



Amendment Notice 3

Licence Number L8308/2008/2

Licence Holder CITIC Pacific Mining Management Pty Ltd

ACN 119 578 371

File Number: DER2014/000430

Premises Sino Iron Project Mine Site
Mining Tenements M08/123, M08/124, M08/125,
M08/264, M08/265, M08/266, G08/54 and L08/126
MARDIE WA 6714

Date of Amendment 11/08/2017

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the *Environmental Protection Act 1986*.

Danielle Eyre

Senior Manager, Industry Regulation (Resource Industries)

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
Annual Period	means a 12 month period commencing from 1 July until 30 June in the following year
Application	The application submitted to DER by CITIC Pacific Mining Management Pty Ltd consisting of reference documents CPM 2017 and CPM 2017a
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 info-der@dwer.wa.gov.au
cfu/100mL	colony forming units per 100 millilitres
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act
DER	Department of Environment Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER) DWER was established under section 35 of the <i>Public Sector Management Act 1994</i> and is responsible for the administration of the EP Act along with other legislation
DMIRS	Department of Mines, Industry Regulation and Safety
DMP	Department of Mines and Petroleum (As of 1 July 2017, the Department of Mines and Petroleum became part of the Department of Mines, Industry Regulation and Safety (DMIRS))

Term	Definition
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Amendment
Licensee	CITIC Pacific Mining Management Pty Ltd
MBBR	moving bed bio reactor
mbgl	metres below ground level
mRL	metres Reduced Level
MS	Ministerial Statement
Mtpa	million tonnes per annum
PM	Particulate Matter
PM ₁₀	used to describe particulate matter that is smaller than 10 microns (µm) in diameter
Prescribed Premises	has the same meaning given to that term under the EP Act
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>
TSF	Tailings Storage Facility
WWTP	Wastewater Treatment Plant
µg/m ³	micrograms per cubic metre
µm	microns

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

This notice is limited only to an amendment for a moving bed bio reactor (MBBR) Wastewater Treatment Plant (WWTP) and transfer of the Tailings Storage Facility (TSF) Stage 2 construction from works approval W4447/2008/1 over to the licence, as this works approval is due to expire on 20 September 2017. No changes to the other aspects of the original Licence have been requested by the Licensee.

The following guidance statements have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles (July 2015);*
- *Guidance Statement: Setting Conditions (October 2015);*
- *Guidance Statement: Decision Making (February 2017);*
- *Guidance Statement: Risk Assessment (February 2017);* and
- *Guidance Statement: Environmental Siting (November 2016).*

Amendment description

On 24 May 2017, CITIC Pacific Mining Management Pty Ltd (Licensee) submitted Applications (CPM 2017 and CPM 2017a) to the former Department of Environment Regulation (DER) to amend the Sino Iron Project Mine Site (Premises) Licence L8308/2008/2.

The Licensee has applied to make the following changes:

1. Construction and operation of the MBBR WWTP; and
2. Transfer of the construction of TSF Stage 2 from W4447/2008/1 to the Licence.

1. Construction and Operation of the MBBR WWTP

The Licensee is proposing to construct and operate a 100 cubic metre (m³) per day (m³/day) MBBR WWTP to service the permanent processing and workshop project areas.

Presently there is a 60 m³/day Biomax C60K WWTP that services the permanent facilities. As the project transitions from a construction to operation phase, personnel are being transferred across to the permanent facilities areas and the Biomax C60K WWTP does not have the capacity to sustain inflows. To accommodate the increased inflows, the MBBR WWTP is proposed to be installed and operated in parallel to the Biomax C60K WWTP. The two WWTPs will operate independently, but will draw their loads from a common balance tank. Approximately 62% of the 50 m³ balance tank flow will be pumped to the MBBR WWTP and 38% pumped to the Biomax C60K WWTP.

Final effluent from both WWTPs will continue to be transferred to the process water dam, where the effluent will be diluted with return process water and then recirculated in the process plant for use in the hoppers and mills.

As part of the works the Biomax C60K WWTP will also be reconditioned, however, these works only include the installation of an elevated access platform to provide easy access to all tank inspection hatches and the relocation of selected valves, vents, dosing system and monitoring systems to enable safe operator access from the elevated platform.

Details of the MBBR WWTP are shown in Tables 2 and 3 below:

Table 2: MBBR WWTP Inputs and Outputs

	Inputs	Outputs
Throughput	Minimum: 15 m ³ /day Maximum: 100 m ³ /day	Minimum: 15 m ³ /day Maximum: 100 m ³ /day
Biochemical Oxygen Demand	<300 mg/L	<20 mg/L
Total Suspended Solids	<300 mg/L	<25 mg/L
Total Nitrogen	<100 mg/L	<20 mg/L
Total Phosphorus	<12 mg/L	6 – 12 mg/L
<i>E.Coli</i>	<10 ⁷ cfu/100mL	<10 cfu/100mL
pH	6.5-8.5 pH units	6.5-8.5 pH units

Table 3: MBBR WWTP Components

No	Component	Capacity
1	Common Balance Tank	50 m ³
2	Primary/Secondary Settling Tank	50 m ³
1	Denitrification Tank	50 m ³
2	Aeration Tank	50 m ³
1	Clarification	50 m ³
1	Effluent Tank	50 m ³

Table 4 below outlines the proposed changes to the Licence.

Table 4: Proposed design capacity changes

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
54	1,060 cubic metres per day	1,160 cubic metres per day	Addition of MBBR WWTP

2. Construction and Operation of TSF2

Works approval W4447/2008/1 was issued on 15 September 2008 for the construction of TSF Stage 1 and TSF Stage 2. Licence L8308/2008/2 was amended on 24 March 2016 to transfer the operational phases of TSF Stage 1 and TSF Stage 1B (interim lift forming the outline of TSF Stage 2). It should be noted that TSF Stage 2 will be a single storage cell developed as a lift on top of TSF Stage 1 and TSF Stage 1B.

Works approval W4447/2008/1 is due to expire on 20 September 2017 and this amendment is to transfer the remaining construction period and include the operation of TSF Stage 2 across to the Licence.

Table 5 outlines the proposed changes to the Licence.

Table 5: Proposed design capacity changes

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
5	<p>Primary Crusher (1 to 4) - 85,400,000 tonnes per Annual Period</p> <p>Mill Line (1 to 6) - 85,400,000 tonnes per Annual Period (producing 27,600,000 tonnes per Annual Period)</p> <p>TSF Stage 1 – 35,800,000 tonnes per Annual Period</p>	<p>Primary Crusher (1 to 4) - 85,400,000 tonnes per Annual Period</p> <p>Mill Line (1 to 6) - 85,400,000 tonnes per Annual Period (producing 27,600,000 tonnes per Annual Period)</p> <p>TSF Stage 2 – 67,400,000 tonnes per Annual Period</p>	<p>No change for the Primary Crushers or Mill Lines</p> <p>Construction of TSF Stage 2 which will result in the deposition rate increasing from 35,800,000 to 67,400,000 which was approved under section 45C of the EP Act for Ministerial Statement (MS) 635 on 31 August 2016</p>

The initial proposal was for an 800 hectare (ha) facility to a maximum height of 54 m (which equates to a storage life of approximately 12 years). Modifications have since been made to this design, as stated in Table 6.

Table 6: TSF modifications (CPM 2017c)

Aspect	Initial application (21 May 2008)	Modification 1 (6 October 2009)	Modification 2 (18 August 2010)	Modification 3 (11 August 2017)
Total Size of Footprint	800 ha	680 ha	800 ha	987 ha ¹
Maximum height of walls	54 m (~ 68 mRL)	35 m (~ 49 mRL)	35 m (~ 49 mRL)	35 m (~ 49 mRL) ²
Storage Life	12 years	5 years	5 years	7 years
Construction	Staged vertical lifts TSF 1 - starter embankment 54 m	Two staged horizontal Stage 1 ~ 12 months Stage 2 ~ 4 years	Embankment Design updated	Tailings deposition rate amended to align with MS 635
Design Capacity	42.4 Mtpa	42.4 Mtpa	57.8 Mtpa	67.4 Mtpa ¹

Note 1: Updates consistent with MS 635.

Note 2: The Licensee will be required to obtain approval from DMIRS prior to the construction of TSF Stage 2 beyond 39 metres (m) Reduced Level (RL).

The proposed construction program is detailed as follows:

- Construction of TSF Stage 2 and tailings deposition will occur concurrently with downstream embankment construction;
- The TSF Stage 1 northern and eastern embankments will be raised to a minimum of 39 mRL prior to the end of September 2017;
- Discharge spigots will be installed along the TSF Stage 1 eastern embankment;
- A spillway will be constructed along the embankment separating TSF Stage 1 and TSF Stage 1B that allows for controlled breaching of TSF Stage 1 into TSF Stage 1B. From this point in time, the TSF will then be operated as a single cell and referred to as TSF Stage 2; and
- The TSF Stage 2 southern wall will be a minimum of 49 mRL by April 2018 with discharge spigots installed along the southern and eastern embankments. Deposition will be controlled so the tailings head at the eastern embankment is approximately 2 m higher than at the southern embankment to maintain the perimeter decant at the north-west corner.

DMIRS granted approval for the construction and operation of TSF Stage 2 to 39 mRL only (refer to Table 7). The Licensee will be required to obtain approval from DMIRS prior to the construction of TSF Stage 2 beyond 39 mRL.

The tailings deposition models are shown in Figures 1 – 3 below. The discharge spigots are shown by the arrows.

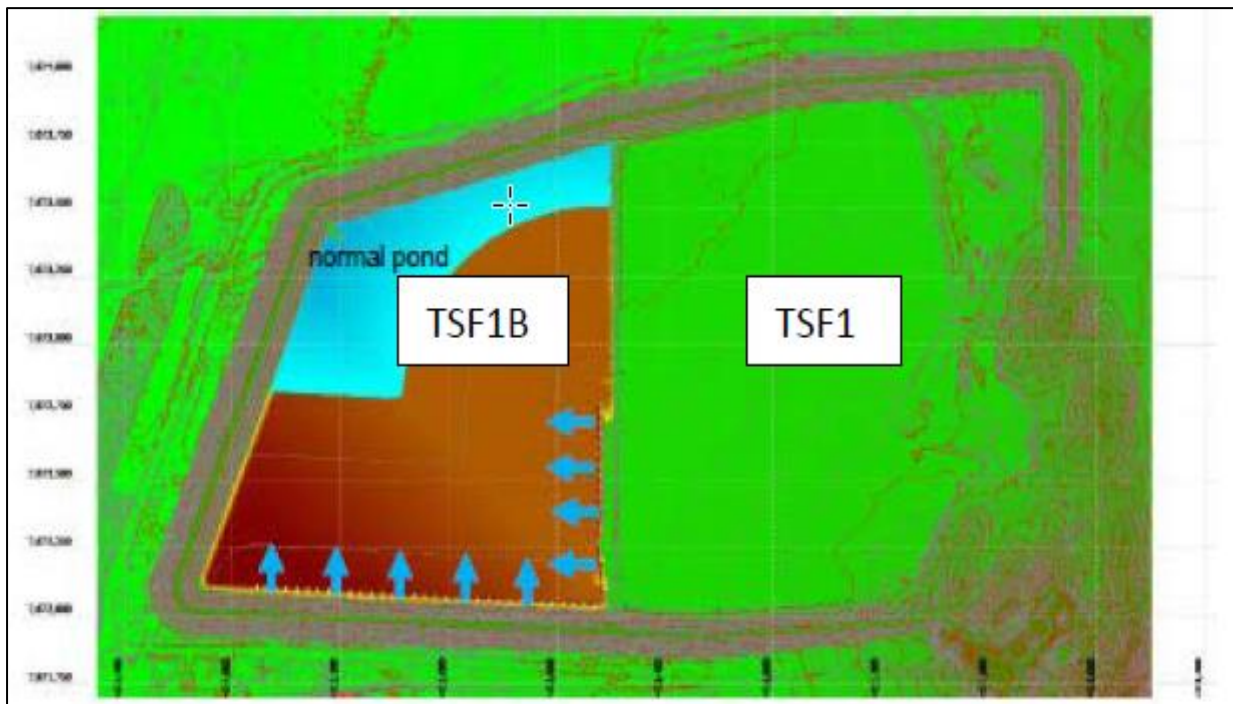


Figure 1: Tailings deposition model with TSF Stage 1 and Stage 1B operating

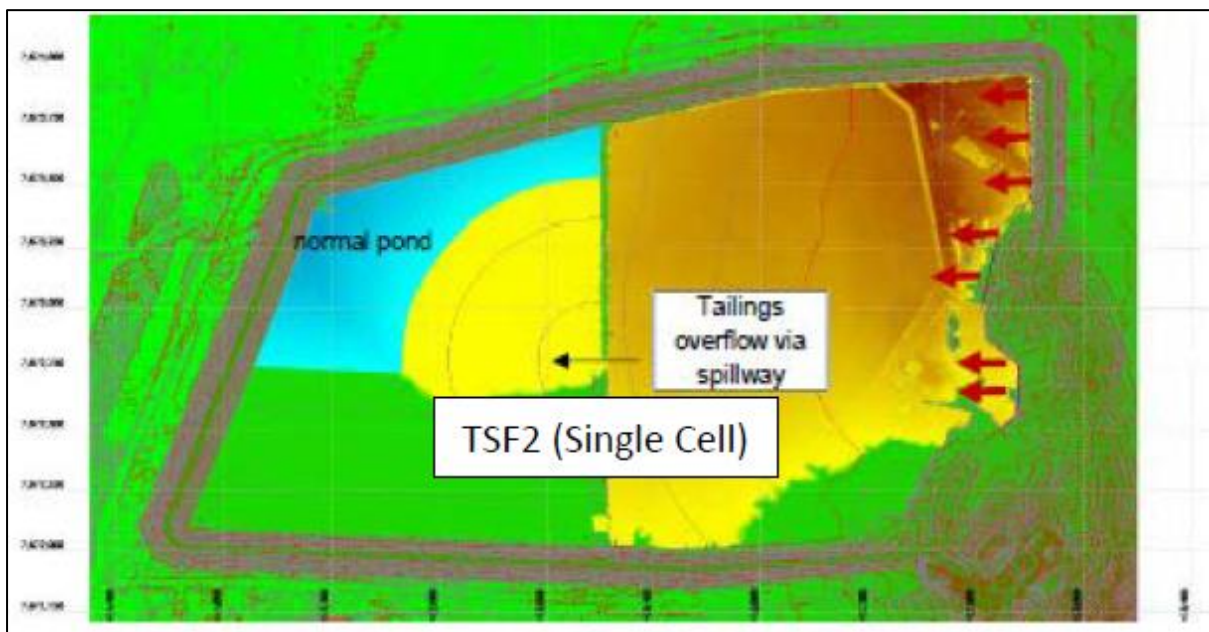


Figure 2: Tailings deposition model operating as a single cell TSF Stage 2 after spillway installed

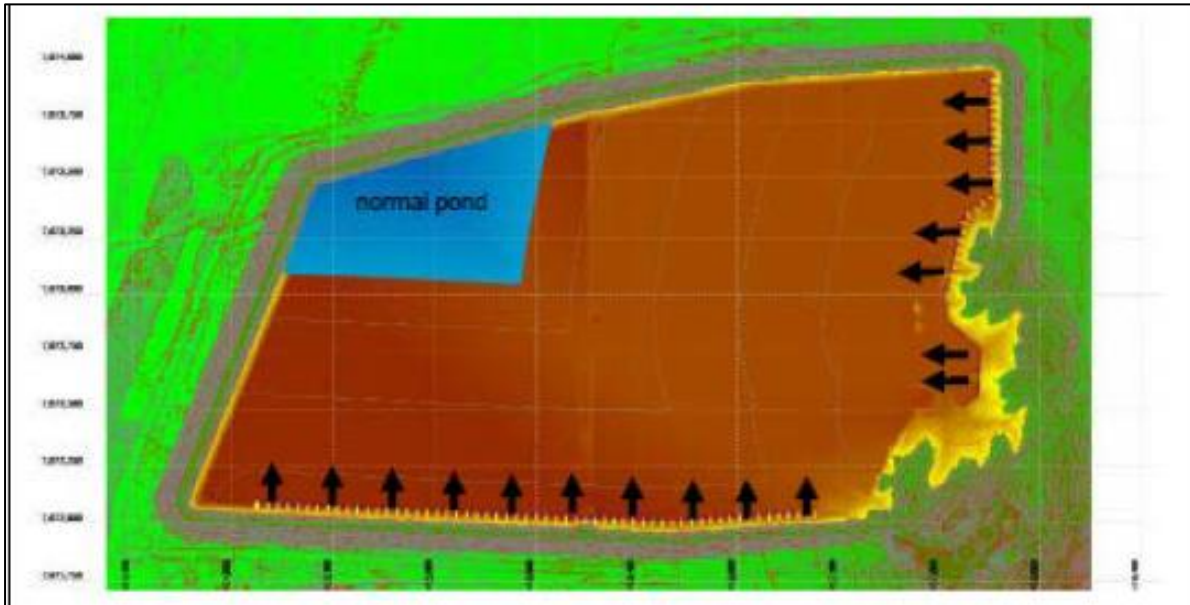


Figure 3: Tailings deposition model operating as TSF Stage 2 to 49 mRL

Additional TSF stages will be required following TSF Stage 2 and these will require further approvals from DMIRS and Part IV and Part V of the EP Act.

Other approvals

The Licensee has provided the following information relating to other approvals as outlined in Table 7.

Table 7: Relevant approvals

Legislation	Number	Approval
<i>Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974</i>	Application not yet lodged	All relevant approvals from the Department of Health and/or City of Karratha will be obtained prior to the commencement of onsite works for the MBBR WWTP
<i>Mining Act 1978</i>	Reg ID 67764	<p>Detailed engineering design documentation for TSF Stage 2 up to an embankment height of 49 mRL was submitted to the former DMP on 17 May 2017</p> <p>DMIRS granted approval for the construction and operation of TSF Stage 2 to 39 mRL only and has stated (DMIRS 2017) that approval "to proceed to RL 49 m (Stage 2 TSF Raise 2B) shall be subject to Citic Pacific Mining demonstrating that Stage 2 TSF Raise 2A has been operated within the design parameters and regulatory requirements, and that no seepage occurs into the adjoining tenement from the TSF"</p>
<i>Environmental Protection Act 1986, Part IV, Ministerial Statement 635</i>	<p>N/A for TSF Stage 2</p> <p>Future TSF stages beyond TSF Stage 2 as part of the Sino Iron Mine Continuation Proposal will require assessment on proponent information</p>	N/A for TSF Stage 2

Amendment history

Table 8 provides the amendment history for L8308/2008/2.

Table 8: Licence amendments

Instrument	Issued	Amendment
L8308/2008/1	23/01/2014	Licence amendment to include the operation of PC1 and PC2 (W5005/2011/1), ML1 (W4447/2008/1) and the Biomax WWTP (W5273/2012/1)
L8308/2008/2	24/03/2016	Licence amended to increase the design capacity of category 5 (inclusion of PC3, PC4, ML2 to ML4 and TSF Stage 1) and category 64, inclusion of categories 12 and 57 and expansion of the premises boundary
L8308/2008/2	28/07/2016	Licence amended to increase the design capacity of category 5 (inclusion of ML5 and 6)
L8308/2008/2	24/11/2016	Licence amended to include category 6 mine dewatering discharge for 2 GL discharge
L8308/2008/2	16/12/2016	Amendment Notice 1 Licence amendment to change the date of completion for Improvement program IR1 from 31 December 2016 to 30 June 2018
L8308/2008/2	9/06/2017	Amendment Notice 2 Licence amendment to include controlled surface water discharge points, TSF1B lift and modifications to groundwater monitoring bores BH08-08 and BH08-16
L8308/2008/2	11/08/2017	Amendment Notice 3 Licence amendment to include the MBBR WWTP and transfer TSF Stage 2 construction conditions across from W4447/2008/1 onto the licence

Location and receptors

Table 9 lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 9: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Fortescue River Mouth recreational area (informal campsite not registered by the City of Karratha)	More than 5 km to the north-west
Mardie Station Pastoral Lease	More than 20 km south-west
Fortescue River Roadhouse	More than 25 km to the south

Table 10 lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 10: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Fortescue River	More than 5 km to the north-west
Du Boulay Creek	More than 2.5 km to the north
Edwards Creek	Onsite
Yaggobiddy Creek	Onsite

Risk assessment

Tables 11 and 12 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 11: Risk assessment for proposed amendments during construction

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
Construction, mobilisation and positioning of infrastructure for WWTP and TSF Stage 2	Vehicle movements on unsealed access roads	Noise	Fortescue River Mouth recreational area is the nearest receptor located more than 5 km to the north-west	Air / wind dispersion	Amenity impacts	Slight	Unlikely	Low	The Delegated Officer considers the distance to the recreational area (not a registered camp area) to be sufficient to ensure that there are minimal impacts to amenity on a local scale
		Dust			Health and amenity impacts	Slight	Unlikely	Low	The Delegated Officer considers the distance to the recreational area (not a registered camp area) to be sufficient to ensure that there are minimal impacts to health and amenity on a local scale
	Disturbance of ground from earthworks and construction activities	Noise	Fortescue River Mouth recreational area is the nearest receptor located more than 5 km to the north-west	Air / wind dispersion	Amenity impacts	Slight	Unlikely	Low	The Delegated Officer considers the distance to the recreational area (not a registered camp area) to be sufficient to ensure that there are minimal impacts to amenity on a local scale
		Dust			Health and amenity impacts	Severe	Rare	High	Refer to detailed Construction risk assessment (Dust emissions) below

Table 12: Risk assessment for proposed amendments during operation

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
MBBR WWTP	Treatment of sewage	Odour	Fortescue River Mouth recreational area is the nearest receptor located more than 5 km to the north-west	Air / wind dispersion	Health and amenity	Slight	Rare	Low	No receptors present and the tanks will be fully enclosed
	Sewage pipes and holding tanks	Sewage and/or brine discharge to land from rupture of pipes / overtopping of holding tanks	Soil and vegetation adjacent to discharge area	Direct discharges to land	Soil contamination inhibiting vegetation growth and survival	Slight	Unlikely	Low	Refer to detailed risk assessment – Operation of the MBBR WWTP below
TSF2	Tailings surface	Dust	Fortescue River Mouth recreational area is the nearest receptor located more than 5 km to the north-west	Air / wind dispersion	Health and amenity impacts	Severe	Rare	High	Refer to detailed risk assessment – Operation of TSF Stage 2 (Tailings surface) below
	Tailings pipeline and ponds	Rupture of tailings pipeline or overtopping of TSF and ponds causing tailings discharge to land	Soil and vegetation adjacent to tailings pipeline alignment, TSF and ponds	Direct discharges to land	Soil contamination inhibiting vegetation growth and survival	Minor	Unlikely	Medium	Refer to detailed risk assessment – Operation of TSF Stage 2 (Tailings pipeline, TSF and ponds) below

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities		Potential emissions	Potential receptors	Potential pathway					Potential adverse impacts
	Seepage	Leachate to groundwater	Groundwater dependent ecosystems, subterranean fauna	Discharges to groundwater	Groundwater mounding	Minor	Likely	Medium	Refer to detailed risk assessment – Operation of TSF Stage 2 (Seepage) below

Construction risk assessment

Dust emissions

Asbestos is naturally occurring in the soil and underlying geology of the Premises and presents a significant risk to the health of people both onsite and off-site if the fibres are disturbed and allowed to contaminate materials or areas where the public may be exposed to them. Onsite occupational health and safety is regulated by DMIRS and WorkSafe WA. Asbestos has previously been encountered at the areas associated with the mining and processing of ore (including the product and tailings).

Construction activities associated with the MBBR WWTP and TSF Stage 2 will be for a limited duration of time and are not expected to disturb the material that has the potential to contain fibrous materials. The following dust mitigation measures will be employed:

- Reduce exposed areas to a minimum required for construction activities;
- Apply water suppression to dust prone areas;
- Tailings will not be used as a construction material;
- No mechanical disturbance to existing tailings surface;
- No additional clearing is required to accommodate the MBBR WWTP;
- The majority of ground disturbance associated with the TSF was completed as part of construction of TSF Stage 1 and TSF Stage 1B; and
- Any additional clearing required to accommodate construction of TSF Stage 2 will be undertaken in accordance with the Premises' Operational Environmental Management Plan (OEMP) (endorsed by the former EPA).

The Licensee has requirements under Part IV of the EP Act (MS 635) for the monitoring of ambient air quality and are required to comply with the following:

- *Guideline on the Management of fibrous minerals in Western Australian mining operations*; and
- *Guidance Note on Public Health Risk Management of Asbestiform Minerals Associated with Mining*.

Noting that a public access road runs through the Premises and the distance to the nearest offsite receptor is over 5 km away, the impact of airborne asbestos to public health will result in adverse health effects at a high level. Therefore, the Delegated Officer considers the consequence to be **severe**.

The Delegated Officer has considered the Licensee's existing Plans (*Fibrous Minerals Management Procedure* and *Fibrous Minerals Management Plan*); requirements under Part IV of the EP Act; other legislation; concentrations of asbestos in the TSF being under detectable levels (*Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*) and determined that asbestos impacts to public health during construction will only occur in exceptional circumstances. Therefore, the Delegated Officers considers the likelihood of the consequence occurring to be **rare**.

The overall rating for the risk on public health associated with asbestos dust is **high**, but the Delegated Officers considers the regulatory controls detailed above adequate to regulate the risk associated with fibrous minerals.

Decision – Construction of the MBBR WWTP and TSF Stage 2

The Delegated Officer has determined that the key emissions associated with the construction of the MBBR WWTP and TSF Stage 2 to be noise and dust emissions.

The Delegated Officer considers the risk associated with noise emissions to be low due to the distance to receptors. The *Environmental Protection (Noise) Regulations 1997* are sufficient to regulate noise emissions during construction.

The Delegated Officer considers the risk associated with dust emissions to be high. The Delegated Officer considers the Licensee's existing controls and requirements under Part IV of the EP Act adequate to regulate the risk associated with fibrous minerals.

The Licensee's controls for the construction of the MBBR WWTP and TSF Stage 2 have been conditioned on the Licence through condition 1.2.14 and were derived from the Licensee's obligations within Application (CPM 2017, CPM 2017a and CPM 2017b).

Existing condition 1.2.14 has been updated via this Amendment Notice to include infrastructure requirements for the construction of the MBBR WWTP and TSF Stage 2.

DWER has approved TSF Stage 2 to 49 mRL. The Licensee will require approval from DMIRS prior to the construction of TSF Stage 2 beyond 39 mRL.

Previous condition 1.2.15 has been deleted via this Amendment Notice and this compliance requirement is now covered under condition 5.3.1. Previous condition 1.2.16 (now condition 1.2.15) has been updated via this Amendment Notice to include the MBBR WWTP.

Works Approval W4447/2008/1 for the TSF is due to expire on 20 September 2017. The Licence has existing requirements for TSF Stage 1 (includes Stage 1 and Stage 1B).

The commissioning conditions from W4447/2008/1 will not be transferred to the Licence as all controls relevant to the TSF under W4447/2008/1 have already been incorporated into the Existing Licence and/or the OEMP as shown in Table 13 below.

Table 13: W4447/2008/1 commissioning conditions and established operational controls (CPM 2017b)

W4447/2008/1 Condition 3	Established Operational Controls	Comments
<p>ii) An operational groundwater monitoring program for the TSF including:</p> <p>a) <i>Water levels;</i> b) <i>pH</i> c) <i>salinity;</i> d) <i>metals;</i> e) <i>hydrocarbons;</i> f) <i>nutrients;</i> g) <i>a map outlining groundwater monitoring bore location for the TSF</i> h) <i>monitoring and management of seepage from the TSF.</i></p>	<p>L8308/2008/2 Condition 3.7.1</p> <p>L8308/2008/2 Condition 1.2.12</p>	<p>The revised TSF2 design will not necessitate any changes to the established operational groundwater monitoring program prescribed by L8308/2008/2.</p> <p>Analysis of combined decant water seepage water recovery volumes will be included within the TSF annual water balance as prescribed by L8308/2008/2.</p>
<p>iii) Monitoring and management of dust from the TSF including:</p> <p>a) <i>proposed dust monitoring regime for dust from the TSF;</i> b) <i>measures to be implemented to minimise dust and effect on vegetation;</i> c) <i>contingencies to be implement for the TSF should cumulative dust levels from the premises not be in accordance with relevant standards.</i></p>	<p>L8308/2008/2 Condition 1.2.9</p> <p>MS635, Condition 2-1, Commitment 2 (OEMP)</p>	<p>The revised TSF2 design will not necessitate any changes to the existing ambient dust monitoring programmed detailed within the Sino Iron Project OEMP.</p>

<p>iv) <i>Monitoring and management of seepage from the TSF including:</i></p> <p>a) <i>the MSDS for the flocculent to be used in the TSF.</i></p>	<p>L8308/2008/2 Condition 1.2.8</p> <p>L8308/2008/2 Condition 1.2.12</p>	<p>TSF seepage drains are described in Table 1.2.3, noting the finger drains are required to be extended to the future toe of the TSF2 embankment and seepage trench relocated.</p> <p>Analysis of combined decant water seepage water recovery volumes will be included within the TSF annual water balance as prescribed by L8308/2008/2.</p> <p>MSDS for the flocculent was included as an appendix to the TSF1 licence amendment submission (DR033962, dated 4 July 2014).</p>
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Risk assessment – Operation of the MBBR WWTP

Sewage pipes and holding tanks

The Application (CPM 2017) and CPM 2017b states that the following management measures are to be implemented by the Licensee:

- The MBBR WWTP will be placed within an earthen bund with high density polyethylene liner to capture overflow;
- An audible alarm will be fitted;
- Infrastructure will be inspected daily and maintained in accordance with manufacturer’s specifications;
- In addition to the in-built storage capacity provided by the common balance tank (0.5-1.0 days assuming normal flow), the MBBR WWTP provides a further in-built emergency storage capacity of 0.8-1.0 days flow assuming normal flow;
- Sludge (non-degradable or slow to degrade) will be removed from the WWTP by a registered controlled waste carrier to be deposited at a licensed controlled waste facility; and
- Groundwater is approximately 26 m below ground level (mbgl) so contamination is not expected to infiltrate, particularly with the high evaporation rates in the Pilbara region.

If the WWTP pipes were to rupture or holding tanks overtop, then the Delegated Officer has determined that the impacts to soil and vegetation will result in minimal onsite impacts. Therefore the Delegated Officer considers the consequence to be **slight**.

Based upon the Licensee’s controls listed above, the Delegated Officer has determined that the likelihood of pipe ruptures / overtopping of holding tanks impacting on soil and vegetation will not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of the consequence occurring to be **unlikely**.

The overall rating for the rupture of pipes / overtopping of holding tanks is **low**.

Decision – Operation of the MBBR WWTP

The Delegated Officer has determined the key emissions associated with the operation of the MBBR WWTP to be discharges to land. The Delegated Officer considers the risks associated with this emission to be low due to the quality of the treated effluent and the Licensee’s controls in place.

Existing condition 1.2.2 has been updated via this Amendment Notice to include the MBBR

WWTP design capacity limit.

Existing condition 1.2.8 has been updated via this Amendment Notice so that it is noted that treated water from the MBBR WWTP is stored within the Process Water Dam prior to reuse within the process plant.

Existing condition 3.6.1 has been updated via this Amendment Notice so that the quality of the treated effluent from the MBBR WWTP is monitored.

Risk assessment – Operation of TSF Stage 2

TSF Stage 2 – Tailings surface

The Application (CPM 2017a) states that the following management measures are to be implemented by the Licensee:

- Keep tailings beach wet to prevent fugitive dust emissions;
- No mechanical disturbance once tailings surface is dry;
- Rotate discharge spigots to maximise evaporation and consolidation of tailings;
- Control channelling of discharged tailings by maximising number of spigots;
- Daily visual inspections of tailings beach for signs of dust generation;
- Use of polyacrylamide flocculent; and
- Inactive areas of tailings beach to be covered as soon as practicable following deposition.

The Licensee operates five continuous beta attenuation monitoring stations (EBAMS) within the Premises boundary in accordance with the OEMP. The following particulate matter (PM) triggers for PM₁₀ (particulate matter that is smaller than 10 microns (µm) in diameter) have been developed:

- Hourly internal action trigger PM₁₀ level of 250 micrograms per cubic metre (µg/m³); and
- Daily average PM₁₀ guideline 70 µg/m³.

Previous examination of the tailings has indicated the presence of both riebeckite and crocidolite particles. Fibrous riebeckite in various forms has been identified in the deposit and it is possible other amphiboles and serpentine asbestiform minerals also are present albeit at a lower concentration.

The Licensee has previously stated that concentrations of asbestos in the TSF are under detectable levels. *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* applies a general regulatory investigation criterion of 0.01% by weight (w/w) asbestos for fibrous asbestos.

The Licensee operates to the *Fibrous Minerals Management Plan*, Department of Health and DMIRS legislation and has existing requirements under Part IV of the EP Act (as detailed under the “dust emissions” section above). Onsite occupational safety and health is regulated by DMIRS.

Noting that a public access road runs through the Premises and the distance to the nearest offsite receptor is over 5 km away, the impact of dust emissions (potentially containing asbestos) from the tailings surface to public health will result in adverse health effects at a high level. Therefore, the Delegated Officer considers the consequence to the **severe**.

The Delegated Officer has considered the Licensee’s controls and determined that asbestos impacts to public health from dust emissions from the tailings surface will only occur in exceptional circumstances. Therefore, the Delegated Officers considers the likelihood of the consequence occurring to be **rare**.

The overall rating for the risk on public health associated with asbestos dust is **high**, but the Delegated Officers considers the regulatory controls detailed above and conditions on the Existing Licence adequate to regulate the risk associated with fibrous minerals.

TSF Stage 2 – Tailings pipeline, TSF and ponds

The Application (CPM 2017a) states that the following management measures are to be implemented by the Licensee:

- Existing tailings pipeline equipped with pressure monitoring system, which is continuously monitored in the processing control room;
- Containment sumps located along pipeline route for temporary storage of tailings in the event of a pipeline breach;
- Daily inspections of pipelines when operating;
- Freeboard of 0.5 m maintained between wall crest and pond level after a 1:100 72 hour rainfall event, on top of normal operating pond;
- Surface water diversion drainage bunds and channels installed around the TSF perimeter that are designed to accommodate a 2 year annual recurrence interval (ARI) event;
- Regular surveys of the TSF surface to monitor freeboard;
- Emergency discharge points licensed by L8308/2008/2 to enable controlled decant water discharges if necessary;
- Eight piezometers around the TSF embankment for monitoring; and
- Daily visual inspections.

The Delegated Officer has considered the location and distance of TSF Stage 2 to public and environmental receptors and determined that the impact from a tailings spill would result in low level onsite impacts. Therefore, the Delegated Officer considers the consequence to be **minor**.

The Delegated Officer has considered the Licensee controls and determined that the environmental impact from a tailings spill will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of the consequence occurring to be **unlikely**.

The overall risk rating for the risk of a tailing spill from the rupture of pipelines / overtopping of the TSF and ponds is **medium**.

TSF Stage 2 – Seepage

The Application (CPM 2017a) states that the following management measures are to be implemented by the Licensee:

- A geosynthetic liner, comprising of 2 mm thick textured Linear Low Density Polyethylene geomembrane underlain by geosynthetic clay liner installed on a compacted clayey material, will be installed along the northern and western embankments of the TSF to limit seepage;
- A series of finger drains beneath the TSF Stage 2 embankments and seepage collection trenches along the outer embankments drain to a central seepage collection sump along the perimeter of the western embankment;
- Seepage is pumped back into the TSF or returned to the processing plant;
- A low permeability zone, comprising of highly weathered waste rock material, will be constructed within the upstream TSF Stage 1 northern embankment and south-western corner of TSF Stage 1B to reduce seepage if the supernatant pond exceeds normal operating levels;

- Monitoring of the supernatant pond and groundwater monitoring (quality and levels); and
- Daily inspections of infrastructure.

The Application (CPM 2017a) also states that “*standing water levels in the proximity of the TSF were always anticipated to rise as a result of seepage*”.

An extract from the Sino Iron Project Groundwater Management Plan (requirement under MS 635) states “*Seepage losses would result in a water table mound beneath the TSF and initial flows would be away from the TSF in an almost radial pattern. The overall hydraulic gradient in the area will be initially towards the west northwest with regional groundwater flows. As mining progresses, the dewatering cone develops groundwater flow paths from the TSF will be westward towards the ore bodies and southwards along the orebody strike to the pit and dewatering operations. Any seepage will ultimately be captured by the dewatering cone and transported towards the pit void.*

Initially the seepage would be fresh and would result in a fresh water plume within the marginal to brackish basement rock and local alluvial-elluvial aquifers.

It is not expected that seepage from the TSF will result in any reduction in the beneficial use of local groundwater. In fact, seepage may well result in an improvement in groundwater quality in the basement rock and overlying alluvial-elluvial aquifers in the vicinity of the TSF”.

The Delegated Officer has considered the location of TSF Stage 2, total dissolved solids of the receiving groundwater ranging from 891 – 4,170 mg/L and the benign tailings quality and determined that seepage from TSF Stage 2 will result in low level onsite impacts. Therefore, the Delegated Officer considers the consequence to **minor**.

The Delegated Officer has considered the Licensee controls (seepage recovery) and depth to groundwater (ranging from 0.73 – 9.13 mbgl)) and determined that the impact of seepage to groundwater / groundwater mounding will occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of the consequence occurring to be **likely**.

The overall risk rating for the risk of seepage from TSF Stage 2 is **medium**.

Decision – Operation of TSF Stage 2

The Delegated Officer has determined the key emissions associated with the operation of TSF Stage 2 to be dust emissions, discharges to land and groundwater.

The Delegated Officer considers the overall risk of dust emissions from TSF Stage 2 to be *high*, but considers the existing regulatory controls (Existing Licence condition 1.2.9 and Part IV requirements) adequate to regulate the risk associated with fibrous minerals.

The Delegated Officer considers the overall risk of TSF Stage 2 from tailings spillages (rupture of pipelines / overtopping of the TSF and ponds) and seepage to be *medium*. It is however noted that the Existing Licence conditions relating to; freeboard, inspection of pipelines, pipelines fitted with telemetry and alarms, annual water balance, reporting of process volumes and monitoring of ambient groundwater quality in the vicinity of the TSF are sufficient in terms of regulatory control.

Existing condition 1.2.8 has been updated via this Amendment Notice to include TSF Stage 2 as a containment infrastructure with requirements.

Existing condition 1.2.13 has been updated via this Amendment Notice to include TSF Stage 2 design capacity limit of 67,400,000 tonnes per annual period (approved under MS 635).

Existing condition 3.6.1 has been updated via this Amendment Notice to remove reference to TSF Stage 1 and replaced with TSF Stage 2 (to include Stages 1, 1B and 2) for process monitoring.

Other amendments

During this amendment the following changes have also been made to the Licence:

- All references to DER are changed to DWER;
- Addition of definitions for 'MBBR' and 'TSF Stage 2' and updates to the definition of 'CEO', 'CEO for the purposes of notification' and 'Department'.
- Existing condition 3.7.1 has been updated to remove reference to "Replacement bore to be installed (IR2)" and replaced with TSF_017 (17NC764), as the Licensee has stated (CMP 2017c) that "*a replacement bore for BH08-16 (09DD604) has been installed and is operational. The new monitoring bore will have an internal site ID of TSF_017 (17NC764)*".
- IR2 from existing condition 4.1.1 has been removed. The Licensee has installed bore TSF_017 (17NC764) and has stated (CPM 2017d) that "*the second quarter groundwater sampling event conducted this month included bore TSF_017 (17NC764)*".
- Existing condition 5.3.1 for the calibration report has been updated to state 3.1.4 rather than 3.1.3 to align with the correct condition.
- The Premises map, map of containment infrastructure and map of monitoring locations replaced with the map in Attachment 1 of this Amendment Notice.
- Replacement of the first map of Map of emissions and monitoring points to that shown in Attachment 2 of this Amendment Notice.

Licensee comments

The Licensee was provided with the draft Amendment Notice on 3 August 2017. Comments received from the Licensee have been considered by the Delegated Officer as shown in Appendix 2.

Amendment

1. Pages 1 and 2 of the Licence is amended by the deletion of the text shown in strikethrough and insertion of the bold text shown in underline below:

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes or more per year	Primary Crushers (1, 2, 3 and 4) 85,400,000 tonnes per Annual Period Concentrators (Mill Lines 1, 2, 3, 4, 5 and 6) 85,400,000 tonnes per Annual Period (producing 27,600,000 tonnes per Annual Period) Tailings Storage Facility (Stage 1)- 35,800,000 tonnes per Annual Period <u>Tailings Storage Facility (Stage 2)</u> <u>67,400,000 tonnes per Annual Period</u>
6	Mine dewatering discharge	50,000 tonnes or more per year	2,000,000 tonnes per Annual Period (2 gigalitres per annual period)
12	Screening, etc. of material	50,000 tonnes or more per year	2,700,000 tonnes per Annual Period
52	Electric power generation	20 megawatts or more in aggregate (using natural gas)	480 megawatts
54	Sewage facility	100 cubic metres or more per day	4,060 <u>1,160</u> cubic metres per day
57	Used tyre storage (general)	100 tyres or more	No more than 500 tyres
64	Class II putrescible landfill site	20 tonnes or more per year	Landfill Facility - 15,000 tonnes per Annual Period (excluding Clean Fill used for cover material) Waste Rock Landforms – 1,000 tonnes of tyres
73	Bulk storage of chemicals, etc	1,000 cubic metres in aggregate	4,800 cubic metres in aggregate

2. The Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below for section 1.1.2:

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purposes of notification means:

~~Chief Executive Officer~~ **Director General**

Department Div.3 Pt.V ~~Administering the~~ Environmental Protection Act 1986

Locked Bag 33 Cloisters Square

PERTH WA 6850

~~info@der.wa.gov.au~~ **info-der@dwer.wa.gov.au;**

'Department' means the department established under s.35 of the Public Sector Management Act **1994** and designated as responsible for the administration of Division 3 Part V of the Environmental Protection Act 1986;

'MBBR' means **moving bed bio reactor;**

'TSF Stage 2' means the TSF Stage 2 assessed under W4447/2008/1;

3. Condition 1.2.2 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

1.2.2 *The Licensee shall ensure that where waste produced on the Premises are not taken off-site for lawful use or disposal, they are managed according to the requirements in Table 1.2.1.*

Table 1.2.1 Management of waste			
Facility as depicted in Schedule 1	Waste type	Management Strategy	Requirements^{1,2}
Camp 123 WWTP and <u>Biomax WWTP and MBBR WWTP</u>	Sewage	Biological, physical and chemical treatment	Camp 123 WWTP - 1,000 m ³ /day Biomax WWTP – 60 m ³ /day <u>MBBR WWTP – 100 m³/day</u>
Landfill Facility	Inert Waste Type 1	Receipt, handling and disposal of waste by landfilling	<p><u>All waste types</u> No more than 15,000 tonnes per annual period of all waste types (excluding clean fill used for cover material) cumulatively shall be disposed of by landfilling.</p> <p>Disposal of waste by landfilling shall only take place within the Landfill Facility shown on the Premises Map in Schedule 1.</p> <p>Waste shall be placed in a defined trench or within an area enclosed by earthen windrows.</p> <p>The active landfill area is managed such that at no time does landfilling result in an exposed face exceeding 2 m in vertical height.</p> <p>The separation distance between the base of the landfill and the highest groundwater level shall not be less than 3 m.</p> <p>Maintain a minimum distance of at least 100 m between the previously filled areas of the landfill and the active tipping area and any surface water body.</p> <p>A fence or other physical barrier shall be maintained around the active landfill area which is an effective barrier to cattle, horses and stock.</p> <p>Undertake fortnightly inspections of the landfill fence or other physical barrier and ensure any damage to the fence is repaired within one working day of its discovery.</p> <p>Ensure that wind-blown waste is contained within the boundary of the landfill and that wind-blown waste is returned to the tipping area on at least a monthly basis.</p> <p>Ensure that no waste is burnt on the Premises.</p> <p>Ensure that any unauthorised fire at the Landfill Facility is promptly extinguished.</p>
	Inert Waste Type 2 (plastic only)		
	Special Waste Type 1 (cement bonded asbestos. No fibrous asbestos shall be accepted)		
	Special Waste Type 2 (waste consisting of certain types of biomedical waste which are regarded as hazardous but which, with the use of specific management techniques may be disposed of safely)		
	Clean Fill		
	Contaminated Solid Waste (must meet the acceptance criteria for Class II landfills)		
	Putrescible Waste		
	Other wastes (must comply with Class II criteria in the Landfill Definitions)		

Table 1.2.1 Management of waste				
Facility as depicted in Schedule 1	Waste type	Management Strategy	Requirements^{1,2}	
			<p><u>Non-greenwaste</u> Tipping area is restricted to a maximum linear length of 30 m.</p> <p><u>Special Waste Type 1</u> Only to be disposed of into a designated asbestos disposal area within the landfill.</p> <p>Not to be deposited within 2 m of the final tipping surface of the landfill.</p> <p>No works shall be carried out on the landfill that could lead to a release of asbestos fibres.</p> <p><u>Special Waste Type 1 and Special Waste Type 2</u> Material containing asbestos or clinical waste is disposed of at the Landfill Facility under the personal supervision of the Licensee or the personal supervision of a person nominated by the Licensee.</p>	
Landfill Facility and Waste Rock Landforms	Inert Waste Type 2 (tyres only)	Receipt, handling and disposal of waste by landfilling	<p><u>Tyres (Inert Waste Type 2)¹</u> No more than 1,000 tonnes of tyres shall be disposed of by landfilling.</p> <p>Tyres shall only be landfilled within the Landfill Facility and Waste Rock Landforms shown on the Premises map in Schedule 1.</p> <p>Tyres shall consist of batches of less than 100 whole tyres.</p> <p>Batches must be separated from each other by at least 100 mm of soil.</p> <p>The location of where tyres are buried will be surveyed and the latitude and longitude recorded.</p>	
Used Tyre Laydown Area	Inert Waste Type 2 (Used tyres)	Storage	<p>Tyres shall only be stored within the Used Tyre Laydown Area shown on the Premises map in Schedule 1.</p> <p>Shall only store a maximum of 500 tyres at any time.</p>	

Note 1: Requirements for landfilling tyres are set out in Part 6 of the Environmental Protection Regulations 1987.

Note 2: Additional requirements for the acceptance and landfilling of controlled waste (including asbestos and tyres) are set out in the Environmental Protection (Controlled Waste) Regulations 2004.

4. Condition 1.2.8 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

1.2.8 The Licensee shall ensure that waste material is only stored and/or treated within vessels or compounds provided with the infrastructure detailed in Table 1.2.3.

Table 1.2.3: Containment infrastructure		
Containment cell or dam number(s) as depicted in Schedule 1	Material	Infrastructure requirements
TSF Stage 4 <u>TSF Stage 2</u>	Tailings and decant water	880 <u>987</u> ha facility to a maximum height of 32.8mRL (TSF Stage 1) , and 33mRL (TSF Stage 1B) <u>49 mRL (TSF Stage 2)¹</u> .

		<p><u>TSF Stage 2 includes low permeability zones comprising highly weathered waste rock material along the upstream zone of the northern and the south-western embankments.</u></p> <p><u>TSF Stage 2 northern and western flanks includes a liner system comprising of 2 mm thick textured Linear Low Density Polyethylene geomembrane underlain by a Geosynthetic Clay Liner installed on a compacted clayey material.</u></p> <p>Tailings to be deposited from multiple discharge locations around the <u>southern and eastern embankment</u> perimeters of the TSF <u>Stage 2.</u></p> <p>Maintain an operational freeboard of 0.53 m.</p>
Process Water Dam	Process water, return water from the TSF thickeners and treated wastewater from the Biomax WWTP <u>and the MBBR WWTP</u>	Lined process water dam, which will store process water, return water from the TSF and treated wastewater from the Biomax WWTP <u>and the MBBR WWTP</u> prior to reuse (i.e. within the hoppers and mills).
TSF Seepage Drains	Seepage water temporarily stored in drains prior to being pumped to the concentrator plant for reuse in processing	A series of finger drains (that will eventually be located underneath the future TSF Stage 2 embankment) will collect any potential seepage. from TSF Stage 1
Camp 123 Turkey's nest	Mine dewatering water	Lined with High Density Polyethylene Liner to meet a permeability of $<10^{-9}$ m/s. Maintain an operational freeboard of 0.5 m.

Note 1: The Licensee will be required to obtain approval from the Department of Mines, Industry Regulation and Safety prior to the construction of TSF Stage 2 beyond 39 mRL.

5. Condition 1.2.13 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

1.2.13 The Licensee shall ensure the limits specified in Table 1.2.5 are not exceeded.

Table 1.2.5: Production or design capacity limits		
Category¹	Category description¹	Premises production or design capacity limit
5	Processing or beneficiation of metallic or non-metallic ore	Primary Crusher (1 to 4) - 85,400,000 tonnes per Annual Period Mill Line (1 to 6) - 85,400,000 tonnes per Annual Period (producing 27,600,000 tonnes per Annual Period) TSF Stage 1 - 35,800,000 tonnes per Annual Period <u>TSF Stage 2 - 67,400,000 tonnes per Annual Period</u>
6	Mine dewatering discharge	2,000,000 tonnes per Annual Period
12	Screening, etc. of material	2,700,000 tonnes per Annual Period
52	Electrical power generation	480 megawatts
73	Bulk storage of chemicals, etc.	4,800 cubic metres in aggregate

Note 1: Environmental Protection Regulations 1987, Schedule 1.

6. Condition 1.2.14 of the Licence is amended by the insertion of the bold text shown in underline below:

1.2.14 The Licensee shall construct the controlled surface water discharge points, **the MBBR WWTP and TSF Stage 2** in accordance with the requirements specified in the infrastructure requirements detailed in Table 1.2.6. The Licensee must not

depart from the design and construction requirements specified in Table 1.2.6 except:

- (a) where such departure is minor in nature and does not materially change or affect the infrastructure; or
- (b) where such departure improves the functionality of the infrastructure and does not increase risks to public health, public amenity or the environment;
- (c) and all other conditions in this Licence are still satisfied.

Table 1.2.6: Infrastructure requirements	
Infrastructure	Requirements (Design and construction)¹
Controlled surface water discharge points:	Layer of riprap will be installed at each discharge point to protect the receiving water bank from erosion
EC1	Discharge pipe to Edwards Creek located approximately 300m north of the enviro dam to an existing rock armoured culvert that traverses the north-south infrastructure corridor
EC2	Discharge pipe to Edwards Creek to a rock armoured culvert that traverses the public Fortescue River Mouth access road
EC3	Discharge pipe to a tributary of Edwards Creek to a rock armoured section of a 2km creek diversion, that was required to protect the integrity of the TSF embankments, and eventually meets up to the natural flow path of the tributary downstream of EC4
EC4	Discharge pipe to a remnant tributary of Edwards Creek, which natural flows no longer traverse, and flows under the North-South road and intersects Edwards Creek downstream of EC1 and EC2 to a tidally affected area
DC1	Discharge pipe to a tributary of DuBoulay Creek that is within the footprint of the proposed west pit scheduled to be mined within the next five years
DC2	Discharge pipe to a tributary of DuBoulay Creek that has a width of 100m
<u>MBBR WWTP</u>	<ul style="list-style-type: none"> - <u>Seven heavy duty enclosed polyethylene tanks (Primary/Secondary Settling Tank 50 m³; Denitrification Tank 50 m³; Aeration Tank 50 m³; Clarification Tank 50 m³; and Effluent Tank 50 m³);</u> - <u>Common Balance Tank (50 m³) provides in-built emergency storage capacity of 0.5 – 1.0 days assuming normal flow;</u> - <u>WWTP placed within a 2 mm HDPE lined bund to capture overflow;</u> - <u>Audible alarm fitted;</u> - <u>Process interlocks fitted;</u> - <u>Sampling point and flow meter installed on the outflow pipeline;</u> - <u>WWTP provides a further in-built emergency storage capacity of 0.8 – 1.0 days flow assuming normal flow; and</u> - <u>Daily inspections</u>
<u>TSF Stage 2</u>	<ul style="list-style-type: none"> - <u>The embankment height shall be 49 mRL²;</u> - <u>A liner system comprising of 2 mm thick textured Linear Low Density Polyethylene geomembrane underlain by a Geosynthetic Clay Liner installed on a compacted clayey material shall be installed on the TSF Stage 2 northern and western flanks;</u> - <u>Low permeability zones comprising highly weathered waste rock material shall be installed along the upstream zone of the northern and the south-western embankments;</u> - <u>The existing series of finger drains shall be extended to the toe of the TSF Stage 2 embankment; and</u> - <u>The seepage collection trench shall be relocated to the toe of the TSF Stage 2 embankment</u>

Note 1: Where the details and commitments of the documents listed in condition 1.2.14 are inconsistent with any other condition of this Licence, the conditions of this Licence shall prevail.

Note 2: The Licensee will be required to obtain approval from the Department of Mines, Industry Regulation and Safety prior to the construction of TSF Stage 2 beyond 39 mRL.

7. The Licence is amended by the deletion of the following Condition 1.2.15:

~~1.2.15 The Licensee shall submit a compliance document to the CEO, following the construction of the controlled surface water discharge points. The compliance document/s shall:~~

- ~~(a) be certified by a suitably qualified engineer and certify that the works were constructed in accordance with the construction requirements specified in Table 1.2.6;~~
- ~~(b) provide a list of departures from the specified works certified by a suitably qualified engineer; and~~
- ~~(c) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.~~

8. Previous Condition 1.2.16 (now Condition 1.2.15) of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

~~4.2.16~~ **1.2.15** *The Licensee shall operate the controlled surface water discharge points, **the MBBR WWTP and TSF Stage 2** in accordance with the conditions of this Licence, following submission of the compliance document required under condition **5.3.1** ~~4.2.15~~.*

9. Condition 3.6.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

3.6.1 *The Licensee shall undertake the monitoring in Table 3.6.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.*

Table 3.6.1: Process monitoring						
Monitoring point reference as depicted in Schedule 1	Process description	Parameter	Limit	Units	Frequency	Method
OWS1	Final effluent tank OWS1 (Heavy Mobile Equipment Workshop) used for dust suppression onsite	Total Recoverable Hydrocarbons	15	mg/L	Quarterly where wastewater is available	None specified
OWS2	Final effluent tank OWS2 (Bulk Fuel Farm) used for dust suppression onsite	Total Recoverable Hydrocarbons	15	mg/L		
OWS3	Final effluent tank OWS3 (Supply Base) used for dust suppression onsite	Total Recoverable Hydrocarbons	15	mg/L		
WWTP	Final treated effluent tank of the Biomax WWTP <u>and the MBBR WWTP</u> Treated effluent is stored in the process water dam, prior to recirculating it in the process plant for use in the hoppers and mills	pH ¹	-		Quarterly	
		Biochemical Oxygen Demand	-	mg/L		
		Total Suspended Solids	-	mg/L		
		E.coli	-	cfu/100 mL		
		Total Nitrogen	-	mg/L		
		Total Phosphorus	-	mg/L		
TSF Stage 4 <u>2</u>	-	Combined decant water and seepage water recovery volumes	-	m ³	Cumulative monthly total	None specified
	-	Volume of tailings deposited	-	m ³		

10. Condition 3.7.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

3.7.1 The Licensee shall undertake the monitoring in Table 3.7.1, Table 3.7.2 and Table 3.7.3 according to the specifications in that table.

Table 3.7.1: Monitoring of ambient groundwater quality						
Monitoring point reference and location as depicted in Schedule 1	Parameter	Units	Averaging period	Frequency		
09NC565 10NC585 (Control) 09NC564 09NC566	pH ¹	pH units	Spot sample	Six monthly		
	Total Nitrogen	mg/L				
	Total Phosphorus	mg/L				
	Total Dissolved Solids	mg/L				
	Lead	mg/L				
	Mercury	mg/L				
	Copper	mg/L				
	Chromium (hexavalent)	mg/L				
	Arsenic	mg/L				
	Nickel	mg/L				
	Zinc	mg/L				
	Cadmium	mg/L				
	Total Recoverable Hydrocarbons	mg/L				
TSF_001 BH08-06 (09DD598) BH08-07 (09DD599) TSF_009 BH08-09 (09DD602) TSF_002 TSF 017 (17NC764) Replacement bore to be installed (IR2) 07WB002 (07NC256)	Standing Water Level ²	mbgl	Spot sample	Monthly		
	Oxidation Reduction Potential ¹	mV	Spot sample	Quarterly		
	pH ¹					
	Dissolved Oxygen ¹	mg/L				
	Temperature ¹	°C				
	Electrical Conductivity ¹	µS/cm				
	Total Dissolved Solids	mg/L				
	Total Sulfur	mg/L				
	Calcium	mg/L				
	Sodium	mg/L				
	Total Alkalinity	mg/L				
	Chloride	mg/L				
	Magnesium	mg/L				
	Potassium	mg/L				
	Sulfate (SO ₄ ²⁻)	mg/L				
	Bicarbonate (HCO ₃ ⁻)	mg/L				
	Carbonate (CO ₃ ²⁻)	mg/L				
	Aluminium	mg/L			Spot sample	Six monthly
	Lead	mg/L				
	Mercury	mg/L				
	Copper	mg/L				
Chromium (hexavalent)	mg/L					
Nickel	mg/L					
Zinc	mg/L					
Cadmium	mg/L					
Cobalt	mg/L					
Iron	mg/L					
Manganese	mg/L					

Note 1: In-field non-NATA accredited analysis permitted.

Note 2: Standing water level should be determined prior to collection of other water samples.

11. Condition 4.1.1 of the Licence is amended by the deletion of the text shown in strikethrough below:

4.1.1 The Licensee shall complete the improvements in Table 4.1.1 by the date of completion in Table 4.1.1.

Table 4.1.1: Improvement program		
Improvement reference	Improvement¹	Date of completion
IR1	The Licensee shall certify that the point source air emission levels from each turbine unit of the Power Station for oxides of nitrogen (NO _x) and carbon monoxide (CO) of <25 ppmv and <50 ppmv, respectively, have been met at full load.	30 June 2018
IR2	The Licensee shall install a replacement groundwater monitoring bore for BH08-16 (09DD604). The Licensee shall monitor from this groundwater monitoring bore as per Condition 3.7.1, Table 3.7.1 following its installation.	30 June 2017

Note 1: All units are referenced to STP dry at 15% O₂

12. Condition 5.3.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

5.3.1 The Licensee shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 5.3.1: Notification requirements			
Condition or table (if relevant)	Parameter	Notification requirement¹	Format or form²
-	Unauthorised fire at the Landfill Facility	Within 14 days of unauthorised fire	ET1
1.2.1 1.2.13 2.2.2	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1
1.2.15	<u>The Licensee shall submit a compliance document to the CEO, following construction of the controlled surface water discharge points, the MBBR WWTP and TSF Stage 2 (following the installation of the liner system, low permeability zones and all other seepage controls). The compliance document shall:</u> a) <u>be certified by a suitably qualified engineer and certify that the works were constructed in accordance with the construction requirements specified in Table 1.2.6;</u> b) <u>note the TSF Stage 2 embankment height at the time of submission;</u> c) <u>provide a list of departures from the specified works certified by a suitably qualified engineer; and</u> d) <u>be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.</u>	<u>Within 7 days of the completion of construction</u>	<u>None specified</u>
2.2.4	The Licensee shall submit a compliance document to the CEO, following construction of the mine dewatering discharge	Within 7 days of the completion of construction	None specified

	<p><i>infrastructure. The compliance document shall:</i></p> <p>a) <i>certify that the works were constructed in accordance with the specifications in Table 2.2.1; and</i></p> <p>b) <i>be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.</i></p>		
3.1.43	<i>Calibration report</i>	<i>As soon as practicable</i>	<i>None specified</i>

Note 1: Notification requirements in the licence shall not negate the requirement to comply with s72 of the Act

Note 2: Forms are in Schedule 2

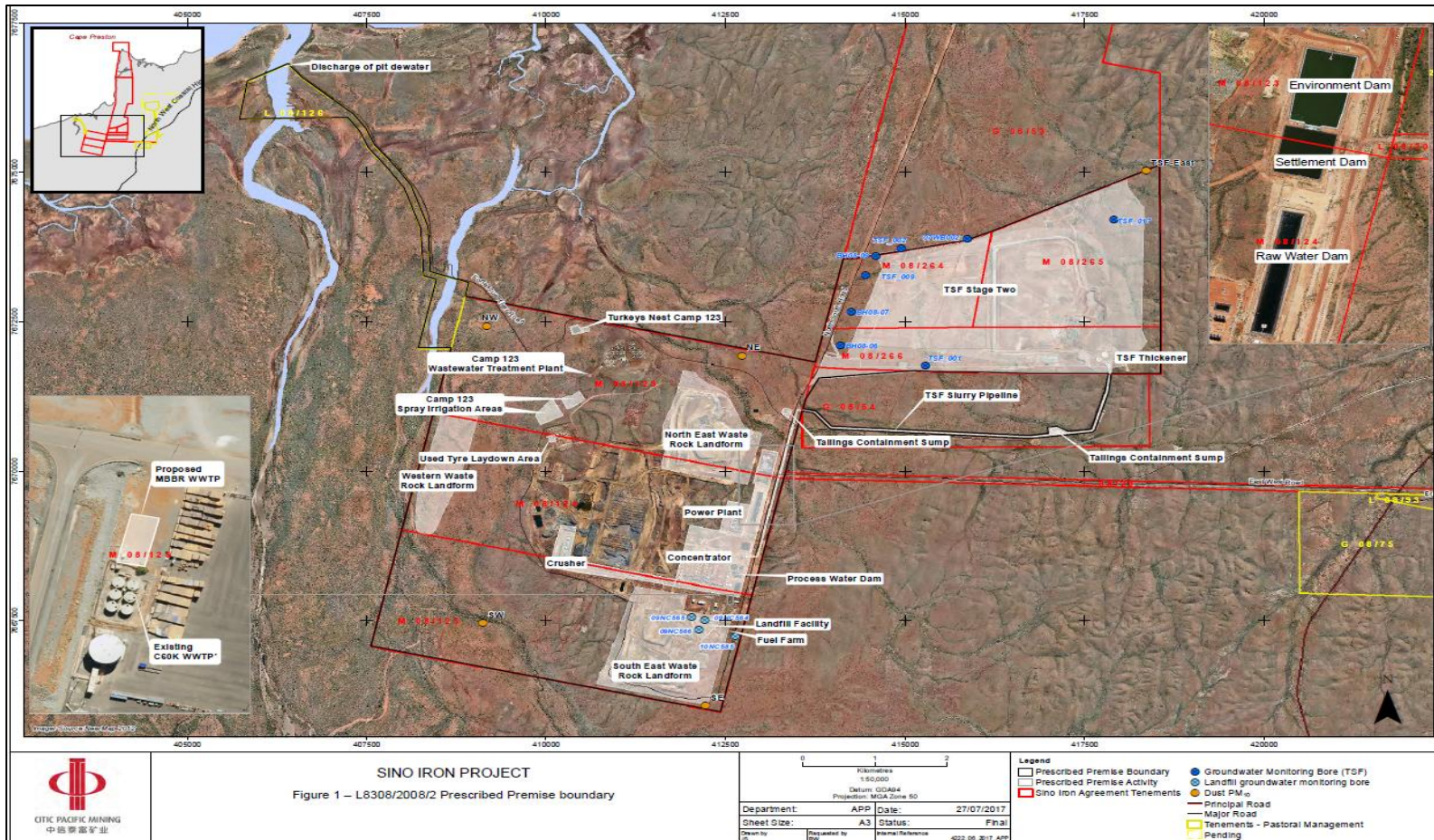
13. The Premises map, map of containment infrastructure and map of monitoring locations in Schedule 1 is deleted and replaced with the map in Attachment 1 of this Amendment Notice.
14. The first map under Map of emissions and monitoring points in Schedule 1 has been deleted and replaced with the map in Attachment 2 of this Amendment Notice.

Attachment 1

Premises map, map of waste management facilities, containment infrastructure, emission point and monitoring locations

The Premises is shown in the map below. The black line depicts the Premises boundary.

The locations of the waste management facilities defined in Table 1.2.1, containment infrastructure defined in Table 1.2.3, emission point defined in Table 2.3.1 and monitoring points defined in Tables 3.6.1 and 3.7.1 are shown below.

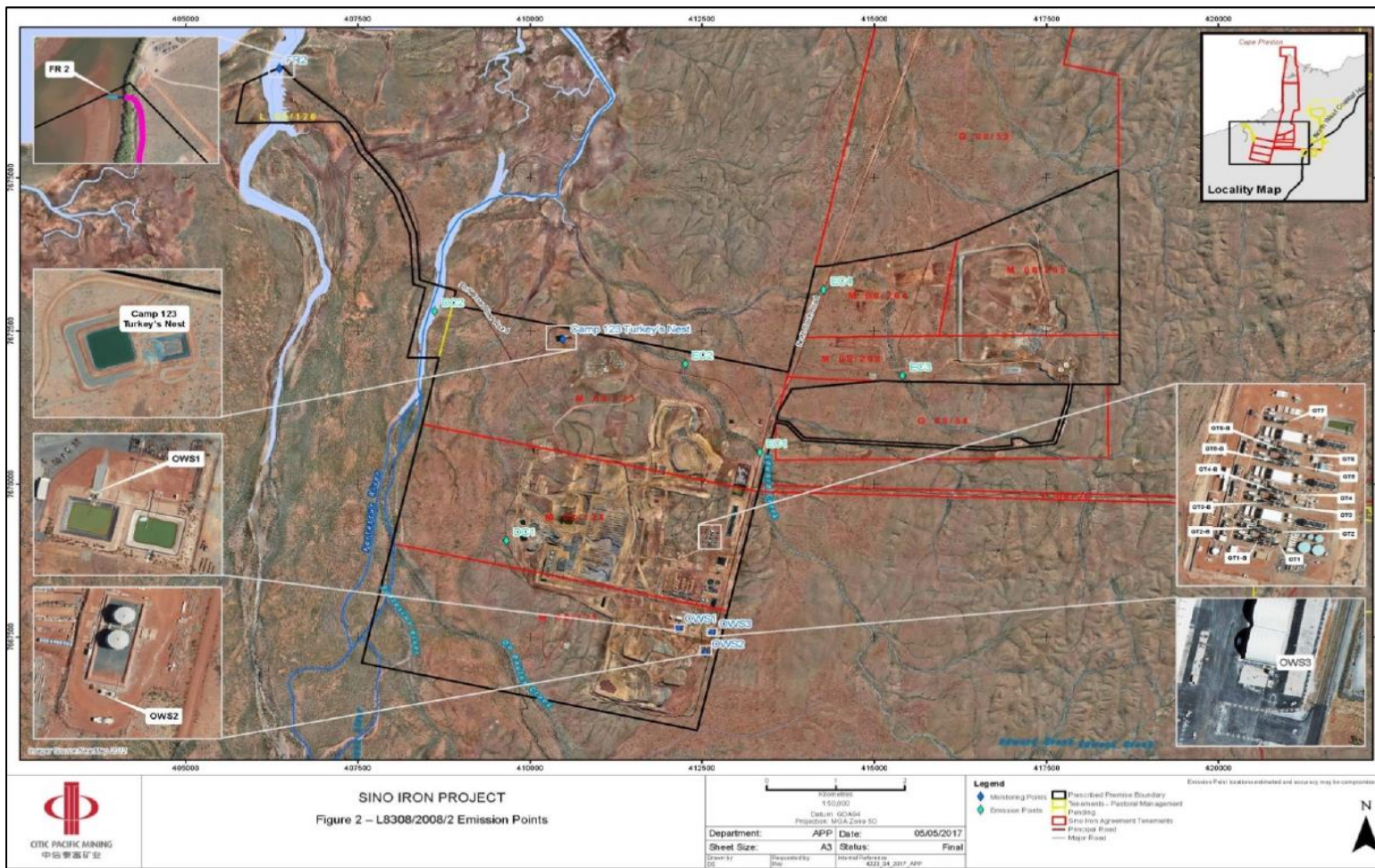


Attachment 2

Map of emissions and monitoring points

The locations of the emission points defined in Tables 2.1.1 and 2.2.1 are shown below.

The locations of the monitoring points defined in Tables 3.2.1, 3.3.1, 3.6.1, 3.7.2 and 3.7.3 are shown in the two maps below.



Licence: L8308/2008/2

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Appendix 1: Key documents

	Document title	In text ref	Availability
1	FW: L8308/2008/2 – TSF Groundwater Monitoring Programme, received from Rob Wood (CITIC Pacific Mining), 20 June 2017	CMP 2017d	DWER records (A1456425)
2	Guidance Note on Public Health Risk Management of Asbestiform Minerals Associated with Mining, Department of Health, 2013	Guidance Note on Public Health Risk Management of Asbestiform Minerals Associated with Mining	accessed at http://ww2.health.wa.gov.au/~/-/media/Files/Corporate/general%20documents/Asbestos/PDF/GNote-Public-Health-Risk-Mgt-Asbestos-associated-with-Mining-Activities.ashx
3	Guideline for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, Department of Health, May 2009	Guideline for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia	accessed at http://ww2.health.wa.gov.au/~/-/media/Files/Corporate/general%20documents/Asbestos/PDF/Guidelines-Asbestos-Contaminated%20Sites-May2009.ashx
4	Guideline on the Management of fibrous minerals in Western Australian mining operations, Department of Mines and Petroleum, 2015	Guideline on the Management of fibrous minerals in Western Australian mining operations	accessed at http://www.dmp.wa.gov.au/Documents/Safety/MSH_G_ManagementOfFibrousMineralsInWaMiningOperations.pdf
5	<i>Guidance Statement: Regulatory principles.</i> Department of Environment Regulation, July 2015	<i>Guidance Statement: Regulatory principles</i>	accessed at www.dwer.wa.gov.au
6	<i>Guidance Statement: Setting conditions.</i> Department of Environment Regulation, October 2015	<i>Guidance Statement: Setting conditions</i>	
7	<i>Guidance Statement: Risk Assessments.</i> Department of Environment Regulation, November 2016	<i>Guidance Statement: Risk Assessments</i>	
8	<i>Guidance Statement: Decision Making.</i> Department of Environment Regulation, November 2016	<i>Guidance Statement: Decision Making</i>	
9	Licence L8308/2008/2 – Sino Iron Project Mine Site	L8308/2008/2	accessed at http://www.der.wa.gov.au

	Document title	In text ref	Availability
10	Ministerial Statement 635	MS 635	accessed at http://www.epa.wa.gov.au/
11	RE: APPLICATION NOTIFICATION – L8308/2008/2 – NOTICE OF PROPOSED AMENDMENT TO LICENCE, received from Rob Wood (CITIC Pacific Mining), 10 August 2017	CPM 2017e	DWER records (A1503222)
12	RE: L8308 amendment questions, received from Rob Wood (CITIC Pacific Mining), 27 July 2017	CPM 2017c	DWER records (A1490690)
13	Sino Iron and Korean Steel Projects – Design Report for Raise 2 of the Stage 2 Tailings Storage Facility, Department of Mines, Industry Regulation and Safety, 21 July 2017	DMIRS 2017	DWER records (A1485481)
14	Sino Iron, Fibrous Minerals Management Plan, CITIC Pacific Mining (DR030318 Revision No. 3), 24 May 2016	Fibrous Minerals Management Plan	DWER records (A1490533)
15	Sino Iron Project, Fibrous Minerals Management Procedure, CITIC Pacific Mining (DR012984), January 2013	Fibrous Minerals Management Procedure	DWER records (A1010040)
16	Sino Iron Project, Operational Environmental Management Plan, CITIC Pacific Mining (DR-029968), 10 April 2013	OEMP	DWER records (A1010039)
17	Sino Iron Project – Processing/Workshop MBBR Wastewater Treatment Plant – Application to Amend L8308/2008/2, CITIC Pacific Mining, 23 May 2017	CPM 2017	DWER records (A1440536)
18	Sino Iron Project – Tailings Storage Facility Stage 2 – Application to Amend L8308/2008/2, CITIC Pacific Mining, 23 May 2017	CPM 2017a	DWER records (A1440535)
19	Sino Iron Project – Tailings Storage Facility Stage 2 and Processing WWTP Upgrade – Application to Amend L8308/2008/2 – Additional Information Request, CITIC Pacific Mining, 13 June 2017	CPM 2017b	DWER records (A1451167)
20	Works Approval W4447/2008/1 – Sino Iron Project	W4447/2008/1	DWER records (A629263)

Appendix 2: Summary of Licensee comments

The Licensee was provided with the draft Amendment Notice on 3 August 2017 for review and comment. The Licensee responded on 10 August 2017 waiving the remaining comment period. The following comments were received on the draft Amendment Notice.

Condition	Summary of Licensee's comment	DWER response
Conditions 1.2.14 and 5.3.1	<p>The Licensee has stated (CPM 2017e) that they propose <i>“to submit the TSF2 compliance document in Q4 2017 following the install of the liner system, low permeability zones and all other seepage controls. The compliance documentation will also note the embankment height at the time of submission, however based on current construction schedules all embankments will not be raised to 49mRL. Post submission of the compliance documentation, TSF2 operations will occur concurrently to downstream construction activities until the final embankment height of 49mRL has been achieved”</i> (subject to receipt of relevant approvals from DMIRS).</p>	<p>Condition 1.2.14 remains unchanged.</p> <p>DWER has updated condition 5.3.1 for 1.2.15 by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:</p> <p>The Licensee shall submit a compliance document to the CEO, following construction of the controlled surface water discharge points, the MBBR WWTP and TSF Stage 2 (to 49 mRL <u>following the installation of the liner system, low permeability zones and all other seepage controls</u>). The compliance document shall:</p> <ol style="list-style-type: none"> <u>be certified by a suitably qualified engineer and</u> certify that the works were constructed in accordance with the specifications <u>construction requirements specified</u> in Table 1.2.6; and <u>note the TSF Stage 2 embankment height at the time of submission;</u> <u>provide a list of departures from the specified works certified by a suitably qualified engineer; and</u> be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.