



Application for Licence Amendment

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

Licence Number L7815/2001/12

Licence Holder Northern Star (Thunderbox) Pty Ltd

ACN 107 154 727

Application Number APP-0027938

Premises Thunderbox Operations
LEINSTER WA 6437

Legal description –

Mining tenements L36/155, L36/157, L36/158, L37/61, L37/73, L37/142, L37/166, L37/199, L37/215, L37/216, M36/35, M36/177, M36/421, M36/462, M36/473, M36/494, M36/503, M36/504, M36/512, M36/516, M36/525, M36/527, M36/541, M36/542, M36/582, M36/584, M36/585, M36/586, M36/587, M36/589, M36/599, M36/600, M37/222, M37/339, M37/340, M37/356, M37/357, M37/358, M37/359, M37/360, M37/361, M37/367, M37/368, M37/437, M37/465 and M37/1148

As defined by the Premises maps attached to the Revised Licence

Date of Report 6 August 2025

Decision Revised licence granted

SENIOR MANAGER, RESOURCE INDUSTRIES

Approvals – Statewide Delivery

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

Table of Contents

1. Decision summary	1
2. Scope of assessment	1
2.1 Regulatory framework	1
2.2 Amendment summary	1
3. Risk assessment.....	4
3.1 Source-pathways and receptors	4
3.1.1 Emissions and controls	4
3.1.2 Receptors.....	5
3.2 Risk ratings.....	6
4. Consultation	10
5. Conclusion	10
5.1 Summary of amendments.....	10
References	11
Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions	12

1. Decision summary

Licence L7815/2001/12 is held by Northern Star (Thunderbox) Pty Ltd (Licence Holder) for the Thunderbox Operations (the Premises), located within Mining tenements listed on the cover page.

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 L7815/2001/12 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.

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 Amendment summary

On 11/03/2025, the Licence Holder submitted an application to the department to amend Licence L7815/2001/12 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Adding infrastructure associated with category 6 constructed under works approval W6918/2024/1;
- Adding category 57 to the licence to allow the storage of used tyres;
- Adding category 63 to the licence to allow the disposal of used tyres; and
- Administrative changes.

This amendment is limited only to changes to Categories 6, 57 and 63 in the existing Licence. No changes to the aspects of the existing Licence relating to Categories 5, 52, 54, 64 and 73 have been requested by the Licence Holder.

Category 6: Mine dewatering

Works Approval W6918/2024/1 permitted Northern Star (Thunderbox) Pty Ltd to construct a new process water pond as well as associated pipeline infrastructure. Construction of the works was completed in October 2024 and DWER conducted compliance of the works in December 2024. Compliance indicated that the works were constructed as outlined in the works approval. No deviation from the works approval design was noted during compliance.

The new process water pond (PWP) is a basin comprised of a compacted soil substrate lined with a 1.5mm HDPE geomembrane liner. The total capacity of the pond is 24,400 m³. A stormwater spillway has been constructed to divert potential overflow from the PWP to the Thunderbox project pit. The PWP is connected to the existing 2 water ponds (Raw Water Pond and Mine Water Pond) via a series of float valves and gooseneck pipes. The addition of the float valves and gooseneck pipes allows all three ponds to stay at or near capacity for peak plant operations.

The PWP will store water sourced from nearby groundwater bores to be used in the process plant. Water contained in the PWP typically has an average TDS of 10,500 mg/L and a pH of 8.17. The PWP will be included on the licence as containment infrastructure. Management of the associated pipelines will be captured under existing licence conditions.

Category 57: Used tyre storage

The Licence Holder has applied to include category 57 onto the licence to store used tyres prior to disposal on site. A limit of 500 tyres at any one time will be stored at three locations over the premises. Each location will be located within an area previously cleared of all vegetation and be exclusively for the storage of used tyres.

No construction is required for the three tyre storage areas as the areas proposed are already cleared laydown areas. Tyre storage areas are flat and are separated from other laydown or stockpile areas and remnant vegetation to minimise fire hazards. Tyres will be stored in separate stockpiles or bays of up to 20 tyres, with a minimum distance of 3 m between stockpiles. The location of the three proposed storage areas is shown in Figure 1 below.

Storage areas will be demarked to ensure only used tyres are held in the facility.

Category 63: Class I landfill

The Licence holder currently is permitted to dispose of a number of used tyres in their existing class II landfill facility. This is not efficient for used tyre disposal as the size of the trenches allowed is too small.

Accordingly, a licence amendment to include category 63 is sought to allow for direct disposal into waste rock landforms (WRL) without the requirement for trenches to be excavated. Class I and Class II landfills will be maintained in separate locations, with only used tyres disposed directly in WRLs under category 63 and other waste disposed in trenched landfill cells under existing licensed category 64.

Used tyres will be transported via trucks from tyre storage areas to WRLs and tipped into active waste rock disposal areas. Tyres will be laid flat allowing for side tipping or back tipping of waste rock materials directly on top. Tyres will become encapsulated by inert waste rock materials, with all tyres buried within 6 months of placement on the WRL. There is no additional construction or operation required for the disposal of tyres outside of the standard deposition of overburden into the WRL.

The licence will be amended to ensure tyres are buried in batches of less than 1000 whole tyres and with a separation of at least 100 mm between each batch.

Approaching mine closure no tyres will remain within 5 m of the final WRL surfaces. It is anticipated that up to 5,000 tonnes of used tyres per annum will be disposed of to WRLs for the remainder of the life of mine. Locations and numbers of used tyres disposed will be recorded by GPS and maintained on file to inform mine closure planning. The area proposed for the class I facility is shown below in Figure 1.

Administrative changes

Other requested changes in the licence amendment that do not require further risk assessment are as follows:

- Remove Bannockburn North Dam from the licence – Bannockburn North Dam will no longer be constructed and all reference to it will be removed from the licence.
- Remove Bannockburn Hill Dam from the licence – Bannockburn Hill Dam is an existing infrastructure that is currently not being used. Plans were made to refurbish the dam and bring it back into production, but these plans have now changed and the dam will remain decommissioned.
- Correct the registered business address – the previous licence shows an incorrect registered address.
- Change the premises name to “Thunderbox Operations” to correctly describe the site.
- DWER initiated amendment to amend ‘Date of issue’ on cover page to 17 October 2024 to reflect correct date of when licence was first granted.

- Update the legal description to remove tenement M36/1148 as the tenement does not exist and was incorrectly included on the previous licence.
- Update the legal description to include tenement L37/222 as it contains a mine dewater pipeline. L37/222 is already represented within the defined premises boundary in Schedule 1. Northern Star (Thunderbox) Pty Ltd holds ownership of the mining tenement which expires on 30/11/2037.
- Replace the premises map (Figure 1) in Schedule 1 to include tenement L37/222.



Figure 1: Location of used tyre storage and class I landfill facilities.

Table 1 below outlines the proposed changes to the prescribed activities in the Licence.

Table 1: Proposed design or throughput capacity changes

Category	Current design/throughput capacity	Proposed design/throughput capacity	Description of proposed amendment
6	8,000,000 tonnes per annual period	No change	Include additional containment infrastructure constructed under works approval W6918/2024/1
57	-	500 tyres	Include category 57 onto licence to allow for storage of used tyres
63	-	5,000 tonnes per annual period	Include category 63 onto licence to allow for disposal of tyres

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

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

Table 2: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Saline water	Process water pond	Pond overtopping	<ul style="list-style-type: none"> • Maintain a freeboard of at least 300 mm; and • Daily inspection of infrastructure when operating.
		Seepage	Maintain integrity of HDPE liner
	Return water pipelines	Pipeline leaks or ruptures	Daily inspection of pipeline infrastructure when operating
Air pollutants	Used tyre storage areas	Fire	<ul style="list-style-type: none"> • No more than 500 used tyres in aggregate stored across premises at any one time; • Used tyres only stored in designated areas; • Excess water from the extinguishing of tyre fires will be contained by bunding to prevent escape into the surrounding environment; • Excess water from the extinguishing of tyre fires will be removed and disposed of by a licensed contractor; • Tyres to be stored in separate stockpiles / bays of no more than 20 tyres with 3 m spacing between; and • Firefighting access maintained at all times with sufficient space to turn around trucks.
Fire washdown water			

Emission	Sources	Potential pathways	Proposed controls
Air pollutants	Tyre disposal	Fire	<ul style="list-style-type: none"> • Tyres only disposed in Thunderbox East and Bannockburn WRLs; • Excess water from the extinguishing of tyre fires will be contained by bunding to prevent escape into the surrounding environment; • Excess water from the extinguishing of tyre fires will be removed and disposed of by a licensed contractor; • Tyres laid flat prior to encapsulation with waste rock within 6 months; and • No tyres buried within 5 m of final WRL surface.
Fire washdown water			
Rubbish (tyres)		Exposure during mine operations and closure	

3.1.2 Receptors

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

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

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

Human receptors	Distance from prescribed activity
Town of Leonora	90 km from Premises. <i>Not considered further as a sensitive receptor due to separation distance.</i>
Weebo Pastoral Station	20 km northwest from the Premises. <i>Not considered further as a sensitive receptor due to separation distance.</i>
Environmental receptors	Distance from prescribed activity
Surface water	Minor surface water drainage lines exist approximately 435 m west of the proposed process water pond.
Native Vegetation	Priority flora (P4) <i>Calytix Uncinata</i> has been located 1 km from the Thunderbox mill precinct.
Designated Area (as defined in section 57 of the EP Act). <i>Rights in Water and Irrigation Act 1914 – Groundwater Area</i>	Premises is within the Goldfields Groundwater Area. Depth to groundwater in the area is approximately 15 - 30 meters below ground level (mbgl). It is considered fresh, ranging between 370 – 740 mg/L total dissolved solids (TDS).

3.2 Risk ratings

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

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

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

The Revised Licence L7815/2001/12 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. mine dewatering, tyre storage and class I landfill 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 operation

Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Operation								
Emergency discharge of overflow process water from the New Process Water Pond into Thunderbox Pit during heavy rainfall events	Saline process water	Pathway: Overtopping of pond Impact: Contamination of groundwater and impacting soils, groundwater mounding impacting vegetation root zones.	Surface water drainage line 435m west of the pond Localised vegetation Goldfields Groundwater Area	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	Conditions 1, 2, 7, 10	The process water pond and associated pipelines are part of a group of storage ponds that are managed under existing licence conditions. The new pond and spillway are designed to divert all overflow to the Thunderbox Pit, less than 0.5 km to the south east. The management of the new process water pond will be adequately managed under these existing conditions.
Process water pipeline leak/rupture		Pathway: Groundwater seepage Impact: Contamination of groundwater and impacting soils; impacts to ecosystem health	Goldfields Groundwater Area Localised vegetation	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Conditions 2, 7, 8, 10	Pipelines constructed under Works Approval W6918 were minimal and designed to integrate the new pond into the existing infrastructure. Existing licence conditions adequately manage potential emissions.

Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Used tyre storage area (Category 57)	Dust (from vehicles stacking/removing stockpiles)	Pathway: Air/windborne Impact: Impacts to vegetation health	Localised vegetation	No controls	C = Slight L = Unlikely Low Risk	N/A	Conditions 1, 2	Conditions on the licence relating to the storage of used tyres are derived from Part 6 of the <i>Environmental Protection Regulations 1987</i> . General provisions of the <i>Environmental Protection Act 1986</i> and the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> also apply.
	Air pollution (tyre fires)	Pathway: Air/windborne Impact: Impacts on the health of animals	Localised fauna	Refer to Section 3.1	C = Major L = Rare Medium Risk	Y		
	Fire wash-waters (tyre fires)	Pathway: Overland runoff Impact: Seepage into surrounding soils, groundwater and surface water impacting ecosystem qualities.	Surface water drainage lines Localised vegetation Goldfields Groundwater Area	Refer to Section 3.1	C = Moderate L = Possible Medium Risk			
Used tyre disposal (Category 63)	Dust (from disposal of tyres in WRL)	Pathway: Air/windborne Impact: Impacts to health of vegetation and ecosystem; Impacts to health of animals	Localised vegetation	No controls	C = Slight L = Unlikely Low Risk	N/A	Conditions 1, 11, 12, 32	

Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Used tyre disposal (Category 63)	Air pollution (tyre fires)	Pathway: Air/windborne Impact: Impacts to health of vegetation and ecosystem; Impacts to health of animals	Localised vegetation Localised fauna	Refer to Section 3.1	C = Major L = Rare Medium Risk	Y	Conditions 1, 11, 12, 32	Conditions on the licence relating to the storage of used tyres are derived from Part 6 of the <i>Environmental Protection Regulations 1987</i> . General provisions of the <i>Environmental Protection Act 1986</i> and the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> also apply.
	Fire wash-waters (tyre fires)	Pathway: Overland runoff Impact: Seepage into surrounding soils, groundwater and surface water impacting ecosystem qualities.	Surface water drainage lines Localised vegetation Goldfields Groundwater Area	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	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
Licence Holder was provided with draft amendment on 18/07/2025	See Appendix 1	See 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
Cover page	Update registered business address Update premises details Amendment to 'date of issue' Remove M36/1148 and include M37/222 Include categories 57 and 63 to the prescribed premises list
Table 1	Rename dams to reflect actual names in the premises maps Include <i>New Process Water Dam</i> to the containment infrastructure table Remove reference to <i>Bannockburn Hill Dam</i> from the containment infrastructure table Include Used tyre storage areas <i>Thunderbox Workshop</i> , <i>Thunderbox Tyre Bay</i> and <i>Bannockburn Workshop</i> to the containment infrastructure table Remove <i>Bannockburn East Dam</i> from the containment infrastructure table
Table 2	Title name change to avoid duplication Administrative change to correct errors Inclusion of "Used Tyre Storage Areas" into table.
Table 3	Title name change to avoid duplication Administrative change to correct errors Remove "East Dam" reference
Table 5	Include separate <i>Inert Waste Type 2</i> section to the Management of waste table
Table 6	Include separate <i>Inert Waste Type 2</i> section to the Cover requirements table

Condition no.	Proposed amendments
Table 14	Include the requirement to record location and amount of used tyres disposed of within the WRL's
Schedule 1, Figure 1	Replace the Premises map with an updated version showing correct tenements
Schedule 1, Figure 4	Replace the map showing containment infrastructure to include the New Process Water Dam
Schedule 1, Figure 23	Insert a new map showing the location of used tyre storage facilities and the location of the Class I landfill (tyres) facilities

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. Northern Star Resources Ltd 2025, *L7815/2001/12 Licence Amendment Supporting Attachments*, Subiaco WA

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

Condition	Summary of Licence Holder's comment	Department's response
Table 1	Bannockburn North Dam was requested to be removed in the licence amendment application; Bannockburn East Dam should not be removed from the licence.	Changes made
Table 3	Bannockburn North Dam was requested to be removed in the licence amendment application; Bannockburn East Dam should not be removed from the licence.	Changes made
Table 5	Change requirements for Inert Waste Type 2 from "No more than 500 used tyres to be buried per annual period" to "No more than 5000 tonnes of used tyres to be buried per annual period".	Changes made
Table 6	Change timescale for Inert Waste Type 2 from "N/A" to "Within six months of deposition on waste rock landform".	Allowing used tyres to be located outside of management areas for up to six months provides an unacceptable fire risk. The Licence has been changed to require the Licence Holder to cover the tyres disposed of within the Waste Rock Landform with clean fill of at least 100mm within 7 days of disposal, which is consistent with similar licences. This was conveyed to the Licence Holder on 5/08/2025.