



## Application for Licence Amendment

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

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<b>Licence Number</b>	L8893/2015/2
<b>Licence Holder</b>	Karora (Beta Hunt) Pty Ltd
<b>ACN</b>	162 824 473
<b>File Number</b>	APP-0026507
<b>Premises</b>	Beta Hunt Mine Site St Ives Road KAMBALDA WA 6442  Part of Mining Tenements: M15/1512, M15/1513, M15/1516, M15/1517, M15/1518, M15/1526, M15/1527, M15/1529, M15/1531, M15/1628, M15/1629, M15/1691, M15/1694, M15/1698, M15/1699, M15/1702 and M15/1705
<b>Date of Report</b>	05/06/2025
<b>Decision</b>	Revised licence granted

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## 1. Decision summary

Licence L8893/2015/2 is held by Karora (Beta Hunt) Pty Ltd (Licence Holder) for the Beta Hunt Mine Site (the Premises), located at St Ives Road, Kambalda.

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 construction and operation of the Premises. As a result of this assessment, Revised Licence L8893/2015/2 has been granted.

## 2. Scope of assessment

### 2.1 Regulatory framework

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

### 2.2 Application summary

On 19 November 2024, the Licence Holder submitted an application to the department to amend Licence L8893/2015/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act).

The Licence Holder currently undertakes underground mining operations for the extraction of ore from the Beta Hunt Mine. As part of mining operations, a substantial volume of groundwater enters Beta Hunt Mine through the connected Silver Lake underground mining operations. To allow mining to continue, groundwater entering the Beta Hunt Mine is abstracted and discharged to the authorised discharge point on the surface of Lake Lefroy or used for dust suppression above ground.

To accommodate increased mining operations, the Licence Holder is proposing to increase the annual dewatering capacity from 480,000 tonnes per annual period to 1,500,000 tonnes per annual period. To manage this increased water volume, an additional authorised discharge point at the Formidable Pit is proposed (Figure 1) via a newly constructed 2.2 km pipeline. Discharge to Lake Lefroy will continue as a contingency measure, to be used when the main pipeline is undergoing maintenance.

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 64 (putrescible landfill) have been requested by the Licence Holder. The Amendment Report of 2022 (DWER 2022) provides a list of administrative and environment reporting changes that have been made to a number of instruments, including proposed amendments to environmental reporting timeframes and requirements for licence L8893/2015/2. As a result, additional changes have been made to the environmental and compliance reporting timeframes prescribed in conditions 20 and 21 of the licence to align with the Amendment Report 2022. Table 1 below outlines the proposed changes to the existing Licence

**Table 1: Proposed throughput capacity changes**

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
6	480,000 tonnes per annum	1,500,000 tonnes per annum	Increase in total annual dewatering volume and construction of associate pipeline infrastructure for the transfer of mine dewater from the Beta Hunt underground mine to the Formidable Pit.

### 2.2.1 Expansion of mine dewatering operations

Mine dewater is currently abstracted from the Beta Hunt Mine and transferred via pipeline to the Turkeys Nest storage location where it is stored for the purpose of sedimentation prior to being discharged to Lake Lefroy.

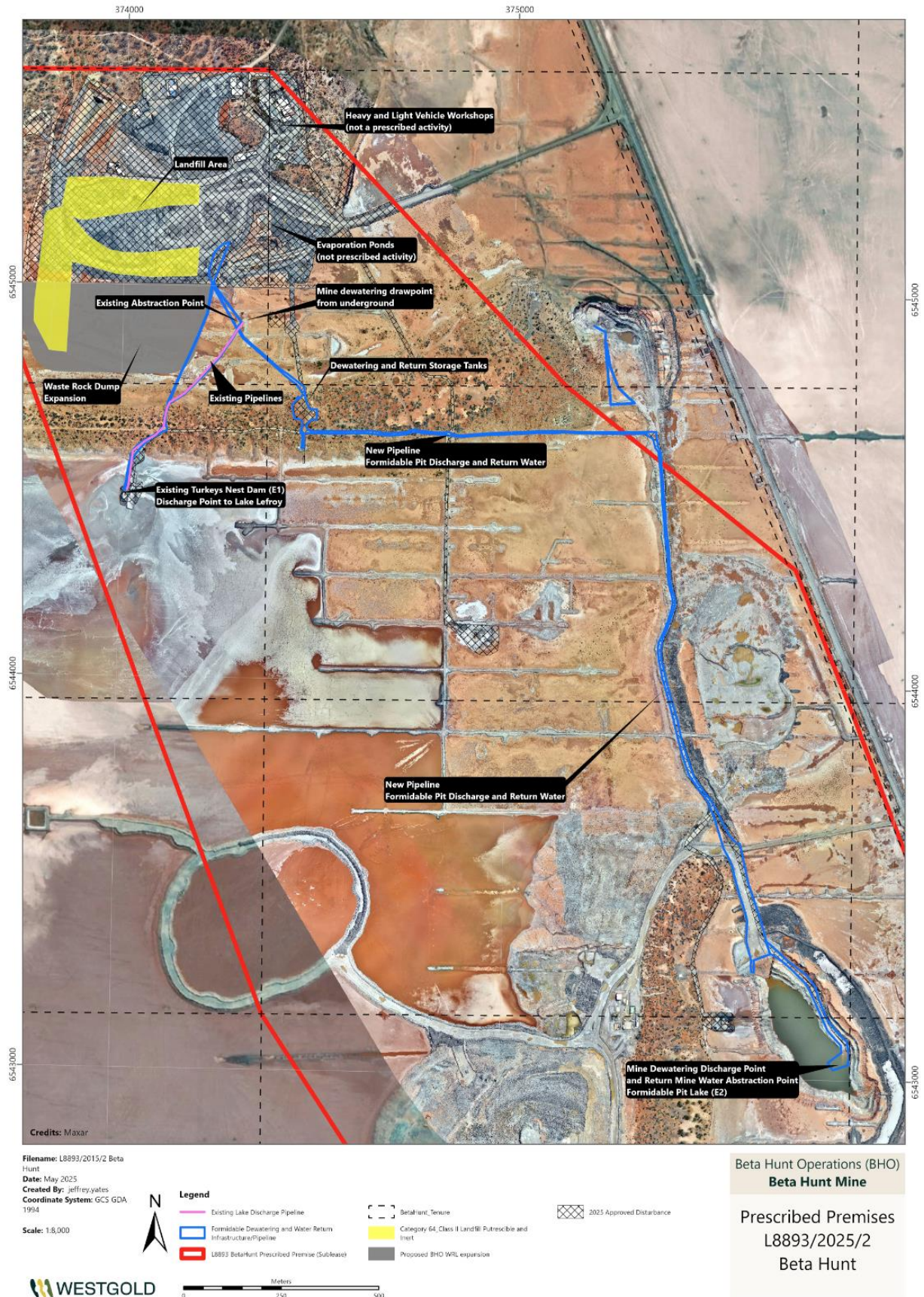
Under the proposed expansion to dewatering operations, mine dewater will be abstracted from the Beta Hunt Mine where it will initially pass through underground settlement dams before being pumped to the surface via high-density polyethylene pipelines. From there mine dewater will be conveyed via a new 2.2 km pipeline to either the Formidable Pit or the Lake Lefroy Discharge Point (now operating as a contingency discharge point during times where the Formidable Pit discharge is decommissioned for maintenance).

Once mine dewater has entered the Formidable Pit, it will undergo a period of sedimentation to allow for the settling of fine particles, after which, water that is clarified in this way will then be transferred via a pontoon-mounted pump and a return pipeline to a holding tank on the Beta Hunt ROM pad for reuse in mining operations and dust suppression, which is an approved use in accordance with licence L8893/2015/2.

To minimise disturbance to vegetation and fauna, pipelines will be strategically located within existing corridors from the Beta Hunt operations to the Formidable Pit, and where the pipeline traverses the lake shore, they will be double skinned to ensure any spills are directed onto the lake surface away from riparian vegetation. Telemetry systems and flowmeters will be implemented to monitor water flow and optimise water management.

This new pipeline and discharge point will accommodate a projected annual mine dewater increase from 480,000 tonnes per annum to 1,500,000 tonnes per annum which will facilitate an increase in mining operations within Beta Hunt Mine.





**Figure 1: Premises map showing Formidable Pit dewater discharge pipeline and discharge points .**

### 2.2.2 Dewater pipeline infrastructure and construction works

Construction of a new pipeline is necessary for the addition of Formidable Pit as an authorised discharge point. The key construction activities to be undertaken include the following:

- Earthworks to prepare the Formidable Pit for water storage and treatment.
- Construction of pipeline corridors, bunding, and scour pits to ensure containment and environmental protection.
- Laying of approximately 2.2 km of discharge and return pipelines to facilitate the transfer of water between the underground mine and the Formidable Pit.
- Installation of pumps and power generation equipment to move water between locations and operate the system.
- Set up and implementation of a telemetry system to monitor water flow rates, pump performance, and overall system efficiency.

The construction of the above infrastructure is expected to take 6 to 8 weeks and will facilitate the transfer of mine dewater from the abstraction point to Formidable Pit.

Given that the pipeline infrastructure is to be constructed within an already disturbed area, no validation of environmental performance of the containment infrastructure is proposed to be undertaken. As such, the Delegated Officer does not consider environmental commissioning to be required in accordance with the Department's Guide to Licensing (DWER 2019).

### 2.2.3 Groundwater protection and monitoring

The premises is located within the goldfields groundwater area, which is a proclaimed groundwater area in accordance with the *Rights in Water and Irrigation Act 1914* (RIWI Act) (DWER 2020b). The premises is subject to groundwater licence GWL205729 which permits the abstraction of 15,000,000 kL per annum from the palaeochannel aquifer, which includes the Formidable Pit.

The licence holder is required to operate within the current allocation or apply for additional water if required due to the increase in dewatering at the Beta Hunt Mine. During the 2023-2024 water year only 15.8% of the allocation was utilised and therefore it is likely the project can continue to operate under the existing water licence.

Analysis of dewater from the Beta Hunt mine indicates hypersaline conditions (160,000 - 380,000 mg/L, typically around 320,000 mg/L) with a neutral pH (7.0-7.4). Elevated concentrations of copper, lead, nickel, and zinc, along with highly variable suspended solids (240-2,500 mg/L), have also been recorded (Westgold 2024). Comparatively, groundwater in the vicinity of the Beta Hunt Mine is highly saline (1,000 - 449,000 mg/L) and acidic (pH 3-5), and is primarily composed of sodium chloride, with significant amounts of magnesium and sulphate.

The quality of groundwater pumped from Beta Hunt is comparable to that found beneath and within Lake Lefroy. The salt load introduced by the dewater is relatively minor compared to the existing salt load on the lake's surface (Westgold 2024).

To ensure that the quality of the mine dewater entering the Formidable Pit is equal to or better quality than the receiving environment, it is monitored at both the mine dewatering abstraction/drawpoint and at the Formidable Pit discharge location (Figure 1). The parameters measured are listed in Condition 15, Table 5 of Licence L8893.

### 2.2.4 Summary of mine water balance to support the increased mine dewatering

The additional discharge point at Formidable pit will assist in accommodating the proposed



increase in mine dewatering. Mine dewater will be discharged via the two operational discharge points as follows:

- Primary discharge (E2 in Figure 1) to Formidable Pit, discharged water is allowed to settle before being returned to use in the mine (closed system); and
- Secondary discharge (E1 in Figure 1) to the existing turkeys nest discharge point to Lake Lefroy. This discharge will be contingency discharge point during times where the Formidable Pit discharge is decommissioned for maintenance).

The primary mine water discharge and return water system balance for the E2 (Formidable Pit) discharge point is described as follows:

- Mine dewater will be discharged at a rate of 1.2 – 1.5 mtpa to Formidable Pit
- To ensure that the quality of the mine dewater entering the Formidable Pit is equal to or better quality than the receiving environment, it is monitored at both the mine dewatering abstraction/ drawpoint and at the Formidable Pit discharge location.
- Of this discharged volume, approximately 0.9 – 1.2 mtpa will be returned/reused via the Formidable Pit return pipeline.
- GWL205729 permits the abstraction of 15,000,000 kL per annum from the palaeochannel aquifer, which includes the Formidable Pit.
- In addition to the Formidable pit return, approximately 0.2 mtpa of groundwater inflow to the mine will be discharged to Formidable Pit.
- Controls to mitigate risk of overtopping Formidable pit:
  - Pit is of sufficient capacity to store dewater which is to be confirmed through a monthly water balance.
  - Pit monitored and inspected daily.
  - Regular survey of pit water level.

### 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 construction and 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
Dust	Construction of pipeline corridor, pipelines, discharge point and associated infrastructure.  Movement of mobile vehicles during pipeline installation.	Air/windborne pathway	Water trucks will be utilised on roads and during construction activities to control dust as required.
Hypersaline mine dewater	Pipeline leak during commissioning of the Formidable pipeline	Direct discharge to land	Equipment to be equipped with spill kits. Pipelines to incorporate leak detection technology. Double-skinned pipeline overland to direct any spills onto the lake. Bunded v-drains and overflow sumps to be constructed if required overland. Daily inspections of pipelines to be conducted.
	Pipeline or storage tank leak/rupture.	Direct discharge to land	Pipeline infrastructure placed within a v-drain when not on lake surface to limit movement and to capture any spills or releases. The v-drain will be constructed to allow any uncontrolled releases to flow to the discharge location.  Double-skinned pipelines direct potential spills to the lake away from riparian vegetation when crossing overland through



Emission	Sources	Potential pathways	Proposed controls
	Dewatering discharge into Formidable Pit.		<p>vegetation.</p> <p>Scour pits will be constructed at low points along the pipeline designed to contain any potential spills/leaks from the pipeline (outside of the containment bunding) before the automatic cut-off system activates.</p> <p>Pipeline to be fitted with flow meters at either end of the delivery lines with automatic shut off triggers.</p> <p>Daily inspections of pipelines to be conducted.</p>
		Overtopping and direct discharge	<p>Pit is of sufficient capacity to store dewater which is to be confirmed through a monthly water balance.</p> <p>Pit monitored and inspected daily.</p> <p>Regular survey of pit water level.</p>
		Seepage through the base and pit walls	<p>Pit monitored and inspected daily.</p> <p>Completion of monthly water balance.</p>

### 3.1.2 Receptors

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

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

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

Environmental receptors	Distance from prescribed activity
General native vegetation / riparian shoreline vegetation	150 m west of the Formidable Pit
Threatened Flora: Xanthoparmelia xanthomelanoides – Geocortex WAHerb	within 400m of proposed pipeline
Lake Lefroy Large ephemeral salt lake, hypersaline	Within the premises, where Formidable Pit is located in.

Environmental receptors	Distance from prescribed activity
Underlying groundwater (non-potable purposes): Saline to hypersaline (1,000 - 449,000 mg/L) and contains elevated metal concentrations. and acidic (pH 3-5)	Groundwater flow in region generally eastward towards the Eucla Basin.  The quality of groundwater pumped from Beta Hunt is comparable to that found beneath and within Lake Lefroy.
Aquatic Biota: Algae, macrophytes, aquatic invertebrates and waterbirds including dormant propagules in the sediment	Lake Lefroy ecosystem, adjacent to Formidable Pit.

### 3.2 Risk ratings

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

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

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

The Revised Licence L8893/2015/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 6 (mine dewatering) activities.

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

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

Risk Event					Risk rating  C = consequence L = likelihood	Applicant controls sufficient?	Conditions of licence	Justification for additional regulatory controls
Source/Activities	Potential emissions	Potential pathways and impact	Receptors	Applicant controls				
Construction								
Construction of pipeline corridor, pipelines, discharge point and associated infrastructure.  Movement of mobile vehicles during installation	Dust	<b>Pathway:</b> Air/windborne pathway  <b>Impact:</b> Decline to ecosystem health	Native vegetation  Threatened flora	Refer to Section 3.1	C = Possible L = Slight <b>Low Risk</b>	Y	<b><u>Condition1 (Table1)</u></b> <b><u>Condition 2</u></b> <b><u>Condition 3</u></b>	Infrastructure construction and installation requirements required to be added to the licence for the construction of the dewater pipeline.
Operation								
Pipeline or storage tank leak/rupture	Hypersaline mine dewater	<b>Pathway:</b> direct discharge to land  <b>Impact:</b> Contamination, erosion, or ecosystem disturbance.	Native vegetation  Threatened flora  Aquatic biota	Refer to Section 3.1	C = Unlikely L = Minor <b>Medium Risk</b>	Y	Condition 4 and Schedule 2	N/A
Dewatering discharge into Formidable Pit	Hypersaline mine dewater	<b>Pathway:</b> Overtopping and direct discharge  <b>Impact:</b> Contamination, erosion or ecosystem disturbance.	Native vegetation  Aquatic biota	Refer to Section 3.1	C = Rare L = Minor <b>Low Risk</b>	Y	Condition 4 and Schedule 2	N/A

Risk Event					Risk rating C = consequence L = likelihood	Applicant controls sufficient?	Conditions of licence	Justification for additional regulatory controls
Source/Activities	Potential emissions	Potential pathways and impact	Receptors	Applicant controls				
Dewatering discharge into Formidable Pit	Hypersaline mine dewater	<b>Pathway:</b> Seepage through the base and pit walls  <b>Impact:</b> groundwater mounding, contamination of groundwater and soil, ecosystem disturbance.	Groundwater Native vegetation Lake Lefroy Aquatic biota	Refer to Section 3.1	C = Possible L = Minor <b>Medium Risk</b>	Y	Condition 4 and Schedule 2	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 (25/03/2025)	N/A	N/A
Local Government Authority advised of proposal (25/03/2025)	<p>The following comments were received from the Shire of Coolgardie on 14 April 2025:</p> <p>Noting that the project is entirely located within granted mining leases, the Shire has no objection to the proposal subject to:</p> <ul style="list-style-type: none"> <li>Environmental and hydrological risks associated with the proximity to Lake Lefroy being managed through appropriate licensing, environmental safeguards, and design responses, i.e: <ul style="list-style-type: none"> <li>Prior to ground disturbance (other than within existing disturbance areas), a Clearing Permit under the <i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i> be acquired;</li> <li>New discharge infrastructure be designed to minimise erosion, manage sedimentation, and avoid uncontrolled overland flow.</li> </ul> </li> </ul>	Noted. Construction of the pipeline is to be located within already disturbed areas where possible, and the licence is updated to include infrastructure design and construction requirements that limit environmental disturbance. No clearing is proposed as part of this application.
	<p>Local Planning Framework</p> <ul style="list-style-type: none"> <li>The pipeline is proposed to be located in the Rural zone as per the Shire's Local Planning Scheme No. 5 and as such the activity proposed is consistent with the objectives and intent of the zone.</li> <li>The land is zoned for mining-related uses, with no direct interface with residential or urban zones.</li> <li>The proposal is consistent with relevant local planning policies.</li> </ul>	Noted.



	<p>Heritage Considerations</p> <ul style="list-style-type: none"> <li>• The proposal does not impact upon any registered or otherwise European Heritage Places.</li> <li>• The proposal is located within the Ngadju Part B Native Title Area, and it is noted that native title is extinguished over the area.</li> </ul>	Noted.
	<p>Environmental Considerations</p> <ul style="list-style-type: none"> <li>• Lake Lefroy is a naturally occurring salt lake approximately 7 km southeast of Kambalda. Riparian shoreline vegetation intersects the premises.</li> <li>• No State listed threatened fauna or flora is identified within the area.</li> <li>• As far as is possible, the environmental impacts on the lake system should primarily be confined only to areas where mining is currently occurring.</li> <li>• Watercourses should not be impacted by the dewatering activities.</li> </ul>	Noted.
Ngadju Native Title Aboriginal Corporation advised of proposal (25/03/2025)	N/A	N/A
Licence Holder was provided with draft amendment on 5 May 2025	Refer to Appendix 1	Refer to 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 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

**Table 6: Summary of licence amendments**

Condition no.	Proposed amendments
Licence cover page	<ul style="list-style-type: none"> <li>Updated Licence Holder name;</li> <li>Updated Licence duration; and</li> <li>Updated prescribed premises table with increased dewatering throughput</li> </ul>
1 (Table 1)	Inclusion of Table 1 and associated condition, providing design and construction requirements for pipeline infrastructure.
2 and 3	Addition of conditions outlining the requirements for the preparation and submission of an Environmental Compliance Report.
Condition 7, Table 2 (previously condition 4, Table 1)	Addition of Formidable Pit to table showing authorised discharge points.
Condition 15, Table 5 (previously condition 12, Table 4)	Addition of Formidable Pit discharge point to monitoring locations.
Condition 20(b) (previously condition 17(b))	Changed submission date of Annual Audit Compliance Report to 1 August in accordance with the 2022 Amendment Notice.
Condition 21 (previously condition 18)	Annual Environmental Report changed to Environmental Report to be submitted biennially in accordance with 2022 Amendment Notice.
Definitions, Table 8 (previously Table 7)	'Environmental Report' (ER) added to definitions table.
Schedule 1	Addition of Figure 2 showing Formidable Pipeline for dewater discharge.
Schedule 2	Updated table to include operational requirements for Formidable Pit and the Formidable Pit dewater pipeline.

## References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2019, *Industry Regulation Guide to Licensing*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2020a, *Guideline: Environmental Siting*, Perth, Western Australia.
5. DWER 2020b, *Rights in Water and Irrigation Act 1914*, Perth, Western Australia.
6. DWER 2022, *Notice of Amendment of Licence Reporting Requirements Section 59(2), Section 59(1)(a) and 59(1)(b) Environmental Protection Act 1986 Licensed Prescribed Premises*, Perth, Western Australia.
7. Westgold 2024, Licence L8893/2015/2 Amendment Supporting Document, 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
Assessed production / throughput	Upon further review of the groundwater inflow, mine water use, water balance, and production requirements, we request that the 850,000 tonnes per annum be amended to 1.5 million tonnes per annum.	Assessed production/ throughput has been increased to 1,500,000 tonnes per annum.  Additional information has been added to the amendment report that provides an updated water balance and justification for the additional annual mine dewater volume.
Condition 15, Table 5	Typo in the Monitoring Location column: "At the Discharge s as shown in Figure 1, and Figure , and Figure 3".	Noted.
Figure 1	Please replace Figure 1 with updated map of the prescribed premises, attached to this correspondence.	Noted.
Figure 3	Please replace Figure 3 with updated site layout, attached to this correspondence.	Noted.