and metalloids have been detected at Lake Way, particularly

near the discharge point, with evidence of accumulation in the surrounding lake sediments. Further, the ecological impact of this enrichment has not been well monitored and understood. Therefore, the Delegated Officer has determined the likelihood of this risk event as **possible**.

The resultant risk rating is **medium risk**. The department notes that the inadequate monitoring completed to date has prevented a robust assessment from being completed. The department is currently investigating potential non-compliances relating to incomplete historical monitoring at the premises. Inadequate monitoring undertaken at the premises has resulted in significant data gaps in assessing and understanding the potential ecological impacts of mine water discharge at Lake Way.

While the reduction of monitoring locations at Lake Way (for ambient surface water and sediments) from 21 to 17 (due to access issues) is deemed acceptable, the department further stresses the need for the licence holder to undertake the required monitoring in accordance with their licence. As elevated levels of heavy metals and metalloids have been consistently observed at the impact area, even under recent low mine water discharge rates (relative to the prescribed throughput on licence L5206/2987/10), consistent ecological monitoring, in accordance with the licence conditions, is necessary to assess for potential impacts.

Where data gaps may continue to persist, the department may modify the risk rating for this risk event in accordance with the *Guideline: Risk assessment* (DWER 2020). Authorisation for continued discharge of mine water to Lake Way may also be modified to some level depending on the relevant risk rating, as the precautionary principle (defined under section 4A of the EP Act) applies.

In addition to the existing monitoring requirements, the Delegated Officer has also determined that additional regulatory controls are required in amended licence L5206/1987/10 (Table 6).

Table 6. Additional regulatory controls requirements

Condition	Requirement	Rationale
Condition 2.3.2	Amendment to point source emissions to surface water parameters (in Table 2.3.2) to specify limit of 0.027 mg/L for selenium.	Selenium is a contaminant of concern in salt lakes due to its ability to biomagnify in local food webs and adversely impact avifauna that rely on aquatic invertebrate in salt lakes as a food source. As such, the department has specified a limit for selenium as part of the ambient surface water monitoring requirements, noting that the limit based on a similar salt lake system with food web comprising algae, brine shrimp, brine flies, and birds (Brix, 2004; Ohlendorf *et al.*, 2009).
Condition 3.2.1	Amendment to monitoring of point source emissions to surface water parameters (in Table 3.2.1) to include mercury and silver.	The department considers the addition of mercury and silver as monitoring parameters for surface water and sediments at Lake Way to be required, due to their potential to be biomagnified in the local food webs, and to affect avifauna populations that may utilise lake invertebrates near the discharge point as a food source.
Condition 3.4.1	Amendment to ambient surface water quality parameters (in Table 3.4.1) and ambient sediment quality parameters (in Table 3.4.2) to include mercury and silver.	
	Specified action to undertake	Due to high historical concentrations of arsenic

Condition	Requirement	Rationale
Condition 4.1.1	sampling of mine water discharge and ambient surface water at LW-A1 and LW-B1 for total arsenic, dissolved arsenic, arsenic(III), and arsenic(V), and assess concentrations against relevant water quality default guideline values (ANZG 2018).	detected at Lake Way, further monitoring of speciated arsenic is required to inform risk and compare against relevant default guideline values.
	Specified action to review monitoring locations for the annual dewatering discharge report and, where monitoring location cannot be accessed, propose an alternative monitoring location that has comparable characteristics (i.e., like-for-like).	The department understands that, in completing the most recent annual dewatering discharge report, only two of seven monitoring locations could be monitored due to access constraints that arose during the site visit. Consequently, the department requires the licence holder to, where access constraints would be ongoing to an extent that would impact future monitoring events, propose alternative monitoring locations and justification. Where access to a proposed monitoring area requires permission from the relevant Traditional Owners, the department recommends consulting with Traditional Owners to ensure access permission can be granted.
Condition 5.2.1	Amendment to annual environmental reporting requirements to include submission of annual dewatering discharge report (condition 3.4.3), as part of the annual environmental report.	The department noted that the existing licence does not specify a submission timeframe for the annual dewatering discharge report. As such, the department has amended the licence to specify submission of the report, noting that an annual dewatering discharge report was not submitted in 2024.

In addition to the additional regulatory controls, further assessment of chromium concentrations in mine water discharge and its impact on ambient sediment and surface water may be required. Ultramafic rocks hosting gold deposits in the region are known to release high concentrations of hexavalent chromium into the groundwater during weathering (Gray, 2003). Under current conditions, mine water that is discharged into Lake Way may contain high levels of hexavalent chromium, as this toxic species is likely to be the most stable chemical form of this element.

Further, tellurium is also a contaminant of potential concern due to the toxicity associated with some of its chemical compounds. However, no requirements to monitor or investigate tellurium has been added to the amended licence at this stage, due to limited understanding of its biogeochemical behavior and difficulties involved with its chemical analysis (Filella *et al*, 2019).

Risk event: Potential increased of acidity with adverse effects to invertebrates and microalgae

A water sample is said to have net acidity if the total acidity of the sample (total amount of available hydrogen ions) is higher than the measured alkalinity. Acidity can occur even where mine water is well-buffered. When net acidity is present, elevated concentration metals, such as dissolved aluminium and iron, are likely to occur, even when pH is near neutral.

Latent acidity in the water can be released if the metal ions react with the oxygen and water to form precipitates of aluminium and iron oxyhydroxides. Acidity of the discharge has a detrimental effect on aquatic receptors, particularly invertebrates common in salt lakes of the

Wheatbelt region (Degens *et al*., 2018). Exposure can affect the functioning of appendages and the structure of calcareous shells. Long term changes in acidity can also affect predation habits from a changing habitat (Degens *et al*., 2018). The Delegated Officer has determined the consequence of this risk event to be **moderate**.

While the sediment and surface water within salt lakes in the region are characterised by an alkaline pH and is likely well buffered, acidity and alkalinity are not currently being monitored during ongoing mine water discharge to assess whether potential impacts may be occurring. Acidity in the mine water may also increase should there be significant oxidation of any sulfidic minerals within the dewatered cones of depression of mine pits. As such, the Delegated Officer has determined the likelihood to be **possible**.

The resultant risk rating is therefore classified as **medium risk**. The Delegated Officer considered that additional regulatory controls are required, such that acidity and alkalinity (as calcium carbonate; $CaCO_3$) is monitored in the mine water discharge (under condition 3.2.1) and pH is monitored in ambient surface water and sediments (under condition 3.4.1). Furthermore, condition 2.3.2 has been amended to set a limit for acidity at 10 mg/L to protect aquatic receptors within the salt lake environment (Degens, 2013). Should the discharge monitoring indicate that mine water acidity is high with limited buffering capacity, further monitoring of acidity and/or alkalinity within the ambient salt lake environment may be required.

4. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

Table 7: Consultation

Consultation method	Comments received	Department response
A draft of the amended licence and amendment report was provided to the licence holder on 24 January 2025	Comments submitted to the department on 28 February 2025 are shown on Appendix 1.	Department response to the comments is shown on Appendix 1.

5. 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.

5.1 Summary of amendments

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

Table 8. Summary of licence amendments

Condition no.	Proposed amendments
-	Conditions and Tables have been renumbered to ensure chronological order. Condition numbers referred to, on the left-hand column in this table refer to the condition number before this amendment.
Cover page	Category 5 assessed production / design capacity increased to *3,400,000 tonnes* per annual period in accordance with the proposed amendment.

Condition no.	Proposed amendments
Introduction	Added *Wiluna Operations has been in voluntary administration since 2022 and is under the control of FTI Consulting* on page 4 to keep the description current. Updated *Premises description and Licence summary* to reflect current activities. Capitalised activities list and amended description for consistency. Amended *Instrument log* to add a more detailed description for instrument W6371/2020/1. Updated *Instrument log* to include instrument number, issue date and description of W6615/2021/1, W6660/2022/1 and L5206/1987/10 (this amendment) to remain consistent with the premises licensing history.
1.1.2	Added the definitions of *Handbook for Sediment Quality Assessment* and *The ASC NEPM* to the Interpretation Section.
-	Added condition (1.2.1) to include the regulation of the Wiltails Plant operations in accordance with the proposed amendment.
1.2.1	Amended reference typing error on the putrescible waste type of table 1.2.1 to include the figure number.
1.2.2	Updated Table 1.2.2 *Requirements* column to reflect current operations at the premises: • All In-pit tailings storage facilities no longer authorised to be used as an active discharge point. • No further discharge to TSF H authorised (for consistency - TSF H is not listed on the licence as a discharge point). • Added discharge material allowed within TSF K as discussed on this amendment report. Added construction height of Stage 2 embankment raise (as per previous construction requirement of condition 1.2.7) and pond size (as per the previously submitted design report).
1.2.3	Added *unless otherwise specified in Table 1.2.3* to increase condition clarity.
1.2.7	Table: • Removed word duplication on the Design and construction requirements column. • Removed TSF K Design and construction requirements as most of the construction conditions have been assessed as being met during this assessment. • Added stormwater diversion drain requirement and related timeline for construction as the diversion drain had not been constructed at the time of this assessment as required by the licence.
-	Added conditions 2.1.2, 2.1.3 and 2.1.4 as outlined in section 3.2 (Table 5) of this amendment report.
2.3.2	Table: • Amended minor typing error on parameter column • Added Quarterly Net acidity (as $CaCO_3$) and Selenium limits with the respective units (mg/L) in accordance with the detailed risk assessment in section 3.3.1 of this amendment report.
3.1.1 (e)	Amended condition to include the the requirements of the *ASC NEPM* (as defined) and *with guidance and principles of Handbook for Sediment Quality Assessment* in accordance with section 3.2 (Table 5) of this amendment report.
3.2.1	Table: • Amended minor typing error on parameter column

Condition no.	Proposed amendments
	• Added additional net acidity and alkalinity parameters and respective unit to the monitoring requirements, in accordance with the detailed risk assessment in section 3.3.1 of this amendment report. • Added mercury and silver parameters to the monitoring requirements in accordance with the detailed risk assessment in section 3.3.1 of this amendment report.
3.4.1	Table 3.4.1: • Removed monitoring points and locations as per the proposed amendment. • Added additional control monitoring point (LW-B13) and location as per the proposed amendment. • Added pH, Net acidity (as $CaCO_3$), Mercury and Silver to the parameter column in accordance with the detailed risk assessment in section 3.3.1 of this amendment report Table 3.4.2: • Removed *and location* from the heading of the monitoring point reference column • Added monitoring point location column with the respective Eastings and Northings references for consistency with Table 3.4.1. • Rearranged and updated monitoring points in accordance with the proposed amendment. • Added pH, Net acidity (as $CaCO_3$), Mercury and Silver to the Parameter column in accordance with the Detailed Risk assessment in section 3.3.1 of this amendment report • Added Frequency column and a 6-month requirement consistent with table 3.4.1 as it was previously unspecified. Table 3.4.3 • Added target of 6 (mbgl) to TSF K monitoring bores (TD-17K – 20K) in accordance with section 3.2 (Table 5) of this amendment report. • Removed Note 3 as now redundant.
-	Added Specified actions, condition 4.1.1 in accordance with section 3.3.1 and the detailed risk assessment in section 3.3.1 of this amendment report.
4.2.1	Table: • Amended *condition or table* column references for coherence • Clarified requirements shown on the monthly water balance • Added requirement to ensure the data is presented logically and can be quickly interpreted by the department. • Added the Annual Dewater Discharge report to ensure it is submitted annually.
Schedule 1 – Maps	Rephrased title in accordance with current standards Removed Schedule 1 Prescribed Premises description as redundant. Replaced Figure 1 in accordance with this amendment and updated caption. Removed Figure 2 as redundant and replaced Figure 3 with the current Figure 2 in accordance with this amendment. Amended Figure 4 (now 3) caption for precision. Replaced Figure 5 to reflect amended monitoring points as per the proposed amendment. Replaced Figure 6 with a clearer and updated image.

Condition no.	Proposed amendments
	Updated Figure 7 caption. Added additional Figure (7) to include the layout of the Wiltails plant and Lime dosing circuit. Rephrased Schedule 2 description for consistency with the updated figures. Removed Figures 8-10 as now redundant.

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

Licence condition / Amendment report section	Summary of licence holder's comment	Department's response
Licence		
Licence Introduction	The licence holder noted that the Golden Age pit was no longer at full capacity, as some tailings have been removed due to past mining expansion activities. Clarification provided on the prescribed activities at the premises: [Golden Age pit] – *Partial tailings. Some tailings removed due to past mining expansion activities.*	The department has updated the description for Golden Age pit updated from: '*full – no longer in use*' to '*no longer in use – previously reached capacity however, tailings were removed during mining expansion*'.
Condition 1.2.1	In Table 1.2.1 (Item 1(b)), the licence holder requested that the term 'storage' be used for the Wiltails plant, instead of 'bund', to encompass other types of containment infrastructure for spill management. While the largest tank has a capacity of 103 m^3, the constructed bund has a capacity of 71 m^3, with additional capacity provided by the adjacent storage pond (3,750 m^3).	The department has amended the wording of the requirement.
Condition 2.3.2	In Table 2.3.2, the licence holder requested that the limit of selenium be amended from 0.027 mg/L to 0.035 mg/L, as historical selenium levels have been detected up to 0.035 mg/L, with no significant impacts noted during ecological assessments. The licence holder suggested an increased limit of 0.035 mg/L to ensure continued compliance with the licence condition.	The limit for selenium was amended onto the licence for the water quality at the point source discharge into Lake Way (emission to surface water). The rationale for this amendment was set out in Table 6, which considered the following: • In salt-lake ecosystems, selenium is readily bioaccumulated through the food web affecting bird species using the brine shrimps or invertebrates as a food source, therefore its potential environmental impact extends through several trophic levels.

Licence condition / Amendment report section	Summary of licence holder's comment	Department's response
		• High evaporation, associated with the ephemeral nature of salt lakes in Western Australia, means that selenium concentrations can quickly reach levels of ecological concern during dry spells when water pooling formed in the area where mine water is discharged, may reach concentrations similar to that of the discharge (or potentially greater). • The limit value of 0.027 mg/L was based on considerable body of research undertaken for breeding bird populations on the Great Salt Lake in Utah (Ohlendorf *et al.*, 2009). The limit is assumed to also apply to salt lake environments in Western Australia, due to similarities in food web structure. While selenium in mine dewater discharge is required to be monitored under the existing licence, environmental monitoring undertaken to date has not been in accordance with the frequency of the relevant licence conditions. Further, selenium is not monitored in surface water under the annual ecological assessments. As such, a robust assessment on the potential impacts of selenium on ecological receptors cannot be completed. Noting that, selenium concentrations were monitored in the mine dewater discharge up to six times in 2020, with a mean concentration of 0.0235 mg/L. Subsequent monitoring in 2021, 2022, and 2023 detected selenium at concentrations of 0.028, 0.026, and 0.021 mg/L, respectively. As such, the Delegated Officer considers the limit of 0.027 mg/L to be reasonable and achievable and has conditioned this in the amended licence.
Amendment Report		
Section 2.3.1 – Background – paragraph 2.	The licence holder requested to modify the sentence to state that the throughput of the Wiltails plant could potentially increase up to 3,400,00 tonnes per annum.	The department has amended the sentence, noting that the increase in Category 5 production capacity was already considered in section 2.3.2 of the Amendment Report. It is noted that the throughput of the CIL plant will also increase, as material processed by the Wiltails plant will undergo further reprocessing through the CIL plant. The risk assessment in section 3.2 of the Amendment Report reflects the increased throughput at 3,400,000 tonnes per annum for these infrastructure. No additional requirements were included in the amended licence as a result of this comment.
Section 3.2	The licence holder indicated a formatting issue.	The department has corrected the formatting issue.