Amendment Report

Application for Licence Amendment

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

Licence Number	L8337/2009/2
Licence Holder	Genesis Minerals (Leonora) Pty Ltd
ACN	667 073 681
File Number	2012/006861
Premises	Gwalia Gold Mine LEONORA WA 6438 Legal description – 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, M37/454, M37/849, M37/903, M37/1026, M37/1027, L37/33, L37/34, L37/35, L37/36, L37/56, L37/58 and L37/66
Date of Report	21 December 2023
Decision	Revised licence granted

Christine Pustkuchen
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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

This amendment decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of proposed changes to licensed activities at the premises. As a result of this assessment licence L8337/2009/2 has been amended.

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 Premises, Amendment and Transfer summary

Premises summary

St Barbara Limited (SBL) currently holds Licence L8337/2009/2, issued under Part V the *Environmental Protection Act 1986 Act* (EP Act). The Leonora Operations comprise of Gwalia Mine (Gwalia), located just south of Leonora, approximately 235 kilometres (km) north of Kalgoorlie in the Goldfields-Esperance region of Western Australia. Mining operations at Gwalia commenced in the 1890s.

This licence permits a range of activities for the underground gold mine site, including ore processing, dewatering, electric power generation, bulk storage of chemicals and waste storage and disposal activities at the Gwalia mine site. The site operates 24 hours a day, 7 days a week. Figure 1 provides an overview of premises layout.

2.2.1 Amendment application

On 30 March 2023, SBL 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).

The amendment application is seeking approval to:

- construct and operate an embankment raise for tailings storage facility (TSF) 3 from RL 390m to 392.5m;
- approval to deposit tailings into TSF4 upon completion of the construction of each embankment raise already approved under condition 1.2.8 of the licence. Condition 1.2.8 allows TSF4 to be raised to a maximum crest elevation of RL383.m over an additional 5 stages. The current elevation of TSF4 embankments is RL 371 m (stage 1); and
- to include existing containment infrastructure on the licence, these include the: process pond, VR6 pond, site drainage pond, fuel catch bay pond; VR3 East pond and VR3 West pond.

Embankment raise to TSF3

TSF3 was commissioned in 1994 and went under care and maintenance in 2003 for approximately five years. TSF3 was recommissioned in 2008 and has been operational since

then. In 2013, works approval W5470/2013/1 provided approval to rise TSF3 embankments to 390 m AHD.

The Licence Holder is seeking approval to increase storage capacity within the existing TSF3 by constructing a further 2.5 m upstream raising the current permitted elevation from RL 390 m to an elevation of RL 392.5 m. Currently, tailings are deposited into TSF3 (Western Cell), which has been constructed to its approved crest elevation of RL 390 m. The perimeter and dividing embankments will be upstream raised to RL 392.5 m (with the dividing embankment being raised into the Eastern Cell basin). The embankments will be constructed with compacted tailings from the TSF beaches.

The proposed raise of TSF3 to RL 392.5 is to facilitate ongoing rotation of tailings deposition between TSF3 and TSF 4 and to allow for upstream raising of TSF4, while the licence holder is also planning to design and construct a new TSF (TSF5). Once TSF3 reaches capacity, TSF4 and TSF5 will be utilised in a manner that facilitates upstream raise of the facilities by rotating deposition between the available deposition cells. The proposed TSF3 RL 392.5 m embankment raise will be the last raise of TSF3.

Operation of TSF4

In 2020, an old partially rehabilitated TSF (Grant's Patch TSF (GP TSF)) was converted into TSF4, by combining the two cells of GP TSF into a single cell. TSF4 has been constructed to a crest elevation of RL 371 m (stage 1) and is permitted under the existing licence to be raised to a maximum crest elevation of RL 383.5 m over an additional 5 stages, taking approximately 2 to 3 months to be constructed per each stage (Talis, 2023).

Deposition of tailings after each embankment raised is currently not authorised under the licence.

The Licence Holder is seeking approval to deposit tailings into TSF4 directly after submission of the required construction compliance report required by conditions of the licence without having to apply for a licence amendment. This will shorten the timeframes associated with the operational component of each lift to TSF4.

Containment infrastructure

The licence holder is seeking an amendment to include six containment infrastructure ponds to the licence. Following a site inspection by DWER in August 2021 the inspector noted that these containment infrastructure ponds were not include on the licences and recommended that theses should be added during the next licence amendment. Ponds to be added are outlined within Table 1.

The process pond and site drainage infrastructure ponds were installed on site prior to 2006 when the premises was owned/operated by Sons of Gwalia Ltd. SBL took ownership of Gwalia in 2006 and the following containment infrastructure ponds were installed:

- Fuel Bay catch pond – installed 2006;
- VR3 East pond – installed in 2010;
- VR3 West pond – installed in 2010; and
- VR6 Pond – installed in 2019.

Table 1: Summary of existing containment infrastructure to be added to licence.

Infrastructure	Source of Water/Purpose	Construction Details
Process Water Dam	Process water (Combination of recycled water from TSF, Reverse Osmosis reject water, Hypersaline water abstracted in	HDPE lined with 0.3 metre freeboard

Infrastructure	Source of Water/Purpose	Construction Details
	accordance with groundwater licence)	Overflow to site drainage catchment pit in high rainfall event
Fuel Bay Catch Pond	Run-off catchment from fuel refill pad, Processed water from light vehicle wash bay	Concrete vehicle wash bay HDPE lined pond Overflow to process plant operational area in high rainfall event
Site Drainage Catch Pit	Stormwater from site-drainage	Unlined, historical site borrow pit No overflow control.
VR3 East	Hypersaline water – formed from condensate from intersected groundwater within the ventilation shaft entrained by the fan suction	HDPE lined with 0.3 metre freeboard, Compound is surrounded by perimeter bund, providing temporary secondary containment in event of overflow Overflow to ephemeral drainage line
VR3 West	Hypersaline water – formed from condensate from intersected groundwater within the ventilation shaft entrained by the fan suction	HDPE Lined with 0.3 metre freeboard, Compound is surrounded by perimeter bund, providing temporary secondary containment in event of overflow. Overflow to ephemeral drainage line
VR6 Pond	Hypersaline water – formed from condensate from intersected groundwater within the ventilation shaft entrained by the fan suction	HDPE Lined with 0.3 metre freeboard. Overflow to ephemeral drainage line

2.2.2 Transfer application

On 3 July 2023 the department received an application to transfer licence L8337/2009/2 to a new occupier - Genesis Minerals (Leonora) Pty Ltd. This transfer application and this licence amendment application will be processed and issued together.

2.2.3 DWER initiated amendments

Revised Premises Boundary Details

During the assessment of the SBL application, it has been identified that two existing prescribed premises share overlapping boundaries with L8337/2009/2. A further proposed prescribed premises also is overlapping. Details of the duplicate premises/proposed premises are as follows:

- Water Corporation - L7461/2000/8 (Lot 1273 on Plan 190076 overlapping with tenement M 37/251)
- Saracen Metals Pty Limited - L8532/2011/1(overlapping tenements L 37/221 and M 37/251)
- Application for a works approval from Australia Western Railroad Pty Ltd seeking to develop a prescribed premises within LOT 501 on deposited plan 60064.

Amendments to the premises boundary have been incorporated in this report to excise deposited plans 190076 and 60064. The Saracen Metals Pty site remains overlapping due to the shared discharge point making it difficult to separate the licences.

Consolidation of licence document

As part of this amendment package the department has consolidated the licence by incorporating changes made under the Amendment Notices as summarised in Table 2.

Table 2: Licences consolidated in this amendment

Instrument	Issued	Summary of approval
L8337/2009/2	19/07/2018	Amendment Notice 1 - To increase cat.52 capacity, change the boundary of the landfill onsite, include a number of tenements to the premises boundary, modify sampling methodology and to reflect the 'paste fill' plant.
L8337/2009/2	18/04/2019	Amendment Notice 2 - To include 4 new generator units at the power plant to a total of 23 MW.

The obligations under this Licence have not changed in consolidating the licence. The department has not undertaken any additional risk assessment of the Premises related to previous Amendment Notices.

In consolidating the licence, the CEO has:

- updated the format and appearance of the Licence;
- revised licence condition's numbers, and removed any redundant conditions and realigned condition numbers for numerical consistency; and
- corrected clerical mistakes and unintentional errors.

The full consolidation of licence conditions as they relate to this Revised Licence are detailed in Section 5.1. Previously issued Amendment Notices will remain on the department's website for future reference and will act as a record of the department's decision making.

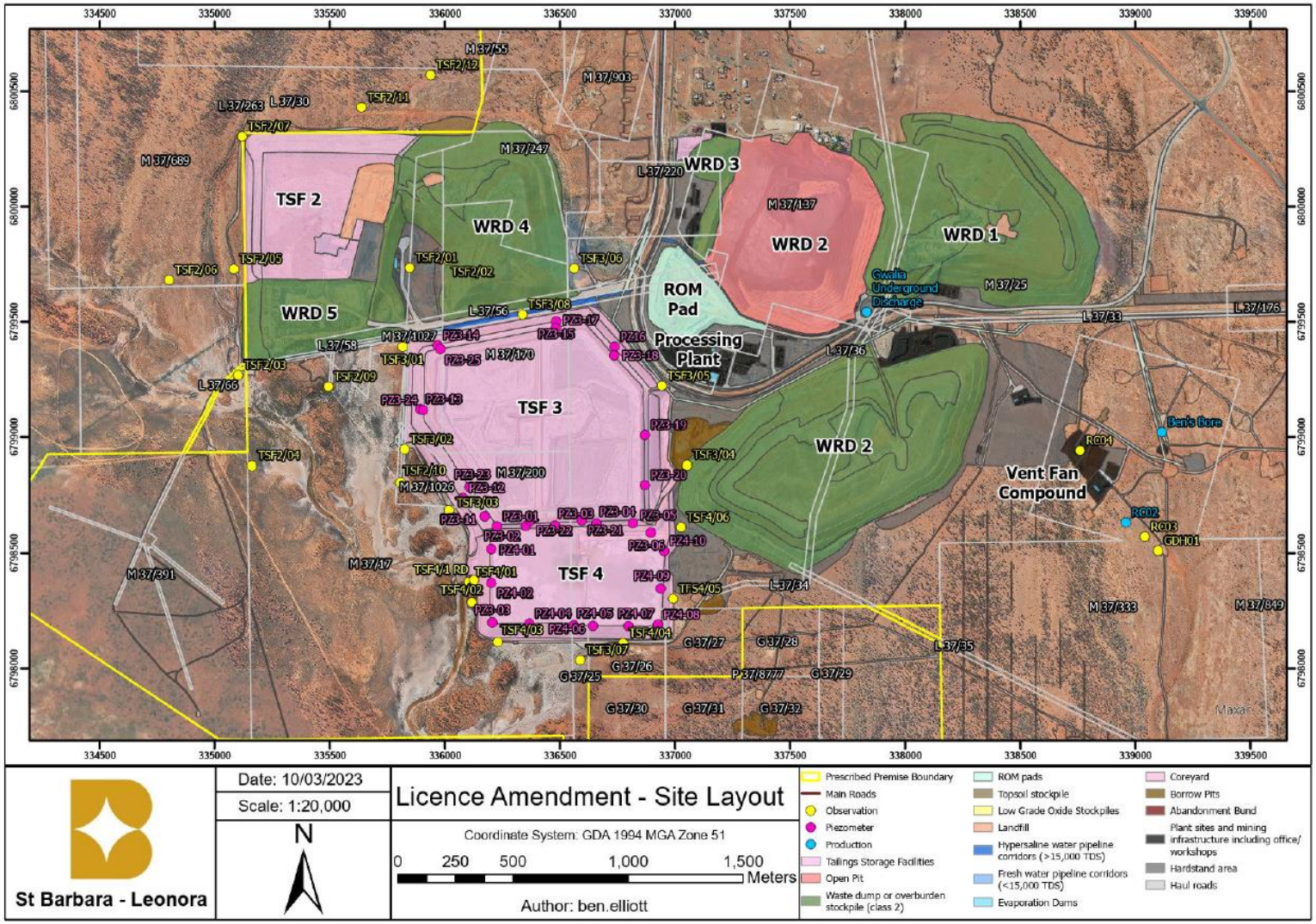

Figure 1: General layout of processing area.

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 3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction (TSF rise only) and operation which have been considered in this Amendment Report are detailed in Table 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Proposed construction controls – TSF3 rise			
Dust	Construction activities associated with the embankment raise of TSF3, including vehicle movements.	Air/windborne pathway	• Disturbance will be managed to ensure that areas are only disturbed where required; • Dust suppression will be implemented where required (including use of water trucks, control of vehicle movements/restricted speeds); • Ground disturbance activities will not be undertaken during periods of high winds, to minimise the potential for dust generation; • Roads/tracks shall be maintained and graded as required to minimise dust generation; • Daily inspections of construction areas will be undertaken to ensure dust control measures are being implemented and are effective.
Noise		Air/windborne pathway	No applicant proposed controls for noise during construction
Sediment laden stormwater		Overland runoff	• Bund along the western flank of TSF3 (along the existing seepage collection trench) to be maintained; • Daily inspection to check for integrity of TSF3 perimeter embankments.
Operation controls – TSF3 and TSF4			
Dust	Operation of TSF including vehicle movements	Air/windborne pathway	• Use of water truck for dust suppression to prevent dust emissions; • Route management: Limit speed and limiting vehicles to established roads or access points where practicable; • Regular inspections and management of tailings deposition;
Noise	Operation of TSF including vehicle movements	Air/windborne pathway	• Maintain equipment and vehicles in accordance with manufacturer's recommendations; • Daily vehicle and equipment inspections.
Sediment laden stormwater	Sediment from TSF	Overland runoff Infiltration through soil	• Daily inspections; • Maintenance of diversion drains.

Emission	Sources	Potential pathways	Proposed controls
		Discharge to land (overtopping) Infiltration through soil	• TSF3 and TSF4 has been designed to accommodate inflows from 1:100 annual exceedance probability (AEP) 72 hours rainfall event, atop normal operating pond, whilst maintaining 0.5 m total freeboard and wave run up from 1:10 AEP wind; • Routine inspections of the TSF will be carried out to check whether the design strategy is being implemented and to identify any maintenance requirements or any circumstances associated with TSF3 and TSF4 performance that needs further attention; • Observations made during the inspections will be recorded and appropriately reported; • Defects identified during the inspections will be repaired or replaced as required; • Operation in accordance with the TSF Operating Manual.
		Discharge to land (pipeline leak or failure) Infiltration through soil	Daily inspections to include serviceability of pipelines to and from the TSF3 and TSF4 including: • tailings delivery and decant pipelines; • condition of pipe work; • damage to pipelines; • excessive movement of pipelines; • pipeline or spigot blockages; • pipeline leaks (leak detection); or • uncontrolled discharges.
		Discharge to land (horizontal seepage) Infiltration to aquifer (vertical seepage)	<u>Seepage controls TSF3</u> • Maintain the seepage interceptor drain for TSF3, immediately downstream of the external toe of TSF3, except along the southern toe where it abuts TSF4; • Monitoring the impact of seepage from TSF3 on groundwater levels and quality; • Daily inspections of TSF3 perimeter embankments including seepage, cracking, instability, depressions, erosions; • Where groundwater monitoring indicates adverse impacts, a risk assessment will be conducted by a qualified specialist and dewatering bores may be installed to mitigate impacts, where required. Genesis Minerals will also be required to manage seepage as per current licence conditions which includes: • Cut-off trenches have been constructed at the starter embankment of TSF3 to

Emission	Sources	Potential pathways	Proposed controls
			reduce the potential for shallow seepage. <u>Seepage controls TSF4</u> • Maintain the seepage recovery system for TSF4; • Ensure seepage is returned to the TSFs or site process water; • Where groundwater monitoring indicates adverse impacts, a risk assessment will be conducted by a qualified specialist and dewatering bores may be installed to mitigate impacts, where required. Genesis Minerals will also be required to manage seepage as per current licence conditions which includes: • Seepage collection system comprising of a collection trench along the perimeter embankment (except the southern flank where it abuts TSF4) and sumps will continue to be utilised to manage potential shallow seepage water and contaminated run-off from the downstream slope of the embankment; • Cut-off trenches have been constructed at the starter embankment of TSF3 to reduce the potential for shallow seepage.

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

Human receptors	**Distance from prescribed activity**
Hoover House and Gwalia Ghost town (tourist attractions and accommodation)	1100 metres north, north-east of TSF3 (Gwalie Ghost Town) 1275 metres north-east of TSF3 (Hoover house) Note prevailing wind direction is Easterly **No pathway to receptors due to distance. Screened out as a receptor.**
Environmental receptors	**Distance from prescribed activity**
Threatened Ecological Community – Melita Calcrete (Priority 1)	Approximately 2000 metres. **No pathway to receptors due to distance. Screened out as a receptor.** Native vegetation is located approximately 100 metres east, south and west of TSF4. Native vegetation is located approximately 200 metres east of TSF3.
Aboriginal and other heritage sites	Registered sites 1737, 200014, 25603, 2708 within premises boundary and within 1000 metres of TSF3/TSF4 area. Additional lodged sites 25594, 38003, 25595 within premises within 1000 metres of TSF3/TSF4 area. The Proposed upgrade activities are situated on pre-existing TSF facilities which have already been disturbed. There will be no direct or indirect impacts expected. **Screened out as a receptor.**
Lake Raeside and surface water drainage line	Lake Raeside is located approximately 4 km from TSF3 and TSF4. A creek line immediately adjacent (less than 200 metres from TSF3 and TSF4) connects Lake Raeside.
Groundwater	South-westerly groundwater flow has been interpreted from the latest records at the monitoring bores in October 2022. Groundwater quality as saline or hypersaline, with the depth of natural groundwater indicated to be as shallow as 0.8 metres below ground level.

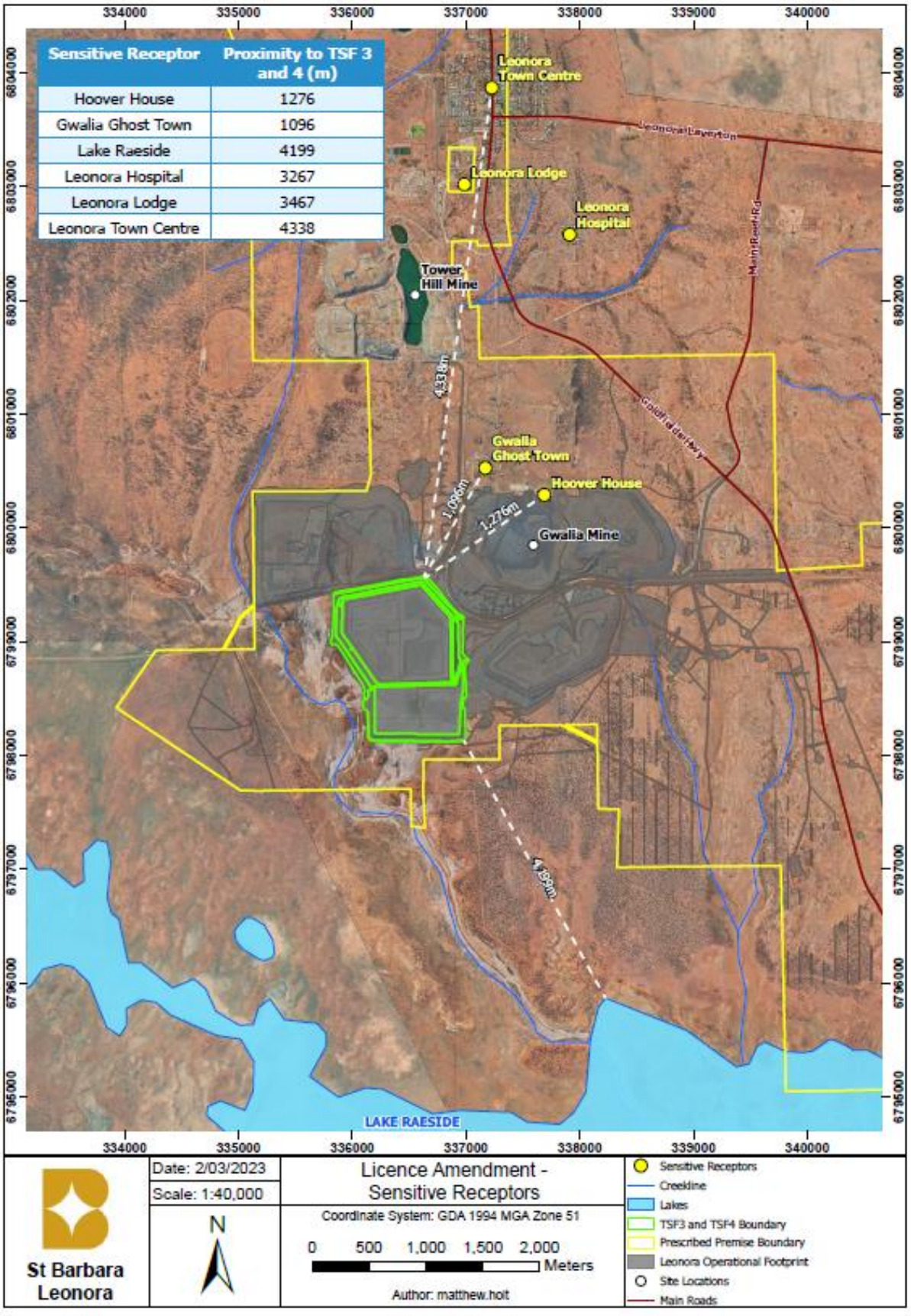

Figure 2: Distance to sensitive receptors

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 5.

The Revised Licence L8337 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises. The Licence also provides authorisation for limited construction which is required by the Licence holder to undertake TSF raise.

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

Table 5. Risk assessment of potential emissions and discharges from the Premises during construction 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**				
Construction (TSF3 only)								
TS3 embankment rise	Dust	Air/windborne pathway causing impacts to health and amenity	Native vegetation (<100 metres)	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
	Noise		Gwalia Ghost town tourist site (1100 metres)	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
	Sediment laden stormwater	Overland runoff	Native vegetation (<100 metres)	Refer to Section 3.1	C = Slight L = Unlikely	Y	N/A	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**				
			Creek (200 m)		**Low Risk**			
Operation (TSF3 and TSF4)								
Operation of TSF3 at increased embankment height 392 and TSF4 at increased height 383.5 (including deposition of tailings, decant pipeline and/or tailings delivery stormwater management)	Dust	Air/windborne pathway causing impacts to health and amenity	Native vegetation (<100 metres)	Refer to Section 3.1	C=Slight L=Unlikely **Low risk**	Y	N/A	N/A
	Noise	Air/windborne pathway causing impacts to health and amenity	Gwalia Ghost town tourist site (1100 metres)	Refer to Section 3.1	C=Slight L=Unlikely **Low risk**	Y	N/A	N/A
	Tailings	**Pathway:** TSF overtopping **Impacts:** Discharge to land, resulting in impacts to ecological health	Native vegetation (<100 meters) Creek line (<200 metres) Lake Raeside (4 km)	Refer to Section 3.1	C = Major L = Unlikely **Medium risk**	Y	Existing condition 1.2.3: containment cell freeboard Existing condition 1.2.7 containment cell inspection schedules	Existing licence conditions adequately manage this risk
	Tailings / sailine return water	**Pathway:** TSF pipeline leak or rupture **Impacts:** Discharge to land, resulting in impacts to ecological health	Groundwater (<1 mbgl) native vegetation (< 100 metres) Lake Raeside (4 km)	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 1.2.1 pipeline controls Condition 1.2.7 containment cell inspection schedule	Existing licence conditions adequately manage this risk

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**				
	Seepage/Leachate (TSF3)	**Pathway:** vertical seepage from TSs **Impacts:** Discharge to land, resulting in changes in groundwater quality and groundwater mounding	Groundwater (<1 mbgl) Lake Raeside (4 km) Creek line (<200 metres)	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	Existing condition 1.2.4: seepage management **Condition 1.2.5 vegetation monitoring** **Condition 1.2.6 water balance monitoring** **Condition 3.4 1– Updated to include WAD CN limit** **Condition 3.4.3, 3.4.4, 3.4.5 – groundwater management plan**	Refer to section 3.4 for detailed risk assessment
	Seepage/Leachate (TSF4)	**Pathway:** vertical seepage from TSs **Impacts:** Discharge to land, resulting in changes in groundwater quality and groundwater mounding	Groundwater (<1 mbgl) Lake Raeside (4 km) Creek line (<200 metres)		C = Moderate L = Possible **Medium Risk**	N	Existing condition 1.2.4: seepage interceptor drain **Condition 1.2.5 vegetation monitoring** **Condition 1.2.6 water balance monitoring** **Condition 3.4.1 – Updated to include SWL trigger values and WAD CN limit** **Condition 3.4.3, 3.4.4, 3.4.5 – groundwater management plan**	Refer to section 3.3 for detailed risk assessment

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.

3.3 Detailed risk assessment for Seepage TSF4

3.3.1 Overview of risk event

L8337/2009/2 authorises the construction of six (6) embankment raises to TSF4 to a height of 383.5 mAHD. Stage 1 has been completed, with the Department assessing the compliance documents. Deposition into stage 1 has also already been approved under the licence.

Currently condition 1.2.8 does not allow operation of TSF4 after each embankment raise. The licence holder is seeking a modification to condition 1.2.8 or an additional condition that allows deposition to occur following provision by the licence holder of appropriate compliance documentation. The intention of the licence holder's request is to avoid the requirement for ongoing Licence Amendments to be required each time a new lift to TSF4 has been completed to allow operation at the new embankment height. The licence holder has provided the following proposed timeline for the TSF4 embankment lifts.

Table 6: TSF4 Lift Proposed Timeline

Stage	Height (mAHD)	Proposed Timing
Stage 1	371	Complete
Stage 2	373.5	FY24
Stage 3	376	FY25 or FY 26
Stage 4	378.5	FY27
Stage 5	381	FY28
Stage 6	383.5	FY29

Operating TSF4 at the increased embankment heights will likely result in an increase of tailings seepage from the facility which has the potential to impact groundwater quality and cause mounding of the groundwater table.

The risk events which will be further assessed in section 3.3 of this report are:

- Mounding of groundwater table causing impacts to the nearby salt lake and vegetation stress or death due to waterlogging within root zones of vegetation; and
- Reduced groundwater quality through seepage

3.3.2 Source: characterization of emission

Tailings Characterisation

The design report for the embankment lift for TSF3 (Golder, 2023) outlined the following characteristics of the tailings within the TSFs:

- solid component of the tailings has very low activity concentrations of naturally occurring radionuclides.
- The tailings have a high sulphur content (0.77% to 1.6%) and high acid neutralising capacity (130 to 220 kg H2SO4/t) and therefore classified as non-acid forming (NAF).
- Leachate from the TSF3 tailings samples were strongly alkaline (pH 8.7 to 9.2) and very saline (1000 to 1800 µS/cm).

- Acid leachate test result indicated elevated result for Al, Fe, Mn and Ni as the key elements which would dissolve under acidic conditions. Trace metals were absent from the leachates indicating a low potential for release.
- Return water from the decant pond was found to have a pH of 7-8, total dissolved solids of 60 000 mg/L and WAD cyanide concentration of between 6.2- 40 mg/L

Seepage history at TSF4
Construction of the 2.5 m embankment raise to TSF4 was completed in July 2020. As part of this construction, a seepage collection system was required based on an estimated seepage model of 200 m^3 a day. The final design included a seepage collection drain extension to the toe drain on the western flank of TSF3. Water is pumped back to the process plant, via the TSF3 decant system for re-use. Measured seepage rates in July 2021 were approximately 170 L/min. (Golder, 2023).

Recent investigations found:
- On 27 January 2021 a 'sand boil' was observed in toe drain along the south flank of TSF4. A reverse filter was constructed in April 2021 to allow seepage to continue but to prevent solids from being transported.
- In July 2021, the area south of the TSF4 toe drain was waterlogged with some surface water present. Standing water was present in toe drain along the south flank of TSF4, and it was concluded most likely that water is seeping from the toe drain into the surrounding soil to the south of the TSF4.

3.3.3 Receptors

Data from the SBL 2021 Annual Environmental Report (SBL, 2022) indicates that site groundwater is naturally shallow and flows in a south westerly direction towards Lake Raeside. Groundwater is hypersaline due to regional geochemistry and is not considered to be suitable quality for domestic or agricultural use.

The central channel of Lake Raeside is located less than 100 m southwest of TSF4. The Lake Raeside catchment consists of occluded palaeodrainage channels that contain numerous interconnected playa lakes and pans of varying size and drains to the southeast towards the Eucla Basin.

The vegetation surrounding Lake Raeside is dominated by acacia and eremophila open woodland and shrubland, with salt tolerant low shrubland of samphires and other chenopods typically predominating in the drainage lines and the shores of the playa lakes.

As a result of low, episodic rainfall and a high evaporation rate, pooled surface water is rarely present on Lake Raeside, although intermittent flows and flooding occur in response to large seasonal rainfall events.

3.3.4 Impact and Proposed Controls for TSF4

Operating TSF4 at the increased embankment heights will likely result in an increase of tailings seepage from the facility which has the potential to impact groundwater quality and cause mounding of the groundwater table. This could lead to impacts on native vegetation if it occurs to the extend where the root zone becomes inundated. Waterlogged soils become deficient in oxygen, which disrupts root respiration and normal cellular processes, causing plant stress and potentially death (Pan *et al.* 2021).

Groundwater monitoring data presented within the most recent annual environmental report (SBL 2022) indicated that surface expression of groundwater has occured in select southern and western monitoring bores around TSF4 (TS4/02 and TS4/03 and TSF3/7), with shallow

groundwater observed at all other monitoring locations. Monitoring results are presented in Figure 3.

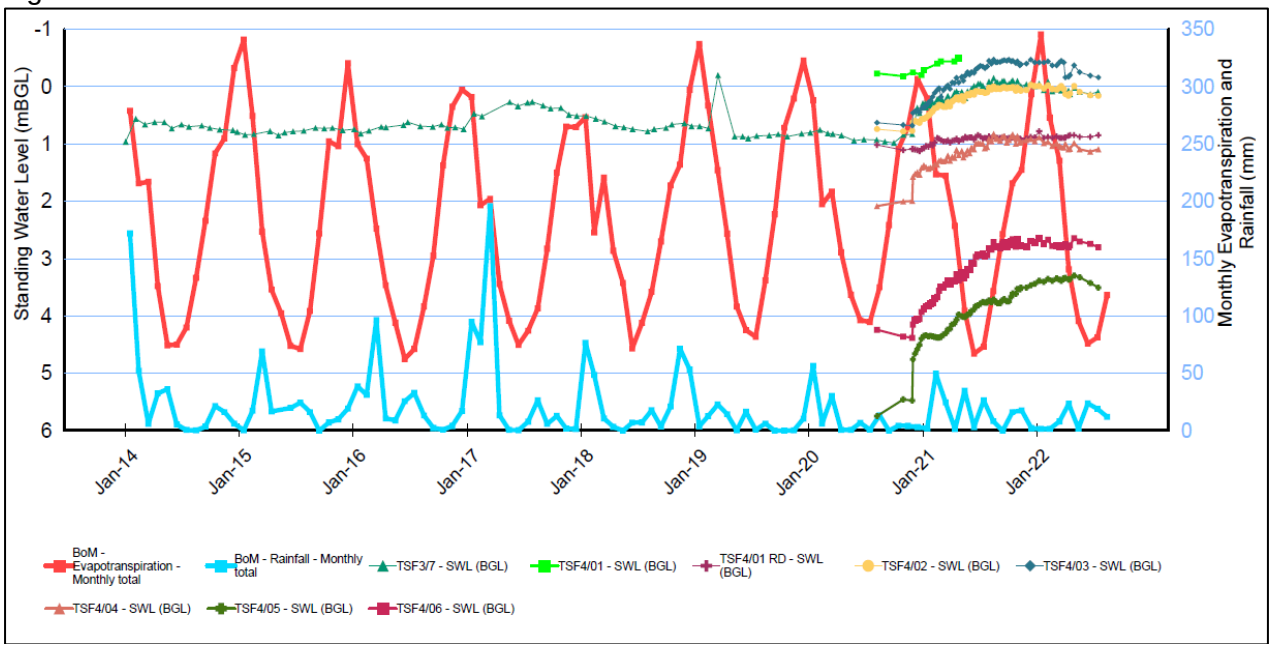

Figure 3: TSF4 Groundwater Levels (SBL, 2022)

Figure 3 demonstrates that groundwater levels at TSF4 have been historically shallow, with an increase in groundwater level observed since commissioning the TSF4 facility since June 2020. The licence holder has stated within their latest annual environmental report that this increase in water level is associated with deposition into the TSF4 placing added weight and pressure onto the underlying clay foundation, forcing water upwards outside of the depression zone. This is being mainly observed to the south of the facility towards the salt lake.

The licence holder undertook a geophysics investigation on the groundwater transmissivity and to temporarily increase its TSF4 monitoring frequency as a result of these observations. This triggered the licence holder to complete upgrades including deepening and widening of the TSF4 toe drain in 2022. At the time pumping infrastructure was also upgraded. The licence holder has stated that improvements in the monitoring data have been observed. Discharge has since ceased at TSF4 and has transitioned to TSF3.

Groundwater quality has been monitored at the monitoring bores surrounding TSF4, on a quarterly basis. Monitoring results for TSF4 include bore TSF3/07 (2014-2022) with remainder of bores monitored only during 2021 and 2022. The monitoring data for the last reporting period indicates:

- TDS concentrations have been generally consistent with historical data variability.
- WAD CN concentrations observed were mostly below the standard lower detection level of <0.04mg/L.
- Monitoring results for analytes Na, K, Ca, Mg, As, Pb, Ni, Fe, Cd, Cr, Cu, Hg, Se, Zn, Cl, CO_3, HCO_3, NO_3 and SO4 are consistent over previous monitoring periods.

This data indicates that seepage from the facility is having minimal impact on surrounding groundwater quality, further supporting the licence holder's statement that the changes in groundwater level is associated with the added weight and pressure of tailings deposition forcing water upwards.

Proposed Controls for TSF4 deposition

The licence holder has proposed the following controls to manage the risk of increased seepage from TSF4:

- maintain the shared seepage interceptor drain for TSF3/TSF4, immediately downstream of the external toe of TSF3, except along the southern toe where it abuts TSF4
- maintain the seepage recovery system for TSF4
- ensure seepage is returned to the TSFs or the process.
- Where groundwater monitoring indicates adverse impacts, a risk assessment will be conducted by a qualified specialist and dewatering bores may be installed to mitigate impacts, where required.
- minimise the decant pond on the TSF at all times (Coffey Mining Pty Ltd 2015).

3.3.5 Risk rating and regulatory controls

It has been determined that there is insufficient data to conclude that groundwater mounding is currently been adequately managed around TSF4. Whilst data indicates that groundwater levels have seen a slight reduction following upgrades to seepage collection infrastructure, it is also noted that deposition to TSF4 concluded shortly after the upgrade.

As there is evidence of groundwater mounding around TSF4 during deposition of tailings since stage 1 construction with some expression of groundwater at ground surface it has been determined that the likelihood of operating at increased embankment height causing further mounding is 'possible'. It has been determined that the consequence of this risk event is moderate with low level offsite impacts possible to nearby vegetation (from waterlogging of roots) and salt lake. Given this, the risk rating for this risk event has been determined to be Medium. Additional regulatory controls will be required to manage this risk.

Additional regulatory controls

It has been determined that deposition into stage 2 of TSF4 (once compliance documents have been submitted) will be approved through this licence amendment. However, approval for operation after construction of stages 3 – 6 will not be granted at this time due to evidence of groundwater mounding occurring resulting in expression of groundwater at the surface within surrounding groundwater monitoring bores. More time is needed to see how current seepage management controls (upgraded toe drain and pumping infrastructure) are preforming before operation of additional lifts can be approved.

In order to ensure impacts from this risk event is being appropriately managed it has been determined that the following additional regulatory controls will be placed on the licence:

Table 7: Additional Regulatory Controls TSF4

Condition/control	Justification
Water balance Condition 1.2.4 – water balance monitoring	To better understand water management at the TSFs a requirement for monthly water balance monitoring during tailings deposition has been added to the licence. This information will be required to be submitted to the department on an annual basis.
Vegetation Monitoring Condition 1.2.5 photographic monitoring of vegetation	To protect adjacent native vegetation the Licence holder is required to undertake an annual assessment of vegetation within the zone of influence of TSF3 and TSF4 to assess if there has been a deterioration of vegetation quality during the reporting period.

Requirement for Groundwater Management Plan New condition 3.4.3, 3.4.4 and 3.4.5	As groundwater mounding has been observed within the groundwater monitoring bores surrounding TSF4, it has been determined that a groundwater management plan must be developed to determine suitability of current groundwater monitoring bores to monitor seepage and propose additional bores if required. Further to this, the groundwater management plan must propose suitable bore specific triggers and determine management actions in the event that these triggers are breached.
Limit for WAD CN added for monitoring bores surrounding TSF3 and TSF4	The detection of WAD CN in groundwater monitoring bores can be indicative of seepage from TSF3 & TSF4. To ensure action is taken if WAD CN is detected at unacceptable levels within the groundwater (and to protect environmental receptors i.e. surface water drainage line / vegetation) a limit for WAD CN has been applied to monitoring bores surrounding TSF3 and TSF4. A condition requiring the CEO to be notified within 14 days of a breach of this limit will also be added to the licence.

3.4 Detailed risk assessment for Seepage TSF3

3.4.1 Overview of Risk Event

L8337/2009/2 authorises operation of TSF3 a height of 390 mAHD. The licence holder is seeking approval to raise (construct) the embankment height of TSF3 from 390 mAHD to 392.5 mAHD and to operate at this height once compliance documents have been submitted to the department.

Operating TSF3 at the increased embankment height could result in an increase of tailings seepage from the facility which has the potential to impact groundwater quality and cause mounding of the groundwater table.

The risk events which will be further assessed in section 3.3 of this report are:

- Mounding of groundwater table causing impacts to the nearby salt lake and vegetation stress or death due to waterlogging within root zones of vegetation; and
- Reduced groundwater quality through seepage.

TSF3 has had a history of seepage issues. In 2010, the Department received notification of low level cyanide contamination in areas downgradient of TSF3. A seepage management plan was prepared by SBL in 2013. This identified long term opportunities for reduction of seepage from TSF3, including the upgrade of the seepage interception drain and recovery system, which has since been undertaken.

3.4.2 Receptors

Groundwater appears to be naturally shallow, estimated at 1-5 metres below ground level due to TSF3's proximity to the salt lake. Groundwater is hypersaline due to regional geochemistry and is not considered to be suitable quality for domestic or agricultural use.

The central channel of Lake Raeside is located 240 m southwest of TSF3. The Lake Raeside catchment consists of occluded palaeodrainage channels that contain numerous interconnected playa lakes and pans of varying size and drains to the southeast towards the Eucla Basin.

The vegetation surrounding Lake Raeside is dominated by acacia and eremophila open woodland and shrubland, with salt tolerant low shrubland of samphires and other chenopods typically predominating in the drainage lines and the shores of the playa lakes.

As a result of low, episodic rainfall and a high evaporation rate, pooled surface water is rarely present on Lake Raeside, although intermittent flows and flooding occur in response to large seasonal rainfall events.

3.4.3 Source: Characterisation of emissions

Tailings Characterisation
Refer to section 3.3.2.

Estimated Seepage
A seepage analyses model was developed and provided input into a water balance for TSF3. The seepage analyses have been undertaken using finite element numerical modelling software, Seep/W, part of Geo-slope International Inc. Version 2021. The TSF3 RL 392.5 m seepage analyses have been carried out under conservative steady state conditions, based upon latest available groundwater and piezometric water levels.

The model demonstrated that seepage flows through the tailings and foundation mainly report to the downstream seepage collection trenches. The licence holder has stated this is consistent with site observations.

The estimated seepage from TSF3 is ~50 m^3/day at the Eastern Cell and ~45 m^3/day at the Western Cell. The seepage rates are compared to the average annual input water to the facility from tailings slurry. The estimated water in the tailings slurry is based on a slurry solids concentration of 47%, a particle density of 2.83 t/m^3, and a tailings average dry density of 1.5 t/m^3. The seepage rates are equivalent to ~1% of the slurry water.

The latest recorded water recovery rate from the seepage collection sump to the west of the facility was in October 2022. The water recovery rate was ~9200 kL for the month, which is equivalent to ~297 m^3/day. This is significantly higher than the estimated seepage rate. The higher water recovery in the seepage collection sump is likely related to groundwater interception by the seepage collection system (Golder, 2023).

3.4.4 Impact and Proposed Controls for TSF3

The licence holder has requested approval to lift TSF3 from RL 390m to RL 392.5. This could increase the seepage rate from the facility resulting in groundwater mounding which could lead to impacts on native vegetation if it occurs to the extend where the root zone becomes inundated. Waterlogged soils become deficient in oxygen, which disrupts root respiration and normal cellular processes, causing plant stress and potentially death (Pan *et al.* 2021).

Groundwater standing water level data from monitoring bores surrounding TSF3 (provided in the 2021/2022 Annual Environmental Report) indicated that groundwater levels have been historically shallow. Figure 4 outlines the trend over the last 7 years for standing water levels surrounding the TSF. The local hydrogeology at TSF3 represents a challenging environment for groundwater management due to the naturally shallow water table, resulting in susceptibility to groundwater mounding and potential surface expression of groundwater.

Results from monitoring bores TSF3/8, TSF3/7 and TSf3/2 indicate surface expression of groundwater. Note that TSF3/07 may be more representative of TSF4 (due to location of bore) and that TSF3/08 is located in a drain.

Figure 4 demonstrates that shallow groundwater has been a feature of operation of TSF3 for many years and water levels appear to be following a steady trend over time.

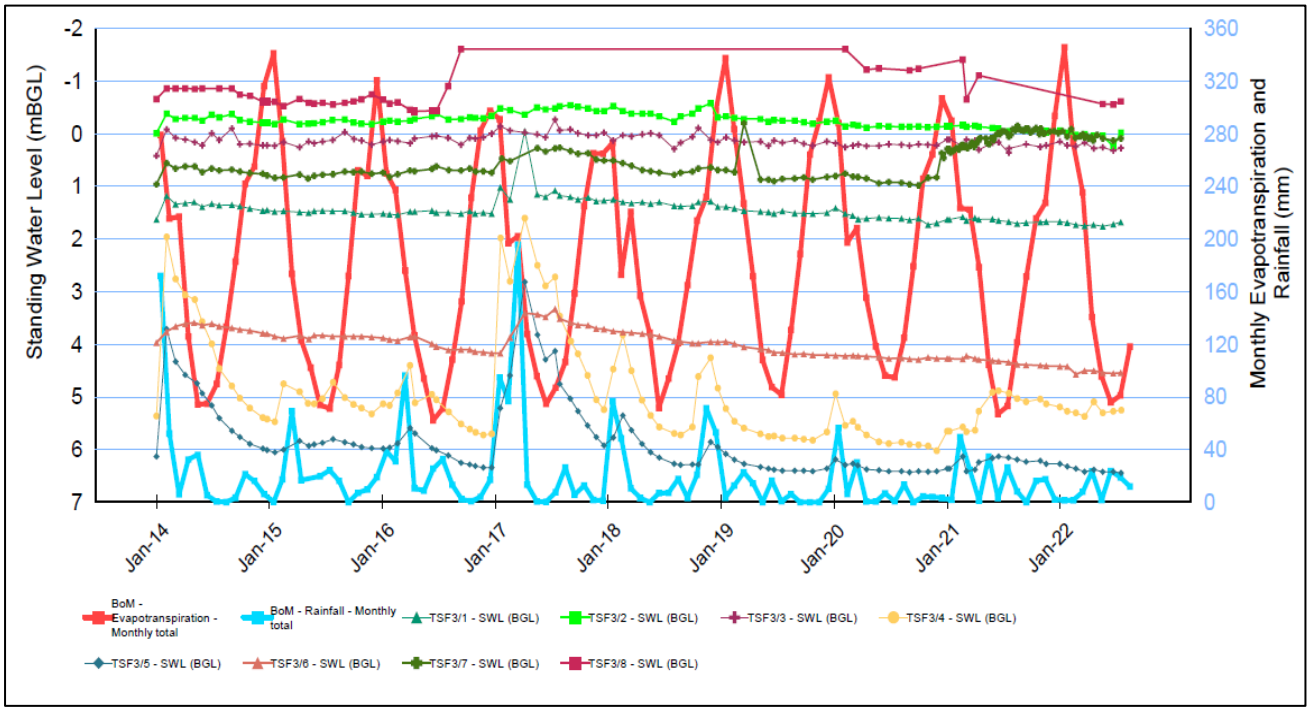

Figure 4: TSF3 Groundwater levels over time (SBL, 2022)

Tailings deposition within the Western Cell of TSF3 recommenced in April 2022. Groundwater level changes since tailings deposition commenced has been steady and no major increase in standing water levels have occurred (see Figure 6).

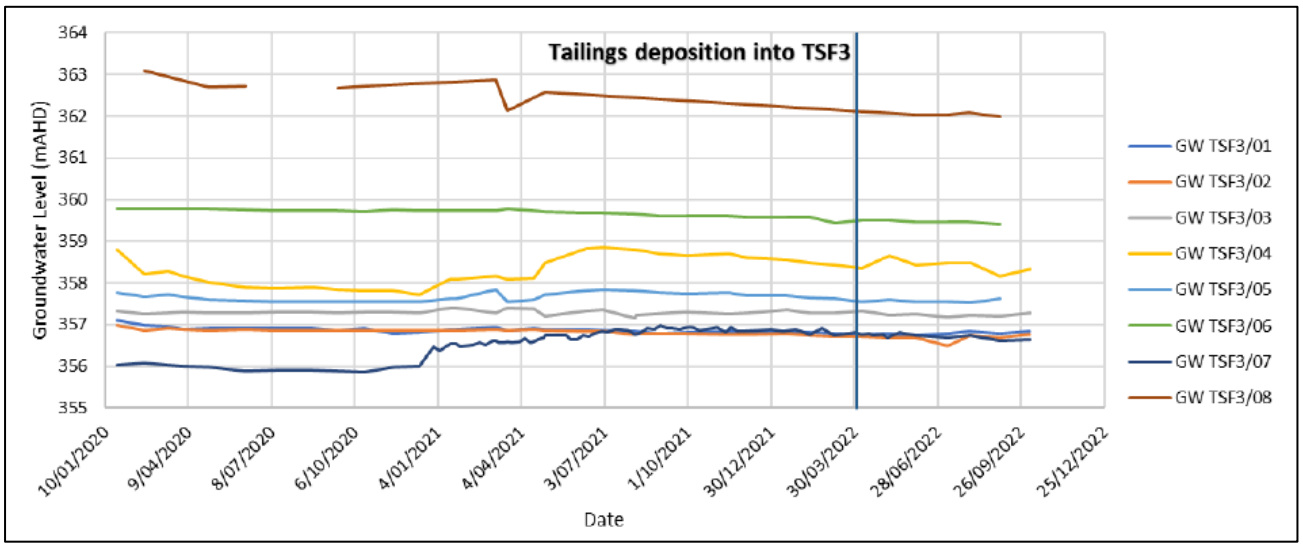

Figure 6: recent groundwater level trend within TSF3 monitoring bores since tailings deposition (Golder, 2023).

Groundwater quality has been monitored at the monitoring bores surrounding TSF3, on a quarterly basis for many years. The monitoring data indicates:

- TDS concentrations have been generally consistent with historical data variability.
- WAD CN concentrations observed has historically been detected below the limit of reporting (<0.04mg/L), however detectable concentrations of WAD CN have been observed in monitoring bores TSF3/06 and TSF3/07 in 2020. Although concentrations

in following monitoring events show levels back to below the limit of reporting (see Figure 7);

- Monitoring results for analytes Na, K, Ca, Mg, As, Pb, Ni, Fe, Cd, Cr, Cu, Hg, Se, Zn, Cl, CO_3, HCO_3, NO_3 and SO4 are consistent over previous monitoring periods.

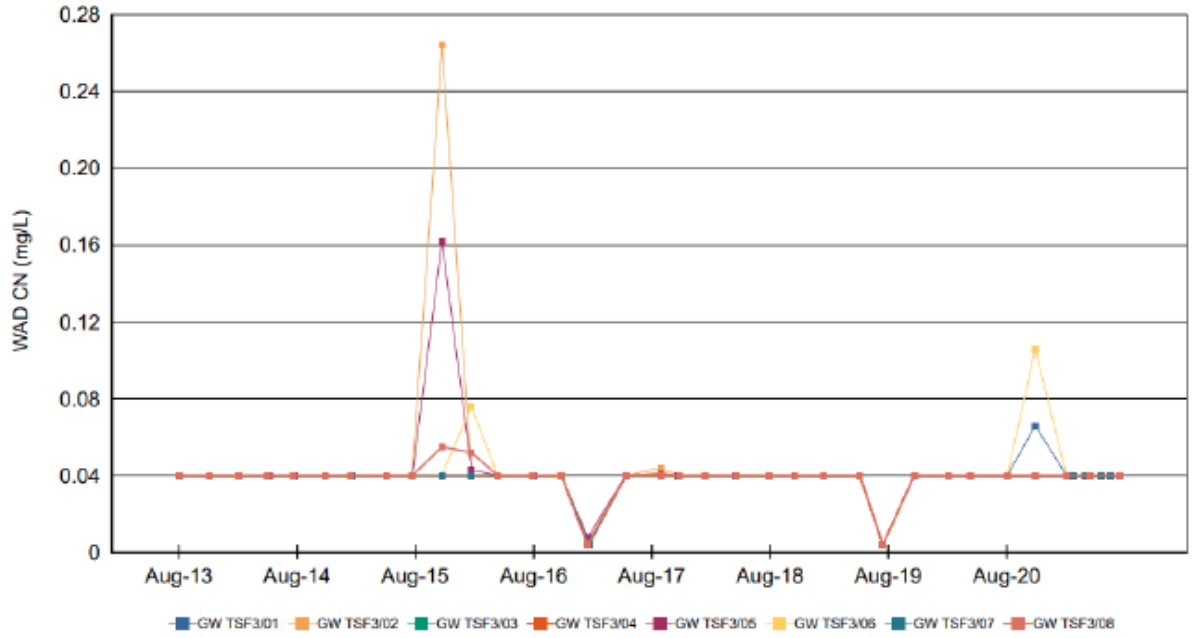

Figure 7: WAD CN results from bores surrounding TSF3 (SBL, 2022)

Groundwater quality data indicates no significant temporal trends in groundwater chemistry in relation to TSF3. Despite the lack of temporal trends observed in the existing groundwater monitoring data, the recent detection of WAD CN in groundwater monitoring bores may be indicative of seepage from TSF3.

Proposed Controls for operation of TSF3

The Licence Holder has proposed that the existing seepage collection system will continue to be used for interception and collection of shallow seepage. The system comprises seepage collection trenches (toe drains) and a seepage collection sump (pond). Seepage water is intercepted and conveyed via the seepage collection channel and delivered to a seepage collection pond (sump) located to the west of TSF3. Figure 8 presents a general overview of the TSF3 seepage collection system.

The licence holder proposes that seepage from TSF3 will continue to be managed in accordance with conditions within licence L8337/2009/2:

- maintain the seepage interceptor drain for TSF3, immediately downstream of the external toe of TSF3, except along the southern toe where it abuts TSF4
- maintain the seepage recovery system for TSF4
- ensure seepage is returned to the TSFs or the process
- monitoring the impact of seepage from TSF2 (inactive) and TSF3 (active) on groundwater levels and quality.

The Licence holder undertakes an annual review of groundwater monitoring data. Where groundwater monitoring indicates adverse impacts, the licence holder has stated that a risk assessment will be conducted by a qualified specialist and dewatering bores may be installed to mitigate impacts, where required.

Figure 8: Existing TSF3 Seepage Collection System

3.4.5 Risk rating and regulatory controls

There is evidence of very shallow groundwater around TSF3, however groundwater monitoring data has indicated that standing water levels have remained steady during tailings deposition which indicates that the current seepage management infrastructure is adequality managing the current seepage rate. However, a raise to the embankments is likely to increase seepage and therefore it has been determined that the likelihood of groundwater mounding occur is 'possible'. It has been determined that the consequence of this risk event is moderate with low level offsite impacts possible to nearby vegetation (from waterlogging of roots). Given this the risk rating for this risk event has been determined to be Medium. The construction of the embankment lift has been approved however additional regulatory controls will be required to manage the risk of groundwater mounding.

Additional regulatory controls

In order to manage impacts from this risk event it has been determined that the following additional regulatory controls will be placed on the licence:

Table 8: Additional Regulatory Controls TSF3

Condition/control	Justification
Water balance Condition 1.2.6 – water balance monitoring	To better understand water management at the TSFs a requirement for monthly water balance monitoring during tailings deposition has been added to the licence. This information will be required to be submitted to the department on an annual basis.
Vegetation	To protect adjacent native vegetation along the drainage line the Licence

Monitoring Condition 1.2.5 photographic monitoring of vegetation	holder is required to undertake an annual assessment of vegetation within the zone of influence of TSF3 and TSF4 to assess if there has been a deterioration of vegetation quality during the reporting period.
Condition 3.4.1 (Table 3.4.1) Limit for WAD CN added for monitoring bores surrounding TSF3 and TSF4	The detection of WAD CN in groundwater monitoring bores can be indicative of seepage from TSF3 & TSF4. To ensure action is taken if WAD CN is detected at unacceptable levels within the groundwater (and to protect environmental receptors i.e., surface water drainage line / vegetation) a limit for WAD CN has been applied to monitoring bores surrounding TSF3 and TSF4. A condition requiring the CEO to be notified within 14 days of a breach of this limit will also be added to the licence.
Requirement for Groundwater Management Plan New condition 3.4.3, 3.4.4 and 3.4.5	As there is a medium risk of groundwater mounding surround TSF3, it has been determined that a groundwater management plan must be developed to determine suitability of current groundwater monitoring bores to monitor seepage and propose additional bores if required. Further to this, the groundwater management plan must propose suitable bore specific triggers and determine management actions in the event that these triggers are breached.

4. Consultation

Table 9 provides a summary of the consultation undertaken by the department.

Table 9: Consultation

Consultation method	Comments received	Department response
Local Government Authority advised of proposal 13 July 2023	No comments received.	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 13 July 2023	*Comments received on 3 August 2023.* Recent approvals under the *Mining Act 1978* are of relevant to proposed TSF3 lift: • Mining Proposal **Reg ID 92909** was approved on 22/02/2021 to enable additional waste rock buttressing to TSF3 to increase landform stability after a review established that the Factors of Safety against the embankment facility were below ANCOLD (2019) recommendations. *Buttressing of TSF3* progressed involving relocation of waste rock from existing waste landforms onto the TSF 3 batters, increasing the stability and strength of the landform. • Mining Proposal **Reg ID 117157** was approved on 27 September 2023. The proposal seeks an additional lift of 2.5m to the current TSF3 (to RL 392.5m) to increase storage capacity	Comments have been noted. DWER notes that for Mining Proposal Reg ID 114270, an application will be required to DWER to increase the category 5 throughput.

	with the inclusion of alternate ore source's into the Gwalia Processing Circuit. The Resources Safety Division (RSD) of DMIRS has reviewed information submitted by the proponent and considers that from a geotechnical perspective the Proposal may be accepted (a Dam Break Assessment and Certificate of Compliance– TSF Design has been provided). Mining Proposal Reg ID 117157 is currently 'on hold' seeking further information from the proponent. However, the required information is in regard to an associated site-wide Mine Closure Plan (MCP), and not associated with the operational requirements of TSF3. Recent approvals under the *Mining Act 1978* are of relevant to TSF4 • Mining Proposal **Reg ID 56307** was approved on 27/01/2016 and enabled the construction of TSF4 in up to six lifts of 2.5 m each from the crest level RL368.5 m (that is, to RL383.5 m). In 2020 the underlying and de-commissioned TSF facility was converted to TSF4 by combining the existing cells into a single cell. The construction included removal of the cover layer over the tailings beach of the western cell with a lift of 2.5 m of the perimeter embankments. TSF4 has been constructed to a crest elevation of RL 371 m and is permitted to be raised it to a maximum crest elevation of RL 383.5 m. At the final crest level RL383.5 m TSF4 will provide an approximate capacity of 5.9 Mt. • Mining Proposal **Reg ID 100203** was approved on 22/10/2021 to enable the establishment of seepage recovery infrastructure for TSF4. The original approved TSF design had produced higher than anticipated seepage from the southern flank of the facility, with seepage expression initially noticed in the toe drain in December 2020. The Proposal enabled the redevelopment of the TSF4 toe-drain, and installation of additional seepage recovery infrastructure to improve seepage recovery rates with recovered seepage transported utilising the existing TSF3 recovery network for reuse in the processing circuit. The Resources Safety Division (RSD) of DMIRS reviewed design documents with works supported by DMIRS to further ensure no downstream negative environmental impacts occur. • Mining Proposal Reg ID 114270 was approved on 20/12/2022 that enabled an increased processing mill capacity from the existing 1.5 mtpa up to 2.5 mtpa (free-milling). (Mining Proposal Reg ID 114270 was approved after the withdrawal of the related Reg ID 114106) General comments:	

	• Site inspections undertaken in May 2019 (AI-083-3350) and November 2019 (AI-961-3500) noted that the TSF3 decant pond size was small and appropriate to the scale of the deposition, with no seepage issues. It was noted that rock armouring was required along the bottom 5 m to 10 m of the embankment of TSF3 adjoining Lake Raeside to ensure long-term stability. This issue was addressed by the buttressing of TSF3 with waste rock as undertaken under Mining Proposal Reg ID 92909 (as above). • Annual TSF operational reviews (TSF3 and TSF4) undertaken in accordance with Tailings Storage Facility Audit – Guide (DMIRS 2017) have been submitted by the Proponent, with the last operational review assessed by DMIRS on 31/08/2021 (Reg ID 98749). Operational recommendations relating to both TSF 3 and TSF4 were made, however, the review concluded that the TSFs are being operated in line with relevant requirements and guidelines.	
Licence Holder was provided with draft amendment on 20 October 2023.	Refer to Appendix 1	Refer to Appendix 1.
Licence holder was provided a second draft amendment on 29 November 2023.	No comments made.	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 10 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 10: Summary of licence amendments

Condition no.	Proposed amendments
Cover page	Licence holder name and ACN updated to Genesis Minerals Pty Ltd
1.2.2	Process water dam, site drainage pond, VR6 pond, Fuel Bay catch pond, VR3 east pond, VR3 west added to licence.
1.2.5	Requirement to undertake an annual assessment of vegetation within the zone of influence of TSF3 and TSF4.

1.2.6	Requirement to undertake monitoring of the water balance for TSF3 and TSF4 each monthly period
1.2.8	Table has been updated to allow operation of TSF4 stage 2 lift once compliance documents have been submitted. TSF3 has been added to the table, with authorization construct and operate TSF3 at RL 392.5 m.
1.2.9	TSF3 construction requirements for last raise have been removed as they are no longer relevant (works completed).
1.2.10	New condition added for construction requirements for TSF3 embankment raise.
3.4.1	A limit for WAD CN has also been added for all groundwater monitoring bores surrounding TSF3 and TSF4
3.4.3, 3.4.4, 3.4.5 (new numbering)	Requirement for groundwater management plan, identifying suitability of current groundwater monitoring network, proposing bore specific limits and proposing management actions in the event that standing water level trigger levels are reached.
3.4.3, 3.4.4 and 3.4.5 (old numbering – detailed in Amendment Notice 18/4/2019)	Conditions requiring ambient air quality monitoring from monitoring point A1 and meteorological monitoring (condition under Amendment Notice 1 in 2018) for a period of one year have been removed. These are redundant conditions as the time period for monitoring has lapsed. Monitoring has been undertaken and data submitted to the department.
3.4.6 (old numbering - detailed in Amendment Notice 18/4/2019)	Condition requiring a Noise Management Plant to be submitted to the department by 20/10/2018 has been removed. Condition is redundant due to requirements of condition being met by the licence holder. Noise management plan was submitted on 19/10/2018. A exemption under Regulation 17 of the Environmental Noise Regulations 1997 is being sought.
4.2.1.	Water balance and annual vegetation assessment added to annual environmental reporting requirements.
4.2.3	Some new condition wording added to include TSF3 works. Intent of condition remains the same.
4.2.4	Some new condition wording added to include TSF3 works. Intent of condition remains the same.
Schedule 1: Maps	Updated prescribed premises boundary provided to remove existing overlapping premises boundaries.
Licence Amalgamation – general administrative changes	The CEO has initiated an amendment to the type and style of licence and incorporated amendment notices 1 and 2. The obligations of the licence holder have not changed in making this administrative amendment. During the consolidation of amendment notices, DWER has not undertaken any additional risk assessment of the premises. In consolidating the licence, the CEO has, • Updated the format and appearance of the licence; • Deleted the redundant AACR form set out in Schedule 2 of the previous licence and advised the licence holder to obtain the form from the Department's website; • Revised the licence condition numbers, removed any redundant conditions

	and realigned condition numbers for numerical consistency; and Corrected clerical mistakes and unintentional errors.

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. St Barbara (SBL) 2022, *Annual Environmental report: September 2021 to August 2022)*, Perth, Western Australia
5. Talis Consultants 2023, *Gwalia Mine: Application for Licence Amendment L8337/2009/2,* Perth, Western Australia
6. Golder, 2023, Embankment Raise of Tailings Storage Facility 3 at Gwalia Mine Site to RL 392.5, 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
1.2.5	Condition 1.2.5 details the requirement to undertake an annual assessment of vegetation by a suitably qualified person. For the quarterly photographic monitoring required by this condition Genesis propose to use a site environmental officer.	The Department supports this proposal and has provided a footnote to this condition to provide approval for the quarterly requirements of condition 1.2.5 to be undertaken by a site environmental officer.
1.2.6	Condition 1.2.6 details the requirement to undertake moniotoring of the water balance for TSF4 and TSF4 including a requirement to record site rainfall. Genesis wish to use the nearby Leonora Airport monitoring station to record site rainfall.	The Department supports this proposal and have updated condition 1.2.6 to include a footnote to reference this.
Conditions 3.4.1, 3.4.3, 3.4.4, 3.4.5.	Due to naturally shallow groundwater, Genesis does not believe it is practical to comply with the generic limits which are outlined in table 3.4.1 related to groundwater level for bores in the TSF3 and TSF4 monitoring network. Instead, Gensis propose that a external hydrogeology consultant is engaged to develop a groundwater management plan to determine suitability of current bore network and determine bore specific triggers and action plans.	The Department supports this proposal and has modified condition 3.4.1, 3.4.3 and 3.4.5 to reflect this.

Appendix 2: Application validation summary (licence amendment)

SECTION 1: APPLICATION SUMMARY					
Application type					
Amendment to licence	☒	Current licence number:	L8337/2009/2		
		Relevant works approval number:		N/A	☐
Date application received		30/3/2023			
Applicant and Premises details					
Applicant name/s (full legal name/s)		St Barbara Limited			
Premises name		St Barbara Limited Gwalia Project.			
Premises location		located within Mining Leases: TSF3: M37/200, M37/25, M37/170, M37/17, M37/1026 TSF4: M37/17, M37/25, G37/25, G37/26, G37/27			
Local Government Authority		Leonora, WA, 6438			
Application documents					
HPCM file reference number:		2012/006861-1			
Key application documents (additional to application form):		Appendix A – DWER licence Appendix B – Detailed Design Report Attachment 3B – Site plans Attachment 5 – Stage 1 Stakeholder Information Attachment 8 – Licence Amendment Attachment 9 – Tailings Storage Facilities			
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.		SBL is proposing the following TSF upgrades associated with its operations that require an amendment to L8337/2009/2. These upgrades are collectively referred to as TSF3 and TSF4 (upgrade activities) and include the following: • Upstream raise of TSF3 to RL 392.5m. Previous TSF3 raise to 390m was approved in W5470/2013/1, no amendment to licence was required to authorise operation of TSF to this height. • The proposed raise of TSF3 to RL 392.5 is to facilitate ongoing rotation of tailings deposition between TSF3 and TSF4 and to allow for upstream raising of TSF4, while SBL is also planning to design and construct a new TSF (TSF5). • L8337/2009/2 allows SBL to lift TSF4 over a number of incremental stages (1-6). As all lifts of TSF4 have already been approved via a Licence amendment in 2015, SBL is seeking approval from DWER for deposition into these Stages (subject to appropriate compliance reporting being			

	completed and authorised by the DWER).] • Administrative Amendments - Fuel Catch pond – installed 2006 - VR3 East pond – installed in 2010 - VR3 West pond – installed in 2010 - VR6 Pond – installed in 2019 SBL is seeking an administrative amendment to include six containment infrastructure ponds to L8337/2009/2. L837/2009/2 currently only details TSF3 Eastern and Western Cells, Tower Hill Pit, Harbour Light Pit and TSF4. TSF3, at the current crest elevation of the perimeter embankment at RL 390 m, will accommodate about 13 months of tailings to be generated at the process plant (from September 2022 to Q4 2023)

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)**
5- Processing or benefication of metallic or non-metallic ore	Processing or benefication of metallic or non-metallic ore	No change proposed
6- Mine dewatering	Mine dewatering	No change proposed
52 - Electric power generation: presmises (other than premises within category 53 or an emergency of standby plant n which electrical power is generated as fuel.	Electric power generation: presmises (other than premises within category 53 or an emergency of standby plant n which electrical power is generated as fuel.	No change proposed
73 – Bulk storage of chemicals, etc	Bulk storage of chemicals, etc.	No change proposed
89- Putrescible landfill	More than 20 but less that 5,000 tonnes per year	No change proposed

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: Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: If N/A explain why? Mining tenement
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.
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 required to implement this amendment.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ 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 ☐ No ☒	Name: N/A Type: Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☐ Regional office:
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☐
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 ☐	Asbestos containing material in cell in class 2 landfill

Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	N/A
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	N/A
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	