



Application for Licence Amendment

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

Licence Number	L8469/2010/2
Licence Holder	Galaxy Lithium Australia Limited
ACN	130 182 099
File Number	DER2014/001110-1
Premises	Ravensthorpe Spodumene Project Newdegate - Ravensthorpe Rd RAVENSTHORPE Legal description – Part of Mining Tenement M74/244 As defined by the Premises map and coordinates attached to the Revised Licence
Date of Report	11 February 2022
Decision	Revised licence granted

**A/MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES**

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 Application summary	1
2.2.1 New 2SE in-pit TSF	1
2.2.2 Monitoring bore and premises boundary changes	2
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
3.3 Detailed risk assessment - seepage of leachate from the in-pit TSF	10
3.3.1 Characteristics of emission	10
3.3.2 Receptors and potential adverse impacts	10
3.3.3 Proposed controls	10
3.3.4 Potential for groundwater mounding to impact receptors	10
3.3.5 Risk rating and regulatory controls	11
3.4 Decision – replacement of monitoring bores and expansion of premises boundary	11
4. Consultation	12
5. Conclusion	12
5.1 Summary of amendments	12
References	15
Appendix 1: Summary of Licence Holder’s comments on risk assessment and draft conditions	16
Appendix 2: Application validation summary	18
Table 1: Licence Holder controls	4
Table 2: Sensitive human and environmental receptors and distance from prescribed activity	5
Table 3: Risk assessment of potential emissions and discharges from the Premises during construction and operation	7
Table 4: Consultation	12
Table 5: Summary of licence amendments	12
Figure 1: Location of the rockfill embankment which sections off a portion of the 2SE pit for tailings storage	2
Figure 2: Location of existing SW in-pit TSF, proposed 2SE in-pit TSF, proposed	

tailings/decant pipeline route and new monitoring bores 1

Figure 3: Perspective view of the 2SE in-pit TSF showing embankment height.....2

Figure 4: Location of TSF monitoring bores to be removed from the licence (MB02, MB03, MB04, MB05 and MB06).....3

1. Decision summary

Licence L8469/2010/2 is held by Galaxy Lithium Australia Limited (Licence Holder) for the Ravensthorpe Spodumene Project (also known as the Mt Cattlin Operations) (the Premises), located on Lot 31 on Plan 224145 and Lot 127 on Plan 145763 (on part mining tenement M74/244) Ravensthorpe.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Revised Licence L8469/2010/2 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Application summary

The Mt Cattlin operations is an open-pit spodumene mine which employs conventional open-pit mining, involving blast, drill, excavator and truck operations. Lithium concentrate is transported to the Esperance Port, from where the material is exported to Asia. The processing plant at Mt Cattlin Operations has an approved maximum throughput of 2 million tonnes per annum (Mtpa) of ore, producing lithium oxide concentrate and generating up to 420,500 tonnes per annum (tpa) of tailings.

On 19 October 2021, the Licence Holder submitted an application to the department to amend Licence L8469/2010/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Construction and operation of new in-pit tailings storage facility (TSF) (2SE in-pit TSF);
- Installation of new monitoring bores to monitor groundwater adjacent to the proposed 2SE in-pit TSF;
- Replacing the decommissioned above ground TSF monitoring bores to be lost due to the construction of the NW Waste Rock Landform with newly constructed monitoring bores; and
- Modify the premises boundary to include the proposed 2SE in-pit TSF.

No change is proposed to the existing approved throughput for Category 5 as a result of this amendment.

2.2.1 New 2SE in-pit TSF

Currently, tailings are deposited within an existing in-pit TSF at the SW Pit, which has a design storage capacity of approximately 600,000 m³. Once the SW in-pit TSF reaches capacity the Licence Holder plans to transfer tailings deposition to the proposed 2SE in-pit TSF.

The 2SE in-pit TSF design takes advantage of an existing mine waste dump, which has formed a rockfill embankment that separates the tailings area from the adjoining pit area (see Figure 1). Tailings and decant return pipelines will be moved from the current discharge point into the SW in-pit TSF to the proposed 2SE in-pit TSF location (See Figure 2). Construction will also include the installation of a decant system which consists of an internal sump and

riser pipe fitted with a submersible pump.

The rockfill embankment aligns the northern and western side of the pit and is constructed to a maximum crest elevation of RL240m using fresh mine waste rock. The lowest elevation within this embankment is an access ramp at RL230m (see Figure 3).

The tailings slurry will be deposited into the 2SE in-pit TSF at 40-50% solids. Tailings deposition will be through a single spigot discharge. The maximum storage capacity of the proposed in-pit TSF is approximately 790,000 m³ which is equivalent to approximately 1.185 million tonnes (Mt) or a storage life of approximately 2.8 years. The maximum storage capacity is defined by the RL230 m, allowing for a minimum freeboard of 500 mm.

The facility has been designed such that when the maximum capacity is reached, it will provide adequate water storage capacity to accommodate a 1 in 100-year, 72-hour storm event, or a probable maximum precipitation (PMP) storm.



Figure 1: Location of the rockfill embankment which sections off a portion of the 2SE pit for tailings storage.

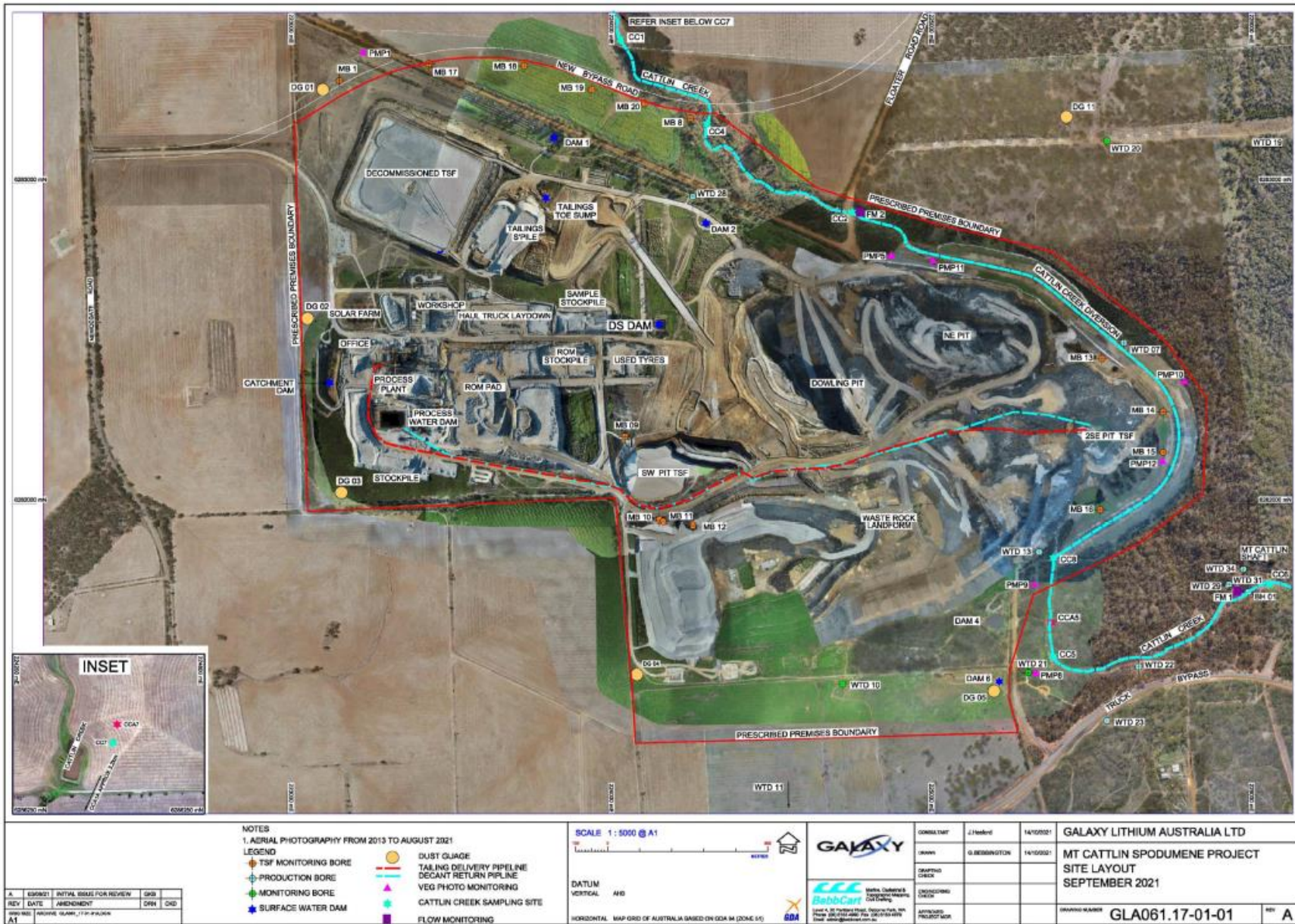


Figure 2: Location of existing SW in-pit TSF, proposed 2SE in-pit TSF, proposed tailings/decant pipeline route and new monitoring bores

Licence: L8469/2010/2

IR-T15 Amendment report template v3.0 (May 2021)

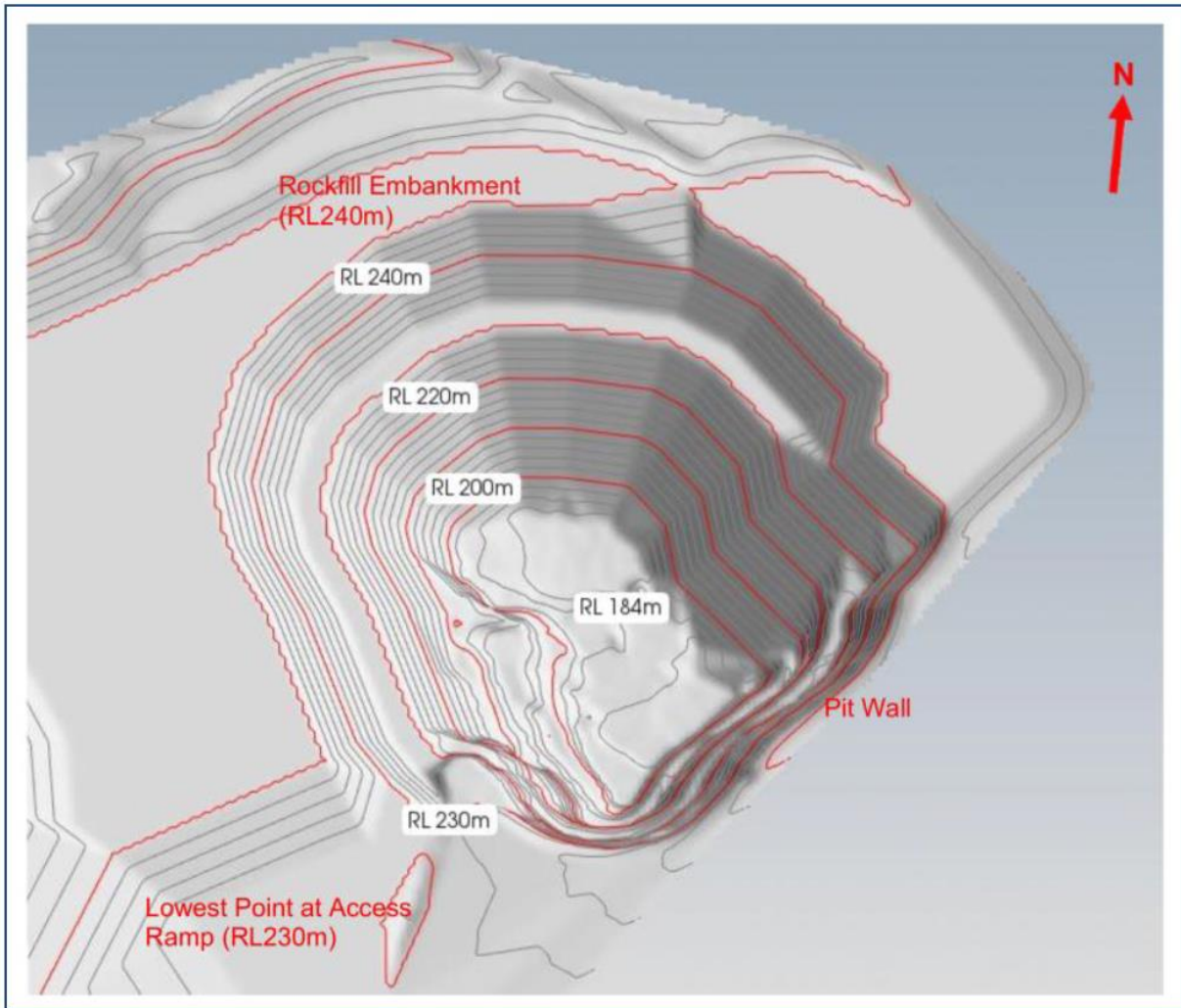


Figure 3: Perspective view of the 2SE in-pit TSF showing embankment height.

2.2.2 Monitoring bore and premises boundary changes

A number of changes have been requested by the Licence Holder to remove or add monitoring bores to the licence. These changes include;

- The addition of four new groundwater monitoring bores (MB13, MB14, MB15 and MB16) which will be installed surrounding the new in-pit TSF (see Figure 2) to monitor groundwater impacts. The location of these new bores can be found within Figure 2; and
- The removal of the decommissioned above ground TSF monitoring bores and the replacement of these with new bores in a different location.

The above ground TSF located to the north of the processing plant (see Figure 2) was decommissioned in 2019. A series of monitoring and recovery bores exist around this TSF and have been included on the licence as compliance bores. These six bores are MB01, MB02, MB03, MB04, MB05 and MB06 (see Figure 4).

As part of future mine waste rock disposal, the Licence Holder now intends to utilise the area of the decommissioned TSF to construct Waste Dump 2 as approved under a Mining Proposal (Reg ID 82027). The waste dump will encapsulate the decommissioned TSF, with several of the TSF bores also lying within its design footprint.

Monitoring bores that will be removed to construct Waste Dump 2 include: MB02; MB03; MB04; MB05; and MB06. Note, MB01 is not within the Waste Dump 2 footprint. Decommissioning of these five bores would require their removal from L8469/2010/2 monitoring conditions.

Using aerial magnetic, structural and exploration data, the Licence Holder has identified four new monitoring bore locations north of Waste Dump 2: MB17; MB18; MB19; and MB20 see (Figure 2). The Licence Holder is proposing that the current monitoring conditions be extended to these new bores. However, at MB19 and MB20 the natural groundwater level is less than 3 m below ground level (BGL) and therefore conditions pertaining to maintaining groundwater standing water levels >3 meters below ground level (m BGL) cannot be complied with. The Licence Holder has therefore requested that the conditions be amended to remove this requirement from Table 3.4.1 of the licence.



Figure 4: Location of TSF monitoring bores to be removed from the licence (MB02, MB03, MB04, MB05 and MB06).

An extension to the current prescribed premises boundary is also being sought to accommodate the new 2SE in-pit TSF in the southeast of the development area. The proposed premises boundary is shown in Figure 2.

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust	Construction / placement of pipelines and associated infrastructure	Air/windborne pathway	<ul style="list-style-type: none"> ▪ Water trucks will be utilised on road and during construction activities to control dust, as required. ▪ Implementation of speed limits to reduce dust generation. ▪ Implementation of the Mt Cattlin Project Airborne Materials Management Plan (2020).
Noise	Construction of pipelines and associated infrastructure	Air/windborne pathway	<ul style="list-style-type: none"> ▪ No specific noise controls have been provided as the noise emissions from the premises are unlikely to change as a result of the proposed construction work. ▪ Licence Holder will comply with the <i>Environmental Protection (Noise) Regulations 1997</i> by implementing the Mt Cattlin Project Noise Management Plan.
Leachate	Seepage from base and walls of pit / embankments	Seepage to soils and groundwater	<ul style="list-style-type: none"> ▪ Decant water system to be installed to return decant water to the processing plant. ▪ Basalt pit walls have a low hydraulic conductivity. ▪ Groundwater quality and standing water levels will be monitored by four new groundwater monitoring bores. ▪ Health of vegetation adjacent to TSF will be monitored (photo monitoring).

Emission	Sources	Potential pathways	Proposed controls
Tailings / return water	Overtopping of pit Pipeline leaks	Direct discharge to land	<ul style="list-style-type: none"> ▪ Pipelines will be placed within 'V' drain secondary containment with telemetry. ▪ Daily inspection of pipelines will occur. ▪ Freeboard of 500mm below lowest elevation of rockfill embankment (230 m RL) will be maintained.

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 2 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 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Town of Ravensthorpe	Town center is approximately 2 km south of the proposed in-pit TSF
Closest residential receptor	1.6km south of the proposed in-pit TSF
Environmental receptors	Distance from prescribed activity
Native Vegetation	Disturbed native vegetation (Mallee Shrubland / Eucalyptus woodland) exists adjacent to the in-pit TSF (~150 m east).
Surface water – Cattlin Creek	The saline (TDS >40, 000 mg/L) and ephemeral Cattlin Creek runs through the prescribed premises. Cattlin Creek has been diverted around the existing 2SE pit development and therefore is immediately east of the proposed in-pit TSF (see Figure 2).
Threatened ecological community (TEC) <i>Priority 3 - Proteaceae dominated kwongan shrublands of the southeast coastal floristic province of Western Australia</i>	Buffer of a TEC is located approximately 1.7km south-east of the proposed in-pit TSF.
Threatened / Priority Flora	500m south-east of the proposed in-pit TSF
Threatened / Priority Fauna (Malleefowl)	500m south-east of the proposed in-pit TSF
Groundwater	Premises is within the Kondinin-Ravensthorpe Groundwater Area Groundwater is extracted via a network of production

	<p>bores for lithium processing (GWL167439(6)). The groundwater has a TDS of around 30,000-40,000 mg/L. Dissolved metal concentrations in groundwater particularly boron, cadmium, cobalt, copper, manganese, nickel, phosphorus and zinc are naturally elevated.</p> <p>Based on the high TDS and metals concentrations the groundwater has no beneficial uses other than for mining or industrial purposes.</p>
--	---

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 3.

The Revised Licence L8469/2010/2 that accompanies this Amendment Report authorises emissions associated with the construction and operation of the Premises i.e. 2SE in-pit TSF.

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

Table 3: Risk assessment of potential emissions and discharges from the Premises during construction and operation.

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of /licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Construction								
Construction of pipeline and associated infrastructure. Installation of pumps	Dust	Air/windborne pathway causing impacts to health and amenity	Nearest residence (farm) located 1.6km south of proposed pit	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A	N/A
	Noise			Refer to Section 3.1	C = slight L = Unlikely Low Risk	Y	N/A	N/A
Operation								
Discharge of tailings to 2SE in-pit TSF	Tailings	Overtopping of pit causing soil/surface water contamination Impacts to vegetation	Cattlin Creek is located immediately south and east of the in-pit TSF Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	New condition 3.3.4 – freeboard requirement for new in-pit TSF Updated condition 3.3.1 – daily inspection for freeboard capacity Updated condition 3.3.3 to include reference to new in-pit TSF (maintenance of stormwater perimeter bund)	The Licence Holder's proposed controls have been conditioned within the works approval in accordance with <i>Guidance statement: Risk Assessments</i> (DER 2017).

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of /licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
	Leachate	Seepage through pit wall causing groundwater mounding and impacting vegetation root zone / vegetation health Seepage causing groundwater mounding impacting surface water quality in Cattlin Creek	Native vegetation at surface Cattlin Creek	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	N	New condition 1.2.7 - <u>Construction of TSF monitoring bores</u> and TSF decant infrastructure Updated condition 3.3.3 – diversion of stormwater away from pit Updated condition 3.4.1 – groundwater monitoring requirements for new in-pit TSF monitoring bores. <u>SWL limit added for these bores</u>	See section 3.3 for detailed risk assessment.
Transfer of tailings / return water through pipelines	Tailings / return water (hypersaline)	Direct discharge as a result of pipeline leak to ground causing soil contamination	Localised soil	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	New condition 1.2.7 - construction requirements for pipelines Existing condition 1.2.6 requires pipelines to have secondary containment or be equipped with	Pipelines will be constructed within 'V' drain secondary containment on disturbed land.

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of /licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							telemetry or automatic cut-outs	

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.

3.3 Detailed risk assessment - seepage of leachate from the in-pit TSF

3.3.1 Characteristics of emission

Seepage from the proposed 2SE in-pit TSF is likely to have a high salinity and contain a number of chemical constituents at levels of environmental concern, including elevated levels of boron, caesium, cobalt, lithium, rubidium, fluoride, nickel and molybdenum. This is because these elements are often present at high concentrations in lithium-caesium-tantalum pegmatites of the type present at the Mt Cattlin mine-site (Bradley et al., 2017) and have the potential to be released into solution by mining and mineral processing activities.

3.3.2 Receptors and potential adverse impacts

Technical advice indicates that the rocks that underlie the mine-site are mostly crystalline and have a negligible primary-porosity. Consequently, groundwater in these materials mostly occurs in fracture-zones within bedrock and probably also in localised zones within weathered regolith. Groundwater monitoring data (Rockwater 2021) suggests that the natural groundwater salinity near the mine-site is too high for use for stock water-supply or other purposes. Consequently, groundwater contamination from mining and mineral processing activities at the site would be unlikely to adversely affect groundwater users in the area. Information provided by Rockwater suggests that fractured rock aquifers near the mine-site also have a low hydraulic conductivity, and so it is unlikely that contaminants released to groundwater from mining activities could be transported at a rapid rate in groundwater in the area.

It is expected that during the early stages of tailings deposition into the 2SE in-pit TSF that groundwater flow will likely be towards the mine pit due to a high evaporation rate which will reduce the potential for contaminants to be released into the groundwater. However, as the pit is progressively filled with mine-waste materials, the evaporation rate would decrease, resulting in the groundwater flow direction to reverse and leading to some groundwater mounding to occur. Mounding of the groundwater table has the potential to impact the health of vegetation at the ground surface and also water quality within Cattlin Creek located immediately to the east of the proposed in-pit TSF.

3.3.3 Proposed controls

The Licence Holder is proposing to install a decant water system to return decant water to the processing plant which will help remove water from the pit, reducing the volume of leachate generated.

The Licence Holder is proposing to install four new groundwater monitoring bores (MB13, MB 14, MB 15, and MB16) around the proposed 2E in-pit TSF to monitor groundwater quality and standing water levels. This will allow the Licence Holder to observe whether any changes in quality or groundwater level are occurring and to implement actions to reduce impacts if required.

The health of vegetation adjacent to the in-pit TSF will also be monitored (photo monitoring).

3.3.4 Potential for groundwater mounding to impact receptors

The degree to which groundwater mounding could take place as a result of tailings disposal in the 2SE in-pit TSF would depend on the expected seepage rate from the in-pit TSF and the presence of fractures (and their average hydraulic conductivity) in the basement rocks near the in-pit TSF. These factors have been poorly defined in supporting information provided by the Licence Holder.

However, groundwater monitoring data from monitoring bores surrounding the existing in-pit TSF in the nearby SW mine void indicates that significant groundwater mounding has not occurred near this facility. Given the close proximity of the two mine voids and the similarity of the bedrock near the two pits, and the similarity of the tailings materials and their method of disposal, it is considered to be unlikely that groundwater mounding will occur around the proposed 2SE in-pit TSF. Therefore, impacts to surface and native vegetation from saline groundwater mounding is expected to be unlikely.

Technical advice however indicates that groundwater levels in the Ravensthorpe area are rising due to land clearing for agriculture. Consequently, there is a long-term risk that seepage from the 2SE in-pit TSF could impact vegetation or the nearby creek in the future due to the effects of dryland salinity in the region and that this issue should be considered in the closure plan for the minesite.

3.3.5 Risk rating and regulatory controls

If mounding of the groundwater table around the 2SE in-pit TSF occurs then the Delegated Officer has determined that the impact will result in mid-level impacts (vegetation stress / death, changes in water quality within Cattlin Creek). Therefore, the Delegated Officer considers the consequence of this risk event to be **Moderate**.

The likelihood of mounding of the groundwater table impacting receptors will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of this risk event to be **Unlikely**.

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix outlined within *Guideline: Risk Assessments* (DWER 2020) and determined that the overall rating for this risk event is **Medium**.

As a result of this risk rating, conditions will be placed on the licence requiring the Licence Holder to monitor groundwater levels and water quality within the proposed groundwater monitoring bores surrounding the in-pit TSF. A standing water level (SWL) limit of 3 meters below ground level (mbgl) has been added to these bores to ensure any groundwater mounding does not impact native vegetation or surface water at the surface.

It has been determined that the proposed monitoring bores MB13, MB 14, MB 15, and MB16 were sited using appropriate geological and geophysical techniques for identifying fracture zones in crystalline bedrock that are potential groundwater pathways. The bore locations are considered to be suitable for monitoring possible seepage from this facility

Conditions requiring the proper installation of the monitoring bores and also the decant return infrastructure will also be included on the licence.

3.4 Decision – replacement of monitoring bores and expansion of premises boundary

The removal of the decommissioned TSF monitoring bores and the replacement of these bores with four new bores has been deemed acceptable by the Delegated Officer. The 3 mbgl limit for standing water levels (stipulated in existing conditions 1.2.4 and 3.4.1) has not been applied to these new bores due to the natural groundwater level in the area of the new bores. The purpose of the 3 mbgl limit was to prevent impacts to vegetation from groundwater mounding. As the above ground TSF has been decommissioned and will be rehabilitated into a waste rock dump it is unlikely that further groundwater mounding will occur. The purpose of the new bores will be to monitor groundwater quality post closure of the TSF.

The change in premises boundary to include the proposed 2SE in-pit TSF has been accepted by the Delegated Officer.

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Local Government Authority advised of proposal 23/11/2021.	No comments have been received.	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 23/11/2021.	No comments have been received.	It is noted that a mining proposal application for the in-pit TSF is currently being processed by DMIRS.
Licence Holder was provided with draft amendment on 13/01/2022.	Refer to comments in Appendix 1	Department response noted in 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.

It is recommended that once the existing in-pit TSF at the SW mine void is decommissioned (which is planned to occur prior to deposition in the new 2SE in-pit TSF) that conditions relating to the operational management of SW in-pit TSF is revised in a future licence amendment to ensure the licence conditions are kept up to date.

Improvement condition 4.1.1, improvement reference IRI will also need further follow up. At the time of this amendment evidence of the submission of the report required by this condition could not be located in the Department's records system. Confirmation of submission of this report will need to be followed up during a future licence amendment.

It is also noted that there is an additional licence amendment application in the system that has been submitted by the Licence Holder to the department seeking approval to allow ongoing nighttime operations. This amendment application is still being processed. Conditions 1.2.12 – 1.2.14 and 3.6.1-3.6.3 will be revised during the assessment of this application.

5.1 Summary of amendments

Table 5 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 5: Summary of licence amendments

Condition no.	Proposed amendments
Front page	Premises address description has been updated to refer to part mining tenement M71/244 only and refer to coordinates in schedule 2.
Definitions	Definitions deleted: ONMP (as not referenced within a condition), monitoring bores (as not

	<p>required), DMIRS (not referenced within a condition), DMS (no longer referenced in a condition), AMMP (not referenced within a condition, Amended Licence (not referenced in a condition), TSF operating manual (no longer reference in a condition).</p> <p>Definitions updated: dust suppression dam, raw water pond changed to process water dam</p> <p>Definitions added: AS1726, Assessment of site contamination NEPM, ASTM D5092/D5092M-16, Schedule 3</p>
1.2.1	Reference to 'section 1' of this licence has been removed from condition
1.2.2	Reference to raw water dam has been replaced with process water dam due to new map
1.2.3	Reference to raw water dam has been replaced with process water dam due to new map
1.2.4 (deleted)	Condition deleted. Condition requires SWL within all TSF monitoring bores to remain greater than 3 mbgl. This condition has been removed as the limit no longer applies to the monitoring bores surrounding the decommissioned above ground TSF – see section 3.4 of decision report for justification. The limit still applies to the in-pit TSF monitoring bores and this has been covered by condition 3.4.1
1.2.5 – 1.2.7 (new numbers 1.2.4 – 1.2.6)	Condition numbers changed to 1.2.4 – 1.2.6 due to deletion of condition 1.2.4
1.2.8 (deleted)	Condition has been deleted. This condition requires the Licence Holder to maintain a noise barrier in the location specified in Schedule 2 of the licence. This noise barrier was not constructed, which has been deemed acceptable by the Delegated Officer. See row regarding condition 1.2.12 for further details.
1.2.9 (deleted)	Condition has been deleted. Optical sorter has been installed, however the optical sorter has been placed on the south side of the location depicted in schedule 2. The noise barrier and two stage crushing circuit were not installed. This condition is no longer accurate and has therefore been deleted. See row regarding condition 1.2.12 for further details.
1.2.10 (deleted)	Condition has been deleted. The noise barrier referenced in this condition was not constructed and therefore the condition is inaccurate and is to be deleted. See row regarding condition 1.2.12 for further details.
1.2.11 (deleted)	Condition has been deleted. This condition has come from Amendment Notice 3 and included construction requirements for the upgrade of the modular crusher and process plant. This infrastructure has been constructed and compliance documentation required by condition 5.1.5 was submitted on 21 June 2019 (DWER record A1829491). At the time a response from DWER was not provided to the Licence Holder. The compliance documentation has been reviewed and it is confirmed that the infrastructure has been constructed in accordance with the documentation listed in Table 1.2.1 with one exception – the feed upgrade circuit (two optical sorters) which was not constructed at the time. These were later constructed under Amendment Notice 5 (condition 1.2.12).
1.2.12 (deleted)	<p>Condition has been deleted. This condition has come from Amendment Notice 5 and included construction requirements for the installation of the ROM optical sorter circuit, ROM 6 m high noise barrier and ROM two stage crusher circuit. Compliance documentation for this infrastructure was submitted on 4 August 2020 as required by conditions 5.1.6 and 5.1.7 (DWER record number DWERDT316747). A response from DWER was sent to the Licence Holder on 21 September 2020 (DWER record number A1935950). DWERs response noted the following deviations:</p> <ul style="list-style-type: none"> • Construction of the optical sorter on the ROM pad was authorised under licence amendment notice AN5. The optical sorter design is consistent with the design plans however it has been installed in a different location than that approved under Amendment Notice 5. • The location where optical sorter has now been installed was previously assessed by the Department under licence L8469 Amendment Notice 3. • Arrangement of optical sorters changed, with each optical sorter being installed in its own structure. Only one of the optical sorters having the cleaning/drying screen installed.

	<ul style="list-style-type: none"> Two-stage crushing circuit, jaw crusher and cone crusher have not been installed. In order to utilise the existing crushing circuit an additional screen, associated conveyor and refeed hopper were installed. Galaxy has determined that the noise barrier specified in condition 1.2.14 of the consolidated licence L8469, based on Amendment Notice 5, is not required on account of its relocation as above and removal of requirement for a two-stage crushing circuit. <p>The location where the optical sorter has now been installed was previously assessed by the Department under licence L8469 Amendment Notice 3 and it was determined that noise emissions from the premises were likely to be acceptable. Amendment Notice 3 did not require construction of the 6m high noise barrier, which was subsequently specified in Amendment Notice 5, on account of Galaxy's proposal to change the optical sorter location to north of the original proposed location in Amendment Notice 3.</p> <p>The non-compliances were noted and on account of previous risk assessments as cited above the Delegated Officer determined that these departures from conditions of licence amendment notice 5 will not increase risk to public health, amenity or the environment.</p>
1.2.7 – new condition	New condition added to licence requiring 2SE in-pit TSF infrastructure to be constructed in accordance with requirements in table 1.2.1
1.2.8 – new condition	New condition added to the licence requiring an audit of compliance to be undertaken for the infrastructure required by condition 1.2.7 and the requirement for an audit report to be submitted to the department.
1.2.9 – new condition	New condition added to the licence outlining the requirements of the audit report required by condition 1.2.8.
1.2.10 – new condition	New condition added to the licence outlining the construction requirements for the new monitoring bores proposed by the Licence Holder.
1.2.11 – new condition	New condition added to the licence requiring the Licence Holder to submit a monitoring bore construction report to the department.
1.2.13 – 1.2.14	Condition numbers changed to 1.2.12-1.2.14
3.1.2	Condition updated to include definition for quarterly monitoring
3.3.1	Condition updated to include process monitoring requirements for 2SE in-pit TSF. Reference to new Figure 1 has also been added to table 3.3.1 and changes to name of infrastructure due to the new map have also been made. A requirement to inspect freeboard capacity for the TSFs has also been added.
3.3.3	Condition updated to include reference to the 2SE in-pit TSF
3.3.4	New condition added requiring a freeboard to be maintained on new in-pit TSF
3.4.1	<p>Condition table 3.4.1 has been updated to include new decommissioned TSF monitoring bore numbers and to remove monitoring bores that are planned for removal.</p> <p>Table 3.4.1 updated to remove the 3mbgl limit from the above ground TSF monitoring bores as 2 of the new bores have naturally occurring groundwater levels above 3mbgl. As the TSF has been decommissioned it is appropriate to remove this limit as tailings deposition is no longer occurring and the risk of groundwater mounding from seepage is no longer significant. New monitoring bores have been added to monitor groundwater quality after closure of the TSF.</p> <p>Table 3.4.1 also updated to include the four new groundwater monitoring bores around 2SE in-pit TSF. SWL limit added to these bores.</p>
3.4.2 (deleted)	Condition has been deleted as it does not relate to the in-pit TSFs. As the above ground TSF has been decommissioned this condition is no longer relevant. A requirement still exists on the licence to investigate any limit exceedances (condition 1.4.1) and to notify the department of any action taken (condition 5.3.1).

3.5.1	Reference to map 3 has been removed from table as new map figure 2 has replaced it.
4.1.1	Row IR2 has been deleted– stormwater management plan required by this improvement condition has been submitted to the department on 30/4/2021 (DWER record number DWERDT446174).
5.1.5 – 5.1.7	Conditions deleted. Condition requirements have been met. See rows regarding conditions 1.2.11 and 1.2.12 for further details.
Schedule 1: Maps	Map depicting premises boundary has been replaced with new Figure 1. Maps 1 of 3 “Groundwater and Vegetation Monitoring Locations”, 2 of 3 “Groundwater and Vegetation Monitoring Locations” has been replaced with new Figure 1. Map 3 of 3 has been retitled as ‘Baseline Dust Monitoring Locations’ and labeled as Figure 2
Schedule 2: Constructed infrastructure April 2018	Schedule 2 has been removed as infrastructure has been constructed / not required.
Schedule 2 (AN6) Location of SW Pit Monitoring bores	Map removed as detail covered by new Figure 2.
New Schedule 2	New schedule 2 has been added to the licence listing GPS coordinates that describe the premises boundary.
Appendix 1 and Appendix 2	Both appendixes deleted as no longer required. They were referenced within deleted conditions 1.2.11 and 1.2.12.

References

1. Bradley, D.C., McCauley, A.D. and Stillings, L.M., 2017. *Mineral-Deposit Model for Lithium–Cesium–Tantalum Pegmatites*. U.S. Geological Survey Investigations Report 2010-5070-0, 48 pp.
2. Department of Environment Regulation (DER), 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. Rockwater Pty Ltd, 2021. *Mt Cattlin Ravensthorpe Spodumene Project: Annual Groundwater Monitoring Summary: GWL 167439(6) September 2020 to August 2021*. Report prepared for Galaxy Resources

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

Condition	Summary of Licence Holder's comment	Department's response
Page 3 of L8469/2010/2 in reference to dewatering description	<p>Please remove reference to MB03 as it is to be decommissioned.</p> <p>Can you confirm what storage pond this refers to please? We have been unable to find a definition/labelled map in current or previous licence amendments.</p>	<p>MB03 removed.</p> <p>Storage pond referred to is the Raw Water Dam used for dewatering discharges, as confirmed by Licence Holder. Description updated by DWER to reflect this infrastructure.</p>
1.2.7	<p>Should this be formatted as:</p> <p>1.2.7 The Licence Holder must construct and/or install the 2SE in-pit TSF infrastructure:</p> <p>(a) in accordance with the corresponding design and construction requirements; and</p> <p>(b) at the corresponding infrastructure location</p> <p>Should this refer to table 1.2.1?</p>	<p>Condition updated to correctly refer to Table 1.2.1.</p> <p>Formatting not changed</p>
1.2.10	<p>Under advice from our Hydrogeological consultant, the bores have been designed to be constructed in accordance with ADIA standards. We believe standards of ASTM D5092/D5092M-16 are similar, with the exception of clearance.</p> <p>Clearance will be 30mm, as opposed to 50mm. As drilling has already commenced, we are unable to meet this standard for clearance without significant cost/delay.</p>	<p>The Delegated Officer considers the ADIA standards specified in the guideline <i>Minimum Construction Requirements for Water Bores in Australia (MCR) 4th Edition (2020)</i> to be sufficient for the purposes of constructing new monitoring bores proposed by the Licence Holder. Condition updated to reflect requested change.</p>
3.2.1	<p>Appears that 2 mentions of "daily" in 'Averaging period' column should be under 'Frequency'.</p>	<p>The monitoring required for tailings deposition and inflows from the tailings decant system is required to be performed on a continuous (cumulative) basis with annual and daily discharge volumes required to be recorded. Condition is therefore correct and does not require changing.</p>

Condition	Summary of Licence Holder's comment	Department's response
3.3.3	Please correct typo: "bunds is are maintained"	Noted and corrected
Table 3.4.1	<p>Licence Holder requests option to complete quarterly sampling and analysis on inactive TSF, to align with other sampling undertaken on site. This will increase data generated for receipt by DWER, as well as significantly reduce overhead costs to Galaxy.</p> <p>Please remove comma between calcium and carbonate (should be calcium carbonate, not calcium, carbonate) (same error in 2 places)</p>	Frequency changed from three times per year to quarterly, as requested by Licence Holder
5.2.1	Licence Holder requests annual period be changed to 01/01 – 31/12 with a due date of 31/03 to align with other similar Governmental and Internal reports.	Condition updated to reflect requested change in annual period. AER now required to be submitted within 90 days after the annual period.
Schedule 2	Spelling error (perscribed)	Noted and corrected

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Works approval	<input type="checkbox"/>				
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>	
		Has the works approval been complied with?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		Date Report received:			
Renewal	<input type="checkbox"/>	Current licence number:			
Amendment to works approval	<input type="checkbox"/>	Current works approval number:			
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L8469/2010/2		
		Relevant works approval number:	N/A	<input checked="" type="checkbox"/>	
Registration	<input type="checkbox"/>	Current works approval number:	None	<input type="checkbox"/>	
Date application received	19/10/2021				
Applicant and Premises details					
Applicant name/s (full legal name/s)	Galaxy Resources Limited				
Premises name	Ravensthorpe Spodumene Project				
Premises location	Lot 31 on Plan 224145 and Lot 127 on Plan 145763 (part of Mining Tenement M74/244), Old Newdegate Rd, Ravensthorpe, WA 6346				
Local Government Authority	SHIRE OF RAVENSTHORPE				
Application documents					
HPCM file reference number:	DER2014/001110-1				
Key application documents (additional to application form):	Application form A2054972, TSF Design Report A2054975, Amendment application A2054971				
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.	<p>Licence amendment for</p> <ul style="list-style-type: none"> • Construction and operation of new in-pit TSF (SE pit); • Decommissioning tailings deposition to the existing SW Pit Tailings Storage Facility (TSF), extend the tailings and decant pipelines to the recently mined 2SE Pit and continue tailings deposition to create a new in-pit TSF; • Installation of new monitoring bores to monitor groundwater adjacent to the proposed 2SE Pit TSF; and • Replacing TSF monitoring bores to be lost due to the construction of the NW Waste Rock Landform with newly constructed monitoring bores. 				

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 of metallic or non metallic ore.	2 000 000 tonnes per annual period	No changes to production/ design capacity

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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: Expiry date: If N/A explain why? Mining tenure
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CPS No: 3045/5, though no clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Licence/permit No: GWL167439(5)

<p>Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: Kondinin-Ravensthorpe Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: South Coast</p>
<p>Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p>
<p>Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i>, <i>Environmental Protection (Controlled Waste) Regulations 2004</i>, <i>State Agreement Act xxxx</i>)</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p><i>Mining Act 1978</i> Reg ID 22377 and 26415 <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i></p>
<p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>N/A</p>
<p>Is the Premises subject to any EPP requirements?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>N/A</p>
<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Classification: N/A Date of classification: N/A</p>