



## Application for Licence Amendment

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

<b>Licence Number</b>	L8337/2009/2
<b>Licence Holder</b>	Genesis Minerals (Leonora) Pty Ltd
<b>ACN</b>	667 073 681
<b>File Number</b>	2012/006861
<b>Premises</b>	<p>Gwalia Mine</p> <p>LEONORA WA 6438</p> <p>Legal description –</p> <p>Mining Tenements: G37/25, G37/26, G37/27, M37/17, M37/25, M37/55, M37/137, M37/170, M37/200, M37/247, M37/251, M37/333, M37/391, M37/903, M37/1026, M37/1027, L37/33, L37/34, L37/35, L37/36, L37/56, L37/58 and L37/66</p> <p>LEONORA WA 6438 as depicted in Schedule 1.</p>
<b>Date of Report</b>	14 August 2024
<b>Decision</b>	Revised licence granted

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**A/SENIOR MANAGER, RESOURCE INDUSTRIES**

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

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## 1. Decision summary

Licence L8337/2009/2 is held by Genesis Minerals (Leonora) Pty Ltd (Licence Holder) for the Gwalia Mine (the Premises), located at LEONORA WA 6438, part of mining tenements G37/25, G37/26, G37/27, M37/17, M37/25, M37/55, M37/137, M37/170, M37/200, M37/247, M37/251, M37/333, M37/391, M37/903, M37/1026, M37/1027, L37/33, L37/34, L37/35, L37/36, L37/56, L37/58 and L37/66.

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 L8337/2009/2 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 3 April 2024, the Licence Holder submitted an application to the department to amend Licence L8337/2009/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). Currently, dewatering from the Gwalia mine is directed into the Tower Hill pit. The Tower Hill pit is proposed to enter the mine schedule in 2026 with an initial mine life of seven years. Subsequently, the dewatering will cease from the Gwalia mine to the Tower Hill pit and existing dewater in the Tower Hill pit will have to be transferred to the proposed Harbour lights pit. Therefore, the following amendments are being sought:

- Dewater from Tower Hill pit (located on M 37/55) and discharge into the new discharge point of Harbour Lights Pit (located on M 37/251), Figure 1.
- Increase production capacity of category 6 mine dewatering from 2,500,000 tonnes/annum to 5,500,000 tonnes/annum. This increase is to allow for a significant portion of the dewatering to take place within the first 24 months.

The Tower Hill pit presently contains 4,800,000 tonnes of water and receives 860,000 tonnes annually from the Gwalia mine. The Harbour Lights pit currently has capacity to accept 6,400,000 tonnes of water, with majority of the dewatering to expected to occur over the first 24-month period, plus the estimated volume dewatered from the Gwalia mine (Table 1). There is an existing pipeline from Tower Hill to Harbour Lights and therefore no construction is required.

**Table 1: Estimated discharge to Harbour Lights over 5 years**

Year	Volume to be discharged to Harbour Lights pit from Tower Hill Pit (Tonnes)	Volume to be abstracted from Harbour Lights pit discharged to Kailis pit (Tonnes)	Harbour Lights pit discharge balance (Tonnes)	Start of year SWL (mAHD)	End of year SWL (mAHD)
2024	4,060,000	-	4,060,000	331	359
2025	2,586,000	1,215,000	1,371,000	359	366
2026	626,000	1,215,000	- 589,000	366	364
2027	626,000	1,215,000	-589,000	364	362
2028	626,000	1,215,000	-589,000	362	359

Additionally, from 2027 onwards, the Licence Holder proposes to discharge from Harbour Lights pit into the Kailis pit, located in the adjacent Kailis Mine licensed premises (L8532/2011/2), also occupied by the Licence Holder. The discharge from Harbour Lights pit to Kailis pit and will be authorised under a future licence amendment to L8562/2011/2.

It is noted that the prescribed premises boundaries for this licence and L8532/2011/2 intersect each other, with Harbour Lights pit within the boundary for each licence. As these licenses are occupied by the same entity, this overlap will not be rectified through this amendment process.

This amendment is limited only to changes to Category 6 activities from the Existing Licence. No changes to the aspects of the existing Licence relating to Category 5, 52, 73 or 89 have been requested by the Licence Holder.

### 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
Saline mine dewater  TDS of 86,000 mg/L and 8.0 pH at Harbour Lights compared to TDS of 109,000 mg/L and 7.66 pH at Tower Hill	Overtopping of Harbour Lights pit during mine dewatering operations	Direct discharge and runoff	<ul style="list-style-type: none"> <li>Dewatering infrastructure continued to be monitored as per existing Condition 2, Table 1 in licence.</li> <li>Freeboard of Harbour Lights pit maintained 300mm or 1 in 100-year 72-hour duration storm event as per existing Condition 3 in licence</li> <li>Water levels are surveyed monthly</li> <li>Surface water runoff is diverted around the pit</li> </ul>
	Seepage of the Harbour Lights pit during mine dewatering operations	Seepage through walls and base of the pit	<ul style="list-style-type: none"> <li>Monitoring undertaken in accordance with existing Condition 24, Table 12 of licence.</li> </ul>
	Rupture, spills and leaks of dewater transported in pipelines during mine dewatering operations	Direct discharge to land	<ul style="list-style-type: none"> <li>Pipelines equipped with telemetry systems/automatic cut outs/secondary containment as per existing Condition 1.</li> <li>Daily visual inspection of mine dewater pipelines as per existing Condition 7 Table 2.</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.

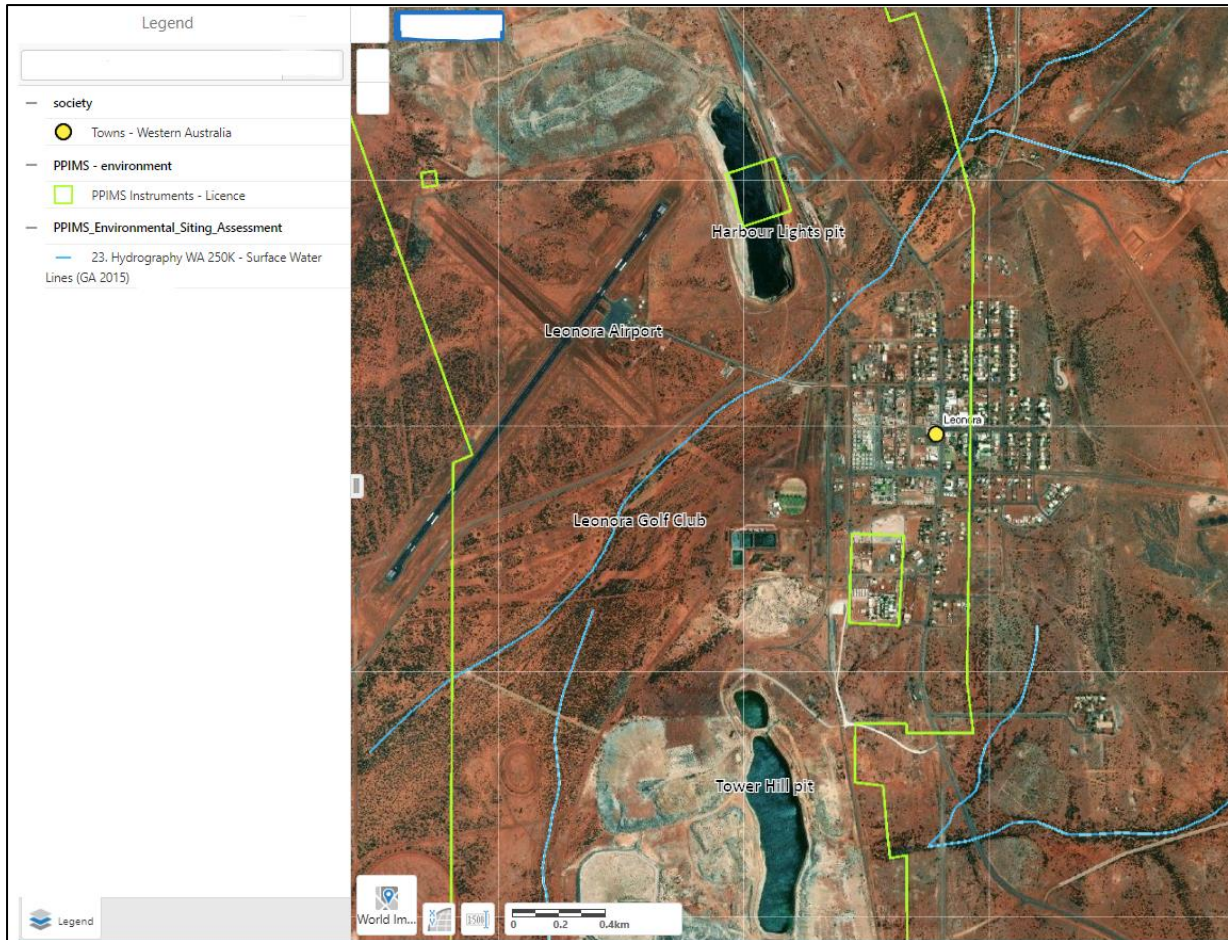
Table 3 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

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

Human receptors	Distance from prescribed activity
Town of Leonora 1. Leonora airport 2. Leonora golf club 3. School	1. 250m west of the Harbour Lights pit 2. 675m south west of the Harbour Lights pit. 3. 900m south east of the Harbour Lights pit
Residential receptors	400m to 1km southeast of the Harbour Lights pit

<p>Aboriginal sites and heritage places:</p> <p>PLACE_ID    NAME</p> <p>24133    Women's Place</p> <p>24134    Leonora Aboriginal Reserve (No. 24481)</p> <p>1925    LEONORA (Storage Cache)</p> <p>34422    Sorry Business - Yirrtkutpuri (East)</p> <p>1285    PAPA KULUNYPA</p>	Overlapping the Harbour Lights pit
<b>Environmental receptors</b>	<b>Distance from prescribed activity</b>
<p>Priority ecological community (P1)</p> <p>Screened out due to distance</p>	<p>3.5km south from the Harbour lights pit and 1km south from the Tower Hill pit.</p>
<p>Underlying groundwater:</p> <p>Pre-mining groundwater salinity was reported to range from 1,500 to 12,500 mg/L TDS, and to average 6,000 mg/L TDS. Salinities generally increase with depth and were up to 51,000 mg/L TDS in deep bores constructed for dewatering the deposit.</p> <p>Groundwater recharge occurs mainly along creek lines as direct infiltration through alluvial sediments. The high evaporation rates reduce general seepage during summer months.</p>	<p>Same aquifer system underlying Harbour Lights and Tower Hill.</p> <p>Prior to mining groundwater levels in the vicinity of the Harbour Lights pit were 10-13m below ground level.</p>
<p>Surface water:</p> <p>Several of the mines straddle drainage lines that fed into southwesterly flowing tributaries of Lake Raeside Palaeodrainage system. Surface drainage diversion structures were required prior to mining of the Tower Hill, Harbour Lights, Jasper Flat and Jasper Hills mine pits. The water courses are ephemeral in nature and only flow briefly after rainfall events. The relatively flat relief over much of the region results in shallow drainage channels and braided systems that meander across broad flood plains.</p>	<p>Ephemeral surface water channel running north- east to south-west in between the two pits. 230m south of the Harbour Lights Pit. This channel also cuts over the golf club, 300m east of the airport, and 150m west of the urban town area.</p>





**Figure 1: Distance to sensitive 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 in-complete 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 L8337/2009/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. category 6 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 and operation

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of Licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation								
Rupture, spills and leaks of mine dewater transported in pipelines	Mine dewater: (hypersaline, TDS 109,000mg/L from Tower Hill pit)	Direct discharge to land	Residences Town amenities Aboriginal heritage sites Surface water	Refer to Section 3.1.1	C = Minor L = Unlikely <b>Low Risk</b>	Y	<u>Existing conditions:</u> Condition 1 – pipeline infrastructure Condition 7 - inspection	N/A
Seepage and groundwater mounding of Harbour Lights pit due to dewatering	Mine dewater (hypersaline, TDS 86,000 - 109,000 mg/L)	Seepage of mine dewater through base and walls of the pit to soil and groundwater	Groundwater Native vegetation	Refer to Section 3.1.1	C = Minor L = Unlikely <b>Low Risk</b>	Y	<u>Existing conditions:</u> Condition 2 – containment infrastructure Condition 18 – emission point reference Condition 24 – monitoring of emissions to groundwater	Due to similar dewater characteristics (TDS and pH) at both the Tower Hill pit and Harbour Lights pit, impact of seepage to environment can be managed by current conditions of the licence.
Overtopping of Harbour Lights pit	Mine dewater (hypersaline, TDS 86,000 - 109,000 mg/L)	Runoff and direct discharge to land	Residences Leonora amenities Aboriginal sites Surface water	Refer to Section 3.1.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	<u>Existing conditions:</u> Condition 2 – containment infrastructure Condition 3 – freeboard Condition 18 – emission point reference	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
Application advertised on the department's website (20/06/2024)	None received	N/A
Licence Holder was provided with draft amendment on 18/07/2024	Comments received 09/08/2024: <ol style="list-style-type: none"> <li>Conditions 31B and 34 are conflicting. Request condition 34 be removed.</li> <li>Conditions numbers 30-36 are not in order</li> </ol>	<ol style="list-style-type: none"> <li>Condition 34 removed.</li> <li>Condition numbers fixed.</li> </ol>

## 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
Throughout	Renumbered as per new licence template
Cover page	Amended category 6 capacity from 2,500,000 to 5,500,000
Licence history	Included this amendment
Interpretation	Addition of this section as per new licence template
Condition 1.1.1, 1.1.3, 1.1.4	Removal of redundant conditions
Condition 1.1.2	Moved definitions to table 15 after conditions.
Condition 30	Replaced condition 4.1.3 to the new licence template
Condition 31	Addition of Annual Audit Compliance Report as per the new licence template. Replaced condition 4.2.1.
Condition 32	Addition of condition as per new licence template
Condition 33	Replaced condition 4.1.1 as per the new licence template
Schedule 1	Addition of Figure 9 displaying discharge points for mine dewatering.

## 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. Genesis Minerals Limited (2024) Gwalia Mine – Application for Licence Amendment L8337/2009/2, Western Australia.