



## Application for Licence Amendment

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

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<b>Licence Number</b>	L5107/1988/13
<b>Licence Holder</b>	Northern Star (HBJ) Pty Ltd
<b>ACN</b>	127 026 519
<b>File Number</b>	2012/006867-2~7
<b>Premises</b>	South Kalgoorlie Operations – Jubilee Gold Mine  Legal description –  Lot 15 on Plan 58833, Lot 50 on Plan 226299 and Lot 51 on Plan 226303, Feysville, Lot 103 on Plan 40395 Lot 105 on Plan 40396, Karamindie, and mining tenements M26/118, M26/143, M26/204 and M15/456  As defined by the premises maps attached to the Revised Licence
<b>Date of Report</b>	8 May 2024
<b>Decision</b>	Revised licence granted

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## 1. Decision summary

Licence L5107/1988/13 is held by Northern Star (HBJ) Pty Ltd (Licence Holder) for the South Kalgoorlie Operations (SKO) Jubilee Gold Mine (the Premises), located on mining tenements approximately 32 km south of the City of Kalgoorlie-Boulder and 18 km north of Kambalda in the Eastern Goldfields region of Western Australia.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L5107/1988/13 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 7 September 2023, the Licence Holder submitted an application to the department to amend Licence L5107/1988/13 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- construction of a new pipeline (~650 m in length) for dewatering from Celebration open pit to Pernatty open pit.
- add an additional dewatering discharge point (Pernatty open pit).
- increase the production capacity of Category 6.
- extend landfill area in waste rock dump, and
- to change the submission date of the Annual Tailings Storage Facility (TSF) Geotechnical Audit Report to align with Northern Star Kanowna Belle Licence (L5029/1992/11) for consistency in reporting due dates.

### 2.3 Premises background

In August 2022, SKO's Jubilee Processing Plant entered care and maintenance. SKO's HBJ underground mine is currently operational with ore taken offsite and processed at another Northern Star Kalgoorlie site.

This amendment is limited only to changes to Category 6 activities from the existing licence. No changes to the aspects of the existing licence relating to Category 5 and 64 have been requested by the Licence Holder. 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	500,000 tonnes per	1,000,000 tonnes per year	Reports from HBJ underground mining personnel indicate wetter conditions as mining progresses. Increasing Category 6 to pre-empt potential

	year		increased dewatering volumes above the current 500,000 tonnes per year production capacity.
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## 2.4 Proposed amendments

### 2.4.1 Additional discharge point – Pernatty open pit

Pernatty open pit was first mined between 1986 and 1994 with a small trial underground operation completed in 1994. It is one of 13 pits in the main SKO mining area. In 2011 Pernatty received a cut-back, with mining lasting approximately 13-months. A works approval (W5166/2012/1) for dewatering Pernatty into the nearby TNT and Celebration pits was granted by the department. Pernatty has remained disused since.

Pernatty open pit is located approximately 310 meters from the Celebration open pit, (crest to crest; Figure 1).

Currently, dewatering from the active HBJ underground mine is discharged into the Celebration open pit (~300,000 m<sup>3</sup> per annum). Groundwater quality measurements from HBJ indicate an average Total Dissolved Solids (TDS) of 102,000 mg/L, indicating hypersaline conditions, and an average pH of 7.3.

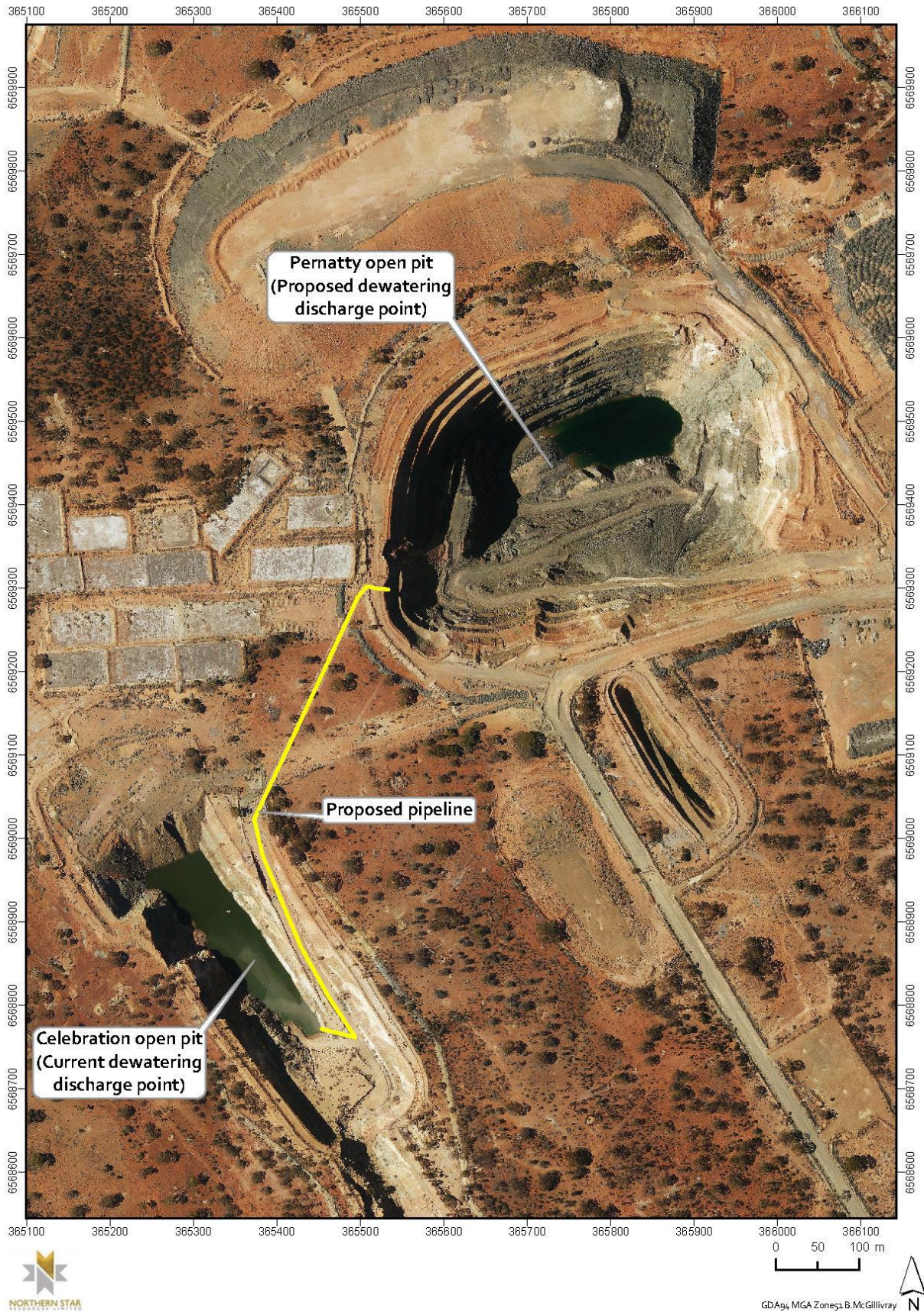
Due to a lack of safe access, the Licence Holder has advised DWER that no recent sampling of the small pit lake in Pernatty has been undertaken. The Licence Holder does believe that given the history of mining in the area and movements of mine dewatering over the years (early 1980s to present), groundwater quality is expected to be similar throughout. The Delegated Officer notes that mining operations are the only beneficial user of groundwater in the area.

The HBJ underground mine is planned to extend further to the north-west towards Celebration open pit. The proposed amendment seeks to add Pernatty open pit as an additional discharge point for mine dewatering in preparation for this future mining.

There are existing pipelines from HBJ to Celebration open pit and a new pipeline will be installed between Celebration and Pernatty pits. The new pipeline is expected to be ~650 meters in length. The planned pipeline route is provided in Figure 1 and the installation will be undertaken as per the requirements of the licence.

The Licence Holder provided calculations of the total available capacity of Pernatty open pit to the 4-meters below crest level limit as 7,527,787 m<sup>3</sup>. There is sufficient capacity in Pernatty open pit to receive dewatering from the HBJ mine on a continuous basis and from Celebration pit in the event it requires dewatering. Freeboard survey measurements will be undertaken as per existing licence conditions.





**Figure 1 Location of Pernatty open pit and proposed dewatering pipeline**



#### **2.4.2 Increase category 6 dewatering capacity.**

Northern Star is seeking to double the production capacity of Category 6 to 1,000,000 tonnes per year. HBJ underground mining personnel have reported wetter conditions and subsequent increased dewatering requirements as mining moves further north. Based on these reports there exists the possibility the current production capacity of 500,000 tonnes per year may be insufficient and could be exceeded. Northern Star Resources holds a current 5C Licence to Take Water (GWL 106836(9)) with an annual water entitlement of 6,188,995 kL for SKO.

#### **2.4.3 Extend landfill area in waste rock dump.**

The Licence Holder is proposing to extend the current area of the waste rock dump (WRD) that can be used for landfill purposes (see Figure 2). Extending the landfill area will provide access to create a landfill in a semi-enclosed section of the waste dump which will reduce the likelihood of windblown waste. All landfills constructed at SKO are managed as per Conditions 10 - 14 of the licence.

#### **2.4.4 Change due date submission of Annual Geotechnical TSF Audit Report**

The Licence Holder proposes to change the due date for submission of the Annual Geotechnical TSF Audit Report to 91 calendar days after the end of the annual period (end of March), to be the same as the Annual Environmental Report and the Annual Audit Compliance Report due dates. This will reduce administrative burden and it will align with Kanowna Belle (L5029/1992/11) reporting requirements. Currently, the Annual Geotechnical report is to be submitted 60 calendar days after the end of the annual period (end of February).

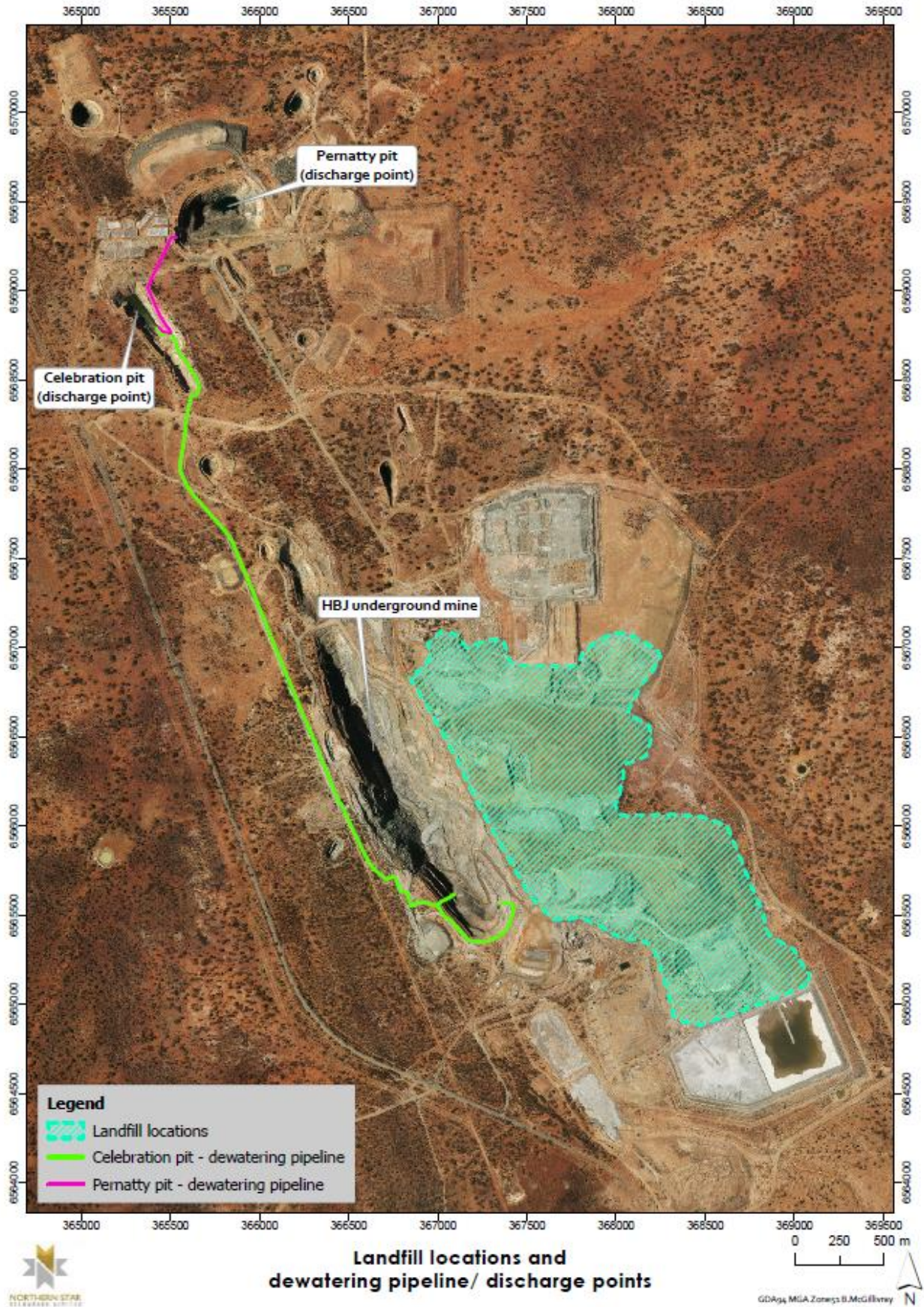


Figure 2 Site layout; dewatering and landfill location



### 3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

#### 3.1 Source-pathways and receptors

##### 3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 2 below. Table 2 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

**Table 2: Licence Holder controls**

Emission	Sources	Potential pathways	Proposed controls
Dust	Vehicle movements, earthworks etc.	Air/windborne pathway	<p>The construction period for pipelines between Celebration and Pernatty pits is expected to be short with no significant dust emissions produced.</p> <p>No additional controls were proposed in the licence amendment application.</p> <p>L5107/1988/13 includes the following control:</p> <ul style="list-style-type: none"> <li>• use of dewatering effluent for dust suppression.</li> </ul>
Discharge of mine dewatering effluent to land	Dewatering to new emission point, pipeline rupture, Overtopping of pit (emission point)	Direct discharge to land, seepage into soil and groundwater	<p>No additional controls were proposed in the licence amendment application.</p> <p>L5107/1988/13 includes the following controls:</p> <ul style="list-style-type: none"> <li>• pipelines containing either tailings or saline effluent are either: <ul style="list-style-type: none"> <li>○ equipped with telemetry systems and pressure sensors along pipelines to allow the detection of leaks and failures.</li> <li>○ equipped with automatic cut-outs in the event of a pipe failure; or</li> <li>○ provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.</li> </ul> </li> </ul>



### 3.1.2 Receptors

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

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

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

Human receptors	Distance from prescribed activity
Woolibar pastoral homestead	10 km south-east of dewatering pits – will not be considered as receptor
Environmental receptors	Distance from prescribed activity
Underlying groundwater (hypersaline)	31,400 – 147,000 mg/L TDS. Approximately 5 – 30 mbgl; generally flowing south / south-east
Aboriginal Sites and Heritage Places – Woolubar Dam Creek.	Within prescribed premises, 7.4 km south of the proposed dewatering activity.
Surrounding native vegetation	Within premises boundary, no priority species
<i>Leipoa ocellate</i> (Malleefowl)	Reported in the area, including within premises boundary

### 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. 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), 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 L5107/1988/13 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 6 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 <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
<b>Construction</b>								
Vehicle movements, earthworks for the construction of pipeline secondary containment	Dust	Air/windborne pathway causing impacts to health and amenity	Surrounding native vegetation	Refer to Section 5.1	C = Slight L = Unlikely <b>Low Risk</b>	Y	Condition 2 – saline effluent used for dust suppression.  Condition 8 – existing condition related to pipeline construction.	The short construction time and existing licence controls means any negative impact from dust emissions on receptors is unlikely.
<b>Operation</b>								
Dewatering to new emission point, pipeline rupture  Overtopping of pit (emission point)	Discharge of mine dewatering effluent to land	Direct discharge to land, seepage into soil and groundwater	Soil and groundwater	Refer to Section 5.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	Condition 8 – existing condition related to pipeline construction.  Condition 21 – Monitoring of point source emission to groundwater.  Maintain freeboard.  Condition 23 – Monitoring of ambient groundwater quality	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 22 November 2023	None received	N/A
Shire of Kalgoorlie-Boulder advised of proposal 22 November 2023	None	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 22 November 2023	None	N/A
Licence Holder was provided with draft amendment on 18 March 2024	Response received 2 May 2024. Licence holder requested several typographic corrections, no other comments were made.	The Delegated Officer corrected typographic errors in the final version of the amended licence.

## 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
Cover page	Increase of Category 6: Mine dewatering from 500,000 tonnes to 1,000,000 tonnes per year
Condition 18, Table 9: Emission point to groundwater	Add Pernatty Open Pit as a mine dewater emission point.
Condition 21, Table 10: Monitoring of point source emissions to groundwater	Add Pernatty Open Pit as an emission point reference.
Condition 29	Change submission date of annual TSF review report from 60 calendar days to 91 calendar days.
Figure 3: Map of landfill and dewatering pipeline	Replace Figure 3 with updated version.



## References

1. Northern Star (HBJ) 2023, *Licence amendment application form Southy Kalgoorlie Operations Jubilee Gold Mine*, Subiaco, Western Australia
2. Northern Star (HBJ) 2023, *Licence Amendment Supporting Document - L5107/1988/13 August 2023*, Subiaco, Western Australia
3. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
5. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.