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	L4247/1991/13
Licence Holder	Talison Lithium Australia Pty Ltd
ACN	139 401 308
File Number	APP-0026523
Premises	Talison Lithium Mine Maranup Ford Road GREENBUSHES WA 6254 Legal description – Mining tenements M01/3, M01/6, M01/7, M01/8, M01/9 and M1/16 L70/232 and L70/244 and General purpose lease G01/1 and G1/04 As defined by the Premises maps in Schedule 1 and coordinates in Schedule 3
Date of Report	1 July 2025
Decision	Revised licence granted

Fiona Roser
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MANAGER, PROCESS INDUSTRIES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L4247/1991/13 is held by Talison Lithium Australia Pty Ltd (Licence Holder) for the Talison Lithium Mine (the Premises), located at Greenbushes, 6254.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L4247/1991/13 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Application summary

On 18 November 2024, the Licence Holder submitted an application to the department to amend Licence L4247/1991/13 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Authorise ongoing operation for Tailings Storage Facility (TSF) 4 Cell 1b and Stage 1 Cell 2 (to 1,265 m Relative Level (RL) embankment height) constructed under W6618/2021/1;
- Requested amendments to operating requirements for TSF1 mining and excavation activities; and
- Requested amendments to freeboard at mine water circuit (MWC) surface water bodies.

2.2.1 TSF4 Stage 1 Cells 1 and 2 – authorisation for ongoing operation

History of W6618/2021/1

The construction of TSF4 was first approved under W6618/2021/1 on 8 March 2022, for the construction for the starter embankment to this facility (to a height of 1,265 m RL). On 4 July 2023, the works approval was amended to allow for staged construction of the starter embankment for Cell 1 due to construction and logistical challenges to ensure that operations were not disrupted. During this amendment stage 1 of the Cell 1 was split up into two stages: Cell 1a to an embankment height of 1,261 m RL allowing time-limited operations to commence at this height, whilst the stage 1b, to an embankment height of 1,265 m RL was constructed.

On 1 September 2023, the works approval was amended to modify the portion of the liner for Cell 1 to bituminous geomembrane (BGM) as the construction progress for the clay liner which was originally authorised, was impacted by rainfall and therefore would not be completed in time for TSF4 to commence accepting tailings. The BGM liner was to cover approximately 12.8 hectares (ha) of the ~80 ha floor of cell 1 in the northern and north-eastern portions of Cell 1. On 27 March 2024, the works approval was amended, this time to change the proposed liner for Cell 2 from engineered clay to BGM liner.

This amendment also assessed the staged construction and operation of Cell 2, with stage 1 involving the BGM liner covering the eastern portion of TSF4 Cell 2 from the northern and dividing embankments to the 1,265 m RL contour that runs north to south through the centre of the cell, and stage 2 consisting of the western portion of the Cell 2 with an elevation above 1,265 m RL to be levelled and lined with the BGM under the separate works approval to raise Cell 2 to 1,270m RL (assessed and approved under W6901/2024/1).

Cell 1a

Currently approved for operation under the existing licence, following assessment and inclusion during the amendment to L4247/1991/13 in August 2024.

Cell 1b

The Licence Holder submitted the Critical Containment Infrastructure Report (CCIR) for the construction of TSF4 Cell 1b under W6618/2021/1 on 27 June 2024. The department assessed this submission and determined it to be compliant with the conditions of the works approval on 18 July 2024, noting that several deviations identified during the CCIR for TSF4 Cell 1a, were being considered under the previous licence amendment.

Cell 2

The Licence Holder submitted the CCIR for the construction of TSF4 Cell 2 under W6618/2021/1 on the 3 September 2024. The department assessed this and determined it to be compliant with the conditions of the works approval on 20 September 2024, which authorised the commencement of time-limited operations for this cell.

Underdrainage constructed design

Underdrainage for the facility includes:

- sand drainage blanket constructed downstream of the clay core that runs through the mine waste outer shell of the embankment to the perimeter toe drains;
- upstream perimeter toe drains above and below the clay liner (in Cell 1) or BGM (in Cell 2);
- strip drains in Cell 2 to direct seepage towards upstream toe drains along perimeter and divider embankments;
- gravel finger drains that discharge to the sand blanket along the southern boundary;
- downstream toe drains that will collect seepage from underdrainage and sand drainage blanket and also collect runoff from embankment and surrounding external catchment.

All the underdrainage were constructed to report to the seepage collection sumps. The department has assessed the construction and operation of sumps A and B through the previous licence amendment (1 August 2024). The assessment of the sumps C and D are discussed further in section 2.2.4.

Decant system

The decant infrastructure will comprise of skid mounted pumps located on an access ramp constructed from the north embankment. Decant water will be pumped back into the mine water circuit (MWC) through to Clear Water Dam.

Pipelines

Pipelines for Cell 1 have already been operational under the licence as part of the previous amendment to the licence that authorised the ongoing operation of TSF4 Cell 1a. As part of the Critical Containment Infrastructure Report for TSF4 Cell 2, the Licence Holder was found compliant with the material for the tailings and return water pipelines (HDPE) and ensuring that it is equipped with process monitoring, alarms and indicator to alert operator of abnormal conditions.

2.2.2 Deviations identified during time limited operations for TSF Cell 1a

Decant pond

On 2 September 2024, as reported in the time-limited operations (TLO) report submitted for TSF4 Cell1a, the Licence Holder was unable to comply with the specified sizing of the decant pond in W6618/2021/1 which required it to be operated to a size of approximately 300 m^2. In the submission of the TLO report, the Licence Holder advised that it is not feasible to operate the decant to this size and a more appropriate size of 90,000 m^2 (300m x 300m). It is noted that in the supporting document of the original assessment to W6618/2021/1, a pond diameter of 300 m was used for modelling purposes. It is also noted that at the time, the Licence Holder advised that the "*TSF will be operated so that the decant pond size is minimised, which will also minimise the seepage rate*".

Whilst this is a deviation to the design, the delegated officer considers that this does not need to be investigated further noting that, the ongoing licence requirements are to minimise the size of the decant pond as much as practicable.

Management of rainfall and runoff via seepage collection drains

As part of the TLO report submitted for W6618/2021/ on 2 September 2024 for TSF4 Cell1a, included with the review of performance and compliance against the conditions for the works approval as required by Condition 2(e), the Licence Holder identified that while rainfall and runoff from TSF4 are directed to the Clear Water Dam (CWD) for reuse in the mine water circuit as required by condition 9, Table 4 item 3, the water first passes through the seepage collection drains and sumps before being returned to the decant pond and then the CWD. The Licence Holder stated that this method aligns with the CCIR and the design specifications. The delegated officer considers that these changes are unlikely to be significant and is consistent with the design specifications that was originally assessed.

2.2.3 Remove existing bore from groundwater monitoring program

As part of this amendment application, the Licence Holder is requesting to remove a monitoring bore (MB01/01) from the groundwater monitoring program noting that the current location of the bore (as shown in Figure 1) will be destroyed with the expansion of the of the Floyds Waste Rock Landform (WRL). The Licence holder has advised that they have installed a replacement nested bore location (MB20/04), screened at three depths, located approximately 500 m southeast of the existing bore. They have advised that this bore location has been monitored quarterly since Q2 2024.

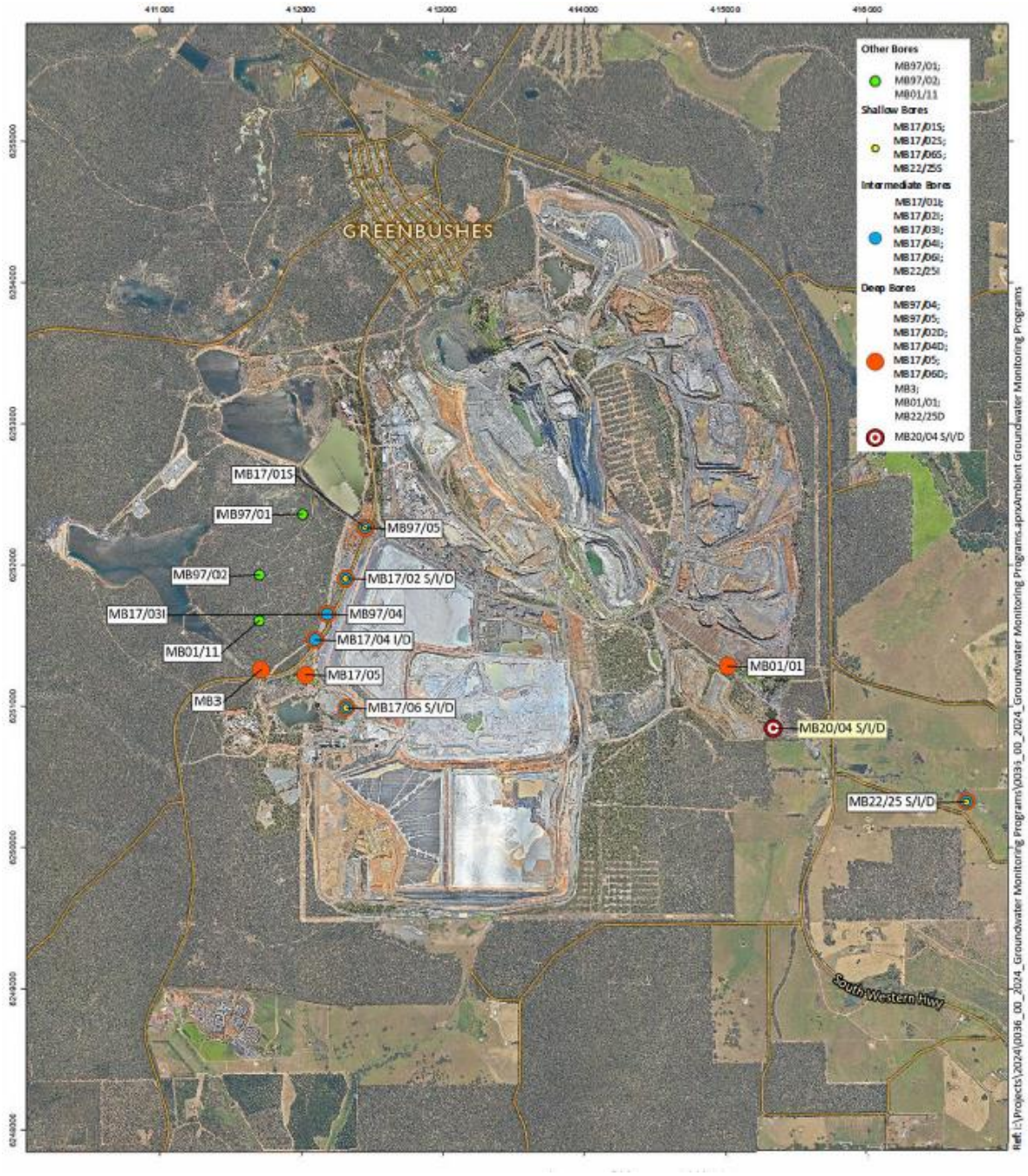

Figure 1: Groundwater monitoring bores

The Licence Holder was required to submit detailed information including evidence of the bore construction report for MB20/04 to demonstrate that it is fit for purpose / screened appropriately to groundwater monitoring. The Licence Holder has submitted a letter from an Engineering Geologist at PSM (PSM 2021) in lieu of a bore construction report for monitoring bore MB20/04. The letter included details on 10 existing TSF4 monitoring bore standpipes at four locations including MB20/04. MB20/04 hosts three multi-level standpipes monitoring bores denoted shallow (S), intermediate (I) and deep (D). The monitoring bores were reported to be in good condition (at the time of testing in April 2021), standpipes capped and protective covers secured.

Slug testing was carried out on MB20/04, where it was observed to have reached equilibrium above pre-testing dipped groundwater heads. PSM 2021, interpreted these results that the screen may be intersecting two varying lithologies; a higher permeability unit situated above a lower permeability unit.

Quarterly monitoring results for MB20/04 are shown in the Table 1 and Table 2. The monitoring results for MB01/01 as required by Licence L4247/1991/13 is shown in Table 3 and Table 4.

Table 1: July 2024 Quarter MB20/04

July 2024 Quarter			Description	MB20/04S	MB20/04I	MB20/04D
			Sample Date	28/08/2024	28/08/2024	28/08/2024
Parameter	Method Name	Units	LLD	Result	Result	Result
SWL	TLA Field test	mbgl	--	2.66	3.62	4.12
SWL	TLA Field test	mAHD	--		222.03	221.54
pH	TLA Field test	pH	0.100	8.31	7.6	6.62
TDS	SGS NATA	mg/L	10.000	1660	1920	2070
Chloride, Cl	SGS NATA	mg/L	1.000	402	658	803
NO_3 as N	SGS NATA	mg/L	0.005	2.53	0.33	<0.01
Sulfate, SO4	SGS NATA	mg/L	1.000	185	133	95
Arsenic, As	SGS NATA	mg/L	0.001	0.002	<0.001	<0.001
Copper, Cu	SGS NATA	mg/L	0.001	0.002	0.002	0.001
Manganese, Mn	SGS NATA	mg/L	0.001	0.022	0.067	1.02
Nickel, Ni	SGS NATA	mg/L	0.001	<0.001	0.001	0.022
Uranium, U	SGS NATA	mg/L	0.001	0.001	<0.001	<0.001
Cobalt, Co	SGS NATA	mg/L	0.001	<0.001	<0.001	0.013
Iron, Fe	SGS NATA	mg/L	0.005	0.19	0.07	0.52
Lithium, Li	SGS NATA	mg/L	0.010	0.028	0.052	0.073
Thorium, Th	SGS NATA	mg/L	0.001	<0.001	<0.001	<0.001
Magnesium, Mg	SGS NATA	mg/L	0.100	8.7	22.4	88.6
Sodium, Na	SGS NATA	mg/L	0.500	552	620	354
Ra 226	ALS NATA	mg/L	NA	NA	0.02	0.07
Ra 226 error	ALS NATA	mg/L	NA	-	-	-
Ra 228	ALS NATA	mg/L	NA	NA	<0.08	0.15
Ra 228 error	ALS NATA	mg/L	NA	-	-	-

Table 2: October 2024 Quarter MB20/04

October 2024 Quarter			Description	MB20/04S	MB20/04I	MB20/04D
			Sample Date	28/11/2024	28/11/2024	28/11/2024
Parameter	Method Name	Units	LLD	Result	Result	Result
SWL	TLA Field test	mbgl	--	3.7	3.87	3.91
SWL	TLA Field test	mAHD	--		221.78	221.75
pH	TLA Field test	pH	0.100	8.04	7.76	6.51
TDS	SGS NATA	mg/L	10.000	1450	1940	2330
Chloride, Cl	SGS NATA	mg/L	1.000	356	628	883
NO_3 as N	SGS NATA	mg/L	0.005	0.04	0.01	0.02
Sulfate, SO4	SGS NATA	mg/L	1.000	137	144	88
Arsenic, As	SGS NATA	mg/L	0.001	0.003	<0.001	<0.001
Copper, Cu	SGS NATA	mg/L	0.001	0.004	0.003	0.003
Manganese, Mn	SGS NATA	mg/L	0.001	0.021	0.063	1.47
Nickel, Ni	SGS NATA	mg/L	0.001	<0.001	0.001	0.027
Uranium, U	SGS NATA	mg/L	0.001	0.001	0.001	<0.001
Cobalt, Co	SGS NATA	mg/L	0.001	<0.001	<0.001	0.003
Iron, Fe	SGS NATA	mg/L	0.005	0.29	0.07	2.20
Lithium, Li	SGS NATA	mg/L	0.010	0.032	0.046	0.074
Thorium, Th	SGS NATA	mg/L	0.001	<0.001	<0.001	<0.001
Magnesium, Mg	SGS NATA	mg/L	0.100	5.1	14.6	85.8
Sodium, Na	SGS NATA	mg/L	0.500	428	563	327
Ra 226	ALS NATA	mg/L	NA	NA	NA	NA
Ra 226 error	ALS NATA	mg/L	NA	-	-	-
Ra 228	ALS NATA	mg/L	NA	NA	NA	NA
Ra 228 error	ALS NATA	mg/L	NA	-	-	-

Table 3: Monitoring results June 2024 MB01/01

Monitoring of ambient groundwater quality (Condition 31 Table 17) – Deep Bores

Monitoring Bore			MB97_5	MB17_02D	MB97_4	MB17_04D	MB17_05	MB17_06D	MB3	MB01_01	MB22/25D
Analyte Name	Method Name	Date	4/6/2024	4/6/2024	20/5/2024	6/6/2024	5/6/2024	17/6/2024	6/6/2024	5/6/2024	10/6/2024
		Units	Result	Result	Result	Result	Result	Result	Result	Result	Result
Standing Water Level, SWL	Field test	mbgl	0.54	1.60	9.07	6.98	5.95	0.83	1.84	0.43	0.45
	Field test	mAHD	256.25	246.31	236.22	234.73	234.59	243.65	227.55	236.32	201.54
pH	Field test	pH	7.04	6.36	5.88	6.07	6.70	6.83	6.81	6.68	7.44
Total Dissolved Solids, TDS	NATA	mg/L	905	98	3900	6020	1350	2760	1290	2350	1610
Chloride, Cl	NATA	mg/L	390	14	1780	3030	507	1280	536	832	739
NO_3 as N	NATA	mg/L	<0.01	0.030	0.020	<0.01	0.030	0.030	<0.01	<0.01	0.030
Sulfate, SO4	NATA	mg/L	54	6	18	158	256	94	130	58	66
Arsenic, As	NATA	mg/L	<0.001	0.001	0.001	0.008	0.001	0.005	0.002	<0.001	<0.001
Copper, Cu	NATA	mg/L	0.003	0.003	0.007	0.005	0.005	0.002	0.005	0.002	0.005
Manganese, Mn	NATA	mg/L	0.417	0.039	1.190	3.050	0.477	1.540	0.127	1.090	0.249
Nickel, Ni	NATA	mg/L	0.005	0.004	0.11	0.075	0.007	0.01	0.007	0.02	0.007
Uranium, U	NATA	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt, Co	NATA	mg/L	0.004	<0.001	0.072	0.068	0.055	0.011	0.002	0.01	0.004
Iron, Fe	NATA	mg/L	4.02	0.56	0.07	0.35	11.8	<0.05	<0.05	2.06	0.44
Lithium, Li	NATA	mg/L	0.023	0.023	0.099	0.115	0.016	0.140	0.031	0.091	0.014
Thorium, Th	NATA	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Mg	NATA	mg/L	41.9	2.7	293.0	249.0	41.9	161.0	22.0	133.0	65.9
Sodium, Na	NATA	mg/L	208	13.6	391	1230	364	501	381	224	372
Radium, Ra 226	NATA	Bq/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Radium, Ra 228	NATA	Bq/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 4: Monitoring results September 2024 MB01/01

Table 9. Monitoring of ambient groundwater quality (Condition 30 Table 17) – Deep Bores

Monitoring Bore			MB97_5	MB17_02D	MB97_4	MB17_04D	MB17_05	MB17_06 D	MB3	MB01_01	MB22/25D
Analyte Name	Method Name	Date	27/8/2024	2/9/2024	4/9/2024	1/10/2024	5/9/2024	5/9/2024	4/9/2024	11/9/2024	28/8/2024
		Units	Result	Result	Result	Result	Result	Result	Result	Result	Result
Standing Water Level, SWL	Field test	mbgl	0.1	1.46	7.97	6.03	5.68	0.73	0.96	0	0
	Field test	mAHD	256.69	246.45	237.32	235.68	234.86	243.74	228.43	236.75	201.986
pH	Field test	pH	6.79	6.36	6.14	6.26	6.72	6.87	7.16	6.57	6.91
Total Dissolved Solids, TDS	NATA	mg/L	885	94	2930	5530	1220	3000	527	1930	1930
Chloride, Cl	NATA	mg/L	388	14	1550	2560	444	1230	264	831	873
NO_3 as N	NATA	mg/L	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	0.09	<0.01	<0.01
Sulfate, SO4	NATA	mg/L	60	6	18	162	249	99	33	69	72
Arsenic, As	NATA	mg/L	<0.001	0.002	0.001	0.004	0.001	0.006	<0.001	<0.001	<0.001
Copper, Cu	NATA	mg/L	0.001	<0.001	0.007	0.002	0.005	<0.001	0.002	<0.001	0.002
Manganese, Mn	NATA	mg/L	0.367	0.041	1.14	2.8	0.374	1.73	0.018	1.03	0.343
Nickel, Ni	NATA	mg/L	0.004	0.003	0.094	0.079	0.007	0.01	0.002	0.015	0.008
Uranium, U	NATA	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Cobalt, Co	NATA	mg/L	0.004	0.001	0.072	0.063	0.039	0.016	<0.001	0.009	0.004
Iron, Fe	NATA	mg/L	5.42	0.65	0.53	0.15	12.5	0.07	0.07	<0.05	0.15
Lithium, Li	NATA	mg/L	0.022	0.02	0.097	0.114	0.012	0.13	0.009	0.085	0.013
Thorium, Th	NATA	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Mg	NATA	mg/L	44.6	2	276	228	35.8	158	19.6	131	80.8
Sodium, Na	NATA	mg/L	218	12.8	380	1170	351	510	132	222	426
Radium, Ra 226	NATA	Bq/L	<0.01	<0.01	0.43	0.25	<0.01	0.15	0.03	<0.01	0.02
Radium, Ra 228	NATA	Bq/L	<0.08	<0.08	0.64	0.31	<0.08	0.32	<0.08	<0.08	<0.08

From the information provided there is limited evidence to confirm with certainty that MB20/04 is a suitable replacement for MB01/01 or that it was screened appropriately. Monitoring data provided indicates that water quality between the two bores is similar, and the screening depths indicatively target varying lithologies. The delegated officer considers at this stage that MB20/04 will suit the purposes of providing ongoing groundwater quality information to replace MB01/01,

set to be destroyed with the expansion of the of the Floyds Waste Rock Landform (WRL). The delegated officer considers however, that a site wide assessment of the groundwater monitoring bores network, and their ongoing suitability is required in the future to ensure that premises wide monitoring bores remain fit for purpose, particularly as expansion activities impact existing monitoring locations.

2.2.4 Seepage collection sumps

The original assessment of TSF4 (W6618/2021/1) required all (four) seepage collections sumps to have automatic shut-off valves to avoid overtopping. In the licence amendment granted 1 August 2024, the department assessed the deviation to design for Sump B, where the Licence Holder advised that there was a change to the valve system and that automatic input valves were not considered a necessary control function. Instead of this control, the Licence Holder advised that sump B was constructed with a larger capacity and included other controls such as level sensors, automatic pumping, and back up pumps (in event of loss of power). With consideration of these additional controls, the delegated officer determined that this deviation was acceptable. Sump A was constructed as conditioned, with automatic shut-off valves.

In the submission of the Critical Containment Infrastructure Report (CCIR) for TSF4 Cell 2 1,265 m RL starter embankment, the Licence Holder advised that sumps C and D have also been constructed with manual valves. As noted in the compliance letter sent by the department (dated 20 September 2024), further information would be required regarding the proposed use of the manual valves at sumps C and D to accurately assess the risk, and that this would be undertaken as part of a future licence amendment (this assessment).

Sump C:

A report prepared by GHD Pty Ltd (2025) was submitted on behalf of the Licence Holder to support the design changes for Sump C and D. The Licence Holder has committed to, when commissioned, the same operational methodology used for Sump B will be adopted for Sump C. As noted is the CCIR and the *Design Philosophy for TSF4 Sumps C and D - Rev.1* Sump C is located at the northwestern corner of TSF4 and drains the western flank of Cell 2 and is intended for use to capture runoff and seepage from rain events. The Sump C infrastructure will include the following:

- Two electric pumps on a duty/standby configuration;
- Additional standby diesel pump;
- Level sensors / indicators fitted with ‘low’, and high-high’ operating levels alarms; and
- Flow meters.

The duty pump will operate under normal conditions (between the ‘low and ‘high’ water levels). The standby pump will provide additional capacity when the level sensors indicated that the ‘high’ water level is reached. If at any time the ‘high-high’ water level is reached, an alarm will alert the control room and operators sent to investigate.

Manual valves will be installed on the underdrainage outlet pipes where they discharge into sump C which the operators can close in the event that the sump reaches ‘high-high’ levels and the pumping system is not operational. In the event of a power/instrumentation failure, the standby diesel pump will be utilised.

Flow metres will also alert the control room in the event of a pipe burst and the system will be shut down to prevent overtopping.

The Licence Holder has confirmed that Sump C is not yet operational, as there has been no tailings deposition in Cell 2.

Sump D:

Sump D is located on the northern side of TSF4 and is intended to capture seepage from the

northern flank of TSF4. It consists of a precast manhole with a diameter of 1,800 m which has been designed to receive seepage from the underdrainage system.

Sump D has been designed and installed with the following infrastructure:

- Two submersible pumps (duty/standby) for normal operations.
- Sump D will overflow directly into the mine water circuit drain during increased flow events.

There is approximately 6 metres between the level of the exit point at the TSF and the Sump D overflow level. Sump D pumping gear was also sized for nominal seepage flow and will not be used for increased flow during rain events.

The Licence Holder has advised that Sump D is currently a temporary structure while the Tailings Replacement Plant (TRP) is operational. Sump D will be upgraded and relocated and the same operational management as Sumps C and B will be applied when TSF4 is raised to RL 1280. The Licence Holder will be required to notify and provide detail of the permanent infrastructure for Sump D so that an assessment can be conducted on it's suitability.

During the submission of the CCIR, the Licence Holder had advised that the electric pumps in sumps C and D will be installed prior to deposition into TSF4 Cell 2 commencing, after which the existing diesel pumps will remain as back up, much like the set up for Sumps A and B. The department has previously advised that the Licence Holder is required to provide written notice and appropriate supporting evidence once the electric pumps have been installed, prior to deposition into TSF4 Cell 2.

The Licence Holder has confirmed that no tailings have been deposited into TSF4 Cell 2 to date and that deposition is likely to commence in Q3 2025. Sump pumps for sumps C and D are to be installed and will be operational prior to deposition commencing into TSF4 Cell 2.

2.2.5 Mine water circuit – onsite storage water dams

The mine water circuit (MWC) is a series of onsite storage water dams that hold process water from a number of sources such as stormwater runoff, tailings decant water return and seepage return. Clear Water Dam is the primary dam for these input flows and also supplies the water for processing activities. Clear Water Dam overflows into Austins Dam. The capacities of the dams are detailed in Table 3. Whilst the Licence Holder has historically had issues with capacity of the mine water circuit, in the past two reporting periods (1 July 2022 – 30 June 2024) there have been no incidents of overtopping at any of the storage water dams.

Table 3: Mine water circuit capacity

Location	**Water level range below overflow level** 1 July 2023 – 30 June 2024	**Mine water circuit capacity range** 1 July 2023 – 30 June 2024	**Mine water circuit capacity as of 8 July 2024 (with a freeboard to allow for a 1% annual exceedance probability 72-hour event)**	**Mine water circuit capacity as of 13 March 2025**	**Mine water circuit capacity as of 13 March 2025 (with a freeboard to allow for a 1% annual exceedance probability 72-hour event)**
Clear Water Dam	0.0 m to 1.4 m	336,024 m^3 to 601,064 m^3	54,563 m^3	601,064 m^3	203,446 m^3
Austins Dam	0.4 m to 3.3 m	150,823 m^3 to 657,287 m^3	114,206 m^3	759,403 m^3	680,215 m^3
Southampton Dam	0.5 m to 2.4 m	63,373 m^3 to 189,668 m^3	58,661 m^3	232,612 m^3	210,729 m^3

Cowan Brook Dam	2.2 m to 7.7 m	665,725 m^3 to 1,945,879 m^3	1,296,630 m^3	2,756,961 m^3	2,298,712 m^3

Clear Water Dam Emissions Management Plan

During the licence amendment granted on 14 December 2022, the department conditioned a specified action that required an emissions management plan with the objective of limiting arsenic and lithium contaminated discharges from Clear Water Dam (seepage and overflow). On 29 September 2023, the Licence Holder submitted the Clear Water Dam Emissions Management Plan and Clear Water Dam Emissions Management Water Treatment Effluent Discharge Risk Assessment.

On 19 January 2024 the department assessed the compliance of this submission and determined that it demonstrated compliance against the licence conditions. Part of this submission included the commitment for the following actions to better manage discharges from Clear Water Dam:

1. Audit all the inflows to and outflows from CWD to ensure that these are accounted for in the water balance, that they are correctly metered, and the flows are recorded;
2. Install a recording device on the CWD spillway to ensure that overflows from CWD to Austins Dam are measured; and
3. Refurbish the v-notch weirs, develop rating curves, and install flow recordings devices on all perimeter seepage underdrains from CWD and Austin Dam.

On 31 May 2024 the Licence Holder had advised that the action 1 has been completed, whilst actions 2 and 3 are be completed end of June 2025 and end of 2026 respectively. With regards to the CWD spillway volume, the Licence Holder advised that these will be determined as a function of the water levels over the spillway (from which flow rate can be calculated).

As noted in the Decision Report for W6901/2024/1, the department intends to undertake a detailed risk assessment of the emissions management plan separate to this approval. In the interim, the delegated officer has conditioned the installation of the works proposed by the Licence Holder in the *Clear Water Dam Emissions Management Plan* so they will be required to notify the department on completion of these works.

Request to remove the requirement to maintain freeboard at CWD

As part of this licence amendment, the Licence Holder is requesting to remove the requirement to maintain the freeboard at Clear Water Dam (CWD) to allow for the 1% annual exceedance probability 72-hour event. It was advised that there is an engineered overflow structure already in place as CWD is designed to overflow into Austins Dam. Alongside the removal of this freeboard, the Licence Holder has proposed to install gauge measure overflow between CWD and Austins Dam with an estimated completion date of 30 June 2025 (as advised in the emissions management plan).

The Licence Holder advised in their 2023-2024 Annual Audit Compliance Report (AACR) that they were non-compliant with the freeboard requirements for Clear Water Dam and Southampton Dam. Despite this, the Licence Holder stated that there was no actual environmental impact from the non-compliance, noting that there were no overflow events that occurred at Clear Water Dam and Southampton Dam.

The Licence Holder has advised that maintaining freeboard requirements in the dams at all times is not practical and does not allow for the complexity and operational flexibility required to distribute water throughout the MWC. In order to manage water quality and availability, there were times when the water levels at the individual dams exceeded the prescribed freeboard. During these times, the Licence Holder has advised that they will ensure sufficient capacity elsewhere in the MWC to prevent overtopping events.

The Licence Holder stated that to avoid overflows from Southampton Dam, water is transferred to other areas of the MWC to reduce water levels below the freeboard, and that these corrective actions result in water levels at Clear Water Dam to be higher than the calculated freeboard level and were maintained above this level for the duration of the 2023-2024 reporting period.

The Licence Holder also advised that the levels at CWD were maintained at these levels to improve the quality and reliability of feed water into the processing plants and the water treatment plant. Whilst no overflow occurred during the reporting period, CWD overflows via spillway to Austins Dam. The delegated officer's determination on this request is summarised in section 5.

Request to change frequency for visual inspections of freeboard at Southampton and Austins Dam

The Licence Holder has requested to change the frequency of visual inspections of the freeboard at Southampton and Austins Dam from daily to weekly. They advised that there were no overflow events throughout the mine water circuit. They stated that water levels in the dams are not so dynamic as to warrant this frequency expect during low-frequency high-rainfall events. The delegated officer's determination of this requested in summarised in section 5.

2.2.6 Amendments to operational requirements for tailings retreatment – mobile machinery associated with excavation of tailings from TSF1

The Licence Holder is requesting to amend existing conditions regarding mining and excavation of TSF1 for re-processing at the Tailings Retreatment Plant (TRP). The requested amendments are to the requirements listed under condition 12, Table 7 that specify:

> *(d) the total excavation area is to cover a maximum of 9 hectares; and*
>
> *(e) TSF1 to be stripped and progressively mined in 1 ha grid blocks, with only two 1 ha blocks active at any time.*

The Licence Holder has advised that they are unable to comply with these current conditions for the following reasons:

1. that the majority of the TSF1 tailings surface area (~110 ha) will be excavated over time to a depth of up to 7 m for reprocessing, with the 'northern section' of ~25 ha being partially backfilled with tailings from TSF2 in accordance with the licence condition; and
2. ground stability challenges and plant feed requirements necessitate mining across multiple areas greater in size than 1 ha each.

The Licence Holder is proposing that the operational requirements be revised to:

> (d) *that active mining area is to cover a maximum of 10 ha; and*
>
> (e) *TSF1 to be stripped and progressively mined in ~3 ha grid blocks, with only ~3 blocks active at any time.*

The Licence Holder has advised that during the 2023-2024 reporting period, that the excavation was unable to comply with the current licence requirements. It is noted that this matter has been reviewed by the department's Assurance team and is under investigation.

Background on TSF1 excavation and Tailings Retreatment Plant

The TRP was originally approved under the works approval W6283/2019/1 granted 2 April 2020. The licence was amended on 19 December 2022 to incorporate the TRP for ongoing operation. At the time, the department conditioned the operational requirement of:

- "*minimise the excavation area to a minimum of 9 hectares (3 active mining areas of 3 hectares each"*, which was proposed by the Licence Holder during draft consultation.

In the licence amendment granted on 12 July 2023 to increase the throughput of the TRP, the

conditions were amended to the current suite.

The delegated officer has reviewed the history of operation and approvals for this activity and notes that potentially conflicting information has been considered through the various iterations of this condition. It is noted however in the *Dust Management Plan,* that mining activities at TSF 1 will be limited to *minimise total mining area to less than 100,000 m^2 – likely to be a minimum of three (3) active mining areas of approximately 3 ha each.* The delegated officer's decision on this requested change is discussed further in section 5.

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 4 below. Table 4 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 4: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Operation (Category 5) – Tailings Storage Facility 4 cell 1b and 2			

Dust	Surface of TSF4	Air/windborne pathway	• tailings deposition managed to maximise wet areas;
			• deposition in rotation through perimeter spigots to minimise period of dry surfaces;
			• tailings left to dry for prolonger periods, dust suppression by aerial application of dust suppressant;
			• implementation of Dust Management Plan:
			  ○ application for dust suppressions stabilisers on appropriate surfaces and spray-on dust suppressants;
			  ○ operation of water carts during dry/windy conditions and during summer months;
			  ○ ceasing non-essential activities during excessively windy, high-risk conditions if dust cannot be adequately controlled;
			<u>Existing licence conditions:</u>
			• condition 16: proactive management of dust generating activities;
			• condition 27 (Table 13): monitoring of ambient air quality;
			• condition 29 (Table 15): ambient air quality trigger and limit values; and
			• condition 35 (Table 19): management actions required in the event of trigger value exceedance.

Decant water	Water return system	Overtopping the TSF	• freeboard of 0.9 m, allowing for storage of an extreme storm event (1 in 100 year, 72 hours, 217 mm).
		Pipeline rupture	• pipeline corridor within earther bunds; and • daily pipeline inspections.
Tailings	Deposition into TSF4	Overtopping the TSF	• freeboard of 0.9 m, allowing for storage of an extreme storm event (1 in 100 year, 72 hours, 217 mm).
		Pipeline rupture	• pipeline corridor within earther bunds; and • daily pipeline inspections.

<table>
<tr><th>Emission</th><th>Sources</th><th>Potential pathways</th><th colspan="2">Proposed controls</th></tr>
<tr><td rowspan="2">Process water</td><td rowspan="2">Storage of decant water in onsite water storage dams</td><td>Infiltration from storage of decant water in onsite water storage dams</td><td colspan="2">• arsenic remediation unit and water treatment plant to reduce lithium and arsenic concentrations in process water.</td></tr>
<tr><td>Overtopping of onsite water storage dams</td><td colspan="2">• water balance monitoring for the mine water circuit (note: this component will be assessed separately due to the Licence Holder’s requested changes to MWC as discussed in section 0 and 0)</td></tr>
<tr><td rowspan="3">Seepage</td><td rowspan="3">Operation of TSF4 cell 1 stage 1b and cell 2 stage 1</td><td rowspan="3">Seepage through the base of the TSF</td><td>Cell 1b</td><td>Cell 2</td></tr>
<tr><td>• constructed with a clay liner with an average permeability of <1 x 10-9 m/s, consisting of three layers of nominal 200 mm compacted thickness and minimum distance between highest maximum groundwater level and base of TSF to be 1m; and
• BGM lining (in northern and north-eastern portions) with a permeability of <6.0 x 10^{-14} m/s, tied into placed clay liner</td><td>• BGM lining with a permeability of <6.0 x 10^{-14} m/s cover the cell floor and embankments up to 265 m AHD; and
• Strip drains installed from 265 to 270 m AHD foundation change towards toe drains along divider and perimeter embankments.</td></tr>
<tr><td colspan="2"><u>Constructed elements:</u>
• location of TSF4 base 15 to 25 m above low permeability heavy soils;
• sandy soils removed from TSF4 footprint of embankment;
• embankment constructed with low permeability core which is keyed through the alluvial material and into underlying clay (for areas that are clay lined in Cell 1);
• upstream underdrainage toe drain installed under and above clay/BGM liner;
• downstream seepage toe drain capturing and diverting seepage water to mine water circuit;
• rock-lined downstream toe drains will capture runoff from embankment and surrounding catchment;
• finger drains and collector pipes above the soft clay layer on the southern wall - each drain has duplicate pipes and gravel surround to give alternate flow paths and each section has two spaced outlets in case one gets blocked;
• sand blanket drain constructed downstream of the starter embankment/</td></tr>
</table>

Emission	Sources	Potential pathways	Proposed controls

			<u>Existed conditions / controls:</u>
			• additional groundwater monitoring bores downgradient (including permeability testing) to inform effectiveness of seepage underdrainage system;
			• surface water monitoring of Woljenup Creek during construction and operations (offsite location – SW20/02);
			• seepage monitoring network installed:
			  ○ including multi-level monitoring bores (within saprolitic, weathered bedrock and inoxidized bedrock) in downgradient of TSF4;
			  ○ trigger values developed based on baseline/ background concentration;
			• seepage recovery drains, sumps and pumps return potentially contaminated water to mine water circuit:
			  ○ 4 seepage collection sumps at low points along final embankment toe;
			  ○ installation of sand and gravel seepage collection blankets in higher seepage areas;
			  ○ captured seepage treated by Water Treatment Plant to improve elevated lithium and arsenic concentrations;
			  ○ remotely operated pumps and standby and/or back up pumps for seepage recovery systems to prevent overflow;
			• minimise decant pond size to reduce seepage;
			• implementation of Seepage Management Plan with the following key objectives:
			  ○ maintain groundwater quality attributable to TSF4 seepage below water quality guidelines;
			  ○ maintain the surface water quality in Woljenup Creek attributable to TSF4 seepage below defined baseline quality threshold

	Underdrainage of TSF4	Overtopping of seepage collection ponds	• all seepage ponds to have freeboard for allowance of a 10% AEP 24-hour storm event; • equipped with remotely operated pumps; • sufficient standby back up pumps must be available for rapid deployment should primary sump fails; • sump A has automatic valves closed off if water level is too high or if there is pump failure; • sump B has level sensors and automatically activated standby pump if high water levels are reached; • sump C has level sensors and operating level alarms to alert operators at the control room if high water levels are reached; and

Emission	Sources	Potential pathways	Proposed controls
			• sump D has two submersible pump s (duty/standby).
	Pipeline from seepage ponds back to mine water circuit	Pipeline rupture in seepage return water system	• pipeline corridors within earthen bunds; • daily pipeline inspections; and • in the event of a leak tailings or process water will drain to sedimentation basins or to existing sump 3.
Operation (Category 5) – Mine water circuit storage bodies			
Operation of Mine water circuit water storage bodies due to consideration of requested to remove freeboard limits and freeboard inspection frequencies.	Decant water, process water and collected surface water	Overtopping of water bodies	Proposed controls and monitoring: • freeboard inspection weekly, changed from daily (except Licence Holder is requesting to remove freeboard limit); <u>Existing controls (licence L4247/1991/13):</u> • Visual marker installed along embankment for freeboard monitoring. • Cowan Brook Dam: 0.5 m plus additional freeboard to allow for a 1% annual exceedance probability 72-hour event;
Operation (Category 5) – TSF1 mining and excavation			

Changes to operational requirements for the TSF1 mining and excavation	Dust	Air / windborne pathway	<u>Existing licence conditions:</u>
			• condition 12 (Table 7): operational requirements for TSF1 retreatment:
			  ○ *use of water carts within tailings excavation area to wet down dust generating surfaces;*
			  ○ *use of mulch or dust suppressants to any cleared (previously mined) areas;*
			  ○ *reduced speed limits to 30 km/hour;*
			• condition 16: proactive management of dust generating activities;
			• condition 27 (Table 13): monitoring of ambient air quality;
			• condition 29 (Table 15): ambient air quality trigger and limit values; and
			• condition 35 (Table 19): management actions required in the event of trigger value exceedance.
			<u>Proposed controls:</u>
			• that active mining area is to cover a maximum of 10 ha; and
			• TSF1 to be stripped and progressively mined in ~3 ha grid blocks, with only ~3 blocks active at any time.

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 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 2020)).

Table 5: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Residential Premises	600m south of TSF4 and others >1km from premises boundary. Greenbushes town ~3.2km northeast of TSF4.
Surface water and groundwater users	600 m south of TSF4 and additional further downstream of TSF4 Most recent survey (2024) conducted by Licence Holder advised of downstream users. Whilst the groundwater underlying the site is not recognised as a strategic resource area (not listed as a proclaimed area) there are a number of residential surface and groundwater users surrounding the site. The results of a water survey carried out by the licence holder in 2021 indicates that downstream users access surface water from Norilup Brook, Hester Brook and Woljenup Creek for purposes including drinking water, domestic uses such as showering, laundry, water for gardens, recreational activities
Environmental receptors	**Distance from prescribed activity**
Surface water receptors – Woljenup Creek, Blackwood River and associated tributaries.	Woljenup creek tributaries running through TSF4 footprint. Woljenup creek immediately downstream of TSF4.
Groundwater	Shallow aquifers underlying the premises.
Cowan Brook, Norilup Dam and Norilup Brook (water quality and ecology)	At the western edge of the premises boundary (offsite). Seepage from Cowan Brook Dam flows into Cowan Brook and into Norilup dam.
Hester State Forest	These receptors have been addressed in the EPA report and is regulated under Part IV and therefore is not considered further in this risk assessment.
Greenbushes state forest	
Threatened / priority flora and fauna	
Cultural receptors	**Distance from activity / prescribed premises**
Aboriginal Heritage Site – Blackwood River and Woljenup Creek listed under *Aboriginal Heritage Act 1972.*	Woljenup creek tributaries running through TSF4 footprint. Woljenup creek immediately downstream of TSF4.

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 **6**.

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

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

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

Risk Event						**Risk rating[1]** **C = consequence** **L = likelihood**	**Licence Holder's controls sufficient?**	**Conditions[2] of licence**	**Justification for additional regulatory controls**
Source/Activities	**Potential emission**	**Potential pathways**	**Potential impact**	**Receptors**	**Licence Holder's controls**				
Operation									
Operation of TSF4 cell 1 stage 1b and cell 2 stage 1	Dust	Air/windborne pathway	Adverse impacts to health and amenity	Residences within 1km of the TSF	Refer to section 3.1.1	**C =** Slight **L =** Unlikely **Low Risk**	Y	Condition 1 [Table 1]: operational requirements for TSF4	The delegated officer considers that the proposed controls regarding deposition into TSF4 and general dust suppression at the premises is adequate to manage any risk of dust emissions from these operations, particularly during deposition.
	Seepage	Seepage through the base of the TSF	Contamination and deteriorating the quality of local groundwater and surface water	Surface waters in the Blackwood River catchment with ecological and aboriginal heritage values	Refer to section 3.1.1	**C =** Moderate **L =** Possible **Medium Risk**	Y	Condition 1 [Table 1]: operational requirements for TSF4 Condition 25 and 26: monthly water balance monitoring Condition 30 [Table 17]: groundwater monitoring Condition 32 [Schedule 2]: annual ecological monitoring	The delegated officer has determined that Cell 1b and Cell 2 Stage 1 have been constructed in a manner prescribed in the works approval. The delegated officer considers that the risk assessment undertaken in the licence amendment granted 1 August 2024, is pertinent to the ongoing operation of TSF Cell 1 and Cell 2, to an embankment height of 1,265m RL (this amendment). The delegated officer considers that this assessment sufficiently considered risk from the operation of TSF4 as an entire facility, and that the existing licence conditions are adequate to continue to manage risk from the ongoing deposition into TSF4 to height of 1,265m RL.
				Potential impacts to downstream residential groundwater and surface water users (drinking water and consumption of aquatic species)	Refer to section 3.1.1	**C =** Major **L =** Possible **High Risk**	Y		
				Potential impacts to downstream residential groundwater and surface water users (stock, irrigation, domestic use)	Refer to section 3.1.1	**C =** Moderate **L =** Possible **Medium Risk**	Y		
			Mounding of local groundwater to adversely impact native vegetation	Nearby vegetation	Refer to section 3.1.1	**C =** Moderate **L =** Possible **Medium Risk**	Y		
		Overtopping of seepage collection ponds	Contamination and deteriorating the quality of local groundwater and surface water	Shallow aquifers below the pond that discharge to downstream surface waters Surface waters in the Blackwood River catchment with ecological and aboriginal heritage values Potential impacts to downstream residential groundwater and surface water users	Refer to section 3.1.1	**C =** Minor **L =** Possible **Medium Risk**	N	Condition 1 [Table 1]: operational requirements for TSF4 **Condition 1 [Table 1] – Additional controls for Sump C and D (d) (iv)**	The controls for the constructed Sump C including the two electric pumps on duty/standby configuration, additional standby diesel pump, levels sensors / indicators with 'low' and high-high' operating levels alarms and flow meters are considered necessary and will be conditioned as part of this licence amendment. The controls proposed for the constructed Sump D including the two submersible pumps (duty/standby) for normal operations, and an overflow to the mine water circuit during increased flow events have been conditioned on this licence to manage potential risks of overtopping and seepage of collection ponds. Additional conditions have been included

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**	**Potential impact**	**Receptors**	**Licence Holder's controls**				
									on the licence to ensure that regular inspections of Sump C and Sump D are carried out and alarms are monitored and responded to in a timely manner.
		Pipeline rupture in seepage return water system			Refer to section 3.1.1	**C =** Moderate **L =** Unlikely **Medium Risk**	Y	Condition 1 [Table 1]: operational requirements for TSF4	The controls for the constructed pipelines, to be equipped with process monitoring, alarms and indicators, and installed bunding with secondary containment are considered sufficient in managing and containing spills from pipeline rupture.
	Process water	Infiltration from storage of decant water in onsite water storage dams	Contamination and deteriorating the quality of local groundwater and surface waters	Surface waters in the Blackwood River catchment with ecological and aboriginal heritage values	Refer to section 3.1.1	**C =** Moderate **L =** Unlikely **Medium Risk**	Y	Condition 23 [Table 11]: process monitoring – water quality	The delegated officer considers that the existing licence conditions to maintain the water quality of the mine water circuit is sufficient to manage any risks from the addition of TSF4 process water.
		Overtopping of onsite water storage dams	Adverse impacts to vegetation	Nearby vegetation	Refer to section 3.1.1	**C =** Moderate **L =** Unlikely **Medium Risk**	Y	Condition 8 [Table 5]: inspection of freeboard Condition 24 [Table 12]: water balance monitoring of mine water circuit	The delegated officer considered the additional water to the mine water storage dams from TSF4 overall as part of the previous assessment and determined that existing licence conditions are adequate in managing risks from overtopping due to inputs of TSF4 decant and seepage water. It is noted that the requested changes by the Licence Holder have been risk assessed separately below.
	Tailings	Overtopping the TSF	Contamination and deteriorating the quality of local surface water and vegetation	Onsite vegetation (Greenbushes State Forest) surrounding the TSF Offsite vegetation (Greenbushes State Forest) surrounding the TSF Surface waters immediately south of the TSF in the Blackwood River catchment with ecological and aboriginal heritage values	Refer to section 3.1.1	**C =** Moderate **L =** Unlikely **Medium Risk**	Y	Condition 1 [Table 1]: operational requirements for TSF4 - freeboard	The delegated officer considers the existing freeboard limits for the operation of TSF4 is sufficient in managing the risks of over topping.
		Pipeline rupture			Refer to section 3.1.1	**C =** Minor **L =** Unlikely **Medium Risk**	Y	Condition 1 [Table 1]: operational requirements for pipelines	The controls for the constructed pipelines, to be equipped with process monitoring, alarms and indicators, and installed bunding with secondary containment are considered sufficient in managing and containing spills from pipeline rupture.
	Decant water	Pipeline rupture	Contamination and deteriorating the quality of local surface water and vegetation	Surface waters in the Blackwood River catchment with ecological and aboriginal heritage values Nearby vegetation (Greenbushes State Forest)	Refer to section 3.1.1	**C =** Minor **L =** Unlikely **Medium Risk**	Y	Condition 1 [Table 1]: operational requirements for pipelines	The controls for the constructed pipelines, to be equipped with process monitoring, alarms and indicators, and installed bunding with secondary containment are considered sufficient in managing and containing spills from pipeline rupture.
		Overtopping the TSF			Refer to section 3.1.1	**C =** Moderate **L =** Unlikely **Medium Risk**	Y	Condition 1 [Table 1]: operational requirements for TSF4 - freeboard	The delegated officer considers the existing freeboard limits for the operation of TSF4 is sufficient in managing the risks of over topping.
Operation of Mine water circuit water storage bodies due to consideration of requested to remove freeboard limits and freeboard inspection frequencies.	Decant water, process water and collected surface water	Overtopping of onsite water storage dams	Discharge into environment resulting in contamination and deterioration of the quality of local surface water and vegetation	Downstream surface water and groundwater users (human receptors) Water quality and ecology of creek lines and surface water bodies (Cowan Brook, Norilup Dam and Norilup Brok and other tributaries of Blackwood River) Nearby native vegetation	Refer to section 3.1.1	**C =** Moderate **L =** Unlikely **Medium Risk**	Y	Condition 8 [Table 5]: inspection of freeboard Condition 24 [Table 12]: water balance monitoring of mine water circuit	Whilst it is noted that the MWC has not overtopped in recent years, the delegated officer has considered that the proposal removal of freeboard for CWD increases the likelihood of an overtopping event. As noted in section 2.2.5, CWD has reached capacity in the last reporting period (<0 m from overtopping limit) and therefore the delegated officer considers that the complete removal of the freeboard would not be acceptable at this time. As noted in section 2.2.5, actions for the Clear Water Dam Emissions Management Plan remain outstanding, and the detailed risk review of

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**	**Potential impact**	**Receptors**	**Licence Holder's controls**				
									the emissions management plan is ongoing separate to this assessment. Until such a time as these actions remain, the delegated officer considers that water levels within CWD should be proactively managed, at least in the lead up to the typical wetter winter months of expected higher rainfall to mitigate risks associated with overtopping.
Changes to conditions for the TSF1 mining and excavation.	Dust	Air / windborne pathway	Adverse impacts to health and amenity	Greenbushes town	Refer to section 3.1.1	**C =** Moderate **L =** Unlikely **Medium Risk**	Y	Condition 12 [Table 7]: TSF1 excavation operational requirements Condition 16: proactive management of dust generating activities Condition 27 [Table 13]: dust monitoring Condition 29 [Table 15]: ambient air quality trigger and limit values Condition 35 [Table 19]: dust management actions	The delegated officer has reviewed the history of the TSF1 mining and past proposed controls and has determined that the Licence Holder's proposed changes appear reasonable and do not significantly change the risk, and existing licence conditions are sufficient in managing any dust emissions from these excavation activities. To improve interpretation of the existing and updated conditions, the delegated officer has included additional clarity and definition for the terms used, and requirements of the condition in managing dust emissions.
			Smothering of vegetation and reduction of vegetation health	Onsite vegetation (Greenbushes State Forest) surrounding the TSF Offsite vegetation (Greenbushes State Forest) surrounding the TSF	Refer to section 3.1.1	**C =** Minor **L =** Unlikely **Medium Risk**	Y		

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

Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

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

Table 7: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website 7 January 2024.	None received	N/A
Local Government Authority advised of proposal 7 January 2024.	None received	N/A
Licence Holder was provided with draft amendment on 14 April 2025	Licence Holder provided a response on 20 May 2025, see Appendix 1: Summary of Licence Holder's comments.	Appendix 1: Summary of Licence Holder's comments.

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.

TSF1 re-mining

The delegated officer has determined that the conditioning of the existing operational requirements was likely due to some inconsistencies in the proposed controls by the Licence Holder. The delegated officer has considered the request of the Licence Holder and has determined that this request is consistent with the originally proposed controls for this activity as per the Dust Management Plan, and with consideration to the other existing licence conditions, this request is accepted.

Freeboard inspection frequency

The delegated officer has accepted the Licence Holder's request to change the frequency of freeboard monitoring at Southampton and Austins Dam from daily to weekly, noting that in the past two annual reporting periods there were no overtopping of mine water circuit dams and capacities detailed in section 2.2.5 indicate that there is sufficient capacities in these two dams.

Request to remove freeboard from Clear Water Dam

Whilst the delegated officer has accepted, in part, the Licence Holder's request to remove the current freeboard of 1% annual exceedance probability 72-hour event, the delegated officer has considered that proactive water management is still required in the lead up to higher rainfall months in May to September as suggested in the *Clear Water Dam Emissions Management Plan*) to effectively manage water across the MWC. The requirement to manage water within CWD has been amended to align with this approach.

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 the legal description to ensure the general purposes leases are correct.
Licence History	Updated to include this amendment.
Condition 1 (Table 1)	Amending format of infrastructure requirements for TSF2 due to clerical errors – administrative in nature.
	Updates to infrastructure requirements for TSF4 to: • Include the operation of Cell 2; • Amend the specified embankment height of operation to 1,265 m RL; • Amend the authorised pond height and tailings beach height to match the raise embankment raise; and • Include controls associated with seepage sumps C and D. Update to freeboard requirements for Clear Water Dam.
Condition 8, Table 5	Updates to the inspection requirements for infrastructure: • Amend frequency of inspections for Austins Dam and Southampton Dam from daily to weekly; • Removing redundant requirements for the Cowan Brook Dam, since it is after the prescribed data and the Licence Holder is now required to conduct inspections in accordance with this date.
Condition 9, Table 6	Inclusion to notify the department following completion of commitments made to the mine water circuit following the submission of the *Clear Water Dam Emissions Management Plan*.
Condition 12, Table 7	Changes to item 1, for updates to the operational requirements for the excavation of tailings for TSF1.
	Removal of note 1, as this restricts the maximum throughput of the WWTP. The Environmental Commissioning Report for the WWTP expansion, as required by works approval W6832/2023/1 has since been submitted and approved by the department.
Condition 26	The requirement to undertake evaporation rate measurements has been amended from 31 January 2025 to 20 June 2026.
Condition 27, Table13	Remove high-volume sampling requirements from the table, noting that the required campaign based monitoring is completed.
Condition 29, Table 15	Remove "*and meteorological"* from Table name as this is not relevant to contents of table following last amendment.
Condition 30, Table 17	Remove MB01/01 as the monitoring bore will be destroyed as part of the expansion of the Floyds Waste Rock Landform (WRL). This monitoring bore will be replaced with MB20/04.
Condition 35, Table 19	Administrative amendments to errors made during inclusion of this table in past amendment. These changes do not change intent of the condition / table.

Condition 44	Amended the requirements of this condition to include any details on the investigation for potential causes of the trigger value exceedance under condition 35, and the addition of specific monitoring data provided in the quarterly report.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. PSM 2021, TSF4 Monitoring Bores Hydraulic Conductivity, West Perth
5. GHD Pty Ltd, (GHD) 2025, Design Philosophy for TSF4 Sumps C and D

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

Condition	Summary of Licence Holder's comment	Department's response
Condition 1 TSF: Material Emergency tailings deposition of up to 900,000m^3 for a period not exceeding 24 months	Talison proposes to deposit waste rock in TSF1 to preload the tailings surface and provide support for the northern wall of TSF4 above 1,275mRL (TSF4 raise above 1,275mRL to be subject of a separate application). Environmental risk associated with the storing waste rock in a TSF is lower than for tailings due to the particle size distribution biased towards larger particles (including gravels and cobbles). Environmental risk associated with runoff and seepage is lower that storing the waste rock in the approved Floyd's Waste Rock Landform due to the presence of embankments and seepage management. There are no material changes to the potential impacts of other discharges and emissions (e.g. noise, dust) relative to storing the waste rock in the approved Floyd's Waste Rock Landform.	The department considers that the request is beyond the scope of the current assessment and therefore is not able to be considered or actioned as part of this amendment. The department recommends that the Licence Holder separately submit a request to amend this condition.
Condition 1 Infrastructure requirements (a) Embankment height at RL 1,282 m	Requested minor change to specification of embankment height for TSF1, noting that not all of the embankment has been constructed to the maximum authorised embankment elevation of 1,282mRL (282m Australian Height Datum). Proposed change to specify embankment height up to RL 1,282m.	The department accepts this change and considers that the wording to specify the embankment heigh up to RL 1,282 m does not change the risk or intent of the condition.
Condition 1 Infrastructure requirements TSF4 Cell 1 and Cell 2 (f) All tailings, decant and seepage pipelines to be:	DWER has previously assessed and approved the following tailings and decant pipeline features for the RL 1265 m raise: • Tailings delivery and return water pipelines are equipped with leak monitoring functionality (using comparisons of instantaneous flow rates and accumulated volume) which will automatically shut down the related pump should the High Alarm setpoint be exceeded. • As a secondary control, Talison has constructed an Emergency Dump Pond (EDP) downstream of the Centralised Tailings Pumping Station (CTPS) to receive tailings by gravity when the CTPS is not in operation or in case of power failure, to avoid tailings settling in the	Previously submitted and assessed compliance documentation (*TSF4 Cell 2, Construction Report 265 mAHD, Critical Containment Infrastructure: W6618)* (TRIM DWERDT992893) along with the amendment to Licence in August 2024 considered the operation of the Emergency Dump Pond. The Emergency Dump Pond was constructed to satisfy pipeline requirements in W6618 and the Licence that required "*all pipelines containing environmentally hazardous substances are provided with secondary containment adequate to contain any spill for a period equal to the time between routine inspections*". Based on the risk assessment conducted during that assessment, the delegated officer considered the use of

Condition	Summary of Licence Holder's comment	Department's response
	pipelines and prevent any release to the environment. The Licence Holder requests that the existing specification within the Licence regarding pipeline controls is amended to in to leak monitoring rather than secondary containment.	the emergency dump pond to be suitable for this purpose, and suitable to serve as secondary containment. The department accepts this requested change to amend secondary containment with leak detection, noting the existing controls in place.
Condition 26 TSF4 Evaporation Monitoring From 1 September 2025, the licence holder must ensure that the measurement of evaporation rate required by condition 25(c) is undertaken in accordance with methods described in McJannet *et al.* (2022) and include, as a minimum, measurement of open water evaporation, wind speed, wind direction, air temperature and humidity using an automated floating evaporation pan and associated weather station.	The McJannet *et al.* (2021) methodology was developed primarily for research purposes and is considered impracticable for medium-term mine site implementation. Talison is working with David McJannet to develop an alternative evaporation measurement methodology, which it is intended will be presented to DWER for review. It is feasible that Talison and McJannet will have developed, and DWER will have approved a methodology by 1 September 2025. Procurement, installation, calibration and additional study and modelling work based on the data collected will almost certainly extend beyond this date. Talison therefore proposes that the condition is revised to requiring monitoring in accordance with a methodology developed by McJannet / CSIRO by 30 June 2026.	The department accepts removing the reference to McJannet et al (2021) until a revised methodology has been developed. The Department maintains the view that site specific calculation of evaporation rates is important for the calculation and understanding of the premises water balance, however recognises that where expert research and methodologies are refined, that these are utilised when available.
Condition 27 The Licence Holder must undertake the monitoring in Table 13 according to the specifications in that table. Monitoring of ambient air quality	Talison requests that these monitoring requirements be removed, noting that monitoring results have been recently provided to DWER.	Noted. The department has received and is currently undertaking detailed review of the ambient air quality monitoring data submitted (PM_{10} high-volume sampling, particle size, airborne asbestos fibre count and respirable crystalline silica), in additional to ongoing review of PM_{10} data. With the submission of this data, the department considers that these requirements within the table can be removed at this time. The department notes however that, requirements for ambient air quality monitoring for these parameters within the licence (either on an ongoing or campaign basis) will be considered as part of the current review, and where appropriate, re-established within licence.

Condition	Summary of Licence Holder's comment	Department's response
Figure 3 Groundwater monitoring locations (Licence Holder to please provide an updated groundwater monitoring figure that includes MB20/04).	An updated groundwater monitoring figure that includes MB20/04 is included as Attachment 1 (of this response).	Updated.
Figure 16 Figure 16: Infrastructure location (showing location of TSF4 Cell 1a, Emergency Dump Pond, WWTP, and treated effluent pipeline) (Licence Holder please provide updated figure to indicate the TSF4 operation cells).	An updated figure indicating the TSF4 operating cells is included as Attachment 2 (of this response).	Updated.
Amendment Report" Item 2.2.5 Clear Water Dam Emissions Management Plan …the Licence Holder had advised that the action 1 has been completed, whilst actions 2 and 3 are yet to be completed.	CWD spillway flow volumes will be determined as a function of the water level over the spillway (from which flow rate can be calculated). The measurement system has been installed and will shortly be operational.	This update on the CWD has been included as part of this Amendment Report.

Appendix 2: Application validation summary

<table>
<tr><th colspan="4">SECTION 1: APPLICATION SUMMARY</th></tr>
<tr><td colspan="4">Application type</td></tr>
<tr><td rowspan="2">Amendment to an existing licence</td><td rowspan="2">☒</td><td>Current licence number</td><td>L4247/1991/13</td></tr>
<tr><td>Relevant works approval number</td><td>W6618/2021/1 (TSF4)
W6283/2019/1 (TSF1 mining)</td></tr>
<tr><td colspan="2">Date application received</td><td colspan="2">18 November 2024</td></tr>
<tr><td colspan="4">Compliance reporting</td></tr>
<tr><td colspan="2">Has the required compliance report(s) been received?</td><td>Yes ☒ No ☐ N/A ☐</td><td><u>For noting only (as Cell 1 Stage 1a is already on the licence):</u>
• CCIR assessment: A2249138 (19/01/24) – compliance assessed further in amendment granted 1 August 2024.
• TLO report assessment: Compliant – A2338467 (17/12/24)
<u>Cell 1 Stage 1b:</u>
• CCIR assessment: Compliant – A2295534 (18/07/24)
• TLO report: not yet submitted
<u>Cell 2 Stage 1</u>
• CCIR assessment: Compliant - A2311787
• TLO report: not yet submitted</td></tr>
<tr><td colspan="4">Applicant and premises details</td></tr>
<tr><td colspan="2">Applicant name/s (full legal name/s)</td><td colspan="2">Talison Lithium Australia Pty Ltd</td></tr>
<tr><td colspan="2" rowspan="2">Does the following information in the application form match those listed in the current ASIC company extract?</td><td>Applicant name/s (full legal names):
Yes ☒ No ☐</td><td>Trading name (if applicable):
Yes ☐ No ☐ N/A ☒</td></tr>
<tr><td>Australian Company Number (ACN):
Yes ☒ No ☐</td><td>Registered business address:
Yes ☒ No ☐</td></tr>
<tr><td colspan="2">Has the applicant demonstrated occupancy (proof of occupier status)?</td><td>Yes ☒ No ☐</td><td>Mining lease / tenement ☒ - no changes to existing premises boundary and expiry dates are in line with instrument expiry</td></tr>
<tr><td colspan="2">Premises name</td><td colspan="2">Talison Lithium Mine</td></tr>
<tr><td colspan="2">Premises location</td><td colspan="2">M01/3 - Expires 27/12/2026
M01/6 - Expires 27/12/2026
M01/7 - Expires 27/12/2026
M01/8 - Expires 27/12/2026
M01/9 - Expires 27/12/2026
M01/16 - Expires 05/06/2028
G01/1 - Expires 05/06/2028
G01/04 - Expires 20/04/2043
L70/232 – Expires 20/04/2043
L70/244 – Expires 15/08/2044</td></tr>
<tr><td colspan="2">Local Government Authority</td><td colspan="2">Shire of Bridgetown-Greenbushes</td></tr>
<tr><td colspan="4">Application documents</td></tr>
<tr><td colspan="2">HPCM file reference number</td><td colspan="2">Instrument (folder): DWERVT16515
Application (subfolder): DWERVT16515~2</td></tr>
<tr><td colspan="2">Key application documents (supporting information provided in addition to the application form)</td><td colspan="2">Licence supporting document:
• TSF checklist;
• Attachment 3B: Proposed activities:
• Attachment 8 as listed below:</td></tr>
</table>

	ATTACHMENT 8: ADDITIONAL INFORMATION The following documents have been included as additional information / for reference for this Application as Attachments to this document: **8A.** TSF4 Detailed design report (GHD, 2021a) **8B.** TSF4 Addendum to detailed design report (GHD, 2024a) **8C.** TSF4 Supporting information for Staged commissioning (2023a) **8D.** TSF4 Cell 1 Construction Compliance Report (GHD, 2024c) **8E.** TSF4 Cell 2 Construction Compliance Report (GHD, 2024d) **8F.** TSF4 BGM liner cell 1 design report (GHD, 2023c) **8G.** CWD Emissions Management Plan (Talison, 2023a) **8H.** TSF4 Seepage Assessment - Site Specific Water quality guidelines (GHD, 2023f) **8I.** TSF4 Seepage Assessment – Clay attenuation testing of saprolitic profile beneath TSF4 (GHD, 2023g) **8J.** TSF4 Seepage Assessment - Short-term LEAF testing (GHD, 2023h) **8K.** TSF4 Seepage Assessment - Woljenup Creek Hydrological Assessment (GHD, 2023i) **8L.** TSF4 Seepage Assessment - Conceptual Hydrological Model (GHD, 2023j)
Scope of application/assessment	
Summary of proposed activities and/or changes to existing operations	As detailed in section 2.2.

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

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed or existing production or design capacity[1]	Proposed changes to the existing production or design capacity[1] (amendments only)
Category 5: Processing or beneficiation of metallic or non-metallic ore	Existing: 7,100,000 tonnes beneficiation per annual period; 5,200,000 tonnes of tailings deposited per annual period	No change
Category 54: sewage facility	Existing: 187.5 m^3 per day	No change

Are there any outstanding Notices of Amendment that need to be amended in the works approval / licence (if applicable)?	Notice of amendment of licence expiry dates (2016) Yes ☐ No ☒ Notice of amendment of licence reporting requirements (2022) Yes ☐ No ☒ Amendment Notices Yes ☐ No ☒	
Are there any unresolved DWER referred amendments from Regulatory Assurance to Industry Regulation relating to this premises?	Yes ☐ No ☒	
Category specific checklists		
Are there any of DWER's prescribed premises category checklists (application form annexes) relevant to the scope of the application?	Yes ☒ No ☐	TSF checklist
Does the application include a completed version of the relevant prescribed premises category checklist(s)?	Yes ☒ No ☐ N/A ☐	
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: (noting - not for this specific assessment but overall project - assessment no. 2172)
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☒ No ☐	Ministerial statement No: MS 1111 EPA Report No: 1635
Is the proposal a Major Project or subject to a State Agreement Act?	Yes ☒ No ☐	Lead Agency: JTSI
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☒ No ☐	EPBC 2018/8206 EPBC 2013/6904.
Has the applicant obtained approval for their Mining Proposal?	Yes ☒ No ☐ N/A ☐	Reg ID 92728
Has the applicant obtained all relevant planning	Yes ☐ No ☐	*Mining Act 1978 applies.*

approvals?	N/A ☒	
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	For noting – not specifically in relation to this proposal, but clearing for the area of TSF4 has been approved under MS 1111
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ No ☒	
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	
Is the Premises subject to any other Acts or subsidiary regulations?	Yes ☒ No ☐	• Part IV of the EP Act (MS 1111) • *Environmental Protection (Noise) Regulations 1997*, Regulation 17 exemption • Part V of the EP Act, Native Vegetation Clearing permit • DCCEEW - EPBC 2018/8206 • *Mining Act 1978* • *Contaminated Sites Act 2003*
Is the Premises within an Environmental Protection Policy (EPP) Area or State Environmental Policy (SEP) Area ?	Yes ☐ No ☒	
Is the Premises subject to any EPP or SEP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Classification: contaminated – restricted use (C–RU) ID 34013 Date of classification: June 2007, and classified again October 2020