Amendment Report

Application for Licence Amendment

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

Licence Number	L4247/1991/13
Licence Holder	Talison Lithium Australia Pty Ltd
ACN	139 401 308
File Number	2012/0071641
Premises	Talison Lithium Mine Maranup Ford Road GREENBUSHES, WA, 6254 Legal description – Mining tenements M01/3, M01/6, M01/7, M01/8, M01/9, M1/16, G01/1 and G01/2 As defined by the coordinates in Schedule 3 of the Revised Licence
Date of Report	28 August 2023
Decision	Revised licence granted

Christine Pustkuchen
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A/MANAGER, RESOURCE INDUSTRIES REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L4247/1991/13 is held by Talison Lithium Australia Pty Ltd (Licence Holder) for the Talison Lithium Mine (the premises), located on mining tenements M01/3, M01/6, M01/7, M01/8, M01/9, M1/16 and general purpose leases G01/1 and G01/2, at Greenbushes, Western Australia (WA).

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 L4247/1991/13 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 26 July 2023, the Licence Holder submitted an application to the department to amend licence L4247/1991/13 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Authorise the excavation of up to 900,000 bank cubic metres (m^3) of tailings from tailings storage facility (TSF) 2 and temporary storage at TSF1 for up to 24 months; and
- Administrative amendments to the licence conditions, including typological errors and misnumbering of condition numbers.

This amendment is limited only to changes to Category 5 activities from the existing licence. 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
Category 5 – Processing or beneficiation of metallic or non-metallic ore	7,100,000 tonnes beneficiated per annual period 5,000,000 tonnes of tailings deposited per annual period	No change	Excavation and transport of up to 900,000 m^3 of deposited tailings from TSF2 to TSF1 for up to 24 months.

2.2.1 Excavation and temporary storage of tailings from TSF2 to TSF1

The Licence Holder is implementing a mine expansion that will increase the processing capacity of the premises from the current 4.7 million tonnes per annum to approximately 11.6 million tonnes per annum of spodumene ore. The expansion required the construction and operation of a fourth TSF (TSF4), as the current active TSF2 is expected to reach full capacity in September 2023. At the time of the application, the construction of TSF4 has been delayed due to winter rains impacting the installation of the TSF liner material. The Licence Holder stated that it was unlikely that TSF4 construction would be completed before TSF2 reaches capacity.

To provide adequate time for the construction of TSF4 to be completed, the Licence Holder has proposed to excavate previously deposited tailings from TSF2 to be stored temporarily at TSF1

(Figure 1a). As TSF1 has not been active since 2006, the storage of tailings will only be for up to 24 months, before being transported and stored at an active TSF within the premises. The excavation of approximately 900,000 m^3 of tailings is likely to provide adequate capacity at TSF2 to handle current incoming tailings deposition.

In 2022, the Licence Holder was authorised to re-mine the tailings at TSF1 to be reprocessed at the newly constructed Tailings Retreatment Plant. To date, approximately 1,600,000 m^3 (i.e., 2,240,000 tonnes) of tailings have been reclaimed. In the northern portion of TSF1, where tailings are proposed to be deposited, topographic survey indicated total storage capacity ranges between 920,000 m^3 to 1,200,000 m^3 (assuming maximum tailings elevation of between RL 1,277 m and RL 1,278 m, respectively) (Figure 1b). Tailings elevation will be confirmed via survey prior to and as deposition progresses to ensure that pre-remining tailings elevations are not exceeded.

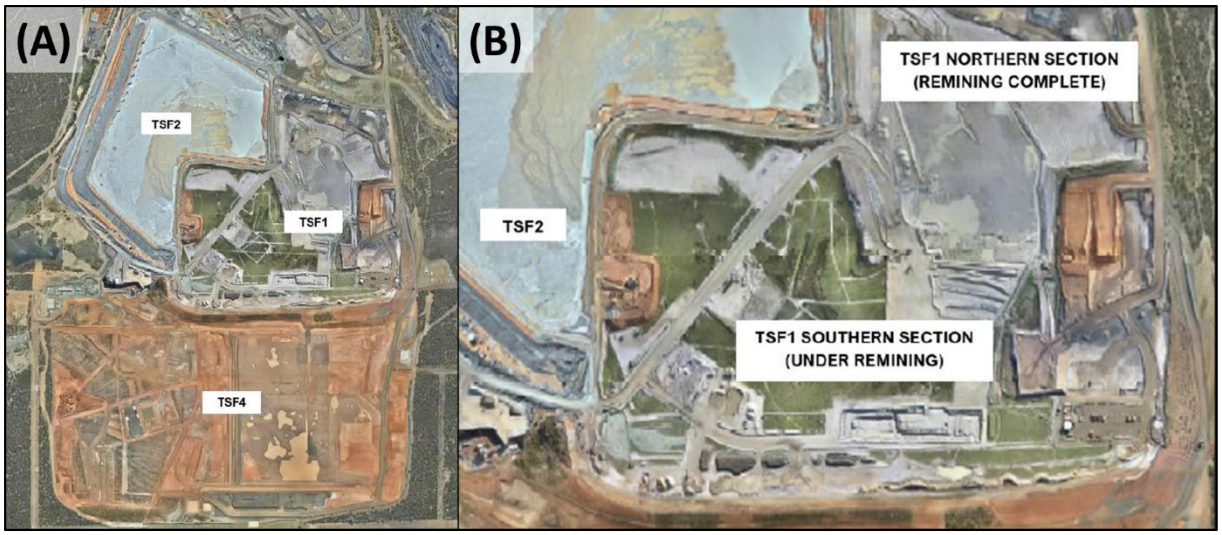

Figure 1: (A) Site layout of TSF1, TSF2 and TSF3 and (B) Current area of tailings remining at TSF1

The TSF1 Operating Manual has been prepared by the Licence Holder to demonstrate that this proposed activity at TSF1 will not exceed the pre-mining tailings elevation, that only dry tailings will be deposited at TSF1 and that the remining and deposition activities will not influence the structural integrity of TSF1 (GHD 2023a). The methodology for the tailings excavation at TSF2 and tailings deposition at TSF1 are detailed in Table 2 and shown in Figure 2.

Table 2: Tailings handling methodology at TSF1 and TSF2

Tailings excavation at TSF2	Tailings deposition and storage at TSF1
1. Starting in the south-eastern corner of TSF2 (Figure 2a), tailings will be mined off the tailings beach in strips with nominal width of 60 m, down to a maximum depth of two metres (Figure 2b). 2. The length of strips will be determined by safe tailings access (determined by a walkover) and the requirement for the excavated strip profile to be free draining. 3. All excavated strip profiles will be formed such that they fall at a minimum grade of 1V:200H to ensure no ponding of rainfall. 4. A minimum exclusion zone of 20 m will be maintained from the upstream embankment crest. 5. Each strip will be separated with a 10m-wide	11. A divider embankment/causeway will be constructed from the eastern intersection (located directly north of the decant accessway) to separate the northern portion of TSF1 from the remainder of TSF1, where remining is occurring (Figure 2c). After remining, the northern portion of TSF1 is estimated to have approximately 7 – 13 m of consolidated tailings. 12. The causeway will be constructed from coarse tailings placed in no greater than 300 mm loose layer and compacted to 95% maximum modified dry density. Compaction compliance using non-vibratory rollers will be determined by a trial, where the number of passes required to achieve the compaction target is defined. 13. The upstream embankment slopes will be

divider wall (Figure 2b). 6. Stripping of tailings will progress west towards the western embankment, followed by the northern beaches, provided access is available (Figure 2a). 7. No strips will be excavated from the very end of the northern beach due to the proximity to the decant pond. 8. A suitable exclusion zone will be maintained between excavation/stripping activities and areas of active tailings deposition, with a minimum distance of 200 m being established (Figure 2a); 9. As stripping progresses towards the west, fresh tailings will be deposited within each strip. 10. The process will be repeated once tailings deposited into the strips are sufficiently drained to allow mechanical access, excavation and transportation.	constructed at 1V:3H, downstream embankment slopes at 1V:4H. The minimum crest width will be 22 m. 14. The causeway will be constructed progressively, in parallel with tailings deposition, to remain ahead of the tailings elevation in order to meet the freeboard requirement of one metre. 15. Once the initial causeway has been constructed, tailings will be deposited using end-tipping method, progressing northwards in layers typically not exceeding two metres, which are then levelled and traffic-compacted by a tracked dozer to improve tailings consolidation (Figure 2d). 16. The advancing face of the tailings will be pushed down at a gradual slope to preload the foundation and form a minimum grade of 1V:200H away from the causeway, towards a sump located at the northern embankment to manage stormwater runoff. The sump will be raised progressively with tailings elevation. 17. Any exposed backfill areas with a height of 1.5 m or higher (i.e., not covered by successive backfill) will be maintained with side slope no steeper than 1V:3H. 18. The process will be repeated until the required capacity has been achieved at TSF2 or the tailings elevation at TSF1 has been filled to pre-remining tailings elevations.

Recent testing of tailings from the TSF2 beach confirmed a moisture content in the range of 7% to 10%. The Licence Holder expects tailings in the proposed excavation area to contain moisture up to a maximum of 15%. Acknowledging that the moisture content of tailings may vary spatially across TSF2, the Licence Holder also proposed the following measures:

1. At the commencement of each shift, the operator will excavate a trial hole to allow for visual inspection and qualitative description of tailings moisture. The tailings moisture condition will be defined as either ‘wet’, ‘moist’ or dry’, in accordance with *Australian Standard 1726:2017 Geotechnical site investigations*, where ‘wet’ tailings will not be excavated. Only ‘dry’ and ‘moist’ tailings, which will not form any free water nor stick together and can therefore be considered ‘suitably drained’, will be excavated. Where tailings were classified as ‘dry’, dust management controls will be implemented, in accordance with the Licence Holder’s Dust Management Plan (Talison Lithium Pty Ltd 2022).
2. The operator will observe the stability of the excavated hole and confirm the presence of any seepage inflow and whether the hole collapses or slumps due to excess moisture. Excavation will not proceed if any seepage, slumping or instability is visible, as the tailings are not considered adequately drained.

The controls for managing emissions and discharges are detailed further in section 3.1.1.

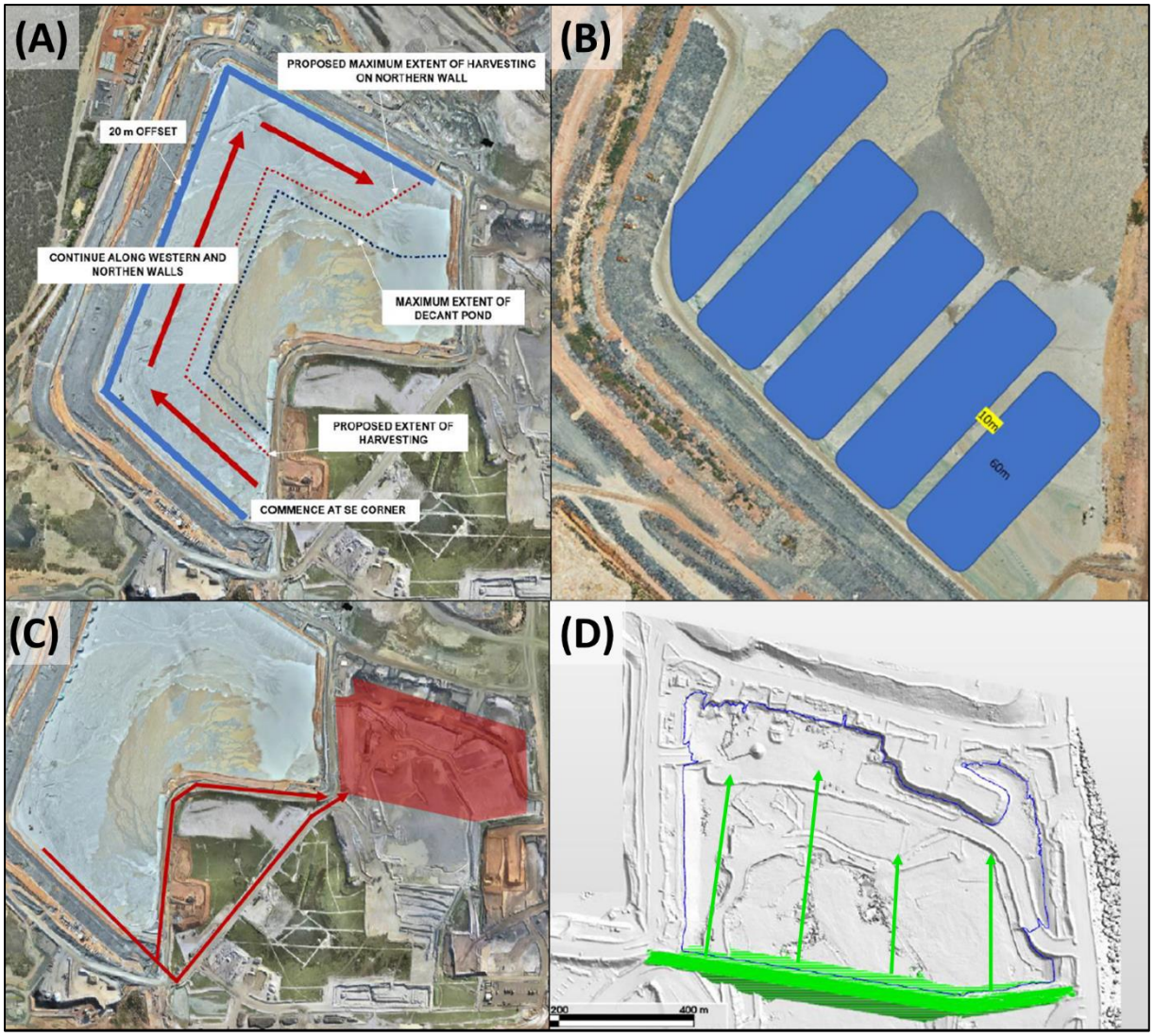

Figure 2: (A) Sequence of tailings excavation at TSF2, (B) Conceptual diagram of excavation cells at TSF2; (C) Haul truck route from TSF2 to TSF1 and proposed tailings deposition area at TSF1; (D) Proposed causeway layout (green) and extent of tailings deposition at TSF1 (blue line)

2.2.2 Administrative amendments

The Licence Holder sought administrative amendments to the licence, mainly relating to typological errors and misnumbering of conditions numbers. The majority of these errors had arisen as formatting error during the previous licence amendment, granted on 12 July 2023. The amendments being sought are listed in Table 3.

Table 3: Administrative amendments

Condition or table	Description	Proposed amendments	Department comments
Table 1	'Market' is referenced in the *Infrastructure requirements* of Table 1 for Clear Water Dam, Austins am, Southampton Dam and Cowan Brook Dam.	Replace 'market' with 'marker'.	This error has been amended.

Condition or table	Description	Proposed amendments	Department comments
Table 1	Condition 2.3.2 is referenced in the *Material* for Clear Water Dam.	Replace with condition 17.	Format of condition numbering is outdated.
Table 6	Table 6 requires the installation of additional dust monitors by 30 November 2023. However, Table 13 requires monitoring using these monitors to commence from 1 November 2023.	Commencement of dust monitoring in Table 13 should be amended to align with installation timeframes (i.e., to commence on 1 December 2023).	The department acknowledges the discrepancy in timeframes between the installation of additional dust monitors and the timeframes for this monitoring. The commencement date and sampling frequency in Table 13 have been amended to align with installation timeframes in Table 6.
Conditions 25, 27	Conditions 25 and 27 appear to be one condition.	Delete condition 27.	This error has been amended.
Table 9	Condition 3.1.1 is referenced in the *Method* for all monitoring point references.	Replace with condition 20.	This error has been amended.
Conditions, 28, 29, 30	Conditions 28, 29 and 30 appear to be one condition.	Delete conditions 29 and 30.	This error has been amended.
Conditions 32, 33	Conditions 32 and 33 appear to be one condition.	Delete condition 33.	This error has been amended.
Conditions 34, 36	Conditions 34 and 36 appear to be one condition.	Delete condition 36.	This error has been amended.
Conditions 38, 39	Conditions 38 and 39 appear to be one condition.	Delete condition 39.	This error has been amended.
Table 17	Units m(AHD), mbgl and Bq/L do not correspond to the correct parameters for the Shallow bores and Intermediate bores in Table 17.	Re-align units to match their corresponding parameters.	This error has been amended.
Table 21	Condition numbers referenced in Table 21 will need to be revised as a result of the deletion of erroneous conditions numbers.	Revise condition numbers in Table 21.	Condition numbers in Table 21 have been revised.

2.3 Part IV of the EP Act

In June 2018, the Licence Holder referred the proposal for the mine expansion activities at the existing premises to the Environmental Protection Agency (EPA). Ministerial Statement (MS) 1111 was granted on 19 August 2019.

The EPA Report 1635 identified the following key environmental factors relevant to the proposal:

- Flora, Vegetation and Terrestrial Fauna – direct loss of up to 350 hectares of native vegetation and priority species, as well as potential indirect impacts to vegetation and flora (habitat for Matters on National Environmental Significance). This required a

Conservation Significant Terrestrial Fauna Management Plan.

- Terrestrial Environmental Quality – impacts from potential contamination of soil from tailings and waste storage.
- Social Surroundings – potential impacts from changes to visual amenity, vibration levels and noise. This required a management plan for managing visual amenity. A Noise Management Plan was also required to meet specified limits outlined in existing Regulation 17 approval.

Requirements of MS 1111 are not assessed in this Amendment Report and are not duplicated as conditions in the licence. However, the report refers to Part V of the EP Act for detailed assessment and management of the following key environmental factors:

- Inland Waters – Potential impacts to surface and groundwater quality through mining operations. This is with respect to the process water treatment, the mine water circuit and surface water ecological surveys.
- Air Quality – Potential impacts from dust emissions and changes to air quality. This refers to a Dust Management Plan and detailed assessment by the department.

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 2020b).

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 premise operation which have been considered in this Amendment Report are detailed in Table 4 below. Table 4 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 4: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust	Excavation of up to 900,000 m^3 of tailings from TSF2 Deposition and storage of up to 900,000 m^3 of tailings at TSF1	Air / windborne pathway	• Activities and management actions will be planned with consideration to existing conditions, weather forecast and real-time dust monitoring program; • Dust management controls will be implemented during excavation works, where qualitative moisture testing of excavated tailings was determined to be ‘dry’ (in accordance with AS 1726:2017); • Tailings will be rehandled and deposited at TSF1 during late winter and spring, at times where risk of dust emission is expected to be low due to rainfall; • Dust suppressing stabilisers will be applied on appropriate surfaces, including (but not limited to) mulch, soft rock, vegetated cover (i.e., rye grass) and spray-on dust suppressants (i.e., Gluon);

Emission	Sources	Potential pathways	Proposed controls
			• Water carts will be operated during dry, windy conditions and during summer months, targeting high risk areas; • Non-essential activities will be ceased during excessively windy, high risk conditions, if dust cannot be adequately controlled; • Speed limit at TSF1 will be reduced to 30 km/hour; • Ambient air quality and meteorological monitoring will continue to be undertaken in accordance with licence L4247/1991/13; • Management actions in the event that a trigger value is exceeded will be undertaken in accordance with licence L4247/1991/13; • A Trigger Action Response Plan is being prepared to evaluate the efficacy of trigger levels of dust monitoring program, as required by licence L4247/1991/13; and • Vegetation condition monitoring will be undertaken in accordance with approved Conservation Significant Terrestrial Fauna Management Plan, as required by MS 1111.
Tailings seepage	Deposition and storage of up to 900,000 m^3 of tailings at TSF1	Vertical infiltration and lateral migration of tailings supernatant water	During tailings excavation at TSF2: • Excavation of tailings strip at TSF2 will be limited by tailings moisture, determined through walkover, qualitative testing for moisture content (in accordance with AS 1726:2017) and visual inspection on stability and seepage inflow; • Moisture content of tailings to be remined expected to range between 5% to 15%; and • Excavation of tailings strip at TSF2 will be kept at a distance of at least 200 m from the decant pond. During tailings deposition at TSF1: • Tailings will be deposited on approximately 7 to 13 m of consolidated tailings in TSF1; • Technical memorandum concluded that the risk of seepage is minimal due to dry stacking method used for tailings deposition and the temporary nature of this storage (i.e., 24 months); • Seepage discharging at the toe of TSF1 is collected via perimeter toe drains and interception trenches, directed under gravity own topographical slope towards seepage recovery sumps. Sump water is then pumped to Clear Water Dam for return to the Mine Water Circuit; • Seepage from the western and eastern sides of TSF1 are captured within the Cowan Brook Dam and open pit catchments, respectively (within the premises); • Seepage from the southern side of TSF1 will be managed as part of TSF4 water management infrastructure (authorised for construction under works approval W6618/2022/1); • Ambient surface water quality and ambient groundwater quality will continue to be monitored in accordance with licence L4247/1991/13;

Emission	Sources	Potential pathways	Proposed controls
			• Storage of tailings at TSF1 will only be temporary, up to a period of 24 months before being transferred to an active TSF; and • A revised operating manual for TSF1 will be implemented, which reflects changes to the operation, monitoring and management requirements of the proposed activity, as required by the Department of Mines, Industry Regulation and Safety (DMIRS).
Dried tailings		Overtopping at TSF1	• Tailings deposition will take place at the northern portion of TSF1, where remining has been undertaken to ensure maximum storage capacity; • Tailings deposition at TSF1 will not exceed pre-mining tailings elevation, estimated to be between RL 1,277 m to RL 1,278 m; • Tailings elevation will be confirmed via survey prior to and as deposition and backfilling progresses; • A minimum freeboard of one metre will be maintained; and • The northern causeway will always remain at least one metre higher than the deposited tailings elevation.
Contaminated and sediment laden stormwater	Excavation of up to 900,000 m^3 of tailings from TSF1 Deposition and storage of up to 900,000 m^3 of tailings at TSF1	Overland runoff	During tailings excavation at TSF2: • Excavation of tailings strip will be graded at 1V:3H away from the embankment crest to minimise runoff and ponding near the embankment. During tailings deposition at TSF1: • When tailings are deposited at TSF1, it will be graded at 1V:200H towards a collection sump along the northern embankment. The sump will be progressively raised with the deposited tailings elevation; and • Water from the sump will be pumped into the Mine Water Circuit, either the TSF2 decant pond; and • Mobile pumping gear (i.e., skied-mounted diesel pump, capable of pumping 1,000 m^3/hour) will be maintained on standby for stormwater pumping. Additional pumping equipment will be implemented to manage excess water during extreme storm events.
Hydrocarbon and chemical reagents		Loss of containment	• Hydrocarbon and chemical spills will be controlled, contained and cleaned up; • Washdown areas and oil/water separators will be regularly inspected and maintained; • Routine facility inspection and maintenance programs will be undertaken; • Hydrocarbon contaminated soil will be treated and disposed at the onsite bioremediation facility; • Hydrocarbon and chemical spills will be reported internally as environmental incidents, with larger spills reported to the department; and • Mobile equipment will be operated and serviced at designated facilities, in accordance with manufacturer

Emission	Sources	Potential pathways	Proposed controls
			specification.
Noise		Air / windborne pathway	• Existing vehicles, plant and equipment will be utilised for the proposed activities (i.e., no additional noise-generating sources); • Vehicles, plant and equipment will be serviced and maintained with manufacturer specifications; • Proposed activities will be undertaken in accordance with an approved Noise Management Plan, as required under Regulation 17 of the *Environmental Protection (Noise) Regulations 1997.* This includes routine noise monitoring and maintenance of a noise bund; and; • In the event of a noise trigger level exceedance, an investigation will be undertaken, in accordance with the Noise Management Plan.
Light		Air / windborne pathway	• Additional light emissions are expected to be negligible. Any additional lighting required for the proposed activities will be limited in the context of lighting already in place for the existing operations at TSF1 (and TSF2); and • Managed in accordance with the Talison Visual Amenity Impact Management and Rehabilitation Plan, as required by MS 1111.

Noise impacts to human receptors are regulated through a Regulation 17 approval for the premises. The Licence Holder is required to implement a Noise Management Plan to meet specified limits set out in current Regulation 17 approval Environmental Protection (Talison Lithium Australia Greenbushes Operations Noise Emissions) Approval 2015. As such, noise emissions are not considered further in this Amendment Report.

Similarly, light emissions from the premises have been assessed under Part IV of the EP Act and is regulated under MS 1111 through the Talison Visual Amenity Impact Management Plan. As such, light emissions are not considered further in this Amendment Report.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020b), 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 5 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 5: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Greenbushes township, including Greenbushes Primary School	The town of Greenbushes abuts the northern boundary of the prescribed premises (Figure 3). TSF1 and TSF2 are located south of Greenbushes, within the southern portion of the prescribed premises. The minimal distance between the Greenbushes town boundary and proposed activity areas within TSF1 and TSF2 are approximately 2.5 km and 2.4

	km, respectively. The Greenbushes Primary School is located on the southern boundary of the township, with similar distances to the proposed activities.
Rural residential premises	Aside from the Greenbushes township, several rural residential premises are present to the south, south-east and north-east of the prescribed premises (Figure 3). The closest premises to the proposed activities is located to the south, approximately 2.5 km and 2.2 km from the proposed activity areas at TSF1 and TSF2, respectively. Several premises surrounding the premises are also owned by the Licence Holder. These premises have not been identified and are considered as part of this risk assessment.
Environmental receptors	**Distance from prescribed activity**
Native vegetation and conservation significant areas	Native vegetation surrounding the premises consists of forest and woodland dominated by *Eucalyptus marginata* and *Corymbia calophylla*, with varying understorey scrub and heath. Most of the native vegetation at and surrounding the premises is within the Greenbushes State Forest/State Forest 20, which is Class A State Forest encompassing 6,000 hectares. While the proposed activities are isolated to within the TSF1 and TSF2 footprint, native vegetation is present directly east of TSF1 and west of TSF2, as shown in aerial imagery (Figure 3).
Conservation significant flora	Flora surveys undertaken to date have encountered several priority flora species within and surrounding the premises (Figure 4). Flora of potential concern is the Priority 4 *Acacia semitrullata*, where a population was sighted within the Greenbushes State Forest area west of TSF2 (within the premises boundary). Another population was sighted near the south-east corner of TSF1 but are no longer present as it was on the proposed TSF4 footprint. A few populations are present further north-west of TSF2, around Austins Dam and Southampton Dam. However, these populations are unlikely to be impacted by the proposed activities and are not considered further in this risk assessment.
Surface water bodies	The premises is located within the Middle Blackwood Surface Water Area, within the Norilup Brook sub-area, the upper reaches of the Hester Brook sub-area and the Woljenup Creek sub-area. A tributary of Spring Creek is located within the western portion of the premises and flows west towards the Norilup Dam (Figure 4). Salt Water Gully is located approximately 200 m north-east of the premises boundary, flowing south before joining with Hester Brook. Woljenup Creek is located south, abutting the premises boundary and the proposed location of TSF4 (Figure 4). Watercourses within these sub-areas are all tributaries of the Blackwood River, which flows southwards to the Hardey Inlet in Augusta. The premises is not located within a proclaimed surface water area under the *Rights in Water and Irrigation Act 1914*. A number of surface water bodies are present on the western portion of the premises, including Southampton Dam, Austins Dam, Clear Water Dam and Cowan Brook Dam. The Clear Water Dam is the closest surface water body to TSF2, which is located directly north-west of the facility (separated by Manarup Rord Road). All dams are currently being used to store water to support mining operations (e.g., process water, contaminated stormwater, site runoff etc.). There are no significant drainage features at the premises, with the Donnybrook-Bridgetown Shear zone ridgeline dividing the premises catchment into two distinct areas.
Groundwater aquifer	Conceptual hydrogeological model infers that TSF1 is underlain by upper saprolitic clay, overlying lower saprolitic clay, overlying saprock, overlying bedrock (GHD 2023b). Generally, groundwater is encountered at the boundary of clays and fresh rock, where

	the potentiometric surface of the basement aquifer is generally above the clay zone, indicating a confined aquifer. The saprolitic clay has low permeability and acts as an aquitard to separate the basement aquifer from the shallow superficial aquifer contained within the alluvium/dredge material. Shallow groundwater was inferred to migrate to the east, south and west of the TSF1 and share a degree of hydraulic connectivity with surface water bodies at the premise (e.g., Cowan Brook Dam, Austins Dam etc.) and other topographically low points at the premises (e.g., seepage interception drains). Groundwater monitoring of the basement aquifer around TSF1 and TSF2 indicated detectable concentrations of lithum, arsenic and nickel, along with lesser occurrences of cobalt and cadmium.

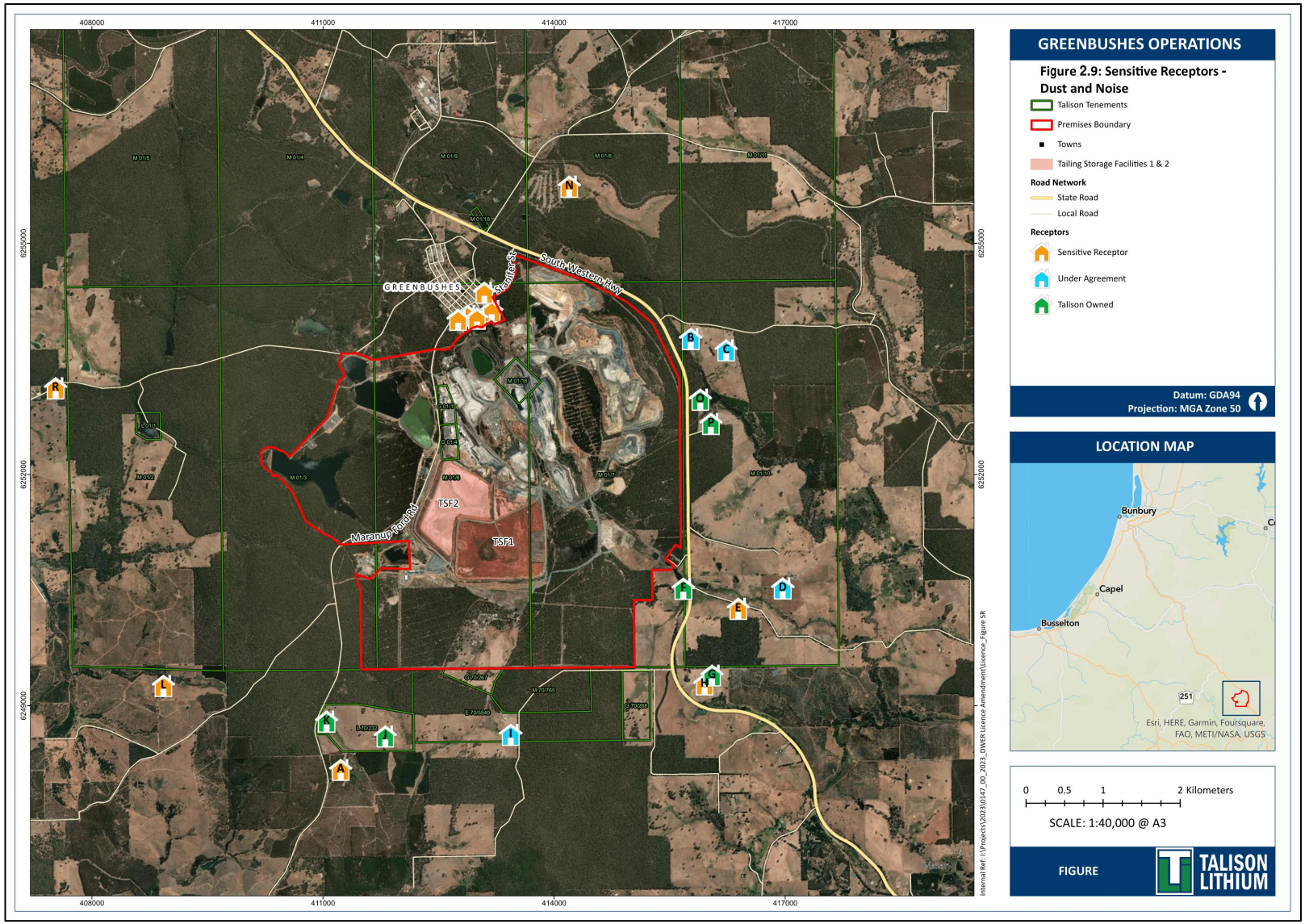

Figure 3: Human receptors surrounding the premises

Licence: L4247/1991/13

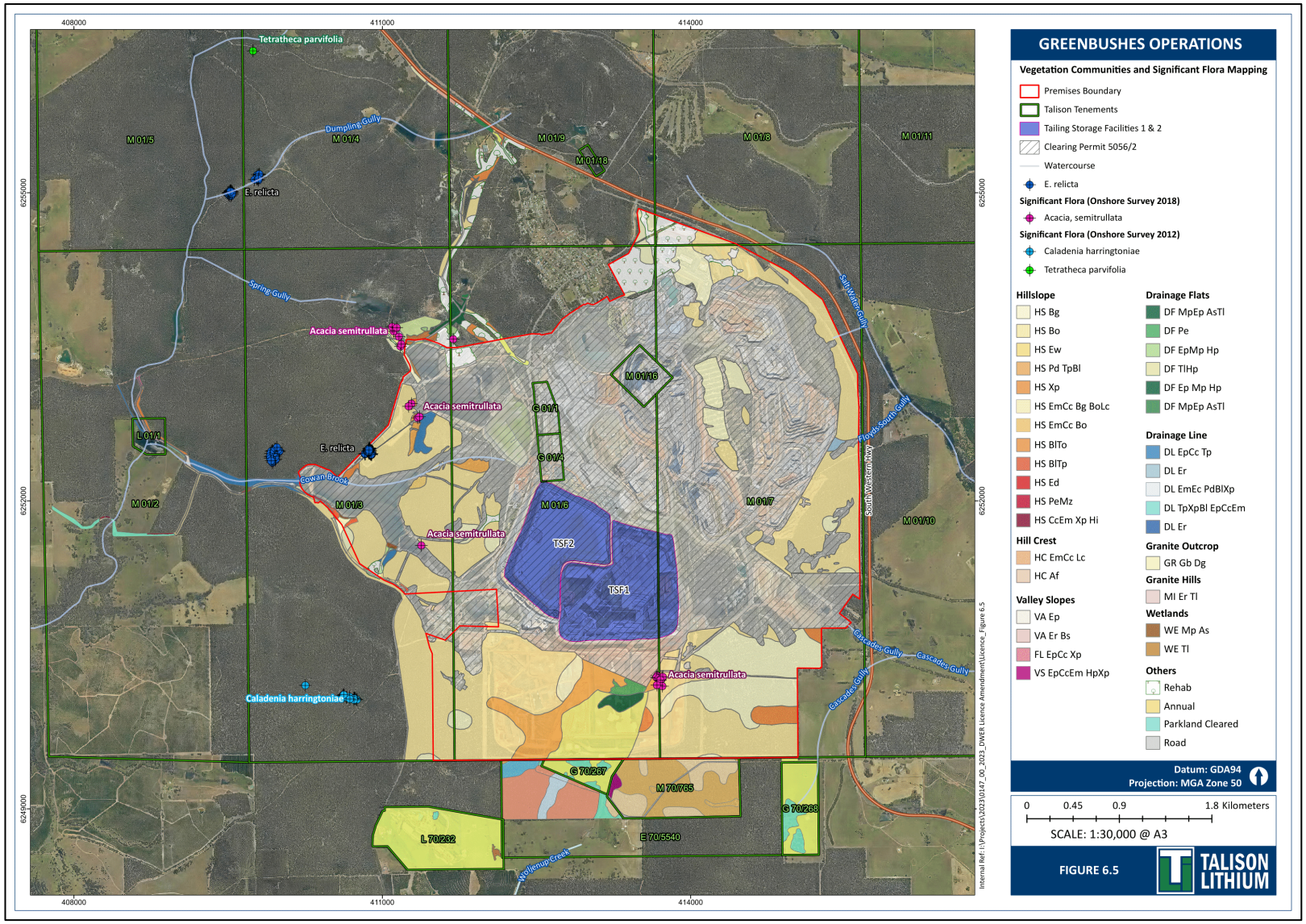

Figure 4: Conservation significant flora and surface water lines surrounding the premises

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020b) 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 6.

The Revised Licence L4247/1991/13 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e., Category 5 activities.

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

Table 6. Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Comments
Source/ Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
Operation								
Excavation of up to 900,000 m^3 of tailings from TSF2 Deposition and storage of up to 900,000 m^3 of tailings at TSF1 (for up to 24 months)	Dust	***Pathway:*** Air/ windborne pathway ***Impact:*** Impact to visual amenity, human and ecological health	Greenbushes township, including Greenbushes Primary School Rural residential premises Native vegetation, including conservation significant areas and flora	Refer to Section 3.1	C = Moderate L = Possible **Medium risk**	Y	**Existing conditions:** Condition 1 – Infrastructure and equipment requirements (updated) Condition 9 – Installation of dust monitors and meteorological station Condition 28 – Ambient air quality monitoring Condition 29 – Meteorological monitoring Condition 30 – Ambient air quality and meteorological trigger and limit values Condition 36 – Product and tailings sampling requirements Condition 37 – Management action for trigger value exceedance event	The management of dust emissions are critical, given the siting of sensitive receptors near the premises. Dust emissions arising from ore processing up to 7.1 million tonnes per annum have been considered in a previous risk assessment (DWER 2023). The risk assessment also considered dust emissions from the excavation of aged tailings from TSF1, which is similar to the proposed activity. Dust controls have been considered and conditioned in the licence (as part of the last amendment), including dust management practices (i.e., restricting disturbance area, application of dust suppressant), real-time boundary monitoring, ambient dust monitoring within the Greenbushes township (to commence in November 2023), development of a Trigger Response Action Plan and modification to PM_{10} limit to align with the NEPM. Additional monitoring of metals in dust particles, airborne asbestos fibres and respirable crystalline silica at the Greenbushes township (to commence in November 2023), as well as better characterisation of these parameters in crushed ore, product and tailings at the processing plant (to be undertaken before September 2023) was also required to understand potential impacts of fibrous materials on human health. These controls were also proposed in this application and have been assessed to be adequate to manage any dust emissions from the proposed activity. The Delegated Officer considers that the existing controls conditioned on the licence are adequate to manage the risk of dust emissions from this proposed activity to sensitive receptors. No additional regulatory controls (above the licence holder's proposed controls) are required. Condition 1 has been updated with the licence holder's proposed control to manage dust emissions from deposition of dry tailings into TSF1 (wetting down with water cart) in accordance with *Guideline: Risk assessments* (DWER 2020b).
	Tailings supernatant water	***Pathway:*** Vertical infiltration and lateral migration of tailings supernatant water ***Impact:*** Impact to groundwater resources, surface water quality and ecological health	Native vegetation, including conservation significant areas Surface water bodies Groundwater aquifer	Refer to Section 3.1	C = Minor L = Unlikely **Medium risk**	Y	**Existing conditions:** Condition 1 – Infrastructure and equipment requirements (updated) Condition 31 – Ambient groundwater monitoring	Seepage is unlikely to pose a significant risk to the relevant receptors due to the low moisture content of deposited tailings, with appropriate measures proposed for ensuring only dry or moist tailings are excavated and deposited at TSF1. Tailings will also be deposited on approximately 7-13 m of existing consolidated tailings at TSF1, which reduces potential seepage pathways for deposited tailings. Leaching risk from the older tailings deposited at TSF1 (i.e., longer than six months) will also likely be relatively lower, compared to fresh tailings from the processing circuit (Roy *et al.*

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Comments
Source/ Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
								2023). The Delegated Officer considers that the existing controls are adequate to manage the risk of seepage emissions from the proposed activity to sensitive receptors. No additional regulatory controls (above the licence holder's proposed controls) are required. Condition 1 has been updated with the licence holders proposed controls to manage seepage risk to ensure only dry or moist tailings are excavated and deposited at TSF1 in accordance with *Guideline: Risk assessments* (DWER 2020b).
	Bulk tailings	***Pathway:*** Overtopping of TSF1 ***Impact:*** Impact to ecological health	Native vegetation, including conservation significant areas and flora Surface water bodies	Refer to Section 3.1	C = Moderate L = Unlikely **Medium risk**	Y	**Existing condition:** Condition 1 – Infrastructure and equipment requirements (updated)	No additional regulatory controls (above the licence holder's proposed controls) are required. Condition 1 has been updated with the licence holders proposed controls to maintain a minimum freeboard of one metre from the embankment crest in accordance with *Guideline: Risk assessments* (DWER 2020b).
	Contaminated and sediment laden stormwater	***Pathway:*** Overland runoff during rainfall event, resulting in discharge to land ***Impact:*** Impact to ecological health		Refer to Section 3.1	C = Moderate L = Unlikely **Medium risk**	Y	**Existing condition:** Condition 1 – Infrastructure and equipment requirements (updated)	Stormwater from within TSF1 deposition area will be collected within theTSF1 sump which is isolated to the northern portion of TSF1 (where deposition is occurring, separated from the rest of the TSF via the causeway). Any water collected in the sump will be pumped to the TSF2 decant pond. It is expected that minimal amounts of water will be collected at the TSF1 sump and therefore this change is unlikely to significantly impact the overall water balance and resulting emissions and discharges from TSF2. No additional regulatory controls (above the licence holder's proposed controls) are required. Condition 1 has been updated with the licence holders proposed controls to manage stormwater via a stormwater collection sump in accordance with *Guideline: Risk assessments* (DWER 2020b).
	Hydrocarbon and chemical reagent	***Pathway:*** Loss of containment, resulting in discharge to land ***Impact:*** Impact to ecological health		Refer to Section 3.1	C = Minor L = Unlikely **Medium risk**	Y	None.	No additional regulatory controls are required. This risk event is adequality regulated under the *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020b).

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 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) advised of proposal on 1 August 2023.	DMIRS confirmed that no changes to the relevant approved Mining Proposal is required for this activity, and that there are no geotechnical concerns.	Noted.
Licence Holder was provided with draft amendment on 25 August 2023.	Licence Holder confirmed information requested by the department in the Amendment Report and requested Table 1 of the licence be updated to specify that water collected at the TSF1 sump (as a result of tailings deposition activities) will be pumped to the TSF2 decant pond, instead of the Clear Water Dam.	The department amended Table 1 of the licence to specify fate of water from sump. It is expected that minimal amounts of water will be collected at the TSF1 sump and therefore this change is unlikely to significantly impact the overall water balance and resulting emissions and discharges from TSF2.

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 8 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 8: Summary of licence amendments

Condition no.	Proposed amendments
General	Updated licence formatting, including correcting administrative errors, typological errors, condition numbering, and removing duplicate conditions.
Condition 1	Updated Table 1 to: • authorise emergency tailings deposition of up to 900,000 m3 for a period not exceeding 24 months at TSF1, including *Infrastructure requirements* during emergency tailings deposition; • authorise excavation of tailings from TSF2 for deposition at TSF1, including *Infrastructure requirements* during tailings excavation; • amend typological error by replacing ‘visual market’ with ‘visual marker’ for the *Infrastructure requirements* of Clear Water Dam, Austins Dam, Southampton Dam and Cowan Brook Dam; • amend condition number referenced at Clear Water Dam from condition

	2.3.2 to condition 17 to align with current licensing format.
Condition 9	Updated Table 6 to: • improve clarity on *Timeframe* for the installation of the Continuous AS PM_{10} Monitor North, Meteorological Station (Greenbushes) and PM_{10} high-volume sampler.
Condition 25	Updated Table 9 to: • amend the condition number referenced in the *Method* for point source monitoring point references from condition 3.1.1 to condition 20 to align with current licensing format.
Condition 28	Updated Table 13 to: • amend the monitoring frequency of PM_{10} high-volume sampler from 1 November 2023 to 1 December 2023, to align with its installation timeframe (as required by condition 9) before 30 November 2023.
Condition 30	Updated condition 30 to refer to the correct air quality monitoring conditions (i.e., conditions 28 and 29).
Condition 31	Updated Table 16 to: • amend errors in units listed, where units previously listed did not match their corresponding parameters; and • amend *Note 1* to specify exemption, as the condition referenced previously is no longer included in the licence.
Condition 35	Updated condition 35 to refer to the correct conditions for Annual Environmental Report submission (i.e., condition 42) and Annual Ecological Assessments (i.e., condition 33).
Condition 40	Updated condition 40 to refer to updated condition numbers in the licence, as a result of the removal of duplicate condition numbers (refer to section 2.2.2).
Condition 42	Updated Table 21 to refer to updated condition numbers in the licence, as a result of the removal of duplicate condition numbers (refer to section 2.2.2).
Condition 44	Updated Table 22 to refer to updated condition numbers in the licence, as a result of the removal of duplicate condition numbers (refer to section 2.2.2).
Condition 45	Updated condition 45 and Table 23 to refer to updated condition numbers in the licence, as a result of the removal of duplicate condition numbers (refer to section 2.2.2).
Condition 48	Updated Table 24 to refer to updated condition numbers in the licence, as a result of the removal of duplicate condition numbers (refer to section 2.2.2).
---	Updated Table 25 to include definitions for AS 1726:2017.
---	Updated Schedule 1: Maps to include Figure 15, which details excavation and emergency tailings deposition methodology at TSF2 and TSF1, respectively.
---	Updated Schedule 3: Premises boundary coordinates to show coordinates in GDA2020, instead of GDA94.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020b, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2023, *Amendment Report for L4247/1991/13 (granted 12 July 2023)*, Perth, Western Australia. TRIM: A2188371.
5. GHD 2023a, Talison TSF1 Operating Manual (Backfill to Northern Section), Perth, Western Australia.
6. GHD 2023b, *TSF4 Seepage Assessment: Conceptual Hydrogeological Model*, unpublished report prepared for Talison Lithium Australia Pty Ltd.
7. Roy, T., Plante, B., Benzaazoua and Demers, I. 2023, *Geochemistry and mineralogy of a spodumene-pegmatite lithium ore at various mineral beneficiation stages*, Minerals Engineering, 202, 108312.
8. Talison Lithium Pty Ltd 2022, *Dust Management Plan ENV-MP-0001*, Western Australia.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
Application type					
Works approval	☐				
Licence	☐	Relevant works approval number:		None	☐
		Has the works approval been complied with?		Yes ☐ No ☐	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes ☐ No ☐ N/A ☐	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes ☐ No ☐	
		Date Report received:			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☒	Current licence number:	L4247/1991/13		
		Relevant works approval number:		N/A	☒
Registration	☐	Current works approval number:		None	☐
Date application received		26 July 2023			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Talison Lithium Australia Pty Ltd			
Premises name		Talison Lithium Mine			
Premises location		Mining tenements M01/3, M01/6*, M01/7*, M01/8, M01/9, M1/16 General purpose leases G01/1 and G01/2 *Amendment only relevant to these tenements.			
Local Government Authority		Shire of Bridgetown-Greenbushes			
Application documents					
HPCM file reference number:		2012/0071641~8			
Key application documents (additional to application form):		• Cover letter • Supporting document, including technical memo for temporary deposition of dry tailings in TSF1 and Stage 2 acid mine drainage leaching test report • TSF1 operating manual (for backfilling of northern area) • Dust management plan			
Scope of application/assessment					

Summary of proposed activities or changes to existing operations.	*Licence amendment* • Authorise to mine up to 900,000 m^3 of dry tailings from TSF2 to deposit in TSF2 for up to 24 months; • Modification to licence condition 1, which currently authorises emergency tailings deposition up to 300 mm at TSF1 for no longer than six months; and • Administrative corrections, including typological errors and condition numbering errors from the previous licence amendment.

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation or metallic or non-metallic ore	7,100,000 tonnes beneficiated per annual period 5,000,000 tonnes of tailings deposited per annual period	No changes as part of this amendment

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	N/A
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☒ No ☐	Ministerial statement No: MS1111 EPA Report No: 1635
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	N/A
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Mining lease / tenement ☒ Expiry: 27 December 2026
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: N/A Premises is located on mining tenements, regulated under the *Mining Act 1978*.
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	CPS No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.

Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☒ No ☐	Application reference No: N/A Licence/permit No: N/A Licence not relevant to this licence amendment.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	N/A
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	N/A
Is the Premises subject to any other Acts or subsidiary regulations?	Yes ☒ No ☐	Mining Act 1978; Mine Safety and Inspection Act 1994; Environmental Protection (Noise) Regulations 1997.
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	N/A
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	N/A
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Classification: Contaminated – Restricted Use (C-RU) Date of classification: 7 October 2020