



## Application for Licence Amendment

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

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Licence Number	L6498/1995/11
Licence Holder	Northern Star Resources Ltd
ACN	092 832 892
<b>File Number</b>	2012/006868-1
<b>Premises</b>	Jundee Operations SHIRE OF WILUNA WILUNA WA 6646  Mining tenements: G53/20, L53/52, L53/60, L53/68, L53/69, L53/70 - L53/73, L53/75, L53/99, L53/100, L53/102, L53/112, L53/113, L53/117, L53/136 - L53/138, L53/142, L53/143, L53/153, L53/169, L53/174, M53/155, M53/156, M53/182, M53/191, M53/192, M53/196 - M53/198, M53/199, M53/221, M53/226, M53/228 - M53/230, M53/235 - M53/237, M53/245 - M53/250, M53/326, M53/347, M53/372, M53/412 - M53/414, M53/441, M53/446, M53/451, M53/452, M53/461, M53/477 - M53/480, M53/492, M53/535 - M53/541, M53/552, M53/588, M53/589, M53/611, M53/707, M53/708, M53/711, M53/712, M53/836, M53/874, M53/895, M53/911, M53/929, M53/935, M53/940, M53/966, PL34 as depicted in Schedule 1.
<b>Date of Report</b>	30 July 2020
<b>Proposed Decision</b>	Revised licence granted

**A/Manager, Resource Industries**

**REGULATORY SERVICES**

*An officer delegated by the CEO under section 20 of the EP Act*

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## 1. Decision summary

Licence L6498/1995/11 is held by Northern Star Resources Ltd (Licence Holder) for the Jundee Operations (the Premises), located in the Shire of Wiluna, on mining tenements defined in Schedule 1 of the Licence.

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 L6498/1995/11 has been granted.

The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence previously granted in relation to the Premises. The Revised Licence has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

## 2. Scope of assessment

### 2.1 Regulatory framework

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

### 2.2 Application summary

On 28 January 2020, the Licence Holder submitted an application to the department to amend Licence L6498/1995/11 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). Ten separate amendments are being sought. Some are administrative, while others require risk assessment. The requested amendments are summarised in Table 1

**Table 1: Requested amendments**

Reference number	Relevant Category	Change requested	Reason for requested change
1	5	Recognise TSF1 as an active facility	Recommissioning authorised by letter, but licence had not been amended to reflect this
2	54	Increase approved premises production capacity from 150m <sup>3</sup> /day to 250 m <sup>3</sup> /day	Increased workforce
3	64	Increase approved premises production capacity from 600t/year to 800t/year	Expansion of operations
4	5	Change to freeboard	Ambiguity of freeboard definitions
5	6	Changes to deposition points for mine dewatering	Current practice does not match licence approval conditions
6	52	Removal of point source monitoring	Was only required for first 12 months. Now complete.
7	5	Removal of Nimary TSF monitoring requirements (except SWL)	Has been decommissioned and rehabilitated for over 10 years.

8	5	Removal of monitoring of hydrocarbons in TSF1	TSF1 is now an active TSF, and not receiving hydrocarbon contaminated materials.
9	5	Correct table reference in note regarding groundwater monitoring bore availability	Incorrect reference
10	5	Removal of 3 groundwater monitoring bores	Bores not suitable for sampling.

As part of this amendment package the department has:

- updated the format and appearance of the Licence; and
- deleted the redundant AACR form set out in schedule 1 of the previous licence and advise the Licence Holder to obtain the form from the department’s website; and
- considered minor and administrative changes recommended out of the compliance inspection undertaken in November 2019.

### 3. Consideration and risk assessment of changes applied for

#### 3.1 Activation of TSF1

Jundee TSF1 was operated from 1995 to 1999. The existing licence (issued 2013) lists it as inactive in terms of tailings deposition, but receiving hydrocarbon contaminated materials (Figure 1).

1.2.2 The Licensee shall ensure that waste material is only stored and/or treated within vessels or compounds provided with infrastructure requirements and at the locations specified in Table 1.2.1.

Table 1.2.1: Containment infrastructure		
Storage vessel or compound	Material	Infrastructure requirements
TSF 2	Tailings	Clay lined
Fisher In-pit TSF	Tailings	Maintain a minimum 1 m height perimeter earthen bund surrounding the Fisher In-pit TSF.
TSF 1	Tailings; Hydrocarbon contaminated soils and materials; Sewage water	Facility currently inactive except for receipt of hydrocarbon contaminated soils and sewage wastewater.

**Figure 1: Existing condition 1.2.2 referencing inactive TSF 1 receiving Hydrocarbon contaminated materials**

Works Approval W5855/2015/1 authorised a stage 4 embankment raise of TSF1. Compliance documents were submitted, and the Delegated Officer authorised recommissioning and operation of TSF1 on 22 May 2017 (DER, May 2017). It was stated in that letter that the department will amend the licence to note that TSF1 is now operational. This has not yet occurred and will be done in this amendment to reflect this authorisation in the licence. This is therefore an administrative change and does not require risk assessment. Now that the TSF is operational, it is no longer used for hydrocarbon contaminated materials, so these comments will be removed from Table 1.2.1. Table 1.2.4 will also be updated so that TSF1 has the same freeboard requirements as TSF2.

## 3.2 Increase Sewage Discharge

The existing licence lists a category 54 sewage facility with an approved premises production capacity of 150m<sup>3</sup>/day. Due to an increased site workforce, the Licence Holder has applied to increase this to more than 250m<sup>3</sup>/day. There are two separate sewage systems on the prescribed premises, referred to as the Village and Jundee Mine systems. They have a combined design capacity of 250m<sup>3</sup>/day

In information provided for this assessment (Northern Star Resources, May 2020), the Licence holder has outlined the site sewage treatment process, which is not expected to change with this amendment. They have also stated that the systems had an average throughput of 145m<sup>3</sup>/day and 45 m<sup>3</sup>/day respectively in 2019, giving a combined throughput of 190 m<sup>3</sup>/day. This exceeds the authorised category limit of 150m<sup>3</sup>/day. This operation in excess of that authorised by licence L6498/1995/11 has been referred as a non-compliance to the Compliance and Enforcement division of DWER. Further investigations and actions taken will not be discussed in this Decision Report.

Discharges from the sewage systems are:

- Sewage sludge which is managed as a Controlled Waste. It is removed from site by a licensed contractor and disposed at a licensed waste facility. Increased volume will increase frequency of required removal, but not change the environmental risk.
- Treated effluent piped to evaporation ponds. From here, some treated effluent is removed by evaporation and seepage, while the remainder is pumped to the TSF system (representing about 1% of the total TSF water inflow) from where it is returned to the mineral processing circuit. This process was approved by the department on 22 February 2008 (DEC, 2008). Increasing the sewage throughput will slightly increase the total water throughput to the TSF, but being such a small proportion of the TSF water balance it not expected to change the environmental risks. Existing freeboard conditions apply to the TSF and effluent storage ponds. Any potential health impacts of treated effluent being discharged to the tailings are incident only on the site workforce, so outside the scope of this assessment. There are no other human receptors present. The Licence Holder states that treated sewage water is currently discharged to TSF2, not TSF1. The delegated officer considers that this does not change the environmental risks. Condition 1.2.2 will be updated to allow sewage discharge to either TSF1 or TSF2, to provide flexibility for TSF water management. Sewage water discharged to the TSF should be minimized, in line with good TSF water management principles.

The Delegated Officer considers that an increase in throughput of sewage does not materially change the environmental risks, and the controls in place are adequate to control existing risks. An increase in throughput to 250m<sup>3</sup>/day is authorised which aligns with the combined design capacity of the Village and Jundee Mine sewage systems. Note that the 'more than 250m<sup>3</sup>/day' requested in the application is not granted, as this would exceed the design capacity of the existing systems.

## 3.3 Increase allowable landfill disposal

The existing licence lists category 64 (Class II or III putrescible landfill) with an approved premises capacity of 600 tonnes per year. The 2019 AACR estimates the actual landfill volume for the 2019 calendar year to be 580 tonnes. Due to an expansion of mining operations, the Licence Holder has applied to increase this to 800 tonnes per year.

There is no proposed change to the approved area or operation of the landfill in this amendment, as the current approved landfill area has capacity for a further 5 years. The Delegated Officer is therefore of the view that the environmental risks have not changed from those assessed in the approval of the current landfill areas. No further risk assessment is required.

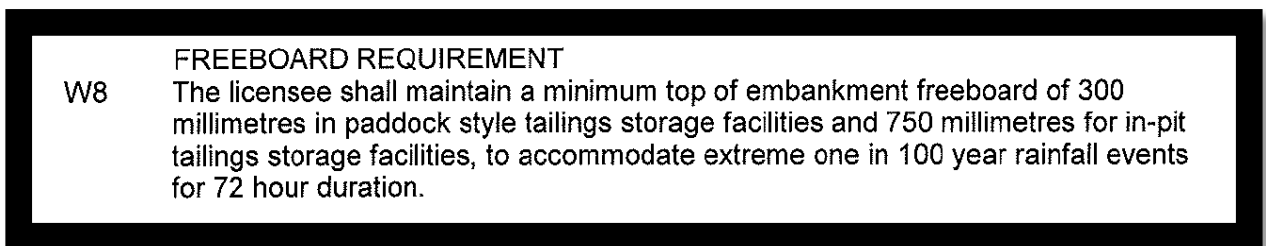
### 3.4 TSF1 and TSF2 Freeboard note

Condition 1.2.4 (Table 1.2.2) of the existing licence specifies the freeboard limit for TSF2 (which will also apply to TSF1 – see section 3.1) as follows:

*Minimum vertical freeboard of 500mm or equivalent to contain a 1 in 100 year rainfall event over 72 hours (whichever is greater) from the operational pond to lowest elevation of perimeter embankment.*

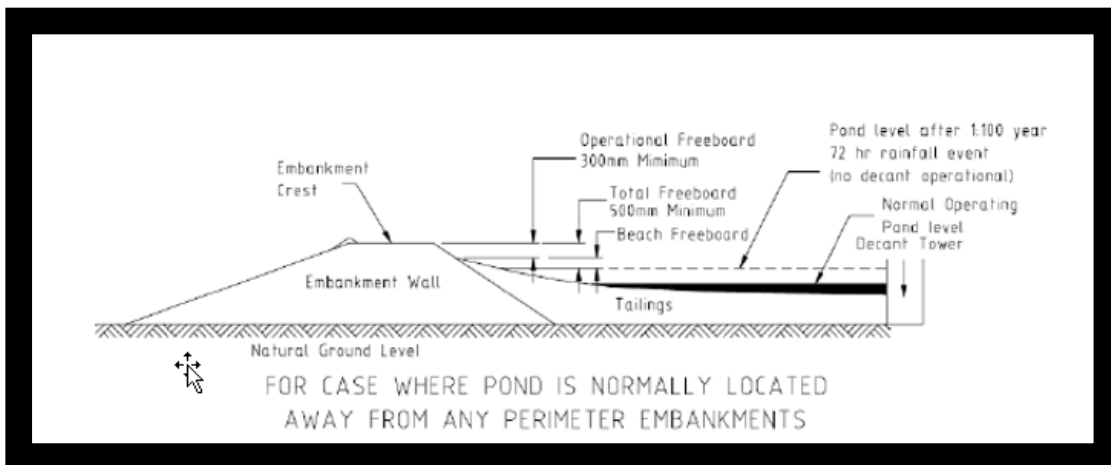
The Licence Holder has applied to 'Update Table 1.2.2 to outline an embankment operational freeboard of 300mm for TSFs as per previous licences.'

It is established that that L6498/1995/11 as granted 21 November 2013 included the standard freeboard condition shown in Figure 2.



**Figure 2: Former condition W8, from Licence L6498/1995/11 as granted 21 November 2013.**

It is noted that definitions of freeboard are taken from the document 'Guide to the preparation of a design report for tailings storage facilities (TSFs)', (DMP, 2015). The existing condition specifies only a minimum total distance to the operational pond. DMP (2015) defines total freeboard as being the sum of operational freeboard and beach freeboard (refer Figure 3).



**Figure 3: Freeboard as defined by the Department of Mines and Petroleum - Now Department of Mines, Industry Regulation and Safety (DMP, 2015)**

To reduce ambiguity in the freeboard requirements, the freeboard requirements for TSF1 and 2 in Table 1.2.2 will be reworded as follows (changes highlighted):

**Table 2: Changes to freeboard requirements (condition 1.2.4)**

Storage vessel or compound	Freeboard requirements
TSF 2 and TSF 1	<ul style="list-style-type: none"> <li>Minimum total vertical freeboard of 500mm or equivalent to contain a 1 in 100 year rainfall event over 72 hours (whichever is greater) from the operational pond to lowest elevation of perimeter embankment.</li> <li>Minimum vertical operational freeboard of 300mm between deposited tailings and the lowest elevation of perimeter embankment.</li> </ul>

### 3.5 Changes to dewatering discharge location

The existing licence authorises mine dewatering under category 6, up to 3,000,000 tonnes per annual period. The only listed discharge points are the Barton Level 4 dam (underground) and the Main Pit. This is not reflective of current practices. The Licence Holder provided an overview of current dewatering operations on 18 May 2020 (Northern Star Resources, May 2020). Depending on source location, mine water is pumped to a network of underground sumps, unused pits and turkeys nest dams, and reports ultimately to Cook pit (primary) or Keating Pit (secondary).

There are no environmental receptors to be impacted by the management of water underground, so surface water storage only will be assessed here. Jundee has a net negative water balance, requiring additional water inputs on top of mine dewater for operational use. All storage locations for mine dewater are therefore ‘temporary’ storages, until the water is reused. There is no planned discharge to the environment.

Groundwater in the vicinity of the Jundee operations ranges from brackish to hypersaline, However it is not currently used for stock and the hydraulic conductivity is so low that it is not likely to be a yield significant water (Saprolite Environmental, 2019). Groundwater is therefore not further considered as a receptor requiring protection.

No construction is required as existing pits and turkey nest dams are utilised. The key risks are assessed in Table 3.

**Table 3. Risk assessment of potential emissions and discharges from dewatering operations**

Risk Event			Risk rating <sup>1</sup> C = consequence L = likelihood	Conditions of licence	Justification for additional regulatory controls
Potential emission	Potential pathways and impact	Receptors			
Saline water	Leak of saline water to vegetation causing stress or death	Native vegetation	C = Minor L = Possible <b>Medium Risk</b>	Existing condition 1.2.1 gives requirements for pipelines containing saline constituents	No change. Existing condition sufficient.
	Overtopping of saline water leading to vegetation stress of death		C = Minor L = Possible <b>Medium Risk</b>	Condition 1.2.2 – line <b>added</b> to Table 1.2.1 requiring all turkey dams to have a minimum vertical freeboard of 300mm Condition 1.2.4 – line <b>added</b> for the risk below is more than sufficient to control the risk of overtopping.	Freeboard on turkey nest to reduce the likelihood of overtopping



Risk Event			Risk rating <sup>1</sup>	Conditions of licence	Justification for additional regulatory controls
Potential emission	Potential pathways and impact	Receptors	C = consequence L = likelihood		
	Seepage leading to mounding of water table into vegetation root zone, causing stress or death		C = Minor L = Unlikely <b>Medium Risk</b>	Condition 1.2.2 – line <b>added</b> to Table 1.2.1 requiring all turkeys nest dams to be HDPE lined.  Condition 1.2.4 – line <b>added</b> to Table 1.2.2 requiring all pits containing mine dewater to maintain a 6m freeboard below the surrounding ground <sup>2</sup>	1. Lining will minimise seepage from turkey dams  2. Pits are unlined, so some seepage is likely. Hence this condition aims to keep seepage outside the root zone of surrounding vegetation

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

Note 2: The application states that local vegetation may have roots up to 10m deep. However representatives of the Licence Holder stated in discussions with the department that this is an estimate based on tree height. The Delegated Officer notes that eucalyptus roots tend to be shallower than the tree height, and on similar sites a standing water level limit of 6m below the ground surface has been found to provide adequate protection to vegetation. The area is already highly disturbed by mining and vegetation impacts of mounding to this level are unlikely.

With the conditions outlined above in place, the map of mine dewater discharge points in the licence (Schedule 1, Figure 5) will be replaced with the map in the application showing the location of all temporary groundwater storage dams.

Existing condition 3.3.1 outlines sampling and analysis required to Main Pit. The Licence Holder states that Cook Pit and Keating Pit are now the main receiving pits for mine dewater, with smaller pits (including Main Pit) used as holding ponds before deposition into these two receiving pits. The water from the various underground workings on site is expected to have similar chemistry, therefore the Delegated Officer is satisfied that sampling of these two main receiving pits will give a representative sample of dewater chemistry. If any contaminants of concern are identified, monitoring of specific pits could be required in future. Condition 3.3.1 will be changed such that the analysis previously required at Main Pit will now be required instead at both Cook and Keating pits.

Condition 2.3.1 will be modified to:

*The Licence Holder is permitted to discharge 3 000 000 tonnes of mine dewater to the surface containment dams and pits identified in Schedule 1, Map of emission points, Figure 5.*

### 3.6 Removal of point source emissions monitoring

The Licence Holder requested removal of section 3.2 (conditions 3.2.1 to 3.2.3) which relates to air emissions from the gas gensets. Monitoring of oxides of nitrogen and carbon monoxide were required for the first 12 months of operation, to validate actual emission against design specifications particularly the confirmation that NO<sub>x</sub> concentrations are less than 500mg/Nm<sup>3</sup> NO<sub>x</sub>.

Monitoring was carried out in November 2017, February 2018, May 2018 and August 2018. Monitoring data was provided in PPM. However converting the highest NO reading and highest NO<sub>2</sub> reading to mg/m<sup>3</sup> (Table 4) demonstrates that emissions measured did not exceed the design specifications of less than 500mg/Nm<sup>3</sup> NO<sub>x</sub>. This monitoring was undertaken at 70% engine capacity. This is reflective of the normal operating engine range of 70-80% capacity.

**Table 4. Conversion of NO and NO<sub>2</sub> concentration**

	Highest ppm recorded in monitoring	concentration (mg/m <sup>3</sup> )
NO	285	350
NO <sub>2</sub>	9	17
<b>Max NO + Max NO<sub>2</sub></b>		<b>367</b>

This is within the design specifications of the Gensets, as assessed. As there are no sensitive receptors present, emissions at these levels are not considered a significant risk that requires ongoing reporting to the department. Emissions of these Gensets, along with the older sets on the premises are listed as emission points in Table 2.2.1 of the licence and shown on the map of emission points to air. Emissions from the Gensets will continue to be reported through National Pollutant Inventory reporting.

Condition 3.2.1 also required volumetric flow rates, which were not measured. This is a non-compliance with condition 3.2.1. However, Table 3.2.1 did not specify a frequency for volumetric monitoring, causing confusion, and the design volumetric flow data was been provided (Northern Star Resources, 28 July 2020). The Delegated Officer is satisfied that given that the highest NO<sub>x</sub> concentrations reported were less than 75% of the design concentration, the risk of flow rate variations resulting in an exceedance of the design NO<sub>x</sub> emissions is not considered significant.

The Delegated Officer is satisfied that the intent of conditions 3.2.1, 3.2.2 and 3.2.3 has been satisfied. These conditions will be removed, and subsequent sections renumbered.

### 3.7 Nimary Compliance Bores

The Licence Holder requested the department consider removal of monitoring requirements for the Nimary TSF compliance bores, except for standing water level (SWL). This TSF was decommissioned in June 2007 and rehabilitated in 2009.

Nimary monitoring was reduced in 2013, but maintained at some monitoring due to a number of bores nearing or exceeding the water quality criteria levels in the licence (A693896).

Data from the 2019 Annual Environmental Report (AER) has been reviewed, which provides monitoring bore data since 2009. One outlier (NMB08; on Figure E49) shows a decrease in depth to groundwater on the final reading of 2019, but this is likely to be an error as levels in this bore have been relatively steady for the last 5 years and no other bores show a decrease. All other Nimary bores show trends of steady or gradually increasing depth to groundwater since the cessation of operation of the Nimary TSF, and levels in all bores (excluding the outlier for NMB08 in December 2019) are currently over 10m below ground level. It is therefore unlikely that any interaction with the root zone will occur, and analysis of parameters listed in Table 3.4.1 are steady and all within licence limits.

Table 3.4.1 will be amended to remove all Nimary monitoring requirements except for Standing Water Levels.

### 3.8 Soil monitoring on TSF1 – Table 3.4.2

The Licence Holder has requested that the requirement for hydrocarbon monitoring at TSF1 be removed. The Delegated Officer agrees that this is redundant as the hydrocarbon contaminated material (treated material from the bioremediation facility, and core cuttings) previously deposited in TSF1 is now encapsulated under 3-4m of tailings, and active tailings deposition is occurring. Hydrocarbon contaminated materials are no longer being deposited in TSF1, and the licence introduction and Table 1.2.1 will be updated to remove this as an

authorised activity. TSF 1 sampling of Total Recordable Hydrocarbons will be removed from existing table Table 3.4.2 (now amended to Table 3.3.2).

### 3.9 Change of table note regarding bore availability

The Licence Holder requested that Note 3 on Table 3.4.1 should reference Table 3.4.1 (Rather than 3.3.1) and Table 3.4.2. This is an administrative error due to condition renumbering in the most recent amendment. It will be corrected to Table 3.4.1 (now renumbered as Table 3.3.1). However this note does not apply to Table 3.4.2 (now Table 3.3.2) as this relates to ambient soil sampling, which is not affected by bore availability.

### 3.10 Removal of some groundwater monitoring bores around Jundee TSF1 & TSF2

The Licence Holder has requested that monitoring requirements for Jundee TSF monitoring bores JMB5-D, JMB23A and JMB24 be reduced to Standing Water Level (SWL) measurement only, due to logistical difficulties with collecting a sample from these bores.

The Delegated Officer considers that the greatest environmental risk associated with groundwater mounding is egress of contaminated groundwater into the root zone of vegetation. This is likely to be detrimental due to salinity of the local groundwater and seepage, regardless of chemistry. This risk will continue to be monitored through monitoring of SWLs. The Delegated Officer considers that analysis undertaken at the remaining bores will give an adequate picture of the chemistry of the seepage plume. It is noted that with the removal of sampling requirements for these three bores, no bores on the western side of the TSFs will require sampling. This is not considered a significant deficit in data collection as the depth to groundwater is greater on the western side due to topography, and the natural groundwater flow is inferred to be toward the northeast (Saprolite Environmental, 2019), away from the bores proposed to cease sampling.

Table 3.4.1 will be modified such that only SWL monitoring is required at monitoring bores JMB5-D, JMB23A and JMB24. No changes to Figure 6 of the existing licence are required.

## 4. Consideration of amendments recommended out of compliance inspection November 2019

**Table 5: Consideration of amendments recommended from the compliance inspection November 2019**

Condition	Recommendation from compliance officer	Action
1.2.2	<p>TSF1 is now active, so</p> <ul style="list-style-type: none"> <li>• TSF1 return water pond re-inserted into licence</li> <li>• Re-assess authorization for TSF1 to accept treated sewage water</li> </ul>	<ul style="list-style-type: none"> <li>• TSF1 return water pond added to Table 1.2.2 (containment infrastructure), and Table 1.2.2 (freeboard requirements)</li> <li>• Assessed in section 3.2 above.</li> </ul>
1.2.4	<ul style="list-style-type: none"> <li>• Turkey nests used for water suppression not included in containment infrastructure</li> <li>• Freeboard limit needed for now-active TSF1</li> </ul>	<ul style="list-style-type: none"> <li>• Assessed in section 3.5 above. Map inserted as Figure 5, and added to Table 1.2.1.</li> <li>• Added to Table 1.2.4</li> </ul>
1.2.5	<ul style="list-style-type: none"> <li>• Dewatering pipelines to be included</li> </ul>	<ul style="list-style-type: none"> <li>• Dewatering pipelines added to Table 1.2.3</li> <li>• Not required as this condition states minimum inspection</li> </ul>

Condition	Recommendation from compliance officer	Action
	<ul style="list-style-type: none"> <li>Consider increasing inspection frequency from 12 hourly to 6 hourly.</li> <li>Review frequency of borefield lines inspection - not specific enough (currently 3 times per week)</li> </ul>	<p>frequency, and condition 1.2.1 requires secondary containment sufficient to contain any spill for a period equal to the time between routine inspections. The licence holder may choose to perform inspections more regularly if containment is insufficient, to maintain compliance with existing conditions.</p> <ul style="list-style-type: none"> <li>Current frequency does not specify a maximum time between inspections. Will be changed to 'at least every 72 hours'. Condition 1.2.1 applies.</li> </ul>
3.2.1	12 months of monitoring now complete. Remove if not required	Assessed in section 4.1 below
3.3.1	Non-NATA in field measurement of pH and TDS authorised for Table 3.4.1 but not 3.3.1. Suggest authorise for Table 3.3.1	Non-NATA in field measurement of pH and TDS is acceptable for Table 3.3.1. Note added to Table 3.3.1 to authorise
4.1.1	Removal of improvement conditions	Assessed in section 4.2 below.
General	Condition required to hold licensee to account for the management of their seepage recovery.	Existing condition 3.4.1 provides SWL limits for the shallowest bores, which is an outcomes-based control. The Licence Holder has a seepage and groundwater management plan. Conditioning of this document or aspects of it may be considered in the next licence review or renewal.
Category 54	Licence Holder looking to increase sewage throughput	Assessed in section 3.2 above.

## 4.1 Removal of Redundant Conditions

Condition 1.2.9 specifies construction of

- a. A gas power station and
- b. A waste heat recovery system.

The waste heat recovery system is yet to be constructed. Approval to construct this expires at the expiry date of the licence (21/11/2024). If construction is still pending at the time of licence renewal, it will be reconsidered as part of that assessment process.

Reporting requirements relating to construction and commissioning are specified in conditions 5.2.4 – 5.2.7 of the existing licence. The Licence Holder has provided documents (Northern Star Resources, 28 July 2020) relating to these conditions. It is noted that the commissioning report was not provided within 3 months of completion of commissioning, which is a technical non-compliance with condition 5.2.6. However the Delegated Officer is satisfied that there has been no environmental impact as a result of this non-compliance.

All documentation required for the construction and commissioning of the gas generators has now been received. The gas power station row will be removed from Table 1.2.6. (condition 1.2.9). Former condition 5.4.4 (now renumbered as 4.2.4) has been slightly reworded to clarify that construction compliance is still required following the completion of the waste heat recovery system, and prior to its operation. Former condition 5.4.5 (now renumbered as 4.2.5) still applies. Former conditions 5.2.6 and 5.2.7 have been removed as they relate to commissioning, which is not relevant for the waste heat recovery system.

## 4.2 Improvement Conditions Removal

**Table 6: Improvement conditions to be removed**

Improvement condition	Documentation	Action
IR1	DWER sent letter stating that IR1 satisfied and will be removed from the licence (DER, 2 March 2017)	<ul style="list-style-type: none"> <li>Remove IR1</li> <li>Remove line item referencing Table 5.1.1 (improvement condition reports), in Table 5.2.2 (non-annual reporting requirements)</li> </ul>
IR2, IR3, IR4	The department sent letter stating that IR2, IR3 & IR4 are considered met and will be removed from the licence (DER, 20 February 2017). This letter also states that the department will review licence conditions based on the data provided.	<ol style="list-style-type: none"> <li>Remove IR2, IR3 &amp; IR4</li> <li>Selenium analysis will be added to monitoring conditions 3.3.1 and 3.4.1 of the licence.</li> </ol>

## 5. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

**Table 7: Consultation**

Consultation method	Comments received	Department response
Department of Mines, Industry Regulation and Safety (DMIRS), and Shire of Wiluna advised of proposal (9/4/2020)	None	NA
Licence Holder was provided with draft amendment on 10 June 2020.	See Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions	

## 6. 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.

## References

1. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. By email: Northern Star Resources 28 January 2020, *Junee Licence Amendment Application*, (DWER Document A1862735; referenced in text as the application)
5. Saprolite Environmental 2019, *Jundee Operations - Proposed TSF1 and TSF2 Tailings Wall Lift 2019/2020 Hydrogeological Assessment and Review – to June 2019* Ellenbrook, Western Australia (in DWER Document A1849372)
6. Department of Mines and Petroleum (DMP) 2015, *Guide to the preparation of a design report for tailings storage facilities (TSFs)*, DMP, Perth, Western Australia, accessed June 2020 from [www.dmp.wa.gov.au/Documents/Safety/MSH\\_G\\_TSFs\\_PreparationDesignReport.pdf](http://www.dmp.wa.gov.au/Documents/Safety/MSH_G_TSFs_PreparationDesignReport.pdf).
7. By email: Northern Star Resources 18 May 2020, *Response to request for further information for amendment to Licence L6498/1995/11*. (DWER Document A1894326)
8. By email: Northern Star Resources 28 July 2020, *Response to draft amendment to Licence L6498/1995/11*. (DWER Documents A1918493)
9. Department of Environment and Conservation (DEC), 28 February 2008, *Changes to current sewerage management practices at NJO*, DEC, Kalgoorlie, Western Australia (in DWER Document A1898044)
10. Department of Environmental Regulation, 22 May 2017. *Environmental Protection Act 1986 – Receipt of compliance documentation for Works Approval W5855/2015/1 – stage 4 embankment raise TSF1 & recommissioning*, DER, Perth, Western Australia (in DWER Document A1436192)
11. Department of Environmental Regulation, 2 March 2017, *DER advice – Improvement program – commissioning plan*, DER, Perth, Western Australia (DWER Document A1386855)
12. Department of Environmental Regulation, 21 February 2017, *Licence L6498/1995/11 Jundee operations: submission of IR4 report detailing selenium monitoring results* DER, Perth, Western Australia (DWER Document A1380397)



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

Condition	Summary of Licence Holder's comment	Department's response
Introduction	Operational updates provided to the 'Premises description and Licence summary'	Changes incorporated into issued licence.
Condition 1.2.2, Table 1.2.1	The TSF1 Return Water Dam and TSF2 Return Water Dam are the same facility. Please change the name to TSF1 & TSF2 Return Water Dam and remove TSF1 Return Water Dam.	Corrected.
Condition 1.2.5, Table 1.2.3	Dewatering pipelines are located within the disturbed mining area and are of a lower risk to impacting the adjacent vegetation. We request that the frequency of dewatering pipelines are inspected At least every 72 hours to align with the inspection frequency of the borefields pipelines.	Granted. It is noted that condition 1.2.1 (regarding secondary containment and detection systems) applies for all pipelines containing saline, alkaline or cyanide constituents. Prior to reducing inspection frequency, the Licence Holder should ensure this does not lead to a non-compliance with condition 1.2.1.
Condition 1.2.6, Table 1.2.4	Please change to 800 tonnes per year (i.e. replacing the reference of 600 tonnes per year), as per page 2 of Licence.	Updated as per the category 64 capacity increase authorised in this amendment.
Condition 3.3.1, Table 3.3.1	Jundee will undertake Selenium monitoring over 12 months or 4 sampling events for each quarter. Results will be reported to DWER to further determine if selenium monitoring is a risk at the operation and if ongoing selenium monitoring will be required.	Discussed with Licence Holder that no end point will be put on selenium monitoring at this stage. The Licence Holder may present the case in a future amendment to remove this requirement based on monitoring data, if they choose to.
Condition 3.3.1, Table 3.3.1	Request removal of Barton Level 4 Dam as a monitoring point, as it is underground and not a dewatering end point.	Agreed, Barton Level 4 Dam is not representative as a dewatering discharge location. As identified in this report, Cook Pit and Keating Pit are the most representative discharge locations. The addition of these monitoring points in the current amendment makes monitoring at Barton Level 4 dam redundant, so it has been removed as requested.
Condition 1.2.9	Compliance documentation provided for gensets. Waste heat recovery system not yet constructed.	Documents satisfactory for the gas generators. These will be removed from condition 1.2.9
Condition 3.2	Design volumetric flow data provided	Acceptable, considering that frequency is not specified in licence and NOx and CO levels measured were low. Conditions 3.2.1, 3.2.2 and 3.2.3 will be removed.
Condition 5.2.4 to 5.2.7	Commissioning report provided	See section 4.1.
Condition 2.2.1, Table 2.2.1	Updated list provided of the Powerhouse Generators. Some have been removed or are currently out of operation	Where no generator is present, Table 2.2.1 is updated to reflect that this emission point is not currently authorised. Points remain on the licence to simplify future amendments if new generators are put in these bays in future. LH stated (by phone) that generators marked out of operation may be used as standby power supply, so have been marked as such in Table 2.2.1.