



Application for Licence Amendment

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

Choose an item.	L7750/2001/10
Choose an item.	Evolution Mining (Mungari) Pty Limited
ACN	002 124 745
File Number	2011/009482-1~7
Premises	Mungari Gold Project COOLGARDIE WA 6429 Legal description – Mining tenements M15/829 and M15/830 As defined by the Premises maps attached to the Revised Licence
Date of Report	01 August 2022
Proposed Decision	Revised licence granted

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**A/MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES**

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 Mining tenements M15/829, M15/830, M15/1741, M15/1408, M15/1287, M15/688, L15/228, L15/246, L15/227 and M15/1407.

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. The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence previously granted in relation to the Premises. The Revised Licence has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

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 Application summary

On 13 April 2022, 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 following amendments are being sought:

- Inclusion of Tailings Storage Facility (TSF) Cell 4, that was constructed under works approval W6364/2020/1

This amendment is limited only to changes to Category 5 activities from the Existing Licence. No changes to the aspects of the existing Licence relating to Category 6, 12 and 89 have been requested by the Licence Holder.

The applicant operates the Mungari Gold Mine which mines ore from one open pit (White Foil) and an underground mine (Frogs Leg). The Premises is approximately 20 km west of Kalgoorlie-Boulder (Figure 1)

The Premises includes an existing double-cell paddock-style TSF (TSF1 and 2). To ensure sufficient tailings storage capacity for the Premises life-of-mine (LOM), the construction of a new TSF (Cell 3 and Cell 4) were proposed and constructed under works approval W6364/2020/1.

TSF Cell 3 was constructed according to the Works Approval W6364/2020/1 and the Licence was amended on 4 November 2021 with the inclusion of TSF Cell 3.

A Critical Containment Infrastructure Report was submitted to the Department on 11 February 2022 and it was determined that the Report met the conditions 1, 4 and 5 of works approval W6364/2020/1 and time limited operations commenced at TSF Cell 4.

TSF Cell 4 Stage 1 has been constructed adjacent to and to the west of TSF 1 and 2 and covers a total footprint of 118 hectares (ha) (Figure 1). The constructed embankment height for stage 1 has been constructed to a height of RL347.4m and has a capacity of 7.5 Mt of tailings material with a 500mm freeboard.

The development of TSF Cell 3 and 4 will provide a total of 25 Mt of additional tailings storage capacity over a ten-year period, supporting expansion of gold mining and increasing throughput

of gold ore at the mill as part of Evolution's ten year LOM plan for MGO.

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 1. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Operation			
Leachate	TSF Cell 4	Seepage through base and embankments of TSF to soil and groundwater	<ul style="list-style-type: none"> ▪ Low permeability TSF base and embankments. Constructed with an in-situ compacted soil liner (minimum 300 mm thick) with a hydraulic conductivity of 5x10⁻⁸ m/s (95% UCL) and maximum hydraulic conductivity of 2x10⁻⁷ m/s. ▪ Upstream cut-off trenches. ▪ Underdrainage basin collection system installed ▪ Three toe-drains along the upstream toe of the perimeter embankment. ▪ Daily inspection of TSF for freeboard capacity and embankment condition ▪ Decant water system installed to remove water from TSF surface ▪ Groundwater monitoring bore network installed for water quality and SWL monitoring. ▪ vibrating-wire piezometers (VWPs) installed.
Tailings and contaminated water	TSF Cell 4	Overtopping of TSF and direct discharge to land	Constructed to provide a minimum 0.5 metre total freeboard (including an allowance for a 1% AEP 72 hour rain event) above the normal operating pond.
Tailings and contaminated water	Tailings and Decant Return	Pipeline burst or leak and direct discharge to land	<ul style="list-style-type: none"> ▪ Pipelines constructed in containment trench. ▪ Telemetered flow meters at process plant

Emission	Sources	Potential pathways	Proposed controls
	Pipeline Corridor (TDRT)		and at toe of TSF embankment. <ul style="list-style-type: none"> ▪ Daily inspections of pipeline integrity.

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 2 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 2: Sensitive human and environmental receptors and distance from prescribed activity

Sensitive receptors	Distance from prescribed activity
Coolgardie townsite	20km south of the premises. No pathway to receptors due to distance.
Kalgoorlie-boulder township	20 km east of the premises. No pathway to receptors due to distance.
Environmental receptors	Distance from prescribed activity
Inland water bodies	Un-named salt lake 0.5 km south West Lake 0.7 km west Cattle Swamp 2.1 km south Kurrawari Lake 1.5 km south Kopai Lake 2.2 km east Greta Lake 3.1 km northeast Kurrawang White Lake 5.8 km northeast
Native vegetation, flora and fauna	Four vegetation zones identified within the Premises: <ul style="list-style-type: none"> • Mixed Eucalyptus Woodlands over sclerophyll shrublands. • Eucalyptus Salubris woodlands. • Casuarina pauper over sclerophyll shrublands. • Eucalyptus oleosa thicket over sclerophyll shrublands. No Threatened or Priority Flora, Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) have been recorded in the Premises and none are located within 2km of the premises. No significant fauna or conservation significant vertebrate fauna have been detected in the Premises and none are located within 2.3 km of

	the premises.
Groundwater	<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>

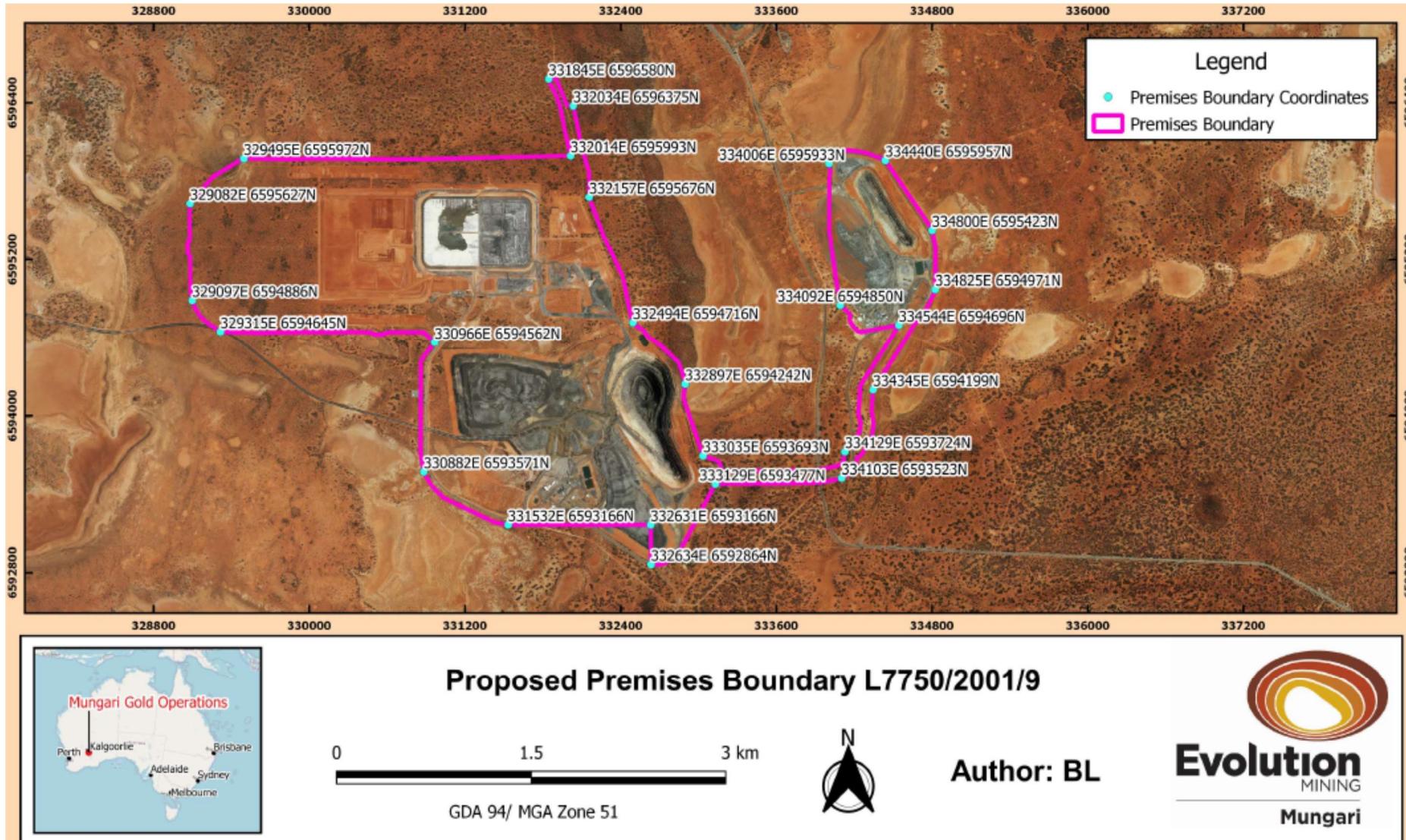


Figure 1: Premises boundary

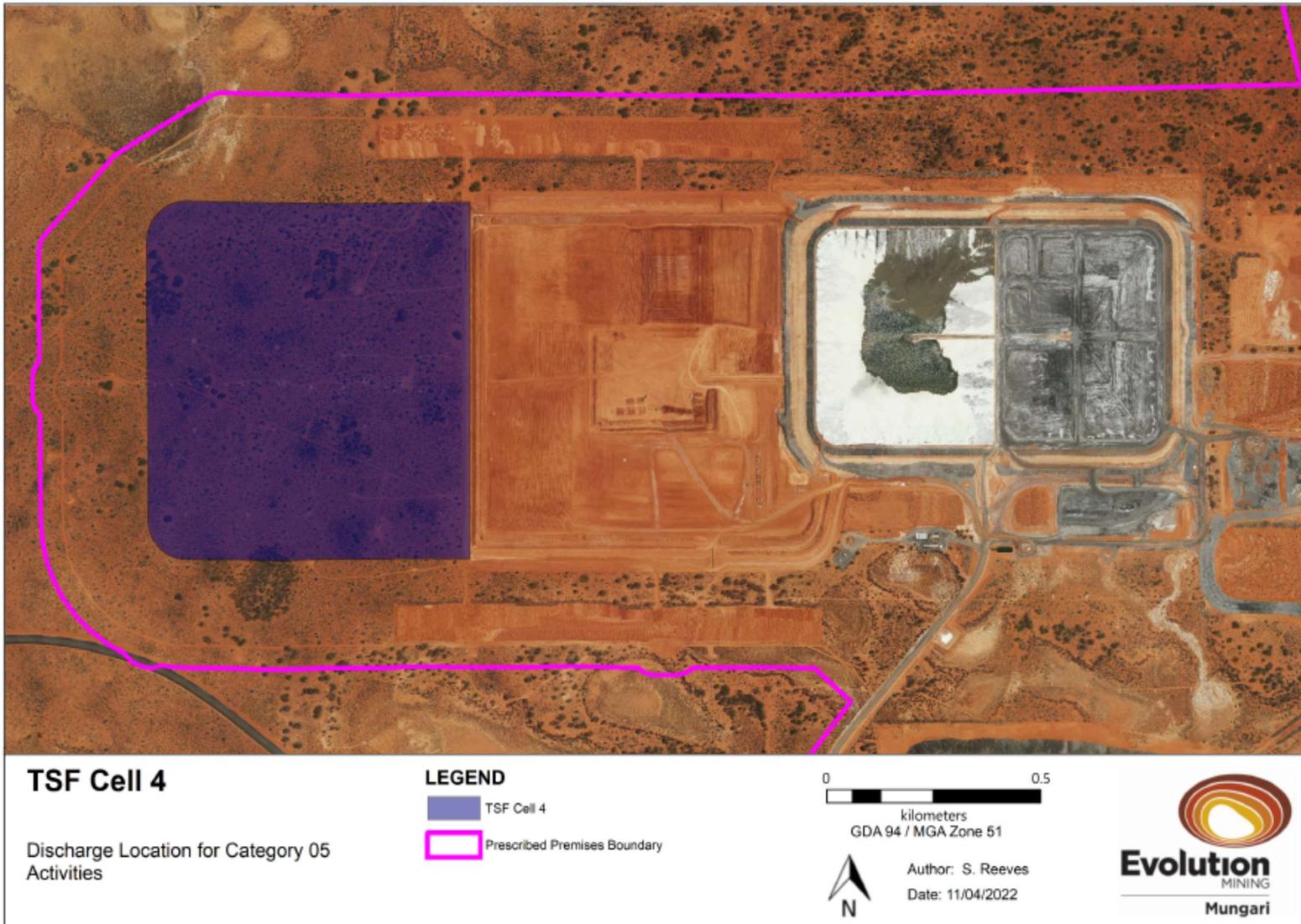


Figure 2: TSF Cell 4

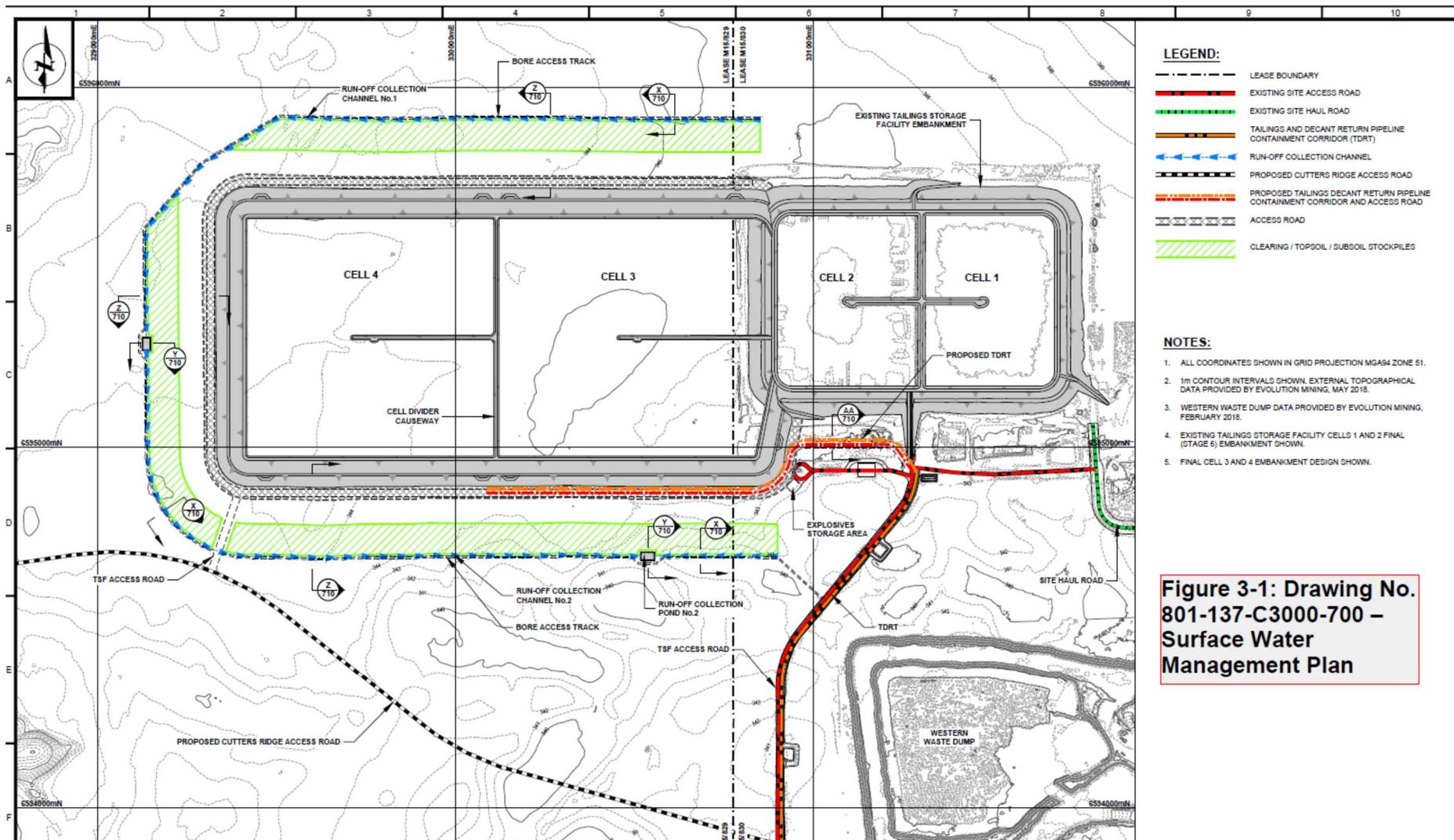


Figure 3-1: Drawing No. 801-137-C3000-700 – Surface Water Management Plan

Figure 3: Cell 3 and Cell 4

L7750/2001/10 Licence

IR-T15 Amendment report template v3.0 (May 2021)

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 3.

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 3. Risk assessment of potential emissions and discharges from the Premises during 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 into TSF Cell 4	Leachate	Seepage through base and embankments of TSF creating groundwater mounding and flow causing impacts to surface water quality and health of native vegetation	Native vegetation adjacent to TSF Cell 4 Surface water features (incl. salt lakes) closest being 500m south of TSF	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	Y	Updated existing condition 3 – to add TSF Cell 4 Updated existing condition 8 - to include TSF Cell 4 staged operating heights. Existing conditions 21 and 22	Hydrogeological assessment by AQ2 Pty Ltd (2020) indicates that water table around TSF Cell 4 is expected to mound with a rise of 4 m extending around 200m from the inside toe of the TSF (this area is mostly cleared of vegetation). Baseline monitoring data (Aug 2021) indicate that groundwater levels around TSF cell 4 are 9-13 mbgl. Therefore, the model predicts worst case scenario of the mounded water table at the margins of the TSF area to be 5 to 9 mbgl. The water table mound has also been modeled to rapidly decrease in magnitude with distance from the TSF and the predicted water table raise is less than 1m at 400 m distance from the inside toe of the TSF, noting that the nearest downstream Salt Lake is approximately 500 m away. To ensure that mounding of the groundwater table is controlled to prevent impacts to vegetation and surface water features, a SWL of 4 mbgl has been applied to the new groundwater monitoring bores installed around TSF cell 4. These new bores and corresponding limit

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				
							already exist on the licence (condition 21) and was added when the licence was amended to include Cell 3. Existing condition 22 which requires an annual assessment of vegetation surrounding the TSF will also apply to vegetation around TSF cell 4.	
		Seepage through base and walls of TSF causing impacts to groundwater quality	Groundwater			Existing condition 5 – seepage recovery Existing condition 21 – TSF groundwater monitoring	N/A	
	Tailings and decant water	Overtopping of TSF Cell 4 potentially causing ecosystem disturbance or impacting surface water quality	Soils Surface water features (incl. salt lakes) closest being 500m south of TSF Native vegetation adjacent to TSF	Refer to Section 3.1.1	C = Major L = Unlikely Medium Risk	Y	Updated condition 3 – to add TSF Cell 4 Existing condition 4 – freeboard requirements Existing condition 6 – inspection of freeboard	N/A
Tailings and decant water	Pipeline burst or leak causing direct discharge to land potentially causing ecosystem disturbance or impacting surface water quality	Soils Surface water features (incl. salt lakes) Native	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk	Y	Existing condition 1 – pipeline requirements (i.e., bunding and telemetry) Existing condition 6 - daily inspection of	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				
			vegetation				pipelines for integrity	

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 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on 15/07/2022	The Licence Holder responded on 25 July 2022 and waived the comment period.	N/A

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 5 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 5: Summary of licence amendments

Condition no.	Proposed amendments
Licence History	Updated to include this amendment.
Condition 3	Table 1 updated to include Cell 4
Condition 8 (table 3)	Condition amended to include TSF Cell 4 embankment height and operating height.
Conditions 23 - 27	Have been updated to standard formatting.
Condition 29	Deleted – as not required.
Condition 30 renumbered to condition 29	Condition numbers updated due to deletion of condition
Condition 29	Updated to standard formatting. N1 form no longer used.
Schedule 1: Maps	Figure 3 has been replaced with an updated figure that includes TSF Cell 4.
Schedule 3: N1 Form	Deleted. N1 form no longer required as condition 29 has been updated to new format.

References

1. AQ2 Pty Ltd 2020, Technical Memo - *Mungari TSF Cells 3 and 4 – Hydrogeological Assessment*, prepared for Evolution Mining Ltd, dated 14/05/2020.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.

3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. Talis Mining Proposal June 2020, Mungari TSF Expansion: Cells 3 and 4.

Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY				
Application type				
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L7750/2001/10	
		Relevant works approval number:		N/A
Date application received		13 April 2022		
Applicant and Premises details				
Applicant name/s (full legal name/s)		Evolution Mining (Mungari) Pty Limited		
Premises name		Mungari Gold Project		
Premises location		L15/228 exp 07/11/2022 L15/246 exp 26/11/2024 M15/688 exp 24/03/2036 M15/829 exp 14/03/2041 M15/830 exp 14/03/2041 M15/1287 exp 23/06/2025 M15/1407 exp 07/01/2025 M15/1741 exp 11/09/2033		
Local Government Authority		Shire of Coolgardie		
Application documents				
HPCM file reference number:		2011/009482-1~7		
Key application documents (additional to application form):				
Scope of application/assessment				
Summary of proposed activities or changes to existing operations.		Licence amendment Operation of: Mungari Processing Plant and TSF Mine Dewatering and Discharge Crushing and screening plant White Foil and Frog's Leg Landfills Inclusion of TSF Cell 4 with an expected throughput of 1.25 Mt pr year, cumulative total of 12.5 Mt over 10 years. Second cell operational of the double cell facility, separated by cell diving causeway with a central decant tower constructed under works approval W6364/2020/1.		

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

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation of metallic or non-metallic ore	3,000,000 tonnes per annual period	N/A
Category 6: Mine dewatering	5,000,000 tonnes per annual period	N/A
Category 12: Screening etc. of material	50,000 tonnes per annual period	N/A
Category 89: Putrescible landfill site	2,000 tonnes per annual period	N/A

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input checked="" type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	CPS No: 8797/1 Clearing already done.

Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: Licence/permit No: Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Type: Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office:
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Priority: N/A Are the proposed activities/landuse compatible with the PDWSA (refer to WQPN 25)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A

<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>Classification: possibly contaminated – investigation required (PC–IR)</p>
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