Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

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

Licence Number	L4328/1989/10
Licence Holder	MARBL Lithium Operations Pty Ltd
ACN	637 077 608
File Number	DER2013/001044-1
Premises	Wodgina Lithium Project M45/49, M45/50, M45/254, M45/353, M45/365, M45/381, M45/382, M45/383, M45/886, M45/887, M45/888, M45/950, M45/923, M45/924, M45/925, M45/949, M45/1188, M45/1252, G45/290, G45/291 and G45/321 MARBLE BAR WA 6760 As depicted in Schedule 1
Date of Report	14 February 2024
Decision	Revised licence granted

Sonya Poor

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SENIOR ENVIRONMENTAL OFFICER, INDUSTRY REGULATION
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L4328/1989/10 is held by MARBL Lithium Operations Pty Ltd (licence holder) for the Wodgina Lithium Project (the Premises), located at mining tenements M45/49, M45/50, M45/254, M45/353, M45/365, M45/381, M45/382, M45/383, M45/886, M45/887, M45/888, M45/950, M45/923, M45/924, M45/925, M45/949, M45/1188, M45/1252, G45/290, G45/291 and G45/321.

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 L4328/1989/10 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 29 September 2023, the licence holder submitted an application to the department to amend licence L4328/1989/10 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Category 5 approved operational area to allow for the mobile crusher operation within the entirety of the prescribed premises boundary;
- Category 5 – Eastern Waste Landform (EWL) footprint to match that in the Mining Proposal (REG ID 120114) for the continued disposal of dry stack tailings;
- Replacement of Tailings Storage Facility (TSF) monitoring bore TSF EXT MB1 with TSF EXT RB1 and addition of TSF3cMB and TSF3c to the current monitoring regime on the licence;
- To allow for a boundary expansion to category 89 putrescible land and tyre storage facility;
- Increase capacity in category 85B from 0.82 gigalitre (GL) per annum to 1.5 GL per annum. Category 85B estimated to receive a maximum 150 litres per second (L/s) of feedwater, producing 45 L/s reject and 105 L/s of permeate; and
- To allow for overflows of Reverse Osmosis (RO) brine into Cassiterite Pit.

This amendment is limited only to changes to Categories 5, 85B, and 89 activities from the existing licence. No changes to the existing licence relating to Categories 52, 54 and 57 have been requested by the licence holder.

Table 1 below outlines the proposed changes to the existing licence.

Table 1: Proposed throughput capacity changes

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
Category 5: Processing or beneficiation of metallic or non-metallic ore	8,750,000 tonnes per annual period	No throughput change.	No throughput changes. Changes relate to allowing for mobile crusher operation within the entirety of the prescribed premises boundary. Align EWL footprint with the Mining Proposal (Reg ID 120114).
Category 52: Electric power generation	64 MW gas power station	No change.	Not applicable.
Category 54: Sewage facility	210 cubic metres per day	No change.	Not applicable.
Category 57: Used tyre storage	500 tyres	No change.	Not applicable.
Category 85B: Water desalination plant	0.82 gigalitres per annual period	1.5 gigalitres per annual period.	Increase capacity to 1.5 gigalitres per annual period, where an increase to process water demand is forecasted.
Category 89: Putrescible landfill site	3,650 tonnes per annual period	No throughput change.	Changes relate to expansion of the putrescible and tyre disposal landfill facility.

2.3 Overview of premises

2.3.1 Operational area for mobile crushing and screening plants – Category 5

The licence holder has requested that the entire prescribed premises boundary (as shown in Schedule 1, Figure 1 under the licence L4328/1989/10) is approved as the operational area for mobile crushing and screening plants within the Premises. The currently approved locations for mobile crushing and screening activities are atop TSF3, TDNE/TP6, within Atlas hardstand and Hercules pit.

There will be no change to the number of mobile crushing and screening plants or the assessed category 5 production capacity. The only supporting infrastructure required for the mobile crushing and screening plants are an office and portable diesel generator. No additional chemical storage or bulk fuel is required.

Existing controls currently in place under the licence for the crushing and screening activities will continue to be implemented.

2.3.2 Expansion of the EWL footprint and dry stack tailings– Category 5

The licence holder received approval from the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) on 14 December 2023 for the expansion of the EWL footprint under Mining Proposal (REG ID 120114) and is seeking to align the EWL footprint expansion under the licence as shown in Figure 1. In addition, the licence holder is seeking approval to continue the disposal of co-mingled dry stack tailings with waste rock within the

revised EWL footprint.

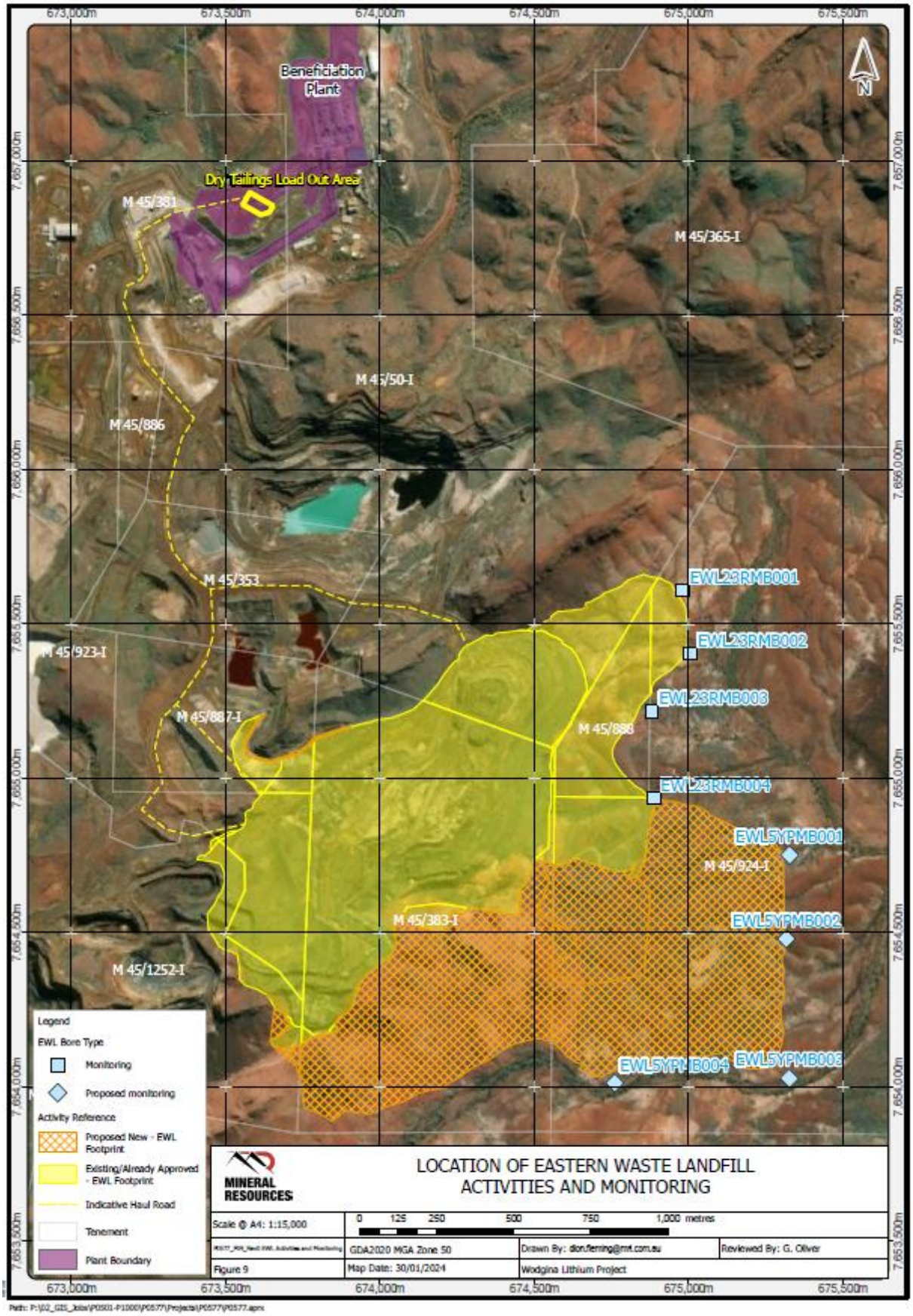

Figure 1: Expansion of the dry stack tailings EWL disposal footprint

The EWL deposition area will be amended from 116.5 hectares (ha) to 209.2 ha with no change to the current throughput. The previously approved dry stack disposal methodology and infrastructure and equipment use will remain. The licence holder has stated that "*due to the consistent disposal methodology for dry stack tailings and unchanged throughput, the expansion of the EWL and the area designated for dry stack tailings disposal will not exacerbate the severity of previously assessed impacts on identified receptors.*"

The licence holder has indicated that the dry coarse tailings have minimal capacity to produce acidity and exhibit benign characteristics. Furthermore, the tailings are co-mingled with non-acid forming waste rock distributed over the entire EWL, rather than concentrating in a single area within the EWL.

Existing controls currently in place under the licence for these prescribed activities will continue to be implemented.

2.3.3 Additional groundwater monitoring bores

With the expansion of the dry stack tailings EWL footprint, the licence holder has stated that '*addition monitoring bores will be required to monitor groundwater conditions around the periphery of the landform, primarily monitoring for impacts of potential Acid and Metalliferous Drainage (AMD)*'. Bore locations were selected based on extensive understanding of the groundwater flow patterns of the nearby landform. The monitoring bore network is primarily located along the eastern perimeter of the EWL as the groundwater flows in a west to east direction within the shallow fractured rock aquifer.

The location, target depth, and target screen depth of the existing and proposed EWL monitoring bores is presented in Table 2 and the monitoring bore locations are shown in Figure 1.

In addition, the licence holder has proposed to replace groundwater monitoring bore TSF3 EXT MB1 with a new replacement bore TSF3 EXT RB1 to be installed and constructed under the *Rights and Irrigation Water Act 1914* (RIWI Act) 26D approval CAW 206994. The current location of TSF3 EXT MB1 is situated within the TSF3 operational footprint. The replacement monitoring bore TSF3 EXT RB1 will be located further south-west on the boundary of the TSF3 operational footprint. This will allow for the continuation of ambient groundwater monitoring at the TSF3 and allow for approved mining activities to occur.

The licence holder has also requested for the inclusion of groundwater monitoring bores TSF3cMB and TSF3c to the current ambient monitoring regime under the licence to allow for the continuation of routine groundwater monitoring at TSF3.

The department has made the requested changes.

The bore locations are detailed in Table 2 and presented in Figure 1 and Figure 2.

Table 2: Existing and proposed monitoring bore locations

Bore ID	Status	Easting	Northing	Target depth (mbgl)	Target screen depth (mbgl)
EWL-a	To be decommissioned[1]	674,626	7,655,427	No data	No data
EWL-b		674,641	7,655,184		
EWL-h		674,422	7,654,628		
EWL-i		674,501	7,654,768		
EWL-j		674,547	7,654,897		
EWL-k		674,529	7,654,942		
EWL23RMB001	Currently approved	674,980	7,655,608	24	18 - 24
EWL23RMB002		675,006	7,655,402	24	18 - 24
EWL23RMB003		674,880	7,655,216	24	18 - 24
EWL23RMB004		674,886	7,654,934	24	18 - 24
EWL5YPMB001	Proposed	675,327	7,654,749	24	18 - 24
EWL5YPMB002		675,316	7,654,478	24	18 - 24
EWL5YPMB003		675,326	7,654,026	24	18 - 24
EWL5YPMB004		674,643	7,653,968	24	18 - 24
TSF3 EXT RB1		672,627	6,755,475	Not provided	Not provided
TSF3 EXT MB1	To be decommissioned	672,697	7,655,648		
TSF3cMB	Proposed	672,620	7,655,676		
TSF3c		672,620	7,655,671		

Figure 2: Location of TSF3 existing and proposed monitoring bores

Licence: L4328/1989/10

2.3.4 Water desalination – Category 85B

Process water demand is forecasted to increase in alignment with an increase to the spodumene beneficiation plant and additional expansion projects that require the use of process water. In addition, with the increase in raw water feed requirements for the Wodgina beneficiation plant, another RO module is planned to be constructed and operating with the existing two RO modules, where the third RO module is on standby to facilitate cleaning and maintenance requirements.

Currently, water fed into the RO plant is at a maximum rate of 100 litres per second (L/s) from the beneficiation plant raw water tank and produces up to 15 L/s of RO brine. With the increase in process water demand, the water fed into the RO plant will reach a maximum rate of 150 L/s and produce up to 45 L/s of RO brine.

Thus, the licence holder has requested an increase to the current throughput capacity approved under the licence of 0.82 GL/annum to 1.5 GL/annum.

2.3.5 Discharge RO brine into Cassiterite Pit

RO brine is currently used for dust suppression under the current licence. However, with the increase in process water demand and category 85B throughput an alternative disposal option for RO brine is required onsite. The licence holder proposes to discharge RO brine in the Cassiterite Pit, which is deemed as an effective storage option with reduced risk of potential discharges to the surrounding environment and allows for passive evaporative losses.

MBS Environmental (2018) has stated the following regarding the use of the Cassiterite Pit for RO brine containment:

"Cassiterite Pit is understood to contain exposed sulfidic pit wall lithologies which are capable of generating a proportion of acidic runoff during rainfall events and further concentrate, due to evaporation in the base of the pit. The evaporative concentration suggests that there is no external hydraulic link outwards from Cassiterite Pit. There is also no evidence of surface expressions of Tinstone Pit water down gradient or that the water body is hydraulically connected to creek lines. This is consistent with it sitting within the tightly held surrounds of the volcanic rock intrusion.

Intermittent diversion of RO brine to the Cassiterite Pit would provide a considered net beneficial outcome as the high alkalinity (1,849 mg/L carbonate and pH 8.15) of RO brine would neutralise or partially neutralise any acidity of pit water and lead to reductions in dissolved metal concentrations by precipitation."

Table 3 provides the water quality analysis of the RO brine from the two existing RO modules and are compared to the ANZECC & ARMCANZ 2000 water quality guidelines from livestock and irrigation.

The licence holder indicated (MRL 2024) that during the wet season with periods of high rainfall, the requirement for dust suppression would decrease and the RO brine would be discharged via an overflow pipeline into Cassiterite Pit. The licence holder expects approximately 60 days per annum that RO brine would be discharged into the Cassiterite Pit, based on historic long-term averages. The estimated volume of RO brine discharged into Cassiterite Pit would be 234 megalitres per annum, however, is dependent on high rainfall events and the reduction in dust suppression requirements.

In addition, the department notes that DEMIRS recently approved Mining Proposal (Reg ID 120114) for the construction and operation of three evaporation ponds to contain RO brine and for the expansion and dewatering of Cassiterite Pit. The licence holder advised the department on the 18 December 2023 that the construction of the evaporation ponds and expansion and dewatering of Cassiterite Pit will be sought under future approvals.

The proposed current use of the Cassiterite pit for discharge of RO brine sought in this licence amendment is required until the three evaporation ponds have been constructed and are operational for the storage of the RO brine. Further details are provided in Appendix 1.

Table 3: RO brine water quality analysis in comparison to the ANZECC & ARMCANZ 2000 water quality guidelines.

Parameters	Units	Guideline		RO Reject Water
		Livestock[1]	Irrigation[2]	
Temperature	Celsius	-	-	30.2
pH	pH Units	-	6.0 - 9.0	8.0
TDS	mg/L	-	4,000	3,782
Total Alkalinity	mg/L CaCO3	-	No Limit	1,400
Ca	mg/L	1,000	NG	150
Mg	mg/L	2,000	SAR[3]	250
Na	mg/L	TDS	SAR	664
K	mg/L	-	-	17
Sr	mg/L	-	-	1.4
Fe	mg/L	No Limit	10	<0.01
Mn	mg/L	No Limit	10	<0.01
Al	mg/L	5	20	0.02
Cl	mg/L	-	TDS	930
SO_4	mg/L	1,000	NG	370
F	mg/L	2	2	3.02
NO_3	mg/L	400	5	42
PO_4	mg/L	-	0.05	0.92
SiO_2	mg/L	-	-	120
Li	mg/L	-	2.5	0.19
Ni	mg/L	1.0	-	0.002
Rb	mg/L	-	-	0.02
Se	mg/L	0.02	-	0.01
U	mg/L	0.2	-	0.13
Zn	mg/L	20	-	0.03

2.3.6 Inert Waste Type 1 and tyre disposal in EWL – Category 89

During the previous licence amendment issued on 27 July 2023 tyre disposal was approved within the EWL footprint. With the recent Mining Proposal approving the expansion of the current EWL footprint, the licence holder requests for the tyre disposal with the EWL footprint to extend to the approved amended EWL footprint.

The licence holder has advised that there is no change to the existing throughput capacity, nor the waste management requirements outlined in Table 2 of the licence.

2.3.7 Landfill expansion – Category 89

The licence holder has requested the inclusion of the expansion to the existing putrescible land for ongoing operations. The expanded landfill area was constructed under works approval W6132/2018/1. The landfill expansion was in response to the growing number of workers at the Wodgina camp site. The current landfill area is 8.67 ha and the landfill expansion is 16.15 ha, with the combined total landfill area of 24.82 ha.

The licence holder has indicated that there is no change to the existing throughput capacity, waste types and process limits and specifications as outlined in Table 2 of the licence.

2.3.8 Other amendments

During the previous licence amendment issued on 25 July 2023, the following operational requirement of 'concrete bunded' under Table 4 was imposed for the 'dry tailings load out area'. The licence holder has requested to reword 'concrete bunded' to 'earthen bund' as concrete bunding appears ambiguous and may be interpreted that the concrete is beneath the dry stack tailings stockpile where there is an underground drainage system.

The department has reviewed the operational requirements under Table 4 where several operational requirements referring to concrete bunding, concrete catchment bunds, and concrete compound are listed. The licence holder requested (MRL 2024) to remove the term 'concrete' and replace it with the term 'earthen'. The department has made the requested change.

During this amendment, the department has also made the following updates:

- Removal of groundwater monitoring wells EWL23RMB001; EWL23RMB002; EWL23RMB003 and EWL23RMB004 from Table 5 as the *Compliance Report, Wodgina Lithium Project groundwater monitoring wells: eastern waste landform* was received by the department on 15 December 2023;
- Removal of condition 10, 31, and 32 as the *Wodgina Lithium project Beneficiation Plant Train 3 Surface Water Engineering Report* was received by the department on 5 December 2023 and deemed compliant on 10 January 2024; and
- Removal of condition 37 after the six consecutive months of operation of both Train 1 and Train 2 as the *Compliance Report, Wodgina Lithium Project six months of continuous operation of Train 1 and Train 2* was received by the department on 15 December 2023.

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 2020a).

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation, which have been considered in this amendment report are detailed in Table 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

Sources / activities	Emissions	Potential pathways	Proposed controls
Category 5			
Installation of mobile crushing and screening plant Installation and construction of groundwater monitoring bores	Dust	Air / windborne pathway	Existing controls under the licence L4328/1989/10 apply. No further risk assessment will be undertaken.
Operation of dry stack tailings in the EWL expansion (co-mingled with mine waste)	Dust	Air / windborne pathway	• assessment of dry stack tailings is coarse in nature and moisture content at time of deposition results in minimal dust generation; • water carts must be used for dust suppression; and • in the event dry stack tailings are left for an extended period of time on the pad, the material must be tarped or sprayed with water to limit dust generation.
	Seepage of soluble metals / metalloids Contaminated stormwater	Infiltration through underlying soils to groundwater Stormwater run-off	**EWL** • area of the deposition most not exceed 209.2 ha; • dry stack tailings must be chemically benign and classified as non-acid forming (NAF) with potential seepage to be neutral; • dry stack tailings must be of low moisture; • dry stack tailings to fill void spaces in the sump, limiting the availability of water to travel through the EWL; • comingled dry stack tailings within the EWL must have a minimum 2 m non-acid forming waste rock cover upon final construction of the landform; • dry stack tailings are to be placed greater than 10 m from the final batter design during operations; and • maintain and operate the groundwater monitoring bore network as per the monitoring conditions under licence L4328/1989/10. **Dry Tailings Load out area** • dry tailings load out area must contain an under-drainage network that reports to a sump before draining back to the processing plant where it is returned to the processing circuit;

Sources / activities	Emissions	Potential pathways	Proposed controls
			and • load out of dry stack tailings requirements as per the condition under licence L4328/1989/10.
	Potentially acid forming (PAF) wastes and Acid Metalliferous Drainage (AMD) generation	Seepage to groundwater Surface water run-off	• dry stack tailings must be chemically benign and classified as NAF with potential seepage to be neutral; • dry stack tailings to fill void spaces in the sump, limiting the availability of water to travel through the EWL; • a compacted base layer of NAF material must be placed on any natural surface to a depth of at least 5 m; • comingled dry stack tailings within the EWL must have a minimum 2 m NAF waste rock cover; • dry stack tailings must be placed greater than 10 m from the final batter design during operations; and • contact surface water run-off from active PAF waste areas during operations must be retained on the landform by PAF cell-bunding to prevent potential AMD as surface water run-off.
	Tailings spills	Direct discharge of dry stack tailings	• maintain existing plant controls, including sump pumps and bunding as per the conditions under licence L4328/1989/10; and • stockpile fluids and stormwater must be drained to a run-off sump and then pumped to the dry tailings area sump.
Operation of mobile crushing and screening plant	Dust	Air / windborne pathway	• the crushing and screening plant must be sited on a flat stable and raised pad when in operation; • the crushing and screening plant must be fitted with shields and covers on transfer points; and • earthen bunds must be constructed around the crushing and screening plant.
	Hydrocarbon spills and leaks Contaminated stormwater	Direct discharge to land Stormwater run-off	• the crushing and screening plant must be sited on a flat stable and raised pad when in operation; • any spills or leaks from the fuel tanks of the plant must not migrate to the crushing and screening plant

Sources / activities	Emissions	Potential pathways	Proposed controls
			operational area; and • earthen bunds must be constructed around the crushing and screening plant.
Category 89			
Operation of putrescible landfill	Dust	Air / windborne pathway	Existing controls under the licence L4328/1989/10 apply.
	Odour	Air / windborne pathway	Screened out as no nearby human receptors within 5 km of the prescribed premises boundary.
	Windblown waste	Air / windborne pathway	Existing controls under the licence L4328/1989/10 apply.
	Seepage and leaching to groundwater Stormwater run-off	Infiltration through underlying soils to groundwater Stormwater run-off	• no more than 1,650 tonnes of waste must be disposed of at the putrescible landfill per annual period; • disposal of waste by landfilling must only occur within the approved landfill areas shown in Schedule 1 maps under the licence L4328/1989/10; and • the separation distance between the base of the landfill and the highest groundwater level must not be less than 2 m.
Deposition of Inert Waste Type 1	Dust	Air / windborne pathway	Existing controls under the licence L4328/1989/10 apply.
	Stormwater run-off	Stormwater run-off	• no more than 1,500 tonnes of Inert Waste Type 1 must be disposed within the 5 m compacted base layer of the EWL; and • existing controls under the licence L4328/1989/10 apply.
Deposition of Inert Waste Type 2 (tyres)	Dust	Air / windborne pathway	Existing controls under the licence L4328/1989/10 apply.
	Stormwater run-off	Stormwater run-off	• no more than 500 tonnes of waste tyres must be disposed of at the tyre disposal areas per annual period, with cells constructed on each bench as the EWL is developed. Tyres must only be landfilled: • in batches separated from each other by at least 100 millimetres (mm) of soil and each consisting of not more than 40 cubic metres (m^3) of tyres reduced

Sources / activities	Emissions	Potential pathways	Proposed controls
			to pieces; or • in batches separated from each other by at least 100 mm of soil and each consisting of not more than 1,000 whole tyres. • 500 mm soil cover requirement as soon as practical following the achievement of final waste levels in the area(s) in which tyres are deposited; and • monitoring of inputs into the deposition locations on a monthly frequency.
Category 85B			
Wastewater from the RO Plant (RO brine) for dust suppression	Seepage and leaching to groundwater	Infiltration through underlying soils to groundwater	• no more than 1.5 GL must be used for dust suppression within disturbed areas and vegetation must be avoided; • RO brine must not be directly discharged to the environment; and • TDNE3 bore field water must not be constituted more than 16 percent (%) of the RO feed water composition.
	RO brine with high concentrations of total dissolved solids (TDS) and heavy metals to land	Direct discharge to land, by irrigation and spray drifts	
Wastewater from the RO Plant (RO brine) deposited into Cassiterite / Tinstone Pits	Seepage and leaching to groundwater	Infiltration through underlying soils to groundwater	• maintain and operate a minimum 10 m freeboard from the lowest point of the pit crest; • daily inspections of the transfer pipeline and associated infrastructure to ensure no leaks or spills; • undertake daily meter readings (volume of water transferred); and • daily readings of the water level to confirm the freeboard.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020a), 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 2020b)). There are no nearby human

sensitive receptors, with the nearest human receptor approximately 6 km north-east of the prescribed premises boundary.

Table 5: Sensitive environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
Groundwater The Premises is located within the *Rights in Water and Irrigation Act 1914* (RIWI Act) Proclaimed Pilbara Groundwater and Surface Water Areas.	No stock bores are near the Premises. The closest bore used for a camp is under groundwater licence GWL184329 (Pilgangoora Operations Pty Ltd). This bore is located more than 9 km from the EWL. Groundwater flow is likely to be northwards, down the hydraulic gradient of the major alluvial channels towards the coastal plain. Groundwater levels measured in the Native Vegetation Clearing Permit Area varied ranging from 200 to 210 metres Reduced Level (mRL) around Cassiterite Pit and 185 to 188 mRL near the EWL. Depth to groundwater surrounding the greenstone belt on the relatively flat granitic peneplain (including the northern evaporation pond location) is less than 10 m of the natural ground surface. Within the greenstone belt, the depth to groundwater varies from very shallow, in low lying relief (less than 10 m) to more than 40 m below ground level (mbgl) on the higher relief metasediment outcrop.
Major watercourses / waterbodies	The nearest river is the Turner River West, located approximately 2.6 km east of the premises boundary. No permanent surface water systems occur within the premises boundary although semi-permanent pools may occur. All ephemeral surface drainage at the Premises essentially flows in a northerly direction. Several local ephemeral drainage lines that flow to the Turner River West is situated within the expanded EWL footprint.
Threatened and Priority Ecological Communities	None were recorded within the premises boundary.
Threatened and Priority Flora	Six conservation significant flora species have been recorded within the premises boundary: • *Abutilon aff. hannii* potentially undescribed • *Euphorbia clementii* P3 • *Heliotropium muticum* P3 • *Terminalia supranitifolia* P3 • *Triodia chichesterensis* P3 • *Vigna triodiophila* P3 No threatened flora has been recorded.
Threatened and Priority Fauna	Three threatened fauna species have been recorded within the premises boundary: • Northern quoll (*Dasyurus hallucatus*) Endangered • Pilbara leaf-nosed bat (*Rhinonicteris aurantia*) Vulnerable • Ghost bat (*Macroderma gigas*) Vulnerable Three priority fauna species have been recorded within the premises boundary:

Environmental receptors	Distance from prescribed activity
	• Spectacled hare-wallaby (*Lagorchestes conspicillatus*) P4 • Long-tailed dunnart (*Sminthopsis longicaudata*) P4 • Western pebble-mound mouse (*Pseudomys chapmani*) P4 Migratory species have also been recorded within the premises boundary: • Wood sandpiper (*Tringa glareola*) • Common sandpiper (*Tringa hypoleucos*)
Aboriginal and heritage sites / places	Seventeen aboriginal cultural heritage places are listed below: • ID 6651 – Wodjina Hills, ceremonial / mythological (registered site) • ID 7116 – Mt York 1, artefacts / scatter (registered site) • ID 7135 – Talkuwarrana, mythological /camp (registered site) • ID 9009 – Gulindjina Yambara, ritual / ceremonial; creation / dreaming narrative (registered site) • ID 21800 – WP01, artefacts / scatter; grinding patches / grooves (registered site) • ID 22037 – WodE#1 Malbarn Caves, creation / dreaming narrative; rock shelter (lodged place) • ID 22038 – WodE#2 Law Ground Site Complex, ceremonial, mythological, skeletal material / burial, camp (registered site) • ID 22039 – WodE#3 Historical Tin Mining Camp, camp, historical (registered site) • ID 22040 – WodE#4 Historical Tin Mining Camp, camp, historical, water source (lodged place) • ID 22045 – Wodgina A#3, artefacts / scatter (lodged place) • ID 22046 – Wodgina A#4, artefacts / scatter (lodged place) • ID 28890 – W-08-03, artefacts / scatter (lodged place) • ID 23788 – Jurtiya 03-12A, artefacts / scatter, quarry (registered site) • ID 32793 – Maramutingana 13-12E (part of Jurtiya complex), creation / dreaming narrative; historical; water source (registered site) • ID 32794 – Ngalawoi (part of Jurtiya complex) creation / dreaming narrative; landscape / seascape feature (lodged place) • ID 36952 – Djoolyia (KAR16-001), ritual / ceremonial; creation / dreaming narrative (lodged place) • ID 37223 – Women's Hill (Coodigulla), place (lodged place)

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) 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 L4328/1989/10 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 L4328/1989/10 that accompanies this amendment report authorises emissions associated with the operation of the Premises.

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	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
Category 5								
Operation								
Operation of dry stack tailings in the EWL expansion (co-mingled with mine waste)	Dust	Air / windborne pathway Causing impacts to vegetation and nearby fauna health	Native vegetation Priority flora Native fauna Aboriginal and heritage sites / places	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 3, 8, 9, 30, and 31	N/A
	Seepage of soluble metals / metalloids Contaminated stormwater	Infiltration through underlying soils to groundwater Stormwater run-off Causing potential surface water and groundwater contamination and impact to surface water and groundwater quality	Soil Native vegetation Surface water Groundwater	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1, 3, 8, 9, 15, 26, 27, 30 and 31	N/A
	PAF wastes and AMD generation	Seepage to groundwater Surface water run-off Causing potential surface water and groundwater contamination and impact to surface	Soil Native vegetation Surface water Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 3, 8, 9, 27, 30 and 31	N/A

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**				
		water and groundwater quality						
	Tailings spills	Direct discharge of dry stack tailings Potential contamination to soil, nearby vegetation, surface water, and groundwater	Soil Native vegetation Surface water Groundwater	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 3, 8, 9, 12, 27, 30, and 31	N/A
Operation of mobile crushing and screening plant	Dust	Air / windborne pathway Causing impacts to vegetation health and nearby fauna health	Native vegetation Priority flora Native fauna Aboriginal and heritage sites / places	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	Condition 8, 9, 30 and 31	N/A
	Hydrocarbon spills and leaks Contaminated stormwater	Direct discharge to land Stormwater run-off Potential contamination to soil, nearby vegetation, surface water, and groundwater	Soil Nearby vegetation Surface water Groundwater	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1, 8, 9, 30 and 31	N/A
Category 89								
Operation								
Operation of expanded	Dust	Air / windborne	Native	Refer to	C = Slight	Y	Condition 3, 4, 5, 6, 7, 8, 9,	N/A

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**				
putrescible		pathway Causing impacts to vegetation health and nearby fauna health	vegetation Priority flora Native fauna Aboriginal and heritage sites / places	Section 3.1	L = Possible **Low Risk**		30 and 31	
	Windblown waste	Air / windborne pathway Contaminating nearby surface water and attracting fauna	Nearby surface water Native and feral fauna	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 3, 4, 5, 6, 7, 8, 9, 30 and 31	N/A
	Seepage and leaching to groundwater Stormwater run-off	Infiltration through underlying soils to groundwater Stormwater run-off Causing potential surface water and groundwater contamination and impact to surface water and groundwater quality	Soil Native vegetation Surface water Groundwater	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1, 3, 4, 5, 6, 7, 8, 9, 30 and 31	N/A
Deposition of Inert Waste Type 1	Dust	Air / windborne pathway Causing impacts to vegetation health and nearby fauna health	Native vegetation Priority flora Native fauna Aboriginal and heritage sites / places	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 3, 4, 5, 6, 7, 8, 9, 30 and 31	N/A

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**				
	Stormwater run-off	Stormwater run-off Causing potential surface water and groundwater contamination and impact to surface water and groundwater quality	Soil Native vegetation Groundwater Surface water	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1, 3, 4, 5, 6, 7, 8, 9, 30 and 31	N/A
Deposition of Inert Waste Type 2 (tyres)	Dust	Air / windborne pathway Causing impacts to vegetation health and nearby fauna health	Native vegetation Priority flora Native fauna Aboriginal and heritage sites / places	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 3, 4, 5, 6, 7, 8, 9, 30 and 31	N/A
	Stormwater run-off	Stormwater run-off Causing potential surface water and groundwater contamination and impact to surface water and groundwater quality	Soil Native vegetation Groundwater Surface water	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1, 3, 4, 5, 6, 7, 8, 9, 30 and 31	N/A
Category 85B								
Operation								
Wastewater from the RO Plant (RO brine) for dust suppression	Seepage and leaching groundwater	Infiltration through underlying soils to groundwater Causing potential	Soil Native vegetation	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 3, 8, 9, 17, 26, 30 and 31	N/A

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**				
		groundwater contamination and impact to groundwater quality	Groundwater					
	RO brine with high concentrations of TDS and heavy metals to land	Direct discharge to land, by irrigation and spray drifts Causing potential salt formation, surface water run-off, and soil accumulation of heavy metals	Soil Surface water Native vegetation Groundwater	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 3, 8, 9, 17, 26, 30 and 31	N/A
Wastewater from the RO Plant (RO brine) deposited into Cassiterite / Tinstone Pits	Seepage and leaching to groundwater	Infiltration through underlying soils to groundwater Causing potential groundwater	Soil Native vegetation Groundwater	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition **3**, 8, 9, 12, **13**, 14, **15**, 30 and 31	**Condition 3:** Inclusion of a freeboard condition for the Cassiterite Pit. **Condition 13:** Inspection requirements for the Cassiterite Pit freeboard. **Condition 15:** Inclusion of Cassiterite Pit as an authorised discharge point for the disposal of RO brine

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

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
DEMIRS advised of proposal on 1 December 2023	DEMIRS provided comments on 18 December 2023, which are detailed in Appendix 1.	Department's response is provided in Appendix 1.
Department of Planning, Land, and Heritage (DPLH) advised of proposal on 1 December 2023	DPLH provided comments on 5 January 2023, which are detailed in Appendix 1.	Department's response is provided in Appendix 1.
Karriyarra Aboriginal Corporation advised of proposal on 1 December 2023	No comments received.	N/A.
Licence holder was provided with draft amendment on 18 January 2024	Licence holder comments are provided in Appendix 2.	The departments response is provided in Appendix 2.

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
Cover page	Update of the duration to the corrected commencement date in the department's Industry Licensing System; Inclusion of the 'date of issue'; and Amended the category 85B throughput from 0.82 GL/annum to 1.5 GL/annum.
-	Updated figure numbers throughout the licence including within tables as some figures were made redundant.
-	Updated table numbers throughout the licence with the removal of condition 10, table 5.
-	Updated throughout the licence the water quality guidelines from ANZECC 2000 to ANZG 2018, which is the most recent version of the Australian and New Zealand Guidelines for fresh and marine water quality.

Condition no.	Proposed amendments
3, Table 2	EWL area of deposition changed from 116.5 ha to 209.2 ha. RO plant throughput changes from 0.82 GL/annum to 1.5 GL/annum. Removal of 'within tenements M45/923 and/or M45/383' in reference to the Eastern Waste Landform. Inclusion of RO brine discharged into Cassiterite Pit with the following process specifications: • Maintain and operate a minimum 10 m freeboard from the lowest point of the pit crest.
9, Table 4	Amended the location of the mobile crushing and screening plant under 'operational requirements' as '*Located within the prescribed premises boundary'* and 'infrastructure location' as '*Figure 1'*. Amended the 'operational requirement' for dry tailings load out area from '*concrete bunded'* to '*concreted bund wall maintained to direct stormwater towards the retention sump for recycling back to the process circuit'.* The licence holder requested to removal of 'concrete', of which the department has replaced this term with 'earthen'. Further details are provided in Appendix 2.
10, Table 5 (redundant now)	Removal of condition 10 and Table 5 as the outstanding infrastructure related to the Beneficiation Plant -Train 3 was deemed compliant on 10 January 2023.
10, Table 5	Inclusion of the proposed groundwater monitoring bores and removal of already constructed groundwater monitoring bores.
13, Table 6	Inclusion of the following: Cassiterite pit • Visual to confirm required freeboard capacity is available
15, Table 7	Inclusion of discharging RO brine into the Cassiterite Pit and the discharge point location as shown in Schedule 1, Figure 2.
26, Table 11	Inclusion of the proposed groundwater monitoring bores excluding bores EWL23RM001-004 and EWL5YMB001-004. Further detail is provided in Appendix 2. Inclusion of monthly cumulative volume monitoring for the diluted RO brine being discharged into the Cassiterite Pit.
27, Table 12	Inclusion of the proposed groundwater monitoring bores. Removal of the decommissioned EWL groundwater monitoring bores.
31 and 32 (now redundant)	Removal of conditions 31 and 32 as the reporting requirements related to the Beneficiation Plant -Train 3 were deemed compliant on 10 January 2023.
34	Part (b) was removed as this was related to the redundant condition 10.
36, Table 15	Inclusion of submission for the well construction report for condition 10, Table 5. Removal of reference to condition 10 and 11 as compliance reports have been received.
37 (now redundant)	Removal of condition 37 as the compliance report was received by the department on 15 December 2023.
10 to 36	Renumbering of previous conditions after the removal conditions 10, 31, 32, and 37 that were made redundant.
Definitions table	Updated the water quality guidelines and Australian standard's water quality definitions.

Condition no.	Proposed amendments
Schedule 2, Table 18	Updated figure numbers throughout table. Inclusion of 'and two containerised RO systems' to item 15.
Schedule 1 maps, Figure 2	Updated figure to include the landfill expansion area.
Schedule 1 maps, Figure 3	Removal of figure as the updated Figure 9 provides the location of the EWL and tyre disposal area.
Schedule 1 maps, Figure 5	Updated figure to include an indicative area for the two containerised RO modules.
Schedule 1 maps, Figure 8	Removal of figure as location of mobile crushing and screening plants is within the entirety of the prescribed premises boundary (Figure 1).
Schedule 1 maps, Figure 9	Updated with a clearer figure.
Schedule 1 maps, Figure 3 to 13	Renumbered figures as previous Figures 3 and 8 were made redundant.

References

1. Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
5. MBS Environmental 2018, *Wodgina Lithium Beneficiation Plant Reverse Osmosis Brine Management Options Assessment*, unpublished report prepared for Mineral Resources Limited.
6. Mineral Resources Limited (MRL) 2024, *Re: Notice under Section 59(b) of the Environmental Protection Act 1986 regarding proposed amendment to licence L4328/1989/10 – responses to draft licence amendments and outstanding matters*, Osborne Park, Western Australia.

Appendix 1: Summary of stakeholder's comments on the application and supporting documentation

Summary of stakeholder's comment	Department's response
DEMIRS provided the following comments in align with the proposed amendments. <u>To allow for overflows of RO brine in Cassiterite Pit</u> The approved Mining Proposal includes three evaporation ponds that will be constructed for the discharge of RO brine and the expansion of the Cassiterite pit which will require dewatering. The evaporation ponds are located on M45/949. The request to discharge RO water into the Cassiterite pit does not agree with the Mining Proposal and the licence holder should provide explanation. <u>Category 5 approved operational area to allow for mobile crusher operation within the entirety of the prescribed premises boundary</u> The shapefile provided with the licence amendment goes beyond the footprint approved for mining activities. Thus, the licence holder should explain why the boundaries do not match the approved site development envelope. <u>Category 5 – Eastern Waste Landform (EWL) footprint to match that in the Mining Proposal (REG ID 120114) currently under assessment with DEMIRS for the continued disposal of dry stack tailings</u> The EWL will expand to the south and matches the licence amendment. <u>Replacement of Tailings Storage Facility (TSF) monitoring bore TSF EXT MB1 with TSF EXT RB1 and addition of TSF3cMB and TSF3c to the current monitoring regime of the licence</u> The latest TSF audit report indicated that TSF 3E has significant embankment cracking at the western abutment, where geotechnical stability analyses indicate potentially unstable conditions could develop if phreatic surface were to rise significantly. Actions taken were grouting the cracks and construction of a rock fill buttress along the downstream batter was planned. Expression of seepage or wetness was not evident on the downstream batter and toe, but the cracks and open BGM seams indicate otherwise that seepage has occurred from TSF 3E. DEMIRS advised that any water discharge into the facility should not be allowed. TSF3 EXT MB1 standing water level (SWL) historical data indicated direct correlation with the phreatic surface in the TSF and the current water should be expressing at the top of the collar. The licence holder should provide the monitoring bore construction, slotting position, and width. The seepage will be	The licence holder advised on 18 December 2023 that the recently approved Mining Proposal sought for future approval of three evaporation ponds to contain RO brine and for the expansion of the Cassiterite pit. In addition, a clearing permit (application CPS 10346/1) is yet to be sought for clearing of native vegetation prior to the construction and operation of the evaporation ponds. The proposed current use of the Cassiterite pit for discharge of RO brine sought in the licence amendment is required until the three evaporation ponds have been constructed and operational. Once all relevant approvals have been sought and the evaporation ponds are operational, dewatering will commence at the Cassiterite pit. The licence holder advised the replacement of monitoring bore TSF3 EXT MB1 is due to the current location situated within the TSF3 operational footprint. The replacement monitoring bore TSF3 EXT RB1 will be located further south-west on the boundary of the TSF3 operational footprint. This will allow for the continuation of ambient groundwater monitoring at the TSF3 and allow for approved mining activities to occur.

Summary of stakeholder's comment	Department's response
detected closer to the surface and not a depth. The licence holder should also explain the reason to decommission the approved bore and provide historical monitoring data for it, at least SWL and lithium concentration. To allow for a boundary expansion to category 89 putrescible land and tyre storage facility Landfill expansion was included in the recently approved Mining Proposal. Increase capacity in category 85B from 0.82 gigalitres (GL) per annum to 1.5 GL per annum. Category 85B estimated to receive a maximum 150 litres per second (L/s) of feedwater, producing 45 L/s reject and 105 L/s of permeate The increased capacity aligns with the recently approved Mining Proposal.	
DPLH provided the following comments in align with the proposed amendments. From an examination of the 'Wodgina East Waste Landform Assessment 5 – Year LOM' (5 July 2023) the licence area intersects with the boundary of the following Aboriginal Registered Sites: • ID 6651 (Wodjina Hills) • ID 6870 (Yarna) • ID 6871 (Mt Tinstone) • ID 9009 (Gulindjina Yambara) • ID 22038 (WodE#2 Law Ground Site Complex) • ID 28889 (W-08-02) • ID 32788 (Jurtiya 03-12A) • ID 32793 (Maramutingana 13-12E (part of Jurtiya complex)) The licence area intersects with the boundary of the following Aboriginal Lodged Places: • ID 22023 (TSF4 Valley Site 1) • ID 22024 (TSF4 Valley Site 2) • ID 22025 (TSF4 Valley Site 3) • ID 22037 (WodE#1 Mabarn Caves) • ID 22039 (WodE#3 Historical Aboriginal Mining Camp) • ID 22040 (WodE#4 Historical Aboriginal Mining Camp) • ID 22044 (Wodgina A#2)	The department advises that the licence holder is aware of their requirements and obligations under the *Aboriginal Heritage Act 1972* in regards to the proposed amendments and the potential impacts to the listed Aboriginal and Heritage sites and for future sites.

Summary of stakeholder's comment	Department's response
• ID 22045 (Wodgina A#3) • ID 22046 (Wodgina A#4) • ID 22047 (Wodgina A#5) • ID 28890 (W-08-03) • ID 28892 (W-08-05) • ID 28893 (W-08-06) • ID 28894 (W-08- Isolated) • ID 36952 (Djoolyia (KAR16-001)) • ID 32794 (Ngalawoi (part of Juurtiya complex)) DPLH's understanding is that the expansion of the Eastern Waste Landform has the potential to impact Aboriginal Lodged Places ID 22037 (WodE#1 Mabarn Caves) and ID 22040 (WodE#4 Historical Aboriginal Mining Camp). The expansion of the Mobile Crushing Plant footprint has the potential to impact a number of Registered Sites and Lodged Places depending on future plant locations. If any of the proposed future works intersect with the boundary of any of these registered sites or lodged places, the licence holder will be required to apply for approvals under the *Aboriginal Heritage Act 1972* (AHA) with the types of approvals and how to apply under the DPLH websites at Aboriginal Heritage Approval https://www.wa.gov.au/. DPLH note the supporting states that the licence holder has entered into Native Title and Heritage Agreement with the Kariyarra Aboriginal Corporation, and that the licence area has been archaeologically and ethnographically surveyed to identify Aboriginal heritage sites and values. DPLH encourages continued communication between the licence holder and the Kariyarra Aboriginal Corporation, and DPLH note that any new Aboriginal heritage places that are discovered during the proposed works are required to be reported to the Registrar and the appropriate approvals sought.	

Appendix 2: Summary of licence holder's comments on risk assessment and draft conditions

<table>
<tr><th>Condition</th><th>Summary of licence holder's comment</th><th>Department's response</th></tr>
<tr><td>3, Table 2</td><td>The Reverse Osmosis (RO) reject water will be low salinity (TDS < 4000 mg/L) and compare favourably with the ANZECC 2000 Guidelines for livestock (cattle) drinking water and for irrigation purposes. It is therefore proposed that the RO reject water can be used safely for dust suppression purposes and for direct discharge into Cassiterite Pit without dilution.

An indicative analysis and comparison table for existing RO reject water is provided in Attachment 6 – Indicative Water Quality for the Additional Reverse Osmosis Module.

Licence holder requests an amendment to Table 2 to permit undiluted RO brine use for dust suppression and discharge into Cassiterite Pit as proposed below:

<table>
<tr><th>Facility</th><th>Waste type</th><th>Process(es)</th><th>Process limits and/or specifications</th></tr>
<tr><td>Reverse Osmosis (RO) Plant Osmoflo plant consisting of three trains as depicted in Schedule 1, Figure ~~6~~ 5</td><td>~~Dilute~~ RO brine</td><td>Storage in Fines Bin Tank/ Reject Water Tank/ Mining Tank/ Haulage Tank for ultimate disposal of the ~~diluted~~ RO Brine to land via dust suppression and discharge into Cassiterite Pit</td><td>No more than ~~0.82~~ 1.5 GL/~~year~~ annum.
• To be used for dust suppression within disturbed areas and vegetation avoided.
• RO brine must not to be directly discharged to the environment.
• TDNE3 borefield water to not constitute more than 16% of the RO Feed Water composition.

Cassiterite Pit
• Maintain and operate a minimum 10 m freeboard from the lowest point of the pit crest.</td></tr>
</table>
</td><td>Table 2 has been amended by removing 'dilute' under the 'Waste type' column.

The 'Process(es)' column has been amended as follows:

"Storage in Fines Bin Tank/ Reject Water Tank/ Mining Tank/ Haulage Tank for ultimate disposal of the diluted RO brine to land via dust suppression

RO brine discharged into Cassiterite Pit"

The department has retained the use of diluted RO brine for dust suppression as only the discharge of RO brine to Cassiterite Pit was risk assessed as part of this amendment application.

It should also be noted that under the 'Process limits and/or specifications' column that RO brine must not be directly discharged to the environment, thus diluted RO brine is permitted for dust suppression within disturbed areas.</td></tr>
<tr><td>9, Table 4</td><td>The objective of this draft condition can be achieved through the installation of an earthen bund wall to direct storm water toward the retention sump for recycling back to the process circuit. To ensure the integrity of the earthen bund wall, inspections will be undertaken prior to predicted and following significant rainfall events, with remediation of the integrity of the bund, undertaken</td><td>The department has removed reference to the term 'concrete' and as noted in the licence holder's comments, the department has included the term</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Summary of licence holder's comment</th><th>Department's response</th></tr>
<tr><td></td><td>where required.

Licence holder requests an amendment to Table 4 such that the condition reads:

"Bund wall maintained to direct stormwater towards the retention sump for recycling back to the process circuit" as proposed below:

<table><tr><td>Dry tailings load out area</td><td>Dust suppression via sprays or tarps as required.
• <s>Concrete bunded</s>. <s>Concreted</s> Bund wall maintained to direct stormwater towards the retention sump for recycling back to the process circuit.
•Under drainage network that reports to a sump for recycling back to the process circuit.</td><td>As depicted in Schedule 1, Figure 9.</td></tr></table></td><td>'earthen' before 'bund'.</td></tr>
<tr><td>13, Table 6</td><td>The RO reject water will be low salinity (TDS < 4000 mg/L) and compare favourably with ANZECC 2000 Guidelines for livestock (cattle) drinking water and for irrigation purposes. An indicative analysis and comparison table for existing RO reject water is provided in Attachment 6 – Indicative Water Quality for the Additional Reverse Osmosis Module.

Given the favourable quality of the RO reject water and thus the low risk to the surrounding environment, it is proposed that daily visual integrity inspections of the RO Plant transfer pipeline and associated infrastructure is be removed. It is noted this control was included by MinRes in Section 4.1.7 of "Attachment 3B – Supporting Document", however review of this condition has identified its impracticality.

Water levels in Cassiterite Pit are currently maintained at the base of the pit floor in order to maintain dry mining operations. Thus, a significant volumetric capacity presently exists within this pit prior to water levels reaching a 10 m freeboard limit. As an example, recent inflow calculations for Cassiterite Pit, whereby an internally drainage catchment of 0.66 km^2 are considered, notes that a 72-hour 1% AEP event would generate 238 100 m^3 of runoff captured in the pit – the volumetric capacity of Cassiterite Pit is multiple orders of magnitude greater than this. Given this, daily inspections to confirm freeboard capacity are not required. Visual inspections following significant rainfall events can be undertaken.

Licence holder requests a revision to Table 6: Inspection of Infrastructure as proposed below.</td><td>The department has amended Table 6 as requested by the licence holder.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Summary of licence holder's comment</th><th>Department's response</th></tr>
<tr><td></td><td>
<table>
<tr><th>Scope of Inspection</th><th>Type of Inspection</th><th>Frequency of Inspection</th></tr>
<tr><td>TSF3E tailing delivery pipelines</td><td></td><td rowspan="4">Daily</td></tr>
<tr><td>TSF3E decant return water lines</td><td></td></tr>
<tr><td>TSF3E embankment freeboards</td><td></td></tr>
<tr><td>~~RO Plant transfer pipeline and associated infrastructure to ensure no leaks or spills~~</td><td>~~Visual integrity~~</td></tr>
<tr><td>Cassiterite Pit</td><td>Visual to confirm required freeboard capacity is required</td><td>Following significant rainfall events</td></tr>
</table>
</td><td></td></tr>
<tr><td>17</td><td>Given the information provided under Item 1 above, Licence holder seeks an amendment to Condition 17 as proposed below: "The Licence Holder must ensure that ~~only diluted~~ RO wastewater, as specified in condition 3, is used for dust suppression on pre-disturbed locations throughout the prescribed premises including haul roads, access roads, ROM pads and waste dumps associated with the mine and crushing plant and construction areas."</td><td>The department retains the wording 'only diluted', as this condition was not part of the scope of this amendment application and would require a risk assessment.

Although the licence holder has stated that the RO brine "will be low salinity (TDS < 4000 mg/L) and compare favourably with ANZECC 2000 Guidelines for livestock (cattle) drinking water and for irrigation purposes", RO brine water quality testing is not undertaken, and the quality of RO brine can change from the current water quality results provided as part of the licence holder's comments.

To maintain consistent terminology, 'RO wastewater' has been replaced with 'RO brine'.</td></tr>
<tr><td>26, Table 11</td><td>These listed bores (EWL23RM001-004 and EWL5YMB001-004) are for monitoring and not production and therefore flow monitoring is not relevant. Licence holder therefore requests the removal of this condition.

The appropriate monitoring requirements for these bores is captured in Table 12 and includes standing water level and a range of physio, chemical and metal parameters.</td><td>EWL23RM001-004 and EWL5YMB001-004 have been removed from Table 11.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Summary of licence holder's comment</th><th>Department's response</th></tr>
<tr><td></td><td>
<table>
<tr><th>Location</th><th>Parameter</th><th>Units</th><th>Averaging Period</th><th>Frequency</th><th>Method</th></tr>
<tr><td rowspan="2">Eastern Waste Landform Dry Stack Tailings Disposal Area</td><td>Dry stack tailings disposed</td><td>m³</td><td>N/A</td><td>Monthly</td><td>N/A</td></tr>
<tr><td>Groundwater monitoring bores EWL23RMB001, EWL23RMB002, EWL23RMB003, EWL23RMB004, EWL5YMB001, EWL5YMB002, EWL5YMB003, EWL5YMB004</td><td>m³</td><td>N/A</td><td>Monthly</td><td>Flow metering device</td></tr>
</table>
</td><td></td></tr>
<tr><td>Schedule 1,
Figure 2</td><td>Figure 2 (Waste Disposal Areas (Landfill and TSF3 Expansion) has been updated to include the expanded landfill area and is included as Attachment 1.</td><td>Inclusion of updated figure.</td></tr>
<tr><td>Schedule 1,
Figure 5</td><td>Figure 5 (RO Plant Layout) has been updated to include an indicative area for the two containerised RO modules and is included as Attachment 2.</td><td>Inclusion of updated figure.</td></tr>
<tr><td>Schedule 1,
Figure 9</td><td>A revised high-resolution figure has been included as Attachment 3, with the title for Figure 9 updated as "Location of Eastern Waste Landform Activities and Monitoring".</td><td>Inclusion of updated figure.</td></tr>
<tr><td>Schedule 1,
Figure 13</td><td>Figure 13 (Location of emission points and monitoring locations) is provided as Attachment 4 and has been updated to include additional proposed monitoring and production bores, including TSF EXT MB 1; TSF EXT RB1; TSF3c; and TSF3cMB (as provided in the table below).</td><td>Inclusion of updated figure.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Summary of licence holder's comment</th><th>Department's response</th></tr>
<tr><td></td><td>
<table>
<tr><th>Bore ID</th><th>Type</th><th>Easting</th><th>Northing</th></tr>
<tr><td>TSF3c</td><td>Production</td><td>672620</td><td>7655671</td></tr>
<tr><td>TSF3cMB</td><td>Monitoring</td><td>672620</td><td>7655676</td></tr>
<tr><td>TSF EXT MB1</td><td>Monitoring</td><td>672697</td><td>7655648</td></tr>
<tr><td>TSF EXT RB1</td><td>Monitoring</td><td>672627</td><td>6755475</td></tr>
</table>
</td><td></td></tr>
<tr><td colspan="3">Amendment report</td></tr>
<tr><td>Figure 1

Licence holder to provide clearer figure.</td><td>An updated figure has been included as Attachment 3 and titled "Location of Eastern Waste Landform Activities and Monitoring".</td><td>Inclusion of updated figure.</td></tr>
<tr><td>Section 2.2.3

Licence holder to provide further details on bores TSF3cMB and TSF3c</td><td>TSF3cMB and TSF3c are included in the latest GWOS revision, which has been submitted in late 2023 and is currently being assessed by DWER.

TSF3c is intended to be a production bore. TSF3cMB is a monitoring bore – 5m from TSF3c.

A bore log inclusive of standing water level (20.6 m bgl) is provided for the bore TSF3 and is included as Attachment 5.</td><td>Department has reviewed the additional information provided.

No further action is required.</td></tr>
<tr><td>Table 2

Applicant to provide GPS coordinates for TSF3cMB and TSF3c</td><td>Consistent with Item 4 of Table 2, the GPS Coordinates for production bores TSF3cMB and TSF3c are included below:
<table>
<tr><th>Bore ID</th><th>Easting</th><th>Northing</th></tr>
<tr><td>TSF3c</td><td>672620</td><td>7655671</td></tr>
<tr><td>TSF3cMB</td><td>672620</td><td>7655676</td></tr>
</table>
</td><td>GPS coordinates for the bores TSF3c and TSF3cMB have been included in Table 2.</td></tr>
<tr><td>Section 2.3.5

What is the timeframe for the temporary use of the pit to discharge RO brine into?</td><td>Currently RO brine is re-used for mining dust suppression, with varying seasonal demand. During periods of high rainfall in the wet season, demand for mining dust suppression will decrease and RO brine will be re-directed into Cassiterite Pit via an overflow pipeline.

Based on historic long-term averages, there are approximately 60 wet days per annum at Wodgina when RO brine will be discharged into the Pit.</td><td>The department has updated section 2.3.5 Discharge RO brine into Cassiterite Pit in accordance with the information provided by the licence holder.</td></tr>
</table>

Condition	Summary of licence holder's comment	Department's response
Section 2.3.5 How much volume will be discharged into the pit?	The volume of RO brine discharged into the Pit will depend on decrease in mining dust suppression demand due to rainfall events. Based on the 60 wet days per annum, approximately 234 ML will be discharged into Cassiterite Pit.	
Section 2.3.5 Licence holder to provide the water quality of the RO brine and confirm if it will be diluted prior to discharge into the pit.	Electrical conductivity of brine is approximately 5,500 us/cm and slightly alkaline and will have a diluting and neutralising effect on water currently in Cassiterite Pit. Attachment 6 – Indicative Water Quality for the Additional Reverse Osmosis Module provides a more comprehensive water quality analysis undertaken for the reject water stream from the two existing RO modules supporting the spodumene beneficiation plant at Wodgina and is indicative of the expected water quality for the containerised additional RO module.	
Section 2.3.5 Where will the RO brine go once dewatering of the Cassiterite Pit commences?	RO reject water will continue to be used for dust suppression, with additional losses achieved through evaporation from the Cassiterite pit surface and using in-pit evaporators. Additional options for RO water disposal will be investigated and may include infiltration systems, evaporative blowers, evaporation ponds or additional storage in turkey nests. Relevant approvals will be sought in future licence amendments.	
Section 2.3.5 Will the RO brine from the dewatering Cassiterite Pit be used on site or stored only?	RO brine from the dewatering of Cassiterite pit will be used for dust suppression, stored in accordance with relevant licence conditions and disposed of via evaporators.	
Section 2.3.5 What approvals are proposed that you will require for these activities?	An amendment to the Mining Proposal and Mine Closure Plan for the Wodgina Lithium Project (REGID 120114) has been approved and includes a proposed evaporation pond of a minimum size of ~ 300,000 m3 and has the capacity to accept RO reject water that is in excess of dust suppression needs. Additional approvals will be sought prior to the construction and operation of the Evaporation Pond, including a Works Approval under Part V of the EP Act and a Native Vegetation Clearing Permit to facilitate the proposed clearing. The approved Mining Proposal and Mine Closure Plan for the Wodgina Lithium Project (REGID 120114) permits the use of in-pit evaporators. In-pit evaporators are an effective and environmentally acceptable mechanism for reducing excess water volumes for the Cassiterite Pit. They can potentially avoid additional land clearing for storage or infiltration options and dropout remains within the pit shell (a net sink) allowing recycling back to the evaporators and minimising loss of containment and seepage risks.	

Condition	Summary of licence holder's comment	Department's response
Section 2.3.7 Licence holder to provide current and total landfill area	The current landfill area is: 8.67ha The additional proposed landfill area is: 16.15ha The total landfill area (current and proposed) is: 24.82ha	Landfill area have been included under section 2.3.7.

Appendix 3: Application validation summary

SECTION 1: APPLICATION SUMMARY					
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:	L4328/1989/10		
		Relevant works approval number:		N/A	☒
Registration	☐	Current works approval number:		None	☐
Date application received		29 September 2023			
Applicant and Premises details					
Applicant name/s (full legal name/s)		MARBL Lithium Operations Pty Ltd			
Premises name		Wodgina Lithium Project			
Premises location		M45/353, M45/050, M45/383, M45/381, M45/886, M45/887, M45/888, and M45/1252			
Local Government Authority		Town of Port Hedland			
Application documents					
HPCM file reference number:		DER2013/001044-1~13			
Key application documents (additional to application form):		Attachment 3B – Supporting documentation Appendix A – Proof of Occupier Status (included within the supporting documentation) Appendix B – Wodgina East Waste Landform Assessment 5-year LOM Appendix C – RO Plant Infrastructure (Indicative) (included within the supporting documentation)			
Scope of application/assessment					

Summary of proposed activities or changes to existing operations.	The licence amendment is for the following: • To allow for overflows of RO brine into Cassiterite Pit; • Category 5 approved operational area to allow for mobile crusher operation within the entirety of the prescribed premises boundary; • Category 5 – EWL footprint to match that in the Mining Proposal (REG ID 120114) currently under assessment with DMIRS for the continued disposal of dry stack tailings; • Replacement of TSF monitoring bore TSF EXT MB1 with TSF EXT RB1 and addition of TSF3cMB and TSF3c to the current monitoring regime on the licence; • To allow for a boundary expansion to category 89 putrescible land and tyre storage facility; and • Increase capacity in category 85B from 0.82 GL/annum to 1.5 GL/annum. Category 85B estimated to receive a maximum 150 L/s of feedwater, producing 45 L/s reject and 105 L/s of permeate.

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	8,750,000 tonnes per annual period	No throughput changes. Changes relate to allowing for mobile crusher operation within the entirety of the prescribed premises boundary. Align EWL footprint with the Mining Proposal (Reg ID 120114) currently under assessment with DMIRS.
Category 52: Electric power generation	64 MW gas power station	No change.
Category 54: Sewage facility	210 cubic metres per day	No change.
Category 57: Used tyre storage	500 tyres	No change
Category 85B: Water desalination plant	0.82 gigalitres per annual period	Increase capacity to 1.5 gigalitres per annual period, where an increase to process water demand is forecasted.
Category 89: Putrescible landfill site	3,650 tonnes per annual period	No throughput changes. Changes relate to expansion of the putrescible and tyre disposal landfill facility.

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 ☒	Referral decision No: Managed under Part V ☐

		Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☒ Expiry: Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	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 ☒ No ☐	CPS No: 9911/11 Other clearing subject to the approval of submitted clearing permit – Application has been submitted; reference ID is CPS 10346/1 (DMIRS Native vegetation unit). No clearing will be undertaken until approval is received for these areas.
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
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: GWL 154570(20)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: N/A Type: Proclaimed Groundwater Area/Surface Water Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☒ Regional office: North West

Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☒	Mining Proposal regulated under the *Mining Act 1978*. Current Mining Proposal Reg ID 120114 under assessment with DMIRS. Reg ID 70087 – Cassiterite Pit Extension Mining Proposal Rev 1. Reg ID 74092 - Wodgina Lithium Cassiterite Pit (NE Node) Expansion) Mining Proposal. Reg ID 74361 – Wodgina Infrastructure Expansion Mining Proposal. *Environmental Protection (Unauthorised Discharges) Regulations 2004*.
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 ☐	CSS_ID: 25234 CSS_SITE_ID: 1939 Classification: Possibly contaminated – investigation required. Classification date: 20/05/2011