

# **Amendment Report**

# **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 - Mining tenements M15/829, M15/830, M15/1741, M15/1408, M15/1287, M15/688, L15/228, L15/246, L15/227 and M15/1407 As depicted in Schedule 1
Date of Report	4 November 2021
Decision	Revised licence granted

Carmen Standring 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 in Coolgardie Western Australia (WA).

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.

### 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 <a href="https://dwer.wa.gov.au/regulatory-documents">https://dwer.wa.gov.au/regulatory-documents</a>.

### 2.2 Application summary

On 25 August 2021 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 amendment is being sought:

 Inclusion of Tailings Storage Facility (TSF) Cell 3, constructed under works approval W6364 /2020/1, on the licence.

This amendment is limited only to changes to Category 5 activities authorised in 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 Premises has an existing double-cell paddock style TSF (TSF 1 and 2). To ensure sufficient tailings storage capacity for the Premises life-of-mine, the construction of a new TSF (cells 3 and 4) were authorised under works approval W6364/2020/1. On 18 May 2021 the Licence Holder submitted the critical containment infrastructure report for TSF cell 3 required by condition 4 of works approval W6364/2020/1. It was found that the report satisfied compliance with condition 1 and the construction requirements for Cell 3 outlined in Table 1 of W6364/2020/1. Additional compliance documentation, regarding TSF cell 3, required by conditions 6-9 of W6364/2020/1 have also been submitted to the department and have indicated compliance with the condition requirements.

TSF Cell 3 stage 1 (starter embankments) has been constructed adjacent to and to the west of TSF 1 and 2 and covers a total footprint area of 197.1 hectares (ha) (Figure 1). The constructed embankment height for stage 1 is 347.4 mRL. It is expected that 1.25 million tonnes (Mt) per year will be deposited within TSF Cell 3 per year, with a cumulative total of 12.5 Mt over 10 years. The works approval includes two additional stages; stage 2 (embankment lift to 349.1 mRL) and stage 3 (embankment lift to 350.7 mRL). These two stages will be the subject of additional future licence amendments, once construction compliance reporting has been satisfied for those stages.

Eight additional groundwater monitoring bores have also been constructed surrounding the footprint of the TSF cell 3 and the yet to be constructed TSF Cell 4. The new bores will also be added to the licence as compliance bores.



#### Figure 1: Location of TSF Cell 3.

Licence: L7750/2001/10

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## 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 below.

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

Emission	Sources	Potential pathways	Proposed controls
Operation			
Leachate	TSF Cell 3	Seepage through base and embankments of TSF to soil and groundwater	<ul> <li>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.</li> </ul>
			<ul> <li>Upstream cut-off trenches.</li> </ul>
			<ul> <li>Underdrainage basin collection system installed</li> </ul>
			<ul> <li>Three toe-drains along the upstream toe of the perimeter embankment.</li> </ul>
			<ul> <li>Daily inspection of TSF for freeboard capacity and embankment condition</li> </ul>
			<ul> <li>Decant water system installed to remove water from TSF surface</li> </ul>
			<ul> <li>Groundwater monitoring bore network installed for water quality and SWL monitoring.</li> </ul>
			<ul> <li>vibrating-wire piezometers (VWPs) installed.</li> </ul>
Tailings and contaminated water	TSF Cell 3	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	Tailings and Decant	Pipeline burst or leak and direct	<ul> <li>Pipelines constructed in containment trench.</li> </ul>

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
water	Return Pipelines	discharge to land	<ul> <li>Telemetered flow meters at process plant and at toe of TSF embankment.</li> </ul>
			<ul> <li>Daily inspections of pipeline integrity.</li> </ul>

#### 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)).

Human 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 (salt lakes)	Unnamed Salt Lake 0.5 km south
	West Lake 0.7 km west
	Kurrawan Lake 1.5 km south
Groundwater	Regional groundwater is hypersaline. There are no known groundwater dependent ecosystems and the only beneficial use is mining and mineral processing.
Native Vegetation	Four vegetation zones identified within Premises:
	<ul> <li>Mixed Eucalyptus Woodlands over Sclerophyll shrublands</li> </ul>
	Eucalyptus Salubris woodlands.
	Casuarina pauper over sclerophyll shrublands.
	<ul> <li>Eucalyptus oleosa thicket over sclerophyll shrublands.</li> </ul>
	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 2 km of the premises.

Table 2: Sensitive human and environmental receptors

### 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 L7750/2001/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Operation of new TSF Cell 3.

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

Risk Event			Risk rating <sup>1</sup>	Licence					
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls	
Operation	Operation								
Deposition and storage of tailings into TSF Cell 3	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 3 Surface water features (incl. salt lakes) closest being 500m south of TSF	Refer to Section 3.1.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Updated condition 3 – to add TSF Cell 3 Existing condition 5 – seepage collection/recovery system to be implemented if seepage from TSF occurs Existing condition 7 – TSF water balance required. Updated condition 21 – TSF groundwater monitoring requirements with SWL limit of 4mbgl Existing condition 22 – annual assessment of vegetation surrounding TSF	Hydrogeological assessment by AQ2 Pty Ltd (2020) indicates that water table around TSF Cell 3 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 3 are 9-16 mbgl. Therefore, the model predicts worst case scenario of the mounded water table at the margins of the TSF area to be 5 to 12 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 will be applied to the new groundwater monitoring bores installed around TSF cell 3. Existing condition 22 which requires	

### Table 3: Risk assessment of potential emissions and discharges from the Premises operation

Risk Event					Risk rating <sup>1</sup>	Licence		
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
								an annual assessment of vegetation surrounding the TSF will also apply to vegetation around TSF cell 3.
		Seepage through base and walls of TSF causing impacts to groundwater	Groundwater				Updated condition 21– TSF groundwater monitoring	Conditions for the adequate management of this risk already exist on the licence. No additional
		quality					Existing condition 5 – seepage recovery	regulatory controls are required.
	Tailings and decant water	Overtopping of TSF Cell 3 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 <b>Medium Risk</b>	Y	Updated condition 3 – to add TSF Cell 3 Existing condition 4 – freeboard requirements Existing condition 6 – inspection of freeboard	Conditions for the adequate management of this risk already exist on the licence. No additional regulatory controls are required.
	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 vegetation	Refer to Section 3.1.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Existing condition 1 – pipeline requirements (i.e., bunding and telemetry) Existing condition 6 - daily inspection of pipelines for integrity	Conditions for the adequate management of this risk already exist on the licence. No additional regulatory controls are required.

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

The Licence Holder was provided with the draft Amendment Report on 27 October 2021. Comments received from the Licence Holder on 1 November 2021 have been considered by the Delegated Officer as detailed in 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 4: 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.

Condition no.	Proposed amendments
Licence History	Updated to include this amendment.
Condition 3	Table 1 updated to include Cell 3
Condition 5	Wording updated to refer to all TSF cells.
Condition 6	Table 2 updated to include reference to TSF within row 3
Condition 7	Wording updated to refer to each TSF cell. Water balance required for each TSF cell.
New condition 8 (table 3)	New condition added to clearly outline at which stage each TSF cell is approved to be operated at. This condition will add clarity to what embankment height is currently approved under the licence for each TSF cell.
Conditions 8 -15 renumbered conditions 9-16	Condition number changes
Condition 9	Table number changed from Table 3 to Table 4.
Condition 10	Reference to condition 8 changed to refer to condition 9 due to renumbering of conditions
Condition 11	Table number changed from Table 4 to Table 5.
Condition 13	Table number changed from Table 5 to Table 6.
Condition 15 -17	Deleted Construction requirements for crushing and screening plant. Crushing and screening infrastructure has been installed and compliance documents have been submitted.
New condition 16	New condition added outlining the locations the crushing and screening plant is allowed to be operated as per Figure 5, schedule 1.
Condition 20 – 33 renumbered conditions 17- 30	Condition number changes
Condition 20 Table 8	Text in rows 3 and 4 (column titled 'parameter') updated to refer to each TSF cell.
Condition 21 Table 9	Text updated to include new monitoring bores around TSF 3.
Condition 27	Table 10 – conditions numbers updated to reflect renumbering. Row added to require TSF annual water balance data (condition 7) to be provided in the annual report.

Table 4: Summary of licence amendments

Condition 30	Reference to condition 23 has been updated to refer to condition 21 due to renumbering of conditions.			
Schedule 1: Maps	Figure 3 has been replaced with an updated figure that includes TSF3 and new monitoring bores.			

## 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.

# Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
3	None of the TSF Cells are 'lined', however, constructed to achieve a target permeability. TSF Cells 1 and 2 were constructed with Zone A material and had a target permeability of 10-8 m/s or less (as per Works Approval W5464) and TSF Cell 3 has been constructed with an in-situ compacted soil liner (CSL) with a hydraulic conductivity of 5 x 10-8 m/s (95% UCL) (as per Works Approval W6364 Condition 1). TSF Cell 3 in-situ CSL was completed at a rate of one test per hectare, constructed as per specified drawings and achieved a hydraulic conductivity of 5 x 10-8 m/s (95% UCL). It is therefore requested to update Condition 3, Table 1. Infrastructure requirements to reflect a permeability of 5 x 10-8 m/s, as approved and constructed.	Requested change has been accepted.
7	The wording of <b>Condition 7</b> has changed to say; " <i>The Licence Holder must undertake an annual water balance for each the TSF cells.</i> " As the Mungari TSF operates multiple cells a year, a single water balance inclusive of all TSF Cells would be a more accurate description in the listed condition. It is therefore requested to re-word this condition to stipulate a single annual water balance of the TSF, inclusive of all three cells	Requested change has been accepted.
8	DWER's original assessment of TSF Cell 3 for Works Approval W6364/2020/1 was inclusive of all three stages involving both embankment lifts up to a final height of 350.7 mRL. The potential risks to the environment from deposition and storage of tailings into TSF Cell 3 are not expected to change as result of each separate embankment lift. As the conditions for the adequate management of deposition and storage of tailings into TSF Cell 3 risk already exist on the revised licence, Evolution are of the opinion that no additional regulatory controls will be required as result of embankment lifts.	Requested change has not been accepted. Justification: DWER Guideline: Industry Regulation Guide to Licencing (June 2019) outlines that for staged approaches (such as TSF lifts) the department is required to certify that the works are compliant with the works approval before amending the licence.
	Therefore, it is requested to amend to allow all three stages (to a construction height of 350.7 mRL) to prevent administrative burden of submitting additional licence amendments each time a lift is constructed	embankment height that has not been constructed can not be given under the

Condition	Summary of Licence Holder's comment	Department's response
		licence until compliance documentation has been submitted for each lift.
21	Electrical Conductivity (EC) is obtained as a standard a parameter during monthly field readings (similarly to TDS). The only monthly lab analysis required from Condition 21's Table 9 Monitoring of ambient groundwater quality is for EC.	Requested change has been accepted.
	It is therefore requested that Note 1: pH and TDS are permitted to be measured in the field in accordance with Australian Standard 5667 may also include EC.	

# Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)						
Application type						
Works approval						
		Relevant works approval number:		None		
		Has the works approval been complied with?		Yes ⊠	Yes 🛛 No 🗆	
Licence		Has time limited operations under the works approval demonstrated acceptable operations?		Yes 🗆	No 🗆 N/A 🗆	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes 🛛	Yes 🛛 No 🗆	
		Date Report received: 18/05/2021				
Renewal		Current licence number:				
Amendment to works approval		Current works approval number:				
Amendment to licence		Current licence number:	L7750/2001/10	50/2001/10		
		Relevant works approval number:	W6364/2020/1	N/A		
Registration		Current works approval number:		None		
Date application received		22/08/2021				
Applicant and Premises details						
Applicant name/s (full legal name/s)		Evolution Mining (Mungari) Pty Ltd				
Premises name		Mungari Gold Project				
		Mining tenements:				
Premises location		Partial L15/228, L15/246, M15/688, M15/829, M15/830,				
		M15/1287, M15/1407, M15/1741				
Local Government Authority		Shire of Coolgardie				
Application documents						
HPCM file reference number:		2011/009482-1				
Key application documents (additional to application form):		<ul> <li>Attachment 3B: Proposed Activities</li> <li>Mining proposal</li> <li>Mungari TSF Expansion – Groundwater Impact Assessment</li> <li>Mungari TSF Expansion: Surface Water Assessment</li> <li>TSF3 Design Report</li> <li>Mungari TSF Cells 3 and 4 – Hydrogeological Assessment (AQ2)</li> </ul>				

Scope of application/assessment		
Summary of proposed activities or changes to existing operations.	Licence amendment Inclusion of TSF Cells 3 with an expected throughput 1.25 Mt per year, cumulative total of 12.5 Mt over 10 years. First Cell operational of the double cell facility, separated by cell dividing causeway with a central decant tower constructed under 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	N/A	3 000 000 tonnes per year (no change proposed to approved production capacity).

#### Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes 🗆 No 🖂	Referral decision No: Managed under Part V □ Assessed under Part IV □	
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes 🗆 No 🖂	Ministerial statement No: EPA Report No:	
Has the proposal been referred and/or assessed under the EPBC Act?	Yes 🗆 No 🖂	Reference No:	
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ⊠ No □	Certificate of title □ General lease □ Expiry: Mining lease / tenement ⊠ Expiry: L15/228, exp. 07/11/2022, L15/246, exp. 26/11/2024, M15/688, 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.
		Other evidence   Expiry:
Has the applicant obtained all relevant planning approvals?	Yes □ No □ N/A ⊠	Approval: Expiry date: If N/A explain why? On mining tenure
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes 🗆 No 🛛	CPS No: N/A No clearing is proposed. Clearing already occurred for construction.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes 🗆 No 🛛	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes 🛛 No 🗆	Application reference No: Licence/permit No: GWL105884(7)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ⊠ No □	Name: Goldfields groundwater area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes I No I N/A I Regional office: Goldfields
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes □ No ⊠	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes $\Box$ No $\Box$ N/A $\boxtimes$
Is the Premises subject to any other Acts or subsidiary regulations (e.g. Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx)	Yes ⊠ No □	<i>Mining Act 1976</i> – mining proposal has been approved.
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes □ No ⊠	

Is the Premises subject to any EPP requirements?	Yes □ No ⊠	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes □ No □	Classification: Awaiting classification Date of classification: N/A