



Application for Licence Amendment

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

Licence Number	L7750/2001/10
Licence Holder	Evolution Mining (Mungari) Pty Ltd
ACN	002 124 745
File Number	2011/009482-1
Premises	Mungari Gold Project COOLGARDIE WA 6429 Legal description – Part mining tenements M15/829, M15/830, M15/1741, M15/1408, M15/1287, M15/688, L15/228, L15/246, L15/227 and M15/1407
Date of Report	05/09/2024
Decision	Revised licence granted

**SENIOR ENVIRONMENTAL OFFICER, RESOURCE INDUSTRIES
INDUSTRY REGULATION (STATE-WIDE DELIVERY)**

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

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1. Decision summary

Licence L7750/2001/10 is held by Evolution Mining (Mungari) Pty Ltd (Licence Holder) for the Mungari Gold Project (the Premises), located at tenements M15/829, M15/830, M15/1741, M15/1408, M15/1287, M15/688, L15/228, L15/246, L15/227 and M15/1407, COOLGARDIE WA 6429.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L7750/2001/10 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Amendment summary

On 07 June 2024, the Licence Holder submitted an application to the department to amend Licence L7750/2001/10 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The amendment is to add the TSF Cell 4 Stage 2 lift constructed under works approval W6364/2020/1 on to the Licence.

No modifications have been requested for any other category.

2.3 TSF Cell 4 Stage 2 lift

The Licence Holder provided a construction report for the TSF Cell 4 Stage 2 lift, which was compliant with the Works Approval W6364/2020/1 construction conditions (DWER, 2024). The embankment has a downstream design (for Stage 2) and the construction requirements include:

- (a) Constructed to have a minimum 500 mm total freeboard;
- (b) Cut-off trench, toe drains and sumps; and
- (c) Water reclamation infrastructure which is composed of underdrainage system, decant water system and toe drains and sumps.

In the construction report (Knight Piésold Consulting, 2023) it was stated that:

- (a) TSF Cell 4 Stage 2 was constructed to a minimum crest level of RL349.1 m equivalent to a 1.7 m downstream raise. It was constructed an access causeway to the decant tower;
- (b) The test work during the construction followed *AS1289 – Methods of Testing Soils for Engineering Purposes*; and
- (c) To maintain the regulatory 300 mm operational freeboard (crest minus tailings level) and 500 mm total freeboard (crest minus water level), tailings shall not exceed RL348.8 m.

Th Licence Holder confirmed that tailings deposition into TSF Cell 4 Stage 2 commenced on 07 May 2024 under W6364/2020/1. The licence holder stated that “*If deposition of tailings commences prior to TSF Cell 4 Stage 2 being approved under Licence L7750/2001/10, TSF operations will be subject to the time limited operations monitoring program [...]*” (Evolution Mining, 2024).

2.3.1 Tailings geochemical characterisation

The tailings samples were analysed by Knight Piésold Consulting (2015) to obtain the geochemical characterisation. The tailings samples had a high sulfur content level which ranged from 1.40 to 1.85% and the sulfide content ranged between 1.21 and 1.64%. The maximum potential acidity that was calculated from the sulfide sulfur content ranged from 58.0 to 50.4 kg H₂SO₄ / tonne of tailings, which is high.

The acid neutralising capacity of the samples ranged from high 58.0% to very high 98.5%. Those values were used to calculate the Net Acid Producing Potential (NAPP) ranged from 1.6 to 2.0 which indicate that the tailing samples have a high neutralising capacity for the samples analysed.

The net acid generation test results shows that the final Net Acid Generation (NAG) pH of the tailings after complete oxidation was between 8.3 and 9.4, indicating that weak alkaline pH conditions are likely to prevail within the tailings pore waters.

The Tailings Multi-Element analysis results show that tailings are highly enriched in arsenic, chloride and sulfur. The tailings were significantly enriched with boron, cadmium, lead, antimony and selenium and slightly enriched with silver, boron, bismuth and zinc.

2.3.2 Time Limited Operations (TLO) on Works Approval W6364/2020/1

The TLO on Works Approval W6364/2020/1 requires the following (see Table 1, Table 5 and Table 6 excerpts):

Table 1: Groundwater monitoring of ambient concentrations

Monitoring well location	Parameter	Unit	Frequency	Method
Monitoring Bores MB-08 to MB-15 as shown on Drawing 801-137-C3000-900 of Schedule 1.	Standing water level ¹	mgbl	Each monthly period	Spot sample, in accordance with AS/NZS 5667.11.
	pH ¹	pH unit		
	Electrical conductivity ¹	µcm/S		
	Total dissolved solids	mg/L	Each quarterly period	
	WAD cyanide	mg/L		
	Total cyanide	mg/L	Each annual period	
	Ca, Mg, Na, K, CO ₃ , Cl, SO ₄ , Al, As, Cd, Cr, Cu, Fe, Mn, Ni, Zn, Pb, Co	mg/L		

Note 1: In-field non-NATA accredited analysis permitted.

Table 5: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Tailings Storage Facility Cell 3; and Cell 4	Operational freeboard of 0.3 m. Methods of operation minimise the likelihood of erosion of the embankments by wave action.	As shown in Drawing 801-137-C3000-050 of Schedule 1.
2.	Tailings and Decant Return Pipeline Corridor (TDRT)	Provided with secondary containment adequate to contain any spill for a period equal to the time between routine inspections.	As shown in Drawing 801-137-C3000-050 of Schedule 1.

Table 6: Compliance and performance monitoring

Site infrastructure and equipment	Area	Parameter	Frequency
Tailings and Decant Return Pipeline Corridor (TDRT) as shown in Drawing 801-137-C3000-050 of Schedule 1	Tailings Storage Facility Cell 3; and Cell 4	<ul style="list-style-type: none"> Outer perimeter area and embankments Condition of roads and ramps Tailings pipeline integrity Tailing behavior at deposition point Visual check on tailings and water levels versus embankment crest (freeboard) Offtake location Blockage or damage of discharge Monitoring instrumentation 	Daily
	TSF decant system	<ul style="list-style-type: none"> Size of supernatant pond Location of supernatant pond Return water pipeline integrity Blockage of decant tower Visual check on decant tower operation 	Daily
	TSF underdrainage, toe-drains, and seepage trench	<ul style="list-style-type: none"> Blockage of towers/pipes Visual checks of water level in towers/pipes Visual check of pipeline integrity 	Daily
	TSF basin	<ul style="list-style-type: none"> Water volume and level Tailings beach-head level 	Each weekly period
Site infrastructure and equipment	Area	Parameter	Frequency
	Tailings	<ul style="list-style-type: none"> Tailings solids (tonnes) Water in tailings (tonnes or m³) Average tailings flow (m³/s) 	Each weekly period
	Water	<ul style="list-style-type: none"> Outflow from decant pumps Outflow from toe drain and underdrainage Specific gravity of decant water 	Daily
Monitoring infrastructure as shown in Drawing 801-137-C3000-900 of Schedule 1	Standpipe and vibrating wire piezometers	<ul style="list-style-type: none"> Standing water level Pore-water pressure 	Each monthly period

Additional ambient groundwater monitoring bores were required to be installed under Works Approval W6364/2020/1. These have been constructed and compliance completed. Refer to Figure 1 for the TSF Cell 4 monitoring bores locations.

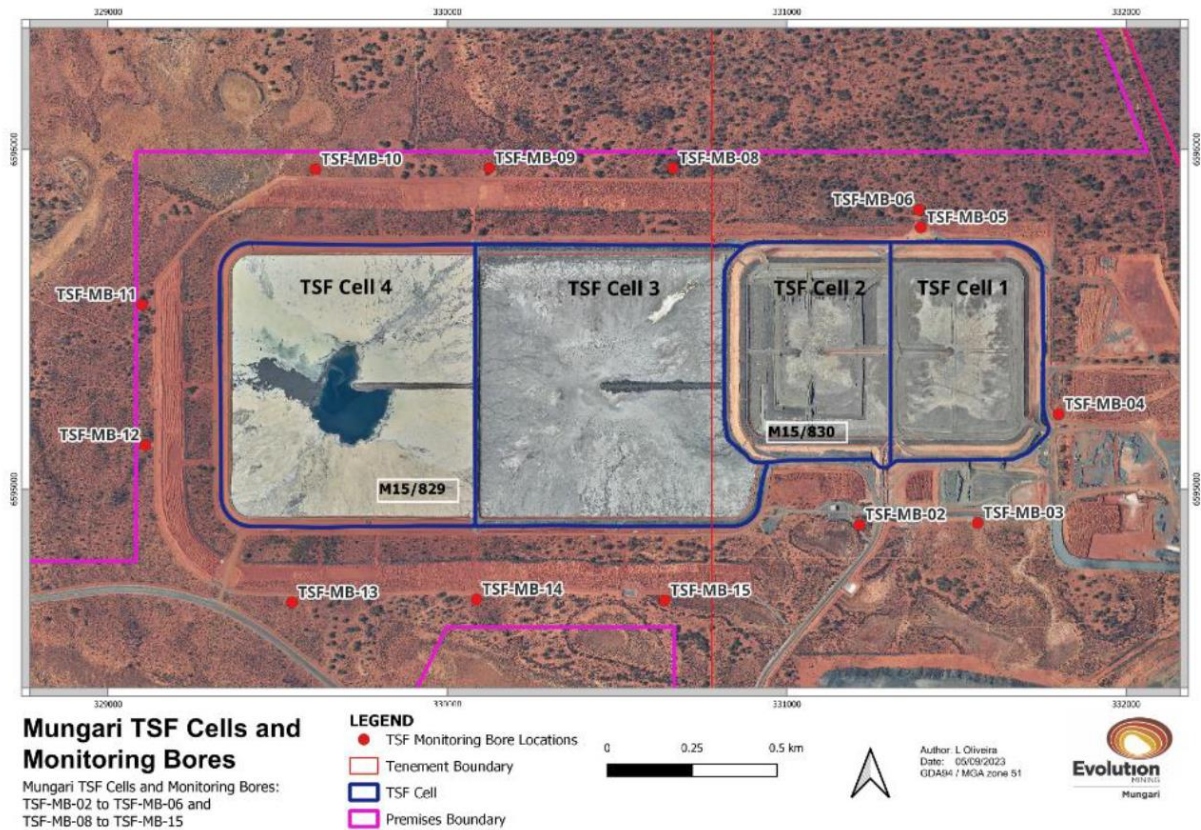


Figure 1: Mungari TSF Cells and monitoring bores location.

The Licence Holder provided the latest monitoring results for the TSF (Evolution Mining 2024). The Standing Water Level in all monitoring bores were within the licence limit of 4 mbgl as per Figure 2.

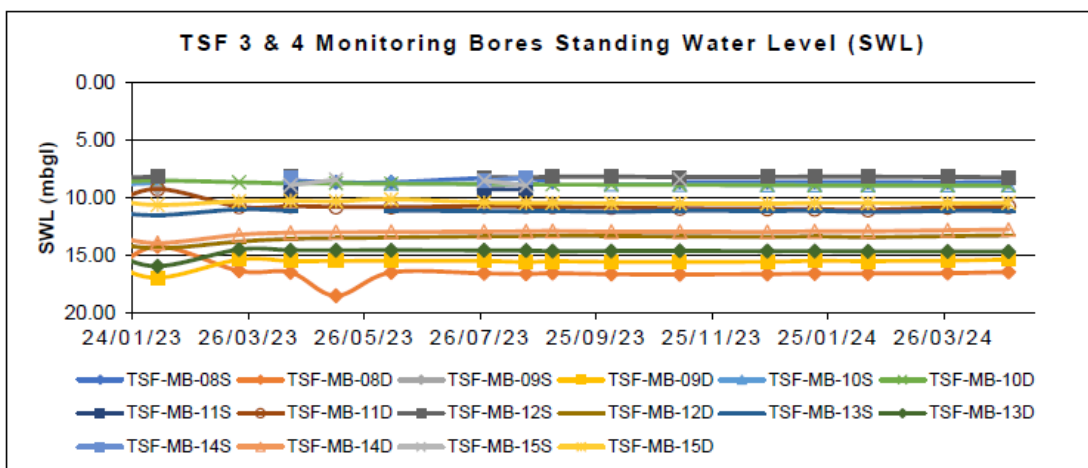


Figure 2: Monitoring Bores Standing Water Level results

The Total Dissolved Solids (TDS) monitoring results are provided in Figure 3 below:

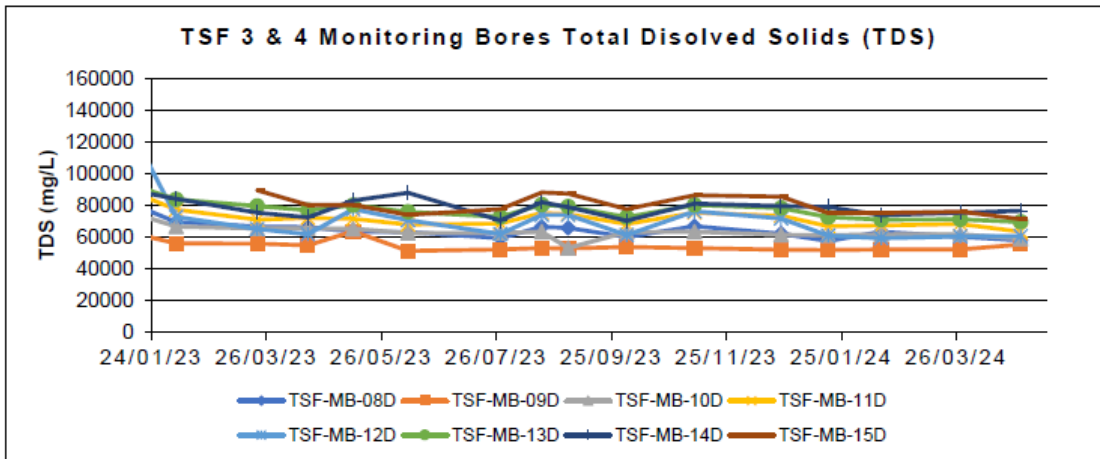


Figure 3: TSF Cell 3 and TSF Cell 4 TDS results

The Electroconductivity results are provided in Figure 4 below:

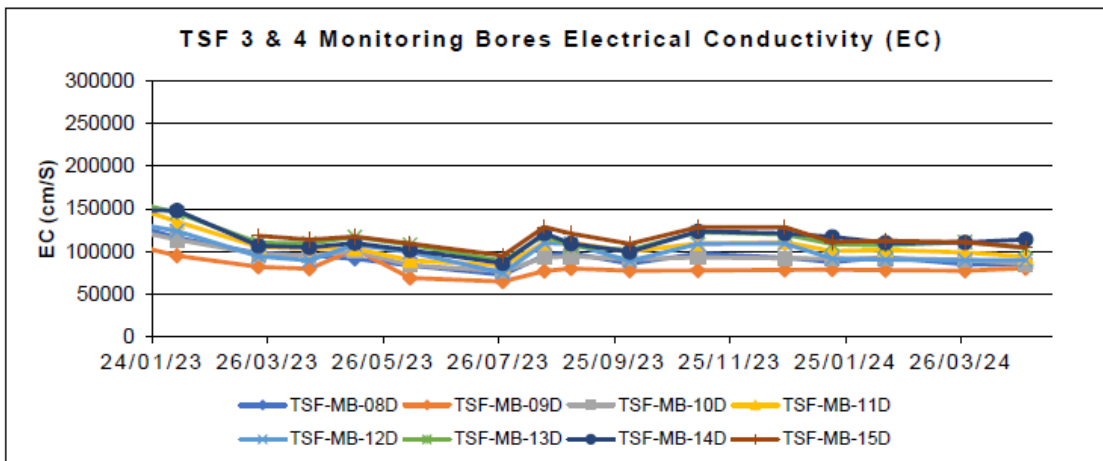


Figure 4: TSF Cell 3 and TSF Cell 4 electrical conductivity

The pH level for monitoring bores is provided in Figure 5 below:

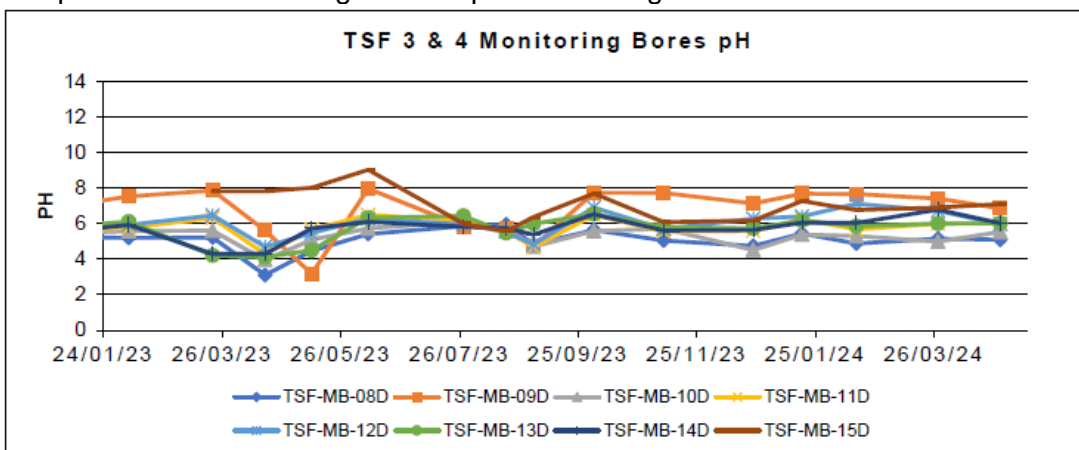


Figure 5: TSF Cell 3 and TSF Cell 4 pH levels

As can be observed in the previous figures, parameters levels are overall stable and are within the corresponding limits where they apply.

The Weak Acid Dissociable Cyanide (WAD-CN) levels were within the 0.5 mg/L limit on the licence.

The Annual Multi-Element Groundwater Quality monitoring results are provided in Table 1 below:

Table 1: Mungari TSF Annual Multi-Element Groundwater Quality

Bore ID	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	CO ₃ (mg CaCO ₃ /L)	Cl (mg/L)	SO ₄ (mg/L)	Al (mg/L)	As (mg/L)	Cd (mg/L)	Cr (mg/L)	Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Ni (mg/L)	Zn (mg/L)	Pb (mg/L)	Co (mg/L)
TSF-MB-02 Deep	351	5600	36800	148	5	57700	8300	0.30	<0.021	<0.0021	<0.021	<0.021	<1.05	5.24	0.112	<1.05	<0.021	0.051
TSF-MB-03 Deep	400	5140	32200	100	<1	58400	7940	5.59	<0.021	<0.0021	<0.021	<0.021	<1.05	0.676	0.062	<1.05	<0.021	<0.021
TSF-MB-03 Shallow	693	4270	31200	97	<1	57900	5660	13.6	<0.021	<0.0021	<0.021	<0.021	<1.05	0.283	0.099	<1.05	0.025	<0.021
TSF-MB-04 Deep	698	2950	27000	163	<1	52300	3980	86.1	<0.021	<0.0021	<0.021	<0.021	1.05	1.2	0.309	0.105	0.204	0.17
TSF-MB-05 Deep	2930	3040	51300	331	<1	86600	3320	18.4	<0.021	<0.0021	<0.021	<0.021	2.14	18.7	0.224	0.105	0.4	0.666
TSF-MB-05 Shallow	3510	3100	58500	370	<1	101000	3200	9.31	<0.052	<0.0052	<0.052	<0.052	5.24	23.3	0.256	0.262	0.376	0.786
TSF-MB-06 Deep	342	2130	19800	136	<1	37700	2750	46.2	<0.01	<0.001	<0.01	0.026	0.52	0.745	0.207	0.102	0.178	0.118
TSF-MB-08 Deep	424	4370	25400	92	41	47500	7000	<0.21	<0.021	<0.0021	<0.021	<0.021	<1.05	1.80	0.244	<0.105	<0.021	0.024
TSF-MB-09 Deep	358	3010	18400	92	57	28600	4660	<0.10	<0.010	<0.0010	<0.010	<0.010	<0.52	0.035	<0.010	<0.052	<0.010	<0.010
TSF-MB-10 Deep	1050	3490	23100	116	44	3500	760	<0.10	<0.010	0.0012	<0.010	0.017	<0.52	1.20	0.092	0.189	<0.010	0.014
TSF-MB-11 Deep	785	4660	28800	100	41	47800	8400	<0.10	<0.010	<0.0021	<0.021	<0.021	1.38	0.654	<0.021	<0.105	<0.021	<0.021
TSF-MB-12 Deep	597	5240	28400	93	58	55200	9060	<0.21	<0.021	<0.0021	<0.021	<0.021	<1.05	2.76	0.057	<0.105	<0.021	<0.021
TSF-MB-13 Deep	472	5970	31900	108	76	57400	9920	<0.21	<0.021	<0.0021	<0.021	<0.021	<1.05	2.08	0.035	<0.105	<0.021	<0.021
TSF-MB-14 Deep	702	5960	32000	119	49	57600	10900	<0.21	<0.021	<0.0021	<0.021	<0.021	<1.05	4.44	0.146	<0.105	<0.021	<0.021
TSF-MB-15 Deep	1400	4230	36100	159	58	62200	7070	<0.21	<0.021	<0.0021	<0.021	<0.021	4.60	5.59	0.164	<0.105	<0.021	<0.021

The department acknowledges the licence holder commitment to monitor the parameters. Additionally, the licence holder will have to provide the time limited operations report once the time limited operations phase is finalised.

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 2 below. Table 2 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 2: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
TSF supernatant	Deposition and storage	Seepage through base and	Low permeability TSF base and embankments.

Emission	Sources	Potential pathways	Proposed controls
<p>containing concentrations of elements with environmental significance (potentially containing cyanide, metals and metalloids)</p>	<p>of tailings in TSF Cell 4</p>	<p>embankments of TSF changing groundwater quality</p>	<p>Upstream cut-off trenches. Underdrainage basin collection system. Three toe-drains along the upstream toe of the perimeter embankment. Daily inspection of TSF, decant system, underdrainage, toe-drains, and seepage trench. Monitoring of TSF embankments, groundwater bores, TSF basin, standpipe piezometers and vibrating-wire piezometers (VWPs). (REF: DWER, 2020) Construction requirement under W6364/2020/1 includes an in-situ compacted soil liner (minimum 300 mm thick) with a hydraulic conductivity of 5×10^{-8} m/s (95% UCL) and maximum hydraulic conductivity of 2×10^{-7} m/s.</p>
		<p>Seepage through base and embankments of TSF creating groundwater mounding and flow causing impacts to surface water quality and health of native vegetation</p>	<p>An annual assessment of vegetation within the zone of influence of the TSF is on the licence.</p>
		<p>Ingestion of supernatant from TSF by wildlife leading to reduced fauna health or deaths.</p>	<p>Controls to prevent wildlife from ingesting supernatant water from the Mungari TSF are not necessary as the supernatant water is hypersaline (natural groundwater used in the processing circuit), with total dissolved solids (TDS) exceeding 100,000 mg/L. Due to the often fatal burden on the kidneys, local fauna have a natural aversion to drinking water with high salinity, particularly when salinity levels are hypersaline (greater than sea water ~35,000 mg/L TDS). As a result the risk of wildlife ingesting the TSF supernatant water is exceedingly low. (Evolution Mining 2024c)</p>
		<p>Overtopping of TSF cells causing impacts to surface water quality, health of native vegetation and localised soil contamination</p>	<p>Sufficient stormwater storage capacity to accommodate all design storm event including Probable Maximum Precipitation (PMP) (REF: DWER, 2020)</p>
<p>Dust lift off from tailings surface</p>	<p>Dust lift off from tailings surface</p>	<p>Air / windborne pathway causing impacts to vegetation</p>	<p>Regular dust suppression in unsurfaced areas by means of the application of saline water via water cart.</p>

Emission	Sources	Potential pathways	Proposed controls
		health due to dust deposition leading to reduced ability for photosynthesis and smothering	<p>Implementation of a speed limit around the TSF (20 km/hr) to reduce the potential for vehicle-related dust generation.</p> <p>Cyclic deposition of tailings around the entire perimeter of the TSF to ensure that the tailings beach remains moist at all times.</p> <p>Cessation of an operation/activity whereby dust generation cannot be controlled; and</p> <p>Progressive rehabilitation on the perimeter embankment downstream face of the TSF as soon as practicable during operation.</p> <p>(REF: Talis, 2020)</p>
Tailings and TSF return water (potentially containing cyanide, metals and metalloids)	Tailings and Decant Return Pipeline Corridor (TDRT)	Pipeline burst or leak causing impacts to surface water quality, native vegetation health and soil contamination	<p>Pipelines constructed in containment trench.</p> <p>Telemetered flow meters at process plant and at toe of TSF embankment.</p> <p>Daily inspections of pipeline integrity.</p> <p>(REF: DWER, 2020)</p>

3.1.2 Receptors

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

Table 3 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Kurrawang (Remote Aboriginal Community)	8.96 km south-east of the Premises. Due distance from the premises, it is not likely to be a receptor.
Environmental receptors	Distance from prescribed activity
Non-perennial Waterbody	Distance from TSF Cell 4: West Lake – 0.58 km west Kurrawang Lake – 1.54 km south Cattle Swamp – 2.16 km south Kopai Lake – 2.93 km east (Evolution Mining 2024b)

<p>Flora</p>	<p>The project area contains the following vegetation zones:</p> <p>(a) Mixed Eucalyptus Woodlands over sclerophyll shrublands. (b) <i>Eucalyptus Salubris</i> woodlands. (c) <i>Casuarina pauper</i> over sclerophyll shrublands. (d) <i>Eucalyptus oleosa</i> thicket over sclerophyll shrublands. (Source: Attachment 5, Knight Piesold 2020, p.6)</p> <p><i>Calandrinia lefroyensis</i> (Biodiversity Conservation Act (2016) P1) was found in 500 m west from premises approximately (Evolution Mining 2024b).</p>
<p>Fauna</p>	<p>Birds During survey in 2019 in the project area (IBSA-2019-0092) the licence holder found 52 birds species, 13 replies species, 10 mammals species, including 7 bat species. Fauna with conservation status include:</p> <ul style="list-style-type: none"> - <i>Actitis hypoleucos</i> (Common Sandpiper) - Mig.(EPBC & BC Acts) - <i>Apus pacificus</i> (Fork-tailed Swift) – Migratory(Mig) (EPBC & BC Acts) - <i>Calidris acuminata</i> (Sharp-tailed Sandpiper) - Mig.(EPBC & BC Acts) - <i>Calidris alba</i> (Sanderling) - Mig.(EPBC & BC Acts) - <i>Calidris ferruginea</i> (Curlew Sandpiper) - CR/Mig.(EPBC Act); VU/Mig. (BC Act) - <i>Calidris melanotos</i> (Pectoral Sandpiper) - Mig.(EPBC & BC Acts) - <i>Calidris ruficollis</i> (Red-necked Stint) - Mig.(EPBC & BC Acts) - <i>Calidris subminuta</i> (Long-toed Stint) - Mig.(EPBC & BC Acts) - <i>Calyptorhynchus latirostris</i> (<i>Carnaby's cockatoo</i>) - EN(EPBC & BC Acts) - <i>Glareola maldivarum</i> (<i>Oriental Pratincole</i>) - Mig.(EPBC & BC Acts) - <i>Falco peregrinus</i> (Peregrine Falcon) - OS (BC Act) - <i>Leipoa ocellata</i> (Malleefowl) - VU (EPBC & BC Acts) - <i>Motacilla cinerea</i> (Grey Wagtail) - Mig. (EPBC & BC Acts) - <i>Pezoporus occidentalis</i> (Night Parrot) - EN(EPBC Act); CR(BC Act) - <i>Plegadis falcinellus</i> (Glossy Ibis) - Mig.(EPBC & BC Acts) - <i>Thinornis rubricollis</i> (Hooded Plover) – Priority 4 (DBCA) - <i>Tringa brevipes</i> (Grey-tailed Tattler) - Mig.(EPBC); P4/Mig. (DBCA) - <i>Tringa glareola</i> (Wood Sandpiper) - Mig.(EPBC & BC Acts) - <i>Tringa nebularia</i> (Common Greenshank) - Mig. (EPBC & BC Acts) <p>Mammals</p> <ul style="list-style-type: none"> - <i>Dasyurus geoffroii</i> (Chuditch) - VU (EPBC & BC Acts) - <i>Myrmecobius fasciatus</i> (Numbat) - EN (EPBC & BC Acts) - <i>Macrotis lagotis</i> (Bilby) - VU (EPBC & BC Acts)
<p>Aboriginal Heritage sites</p>	<p>Distance from TSF Cell 4: Place ID: 18384 - Kopai Lakes – 2.7 km east Place ID: 846 - Piira Tukurr – Mythological – 0.67 km south</p>
<p>Groundwater</p>	<p>Temporary, intermittent perched aquifers can develop in shallow cover horizons immediately following major rainfall events.</p> <p>A regional watertable occurs and the depth to the water table ranges from less than 5 m in some playa-lake environments to more than 40 m in elevated areas. Groundwater flow is towards major palaeodrainages and modern playa lakes, where the water table is close to the surface. Groundwater discharge occurs mainly by evaporation from playa lakes, with a relatively small amount of discharge via flow through palaeochannels. There will also be discharge as baseflow to local drainages (from shallow aquifers) when the water table is elevated immediately following significant rainfall events.</p> <p>Groundwater is mainly saline to hypersaline. The salinity ranges from around 1,000 mg/L TDS in some shallow aquifers in cover or saprolite adjacent to basement outcrops and in intermittent perched aquifers following rainfall, to as much as 200,000 mg/L TDS in the palaeochannels, adjacent playa-lake sediments, and in adjacent fractured and weathered bedrock.</p>

	<p>The predicted worst-case groundwater mound around the TSF indicates a groundwater rise of 4 m extending around 200 m from the inside toe of the TSF. Based on measured water levels in the TSF footprint, the mounded water table at the margins of the TSF area will be 5 to 9 m below surface.</p> <p>The water table mound is predicted to rapidly decrease in magnitude with distance from the TSF and the predicted water table rise is less than 1 m at 400 m distance from the inside toe of the TSF. The nearest downstream salt lake is approximately 500 m away and groundwater is anticipated to remain more than 6 m below ground level (i.e. below the root zone of native vegetation).</p> <p>Seepage flows will initially be semi-radially away from the TSF under the influence of the water table mound and will eventually come under the influence of regional hydraulic gradients. Based on available topographic data, the predicted maximum water table mound rise, and the influence of the existing mound beneath TSF Cells 1 and 2, all seepage from TSF Cells 3 and 4 is predicted to flow to the south and eventually into the White Foil pit.</p> <p>(Reference: W6364/2020/1 Decision Report)</p>
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3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Licence L7750/2001/10 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 5 activities.

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

Table 4. Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation								
Deposition and storage of tailings in TSF Cell 4	TSF supernatant containing concentrations of elements with environmental significance (potentially containing cyanide, metals and metalloids)	Seepage through base and embankments of TSF changing groundwater quality	Groundwater	Refer to Section 5.1	C = Moderate L = Possible Medium Risk	Y	Condition 3 – Construction requirement regarding minimum permeability <u>Operational requirements</u> Condition 5 – regarding supernatant and seepage collection Condition 7 – annual TSF water balance Condition 8 – TSF operational height Condition 21 – groundwater monitoring and limits for WAD-CN	N/A
		Seepage through base and embankments of TSF creating groundwater mounding and flow causing impacts to surface water quality and health of native vegetation	Surface water Native vegetation	Refer to Section 5.1	C = Moderate L = Possible Medium Risk	Y	Condition 3 – Construction requirement regarding minimum permeability <u>Operational requirements</u> Condition 5 – regarding supernatant and seepage collection Condition 7 – annual TSF water balance Condition 8 – TSF operational height Condition 21 – groundwater monitoring and limits for SWL	N/A

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							Condition 22 – vegetation monitoring	
		Ingestion of supernatant from TSF by wildlife leading to reduced fauna health or deaths.	Fauna	Refer to Section 5.1	C = Minor L = Unlikely Medium Risk	Y	N/A	
		Overtopping of TSF cells causing impacts to surface water quality, health of native vegetation and localised soil contamination	Soil Native Vegetation Surface water	Refer to Section 5.1	C = Moderate L = Unlikely Medium Risk	Y	<u>Operational requirements</u> Condition 4 – minimum total freeboard Condition 6 – Infrastructure inspection (TSF freeboard)	N/A
	Dust lift off from tailings surface	Air / windborne pathway causing impacts to vegetation health due to dust deposition leading to reduced ability for photosynthesis and smothering	Native Vegetation	Refer to Section 5.1	C = Minor L = Rare Low Risk	Y	N/A	N/A
Tailings and Decant Return Pipeline Corridor (TDRT)	Tailings and TSF return water (potentially containing cyanide, metals and metalloids)	Pipeline burst or leak causing impacts to surface water quality, native vegetation health and soil contamination	Soil Native Vegetation Surface water	Refer to Section 5.1	C = Moderate L = Possible Medium Risk	Y	<u>Operational requirements</u> Condition 6 – Infrastructure inspection (tailings pipelines)	N/A

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

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

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on 22 August 2024	<p>The Licence Holder provided answers to DWER queries and requested 21 days period be waived:</p> <ul style="list-style-type: none"> Licence Holder stated that controls for fauna are not necessary due to the salinity of the water. This information was added in Table 2 of the amendment report; and The Licence Holder provided date when they started depositing tailings into TSF Cell 4 Stage 2, this information was added into Section 2.3 of the amendment report. 	Noted and added to the amendment report.

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 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 6: Summary of licence amendments

Condition no.	Proposed amendments
Licence History	This amendment was added
2	Format wording updated
8	Table 3 updated by adding the TSF Cell 4 (Stage 2)
21	Added in titles to ambient groundwater monitoring bores

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2020, *Decision Report W6364/2020/1 (date: 10 September 2020)*, Perth, Western Australia.
5. DWER 2024, *W6364/20220/1 Compliance Report, Compliance demonstrated* (REF: A2252419).
6. Evolution Mining 2024, *Application documents - Attachment 8: Additional Information Submitted* (REF: A2285343).
7. Evolution Mining 2024b, *Application documents - Attachment 5: Other Approvals*
8. Evolution Mining 2024c, *Comment to licence amendment draft* (REF: DWERDT1000206)
9. Knight Piésold Consulting 2015, *Memo: Mungari Project – Tailings Physical and Geochemical Testing* (REF: DWERDT251988).
10. Knight Piésold Consulting 2023, *Tailings Storage Facility – Cell 4 Stage 2 Construction Report*, Kalgoorlie, Western Australia (DWERDT877308).
11. Talis 2020, *Mining Proposal Mungari TSF Expansion: Cells 3 and 4, M15/829, M15/830* (REF: A2285348).