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	L8308/2008/3
Licence Holder	CITIC Pacific Mining Management Pty Ltd
ACN	119 578 371
File Number	APP-0028662
Premises	Sino Iron Project Mine Site Mining tenements M08/123, M08/124, M08/125, M08/264, M08/265, M08/266, G08/53, G08/54 and L08/126 MARDIE WA 6714 As defined by the Premises map attached to the Revised Licence
Date of Report	10 July 2025 **(FINAL)**
Decision	Revised licence granted

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1. Decision summary

Licence L8308/2008/3 is held by CITIC Pacific Mining Management Pty Ltd (Licence Holder) for the Sino Iron Project Mine Site (the Premises), located approximately 80 km south-west of Karratha.

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 L8308/2008/3 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 Amendment summary

On 22 April 2025, the Licence Holder submitted an application to the department to amend Licence L8308/2008/3 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments associated with Tailings Storage Facility (TSF) 2 are being sought:

- Change tailings deposition regime;
- Supernatant pond relocation; and
- Construction of Y-shaped causeway connected to the southern embankment.

There are no changes to the existing assessed production capacities for Category 5, 6, 12, 52, 54, 57 and 64 activities as a result of this amendment.

2.2.1 TSF2

There are no changes to the overall TSF2 design, including the TSF2 footprint, cells or embankment divisions.

The requested changes are required to facilitate future embankment wall raises, improve the decant recovery rate and reduce seepage from the external embankment.

Tailings deposition system

After primary tailings thickening in the Concentrator the tailings are pumped to TSF2 via the tailings slurry pipeline for secondary thickening. Thickened tailings from the TSF Thickeners are transported via four pipelines, each connected to a dedicated or a standby thickener underflow pump train. These four TSF thickener underflow tailings pipelines (two from each TSF Thickener) enter the tie-in station on the southeast corner of TSF2.

Currently deposition occurs from multiple discharge locations (spigots) along the southern and eastern perimeters of TSF2. The tailings are deposited into TSF2 at approximately 60% solids by mass.

The Licence Holder is proposing to change the tailings deposition methodology from the southern and eastern embankment of TSF2 to instead allow the discharge of tailings from all four sides of the perimeter embankment.

Additional tailings distribution pipelines and spigots will be installed along the northern and western embankment as shown in Figure 1. There are 16 discharge groups distributed across

the four high density polyethylene (HDPE) pipelines, each consisting of three to four discharge spigots. The nominal distance between every two adjacent spigot is 100 m.

Tailings deposition modelling (using 3D modelling software Muk3D) with consideration of the causeway construction sequencing, was carried out based on the target tailings elevation from 60.5 m to 68.5 m with 1 m increments for each run. This involved a total of 9 steps as shown in Figure 2.

CPM 2025 states the proposed changes to the tailings deposition will not require an increase to the approved tailings deposition volume or change the tailings characteristics (solids density and particle size distribution). Therefore, no material change to the TSF operational water balance is anticipated, and seepage recovery systems remain unchanged.

Central causeway (Y-type)

The Licence Holder is proposing to relocate the decant infrastructure from the northwest corner to a central location. The benefits of the new central decant pond location are:

- To facilitate a drained exterior beach platform to support subsequent upstream wall construction around the perimeter.
- To improve drainage and increase the strength of the existing tailings beach directly upstream of the current northern and western TSF embankments by “pushing” the supernatant pond away from the external embankment walls.
- To increase the overall tailings storage capacity by more efficient achievement of compliance with wave run-up and freeboard requirements for the facility.
- To increase the rate of decant water recovery by reducing the average beaching lengths and promoting more consistent beach slopes around the perimeter. This improvement in operating conditions has potential to reduce evaporation losses and improve the overall site water balance.

In order to effectively manage the water recovery from the central decant location, a Y-type causeway structure is proposed. The causeway will be extended from the TSF southern embankment wall as shown in Figure 3. The Y-type causeway will facilitate collection of decant water from the centre of the decant ponds by using three floating decant systems (one for each of the two arms and one standby).

The causeway is planned to be constructed in 6 raises. For all raises, a two-stage construction approach is intended to ensure a minimum Factor of Safety of 1.5 based on the assumed tailings strength profile. Overall construction is approximately 22 weeks, with intermittent causeway construction works and tailings deposition which will enable ongoing operations.

The total fill required for the causeways is estimated to be 1.74 million cubic metres (Mm^3), comprising 1.69 Mm^3 of Type C3 rockfill and 0.05 Mm^3 of basecourse material.

Rock type C3 and basecourse material have been classified as low acidic and/or metalliferous drainage potential.

Decant return system

The decant return water will report to the TSF Thickener distribution box. From the TSF Thickeners, the decant return water is pumped to the Process Water Dam via the Water Staging Pond and Environmental Dam or directly via the existing pipeline.

The central decant for decant water return will utilise three pumps. Under normal conditions, only one pump is required to operate; in exceptional cases, such as heavy rainfall or tailings by-pass discharge that increases the water volume within the TSF, two pumps can be activated to expedite the reduction of water volume in the decant pond.

Cut-off trenches / toes and underdrainage system

There are no changes to the approved and installed drainage system. A series of finger drains are installed underneath the TSF embankment and buttress to collect and convey any seepage water from the TSF into the seepage collection trenches. The seepage water is then drained to a seepage collection sump and pumped back to the process plant and/or secondary tailings thickener.

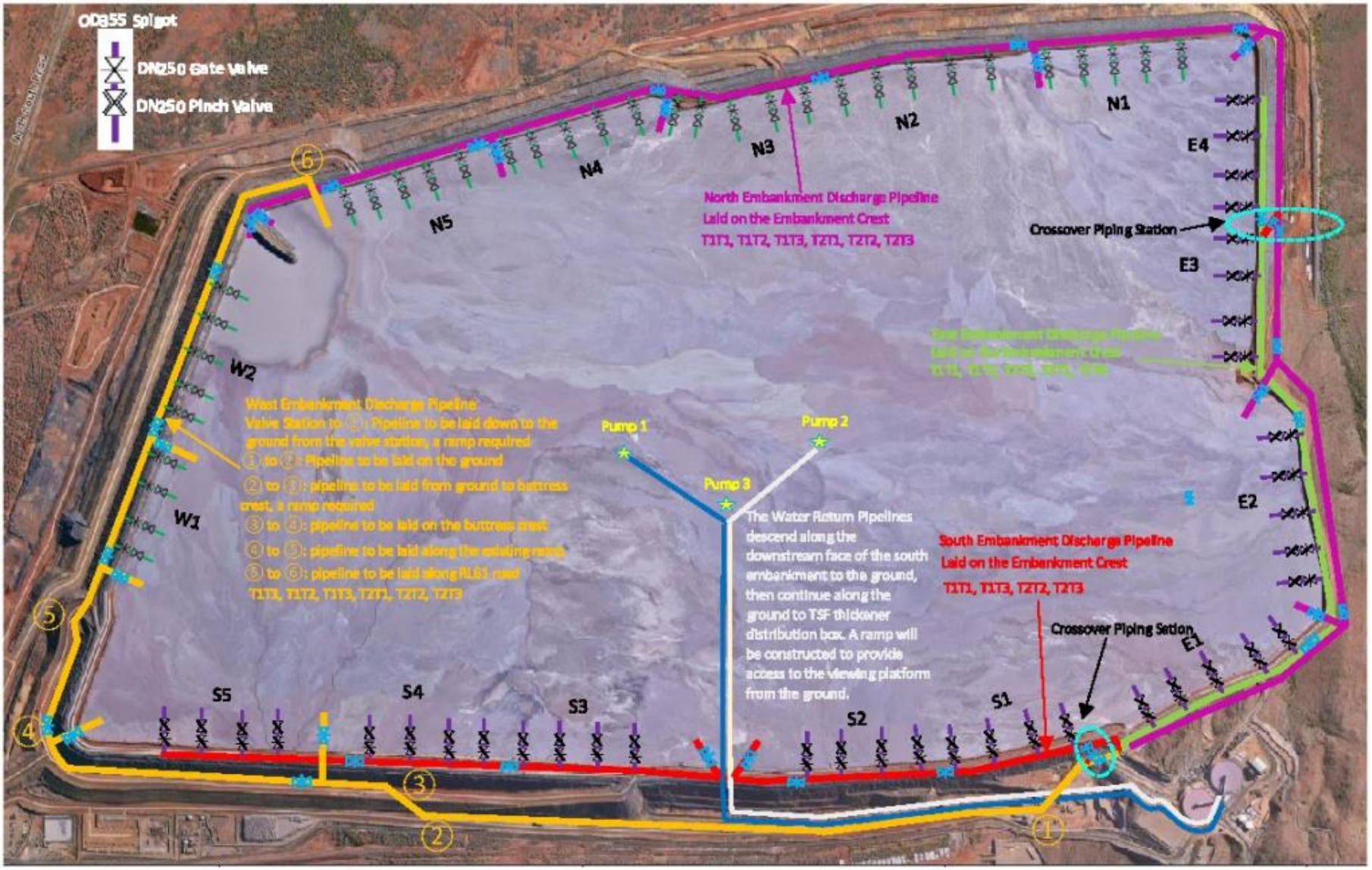

Figure 1: Conceptual design for the decant return and perimeter tailings pipelines

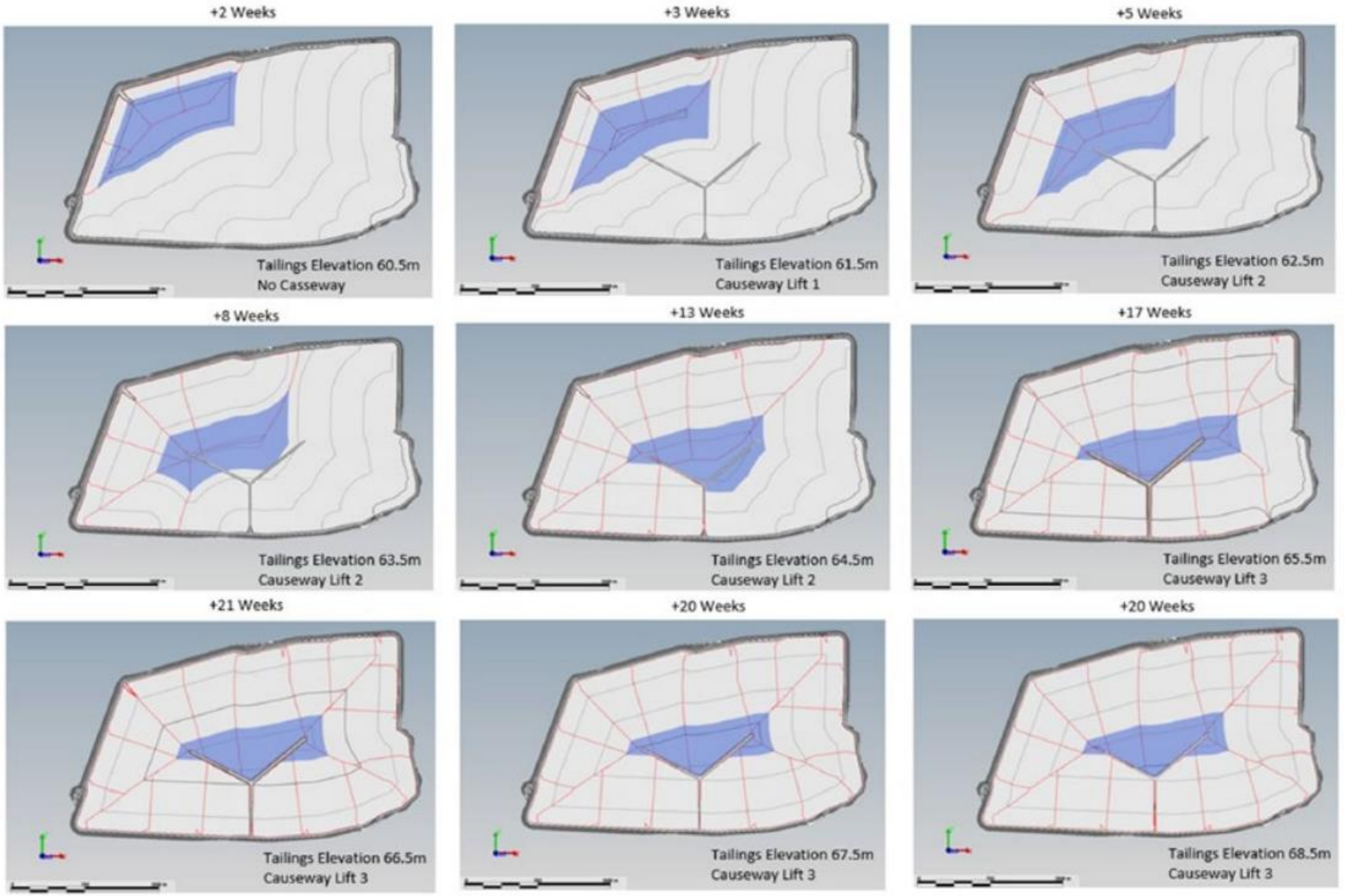

Figure 2: Deposition model outputs

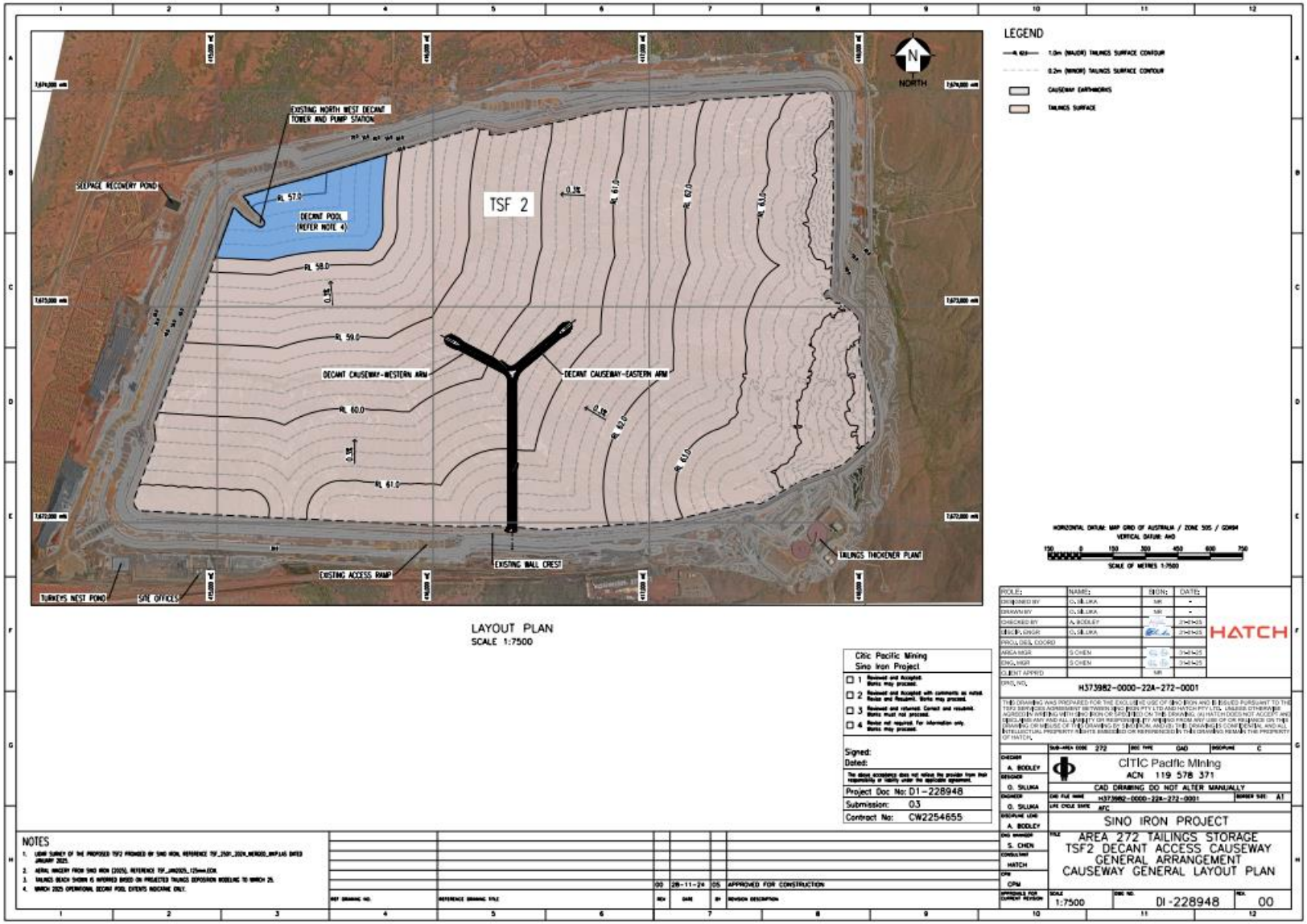

Figure 3: Causeway layout

2.2.2 Other amendments

Under this amendment, the Licence Holder has also requested the following:

- Inclusion of G08/53 to the prescribed premises boundary. The department has made this requested change.
- Removal of reference to "Northern and western flanks include a liner system comprising of Elastomeric Bituminous Geomembrane Liner above 39 mRL to 66 mRL" for Condition 1, Table 1 and Condition 12, Table 5.

  On the basis that construction lift to 66 mRL has been finalised and final construction report was submitted to the department on 22 January 2025; and that the proposed central supernatant pond will not require embankment liners to manage supernatant water against the TSF embankment walls.

  The department has retained reference to the above in Condition 1, Table 1 as this is an operational requirement. The Licence Holder should ensure that all liners associated with the embankments are maintained.

  The department has removed reference to the above in Condition 12, Table 5 as this is a construction requirement which has now been met.
- That the timeframe for the submission of the compliance audit report required under Condition 28 (now Condition 27) be extended from 7 days to 30 days; and that the term finalised is added.

  The Licence Holder has stated that the current requirement to complete and submit an audit within a 7-day timeframe is not achievable. The term finalised is taken to mean the completion of the contracting scope of work, including the supply of engineering designs and audit reports by the contracting company.

  The wording of the condition is standard and the term finalised has not been added. To allow the Licence Holder the additional time to receive all the necessary documentation from the contracting company, the timeframe has been extended from 7 days to 60 days.

Under this amendment, the department has removed the construction requirements for TSF2 Raise 4 from Condition 12, Table 5. An Environmental Compliance Report was received by the department on 23 January 2025 and additional supporting documentation on 05 June 2025 (APP-0027233).

2.3 Part IV of the EP Act

The Premises is subject to Ministerial Statement (MS) 635, MS 822, MS 1066 and MS 1169 under Part IV of the EP Act:

- MS 635, issued on 20 October 2003, approved the construction and operation of a 44.8 Mtpa iron ore mine, power station, desalination plant, processing plant, accommodation, and port facilities in the Cape Preston area;
- MS 635, Attachments 1 to 5 have resulted in approvals to increase the mining rate to 95 Mtpa, the production of concentrate to 27.6 Mtpa and produced waste to tailings storage to 67.4 Mtpa and discharge of up to 2 GL/a of dewatered groundwater from the mine pit to a point near the mouth of the Fortescue River;
- MS 822, issued on 23 December 2009, amended conditions (7-1 and 8-1 to 8-4) in MS 635 to remove requirements for further investigations into seawater quality and the location of the marine outfall and replaced them with conditions related to Ecological Protection Areas;

- MS 1066, issued on 20 October 2017, approved the expansion of the iron ore mine, processing plant and export facilities in the Cape Preston area. For the mine and processing plant this included deepening the mine pit, additional infrastructure (including waste storage, creek diversion and infrastructure corridors), additional dewatering and discharge of surplus dewater.

  Condition 16 of MS 635 was replaced under MS 1066 and additional condition 17 relating to amendment of plans, reports, systems or programs included.

- MS 1169 issued on 10 June 2021 deleted and replaced conditions (8-3 and 8-8) of MS 822 and included condition 8-9.

2.4 Mining Act 1978

The Licence Holder has stated (CPM 2025) that the construction methodology and design for the central decant and the Y-shaped causeway, including a relevant risk assessment and updated TSF Operating Manual, has been submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for their review.

An email was provided from DEMIRS to the Licence Holder which states *Your request to move the Sino Iron Project's TSF2 decant to a central location has been reviewed by a DEMIRS Geotechnical Engineer and is considered to satisfy design and safety considerations. DEMIRS is therefore satisfied that these works can be undertaken and no further tenement conditions associated with these works are being imposed at this point in time.*

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

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Construction of Y-shaped central decant causeway Laydown of new pipeline / spigots for tailing deposition Machinery / vehicle movement	Air/windborne pathway	The TSF is a fibre-designated area due to fibrous minerals within the tailings stream. • Designated Areas (requiring respirators and suitable personal protective equipment) are established where elevated concentrations of fibre may be present. • As rock type C3 material may contain fibrous minerals, the causeway embankment construction activities will comply with the Fibrous Mineral Management Plan for the premises. • Water trucks will be used to minimise dust during construction, and care will be exercised in placing waste rock and controlling dust generation.
Operation			
Dust	Deposition of tailing from embankment of TSF2	Air/windborne pathway	• Controlling tailings deposition to maintain the tailings in a wet state to the extent possible. • Wetting of dried areas if dust lift-off occurs.
TSF decant water		Seepage / infiltration of decant water through base of TSF	• Three floating decant systems (one for each arm and one standby) will facilitate the collection of decant water from the centre of TSF2. • Each pump has a flow rate of approximately 500 m^3/hr. • Under normal conditions, only one pump is required to operate; in exceptional cases, such as heavy rainfall or tailings by-pass discharge that increase the water volume within the TSF, two pumps can be activated to expedite the reduction of water volume in the decant pond. • Each pump intake equipped with a floating inlet to ensure adequate water return even when the water in the decant pond is shallow and turbid, thereby minimising the area of the water pond within the TSF. • Sub-aerial deposition. • Tailings deposition rotated between
Tailings		Overtopping of tailings	

Emission	Sources	Potential pathways	Proposed controls
			the spigots to keep the location of the decant pond at the centre of TSF2. • Nominal distance between every two adjacent spigots is 100 m. • Each spigot equipped with a knife gate valve and a pinch valve. The knife gate valve is installed before the pinch valve as an isolation valve to be used when the pinch valve falls. • The pinch valve facilitates the slurry flow regulation, ensuring an even distribution among all the spigots. • The minimal operational freeboard of 0.5 m below the embankment crest level is designed for a 1 in 100 years 72 hours rainfall event. • During normal operating conditions, the aim is to maintain the size of the supernatant pond below approximately 9% of the TSF tailings surface area. • Ongoing monitoring of the decant pond and monitoring bore water levels and quality.
Tailings	Tailings deposition and return pipelines	Discharges to land and infiltration	• Tailings pipeline fitted with pressure monitoring to warn of possible system failures or breaks in the pipeline. • A bursting disc assembly is installed on each pipeline to protect the HDPE tailings deposition pipelines from over-pressurisation. • Process return water pipeline fitted with pressure gauges to monitor a pressure drop and warn of possible systems failures, scaling or breaks in the pipeline. • System information is returned to the control room and the data acquisition system (SCADA) located at the Concentrator. • Tailings pipelines are bunded with recovery sumps, to serve as engineering controls, providing a containment barrier for potential spills. • Routine inspection of pipeline infrastructure to identify leaks in pipelines carrying tailings or decant water.

3.1.2 Receptors

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

Table 2 and Figure 4 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental siting* (DWER 2020)).

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

Human receptors	**Distance from prescribed activity**
A public road facilitating access to the Fortescue River mouth recreation area (informal campsite not managed by the City of Karratha).	Passes approximately 1.5 km to the south of TSF2 running in an east-west direction.
Environmental receptors	**Distance from prescribed activity**
Edwards Creek Minor tributary of the Fortescue River. Flows in the north-westly direction. Stormwater and process water is authorised to be discharged via emission points EC3 and EC4 (discharge pipe to a tributary of Edwards Creek) as a result of an uncontrollable event.	2 km from TSF2. Edward Creek then merges into DuBoulay Creek.
DuBoulay Creek Minor tributary of the Fortescue River. Flows to the south-west of the Premises. TSF2 seepage and decant water is discharged via emission point DC2 which is located within DuBoulay Creek in a tidal location where hypersaline conditions are experienced regularly and also subjected to flood conditions after significant rainfall in the Fortescue River catchment.	5 km from TSF2.
Groundwater Generally flows to the west-north-west from the ridges in the east towards the Indian Ocean.	Groundwater level is estimated to be approximately 1.5 m below ground level (mbgl).
Rights in Water and Irrigation Act 1914 Pilbara Groundwater Area Pilbara Surface Water Area	Premises is located within the Proclaimed Pilbara Groundwater and Surface Water Area.
Cultural receptors	**Distance from prescribed activity**
Aboriginal heritage site	SP08-13/1989 – Artefacts / Scatter; Quarry 50 m

	from TSF2 embankment. (Within mining area – no change to the TSF2 embankment or cells).

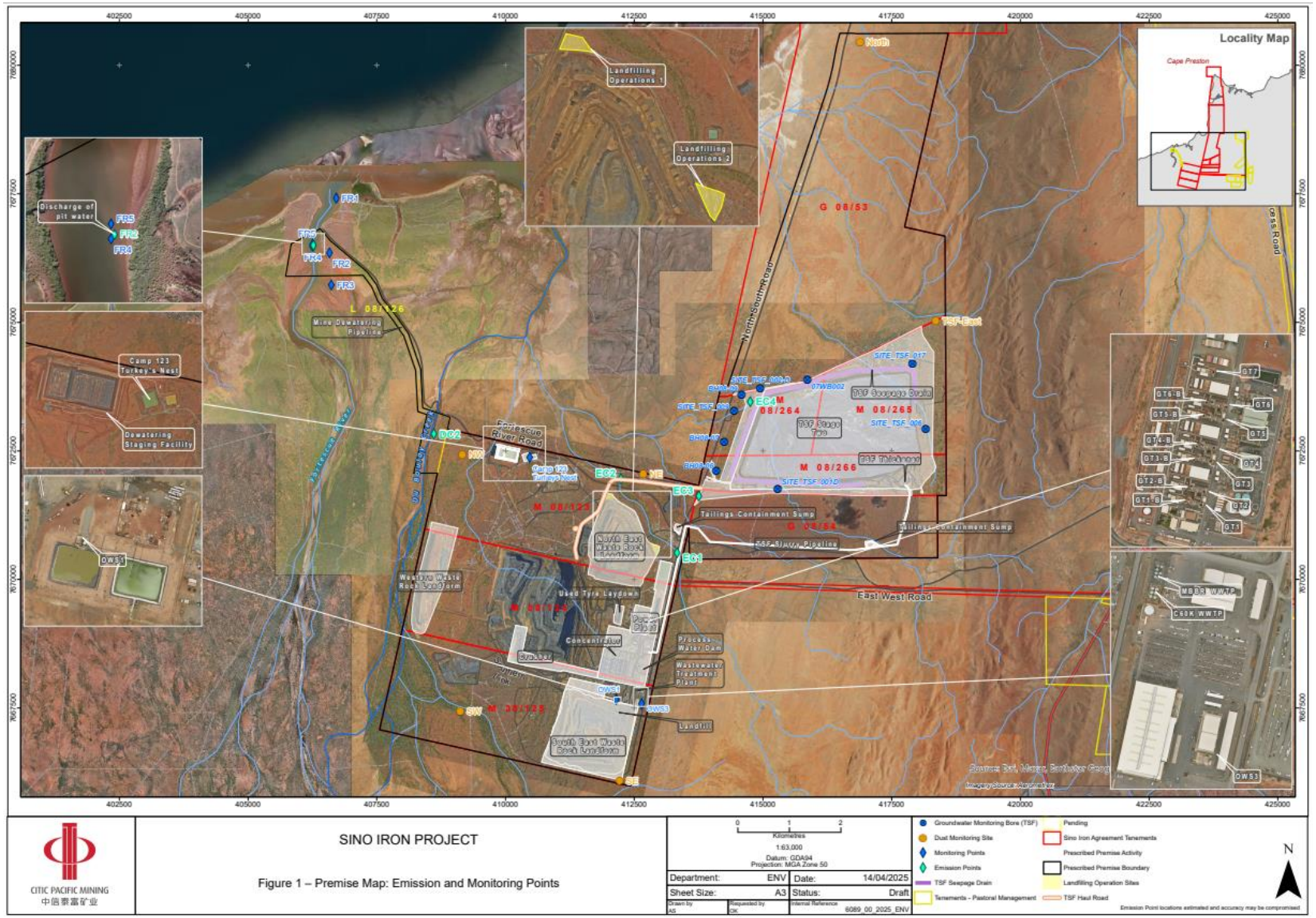

Figure 4: Distance to receptors

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 incomplete they have not been considered further in the risk assessment.

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

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

The Revised Licence L8308/2008/3 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 3. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for other regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
Construction								
Construction of Y-shaped central decant causeway Laydown of new pipeline / spigots for tailing deposition Machinery / vehicle movement	Dust	Air/windborne pathway causing impacts to health and amenity TSF is a fibre-designated area due to fibrous minerals within the tailing stream	Public while utilising access to the Fortescue River Aboriginal heritage site	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	N/A	*Work Health and Safety (Mines) Regulations 2022* General provisions of the EP Act also apply
Operation								
Deposition of tailings from embankment of TSF2	Dust	Air/windborne pathway causing impacts to health and amenity TSF is a fibre-designated area due to fibrous minerals within the tailing stream	Public while utilising access to the Fortescue River Aboriginal heritage site	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Existing condition 8	*Work Health and Safety (Mines) Regulations 2022* General provisions of the EP Act also apply
	TSF supernatant	Seepage / infiltration of supernatant water through base of TSF causing reduced groundwater quality; localised death of groundwater dependent vegetation; and groundwater mounding	Groundwater Groundwater dependent vegetation	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Existing conditions: • Condition 1 – Operational requirements • Condition 11 – TSF water balance • Condition 19 – Emissions and discharges monitoring • Condition 23 – Process monitoring	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for other regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
							• Condition 24 – Monitoring of ambient concentrations	
	Tailings	Overtopping of tailings causing reduced soil and surface water quality; and health of surrounding vegetation	Soil Vegetation Surface water bodies	Refer to Section 3.1	C = Minor L = Rare **Low Risk**	Y	Existing conditions: • Condition 1 – Operational requirements • Condition 11 – TSF water balance • Condition 19 – Emissions and discharges monitoring (DC2) • Condition 23 – Process monitoring • Condition 24 – Monitoring of ambient concentrations (DC2) • Condition 25 – Monitoring of ambient vegetation health (DC2)	Under this amendment condition 1 (operational requirements) updated for TSF Stage Two to ensure tailings deposition is rotated between discharge locations to keep the location of the decant pond to the centre of TSF2
Tailings deposition and return pipelines	Spillage of tailings and decant return water through leaks, pipeline ruptures or failure	Discharges to land and infiltration causing reduced soil and surface water quality; and health of surrounding vegetation	Soil Vegetation Surface water bodies	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Existing conditions: • Condition 9 – Inspection of infrastructure • Condition 10 – tailings pipeline management • Condition 12 – construction specifications	Under this amendment, condition 12 updated for TSF2 to include construction requirements for the tailings deposition pipeline and spigots; and causeway construction

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

Table 4: Consultation

Consultation method	Comments received	Department response
Department of Jobs, Tourism, Science and Innovation advised of proposal on 05 June 2025	No comments received	N/A
Licence Holder was provided with draft amendment on 02 July 2025	The Licence Holder provided the following comment on 08 July 2025 and waived the remaining consultation period: Request replacing the sentence in Table 5 of the draft licence, "*Nominal distance between every two adjacent spigots is 100m*" with "*Spigot spacing to ensure even slurry distribution, optimised beach development, and effective water management*". This requested change allows greater flexibility to optimise tailings distribution and deposition across the full embankment discharge area, including future raises.	The department has removed the wording "*Nominal distance between every two adjacent spigots is 100m".* The department has not replaced this with that proposed by the Licence Holder. As Table 5 is about construction requirements the wording requested by the Licence Holder would make compliance hard to determine. Instead, the department considers the operational requirement of Condition 1, Table 1 requiring the Licence Holder to ensure that '*tailings deposition is rotated between discharge locations to keep the location of the decant pond at the centre of TSF2'* is sufficient.

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 5 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 5: Summary of licence amendments

Condition no.	Proposed amendments
DWER file number	Updated to reference the Environment Online internal number
Premises details	Inclusion of G08/53
Licence history	Updated to include the licence history for L8308/2008/2 that was previously deleted under the licence renewal for L8308/2008/3 (30 May 2024). Retaining this information allows easy representative of the amendments made to the Licence over time
Condition 1, Table 1	Administrative updates Eastern embankment updated to 70.5 mRL Inclusion of requirement for tailings deposition to be rotated between discharge locations to keep the location of the decant pond at the centre of TSF2
Condition 2, Table 2	Administrative updates Removal of reference to “on the Premises map in Schedule 1: Maps” and instead it now references the specific Figure number in Schedule 1
Condition 12, Table 5	Administrative updates Inclusion of construction requirements for the TSF2 tailings deposition pipeline and spigots; and causeway construction (assessed under this Amendment Report) Removal of TSF2 Raise 4 construction requirements as these requirements have been met
Condition 13	Administrative updates
Condition 14, Table 6 and Condition 15, Table 7	Administrative updates Removal of reference to “on the Premises map in Schedule 1: Maps” and instead it now references the specific Figure number in Schedule 1
Condition 27 (previous condition 28)	Updated from 7 days to 60 days. Refer to section 2.2.2
Condition 30 (previous condition 27)	Updated to reflect standard licence condition wording
Condition 31	Updated to reflect standard licence condition wording
Condition 32	Updated to ensure the Licence Holder maintains records, information etc. on the works conducted under condition 12
Schedule 1: Maps	Figure 1 updated Previous Figures 2, 3 and 4 deleted New Figures 2, 3, 4 and 5 relating to TSF2 perimeter tailings pipelines and causeway construction

References

1. CITIC Pacific Mining (CPM) 2025, *L8308/2008/3 Amendment Application – Category Checklist TSF – Addendum and Supporting Information* (Document Number: 1286095269-4437), 17 April 2025.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. Ministerial Statements available at https://www.epa.wa.gov.au/all-ministerial-statements.