



Amendment Notice # 7

Licence Number	L8308/2008/2
Licence Holder	CITIC Pacific Mining Management Pty Ltd
ACN	119 578 371
File Number:	DER2014/000430-2~3
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	18/04/2019

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* (EP Act) as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

ALANA KIDD

MANAGER, 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
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environmental Report
Amendment Notice	refers to this document
BGM	Elastomeric bituminous geomembrane
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 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
DC2	DuBoulay Creek discharge point 2
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.
DMIRS	Department of Mines, Industry Regulation and Safety
DWER	Department of Water and Environmental Regulation
EBAMS	Electronic Beta Attenuation Monitors
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>

EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</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 Review
HDPE	High Density Polyethylene Liner
Licence Holder	CITIC Pacific Mining Management Pty Ltd
Licensee	CITIC Pacific Mining Management Pty Ltd
LLDPE	Linear low density polyethylene geomembrane liner system
m ³	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
mRL	Metres reduced level
mtpa	million tonnes per annum
NEPM	National Environmental Protection Measure
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act.
PMPL	Pastoral Management Pty Ltd
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>
TDS	Total Dissolved Solids
TSF Stage 2	Tailings Storage Facility Stage 2
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
µg/m ³	micrograms per cubic metre

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 Categories 5 and 6. No changes to the aspects of the Existing Licence including Amendment Notices 1, 2, 5 and 6 relating to Categories 12, 52, 54, 57, 64 and 73 have been requested by the Licence Holder. This amendment does result in changes to Amendment Notices 3 and 4 for the TSF and mine dewatering discharge.

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: Land Use Planning (February 2017);*
- *Guidance Statement: Licence Duration (August 2016);*
- *Guidance Statement: Decision Making (February 2017);*
- *Guidance Statement: Risk Assessment (February 2017);* and
- *Guidance Statement: Environmental Siting (November 2016).*

Amendment description

The Licence Holder has submitted an application to amend licence L8308/2008/2 for a proposed raise 3 lift to TSF Stage 2 (TSF2).

TSF Stage 2

Raise 3 Lift

All facilities, including the required finger drains, seepage trenches, pumps and groundwater monitoring bores are already in place from current operations to support the proposed TSF2, Raise 3 lift. The TSF2 design report has been revised for the intended lifts.

The key characteristics of the revised TSF2 design are provided in Table 2 and schematic diagrams provided in

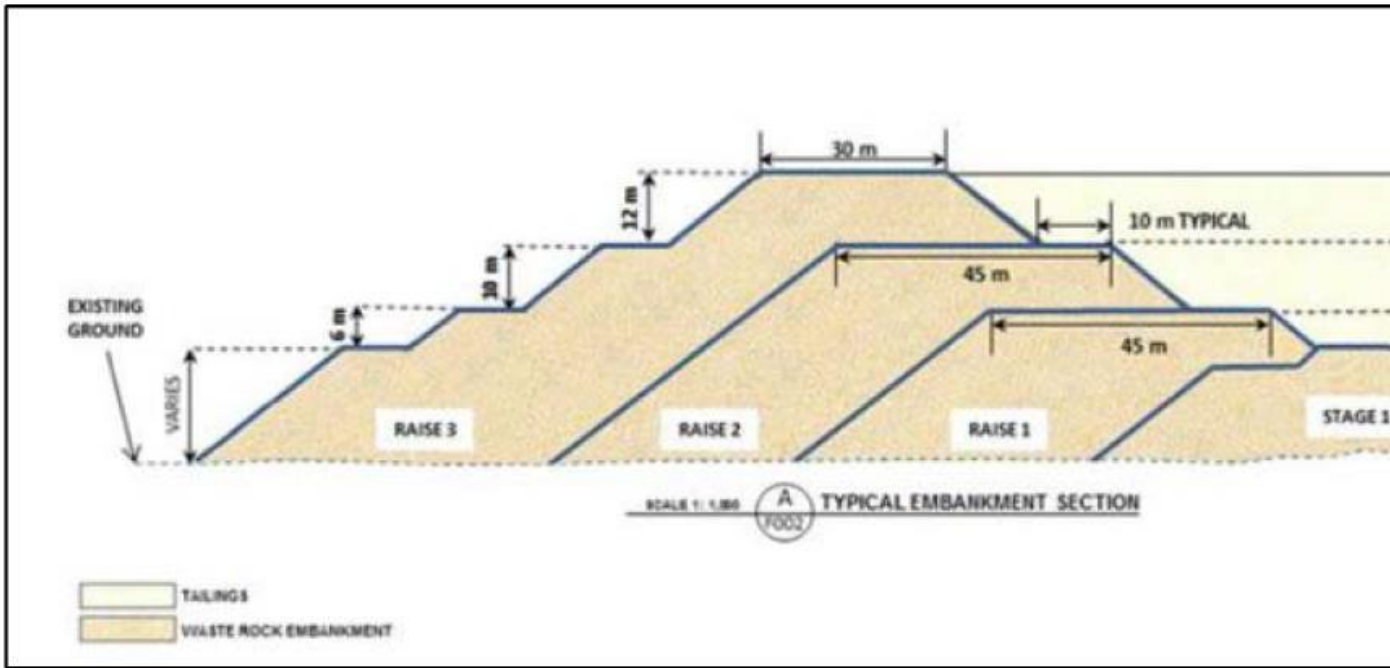


Figure 1,

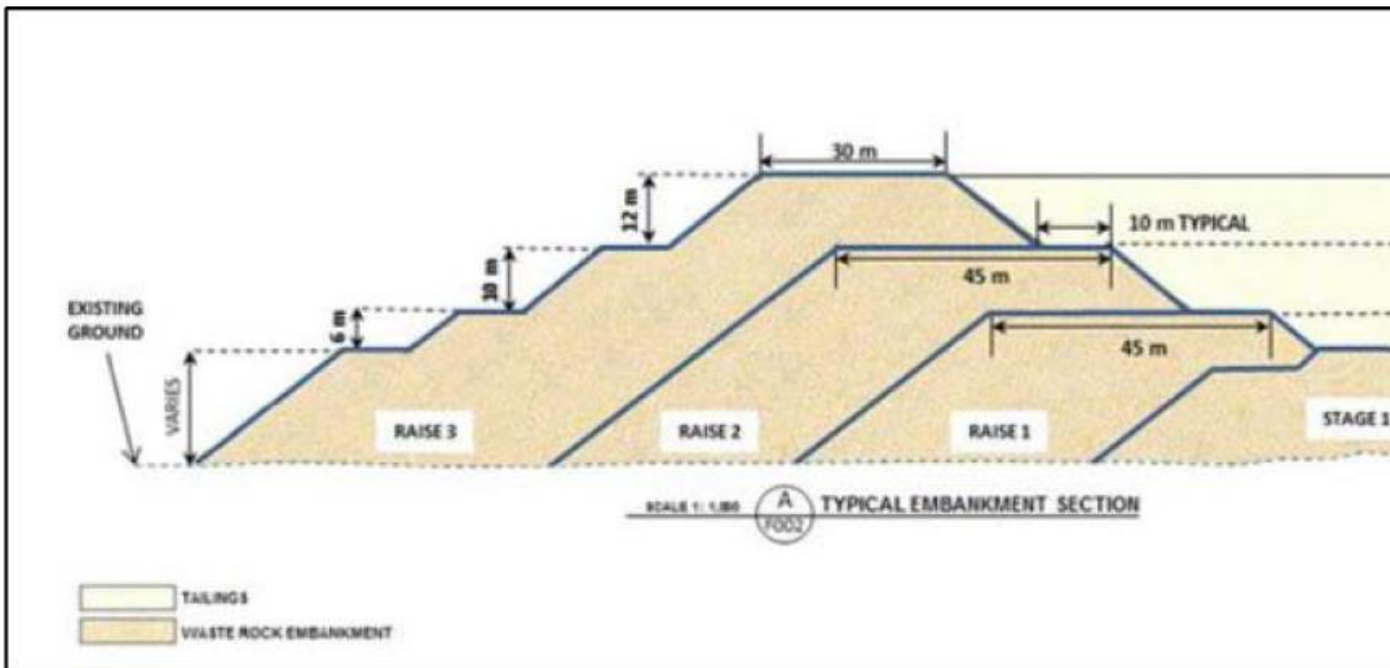


Figure 1

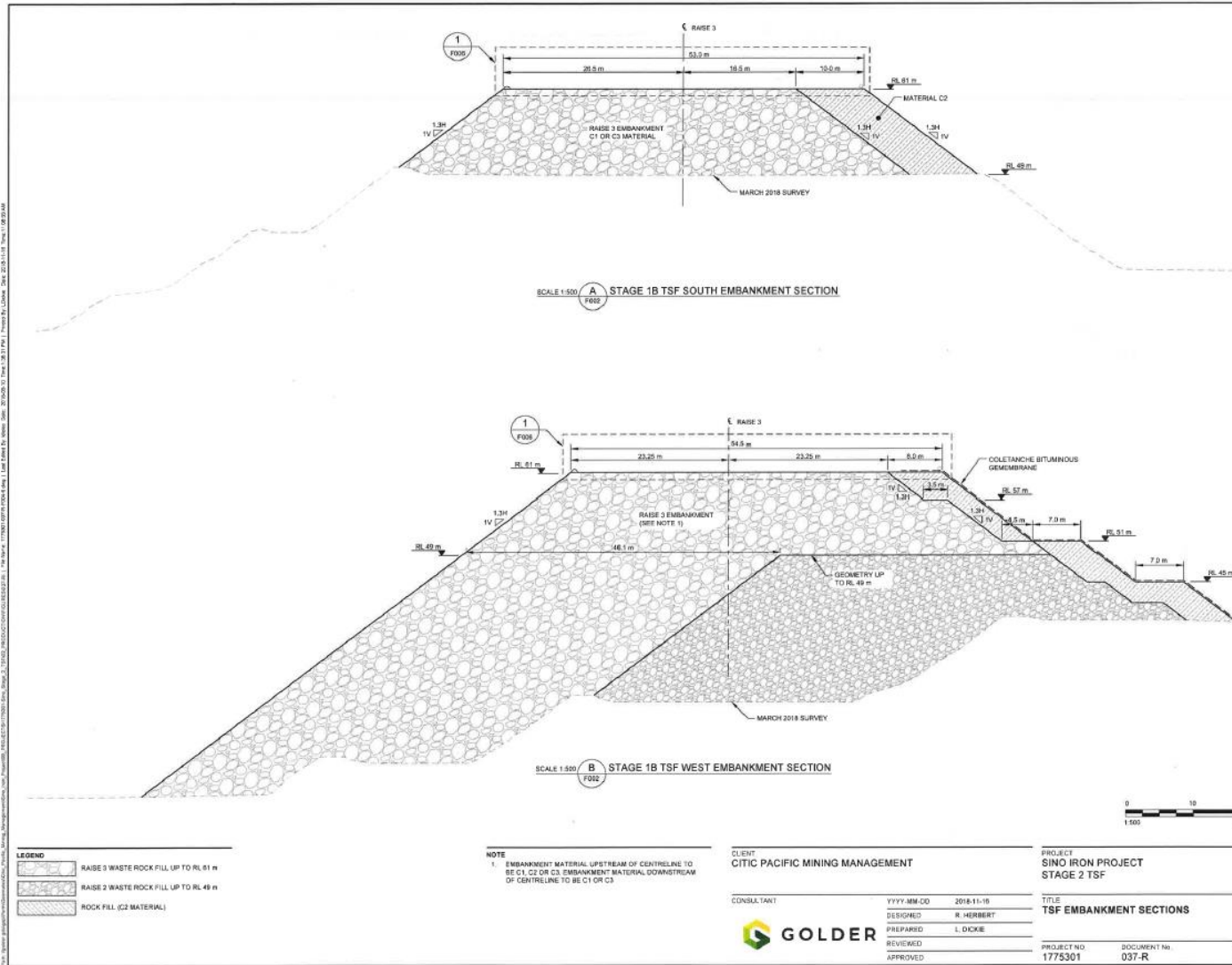


Figure 2, Figure 3 and Figure 4.

Table 2: Key characteristics of TSF2.

Total size of TSF footprint	<987 ha (as defined by MS635 as amended and MS1066)
TSF surface area	~550 ha
Maximum embankment height	61 mRL
Decant location	Perimeter decant, north-west corner
Design capacity	~276 Mt / ~163 Mm ³
Tailings throughput	~69% of ore feed
Solid content	~60% by mass
Tailings settled dry density	~1.7 t/m ³
Beach slope	~0.3%

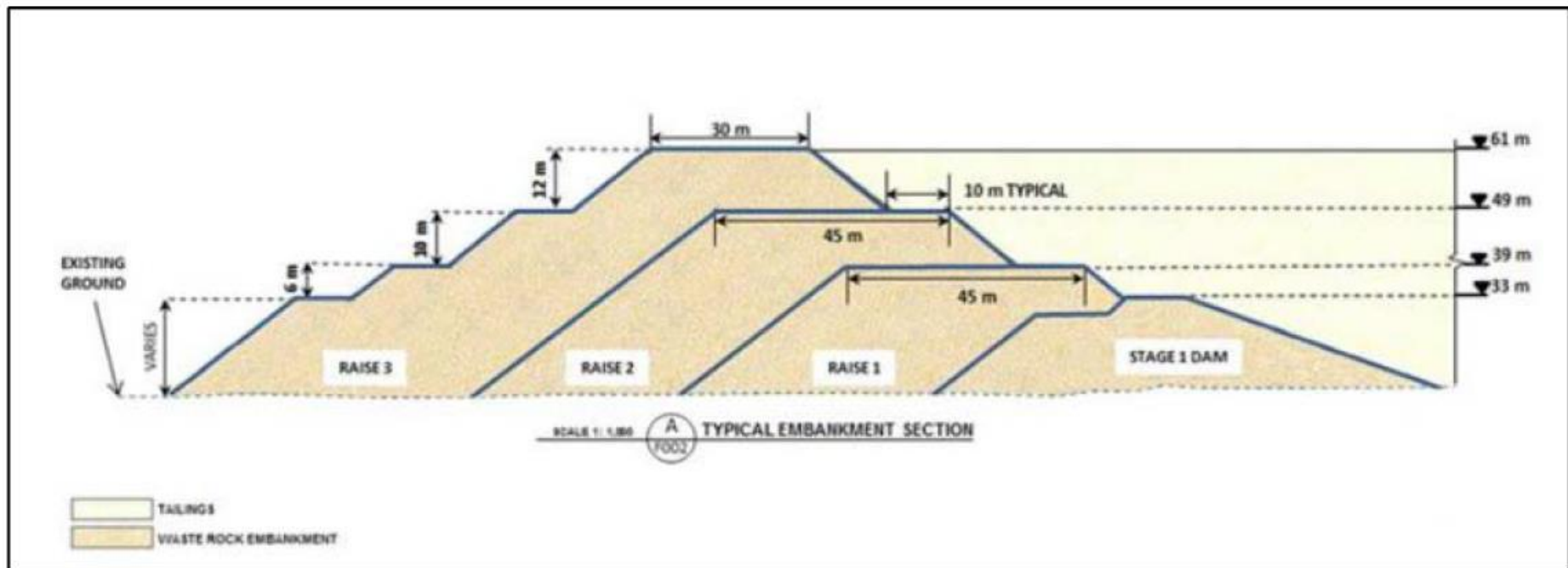


Figure 1: Schematic Description of TSF Stage 2, Raises 1 - 3 (CITIC Application, 2019)

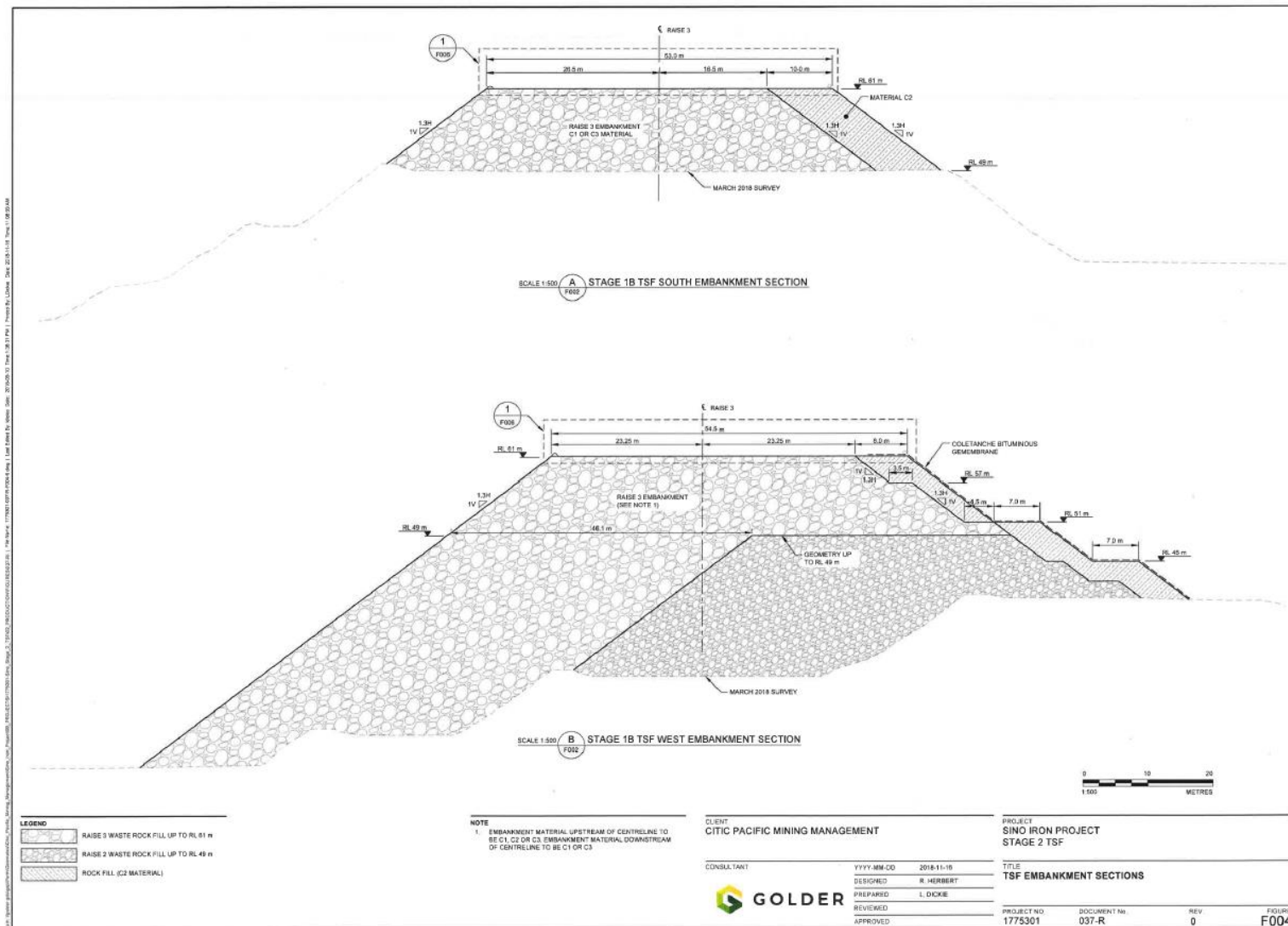


Figure 2: TSF Embankment Sections, south and west (CITIC Design Drawings, 2019)

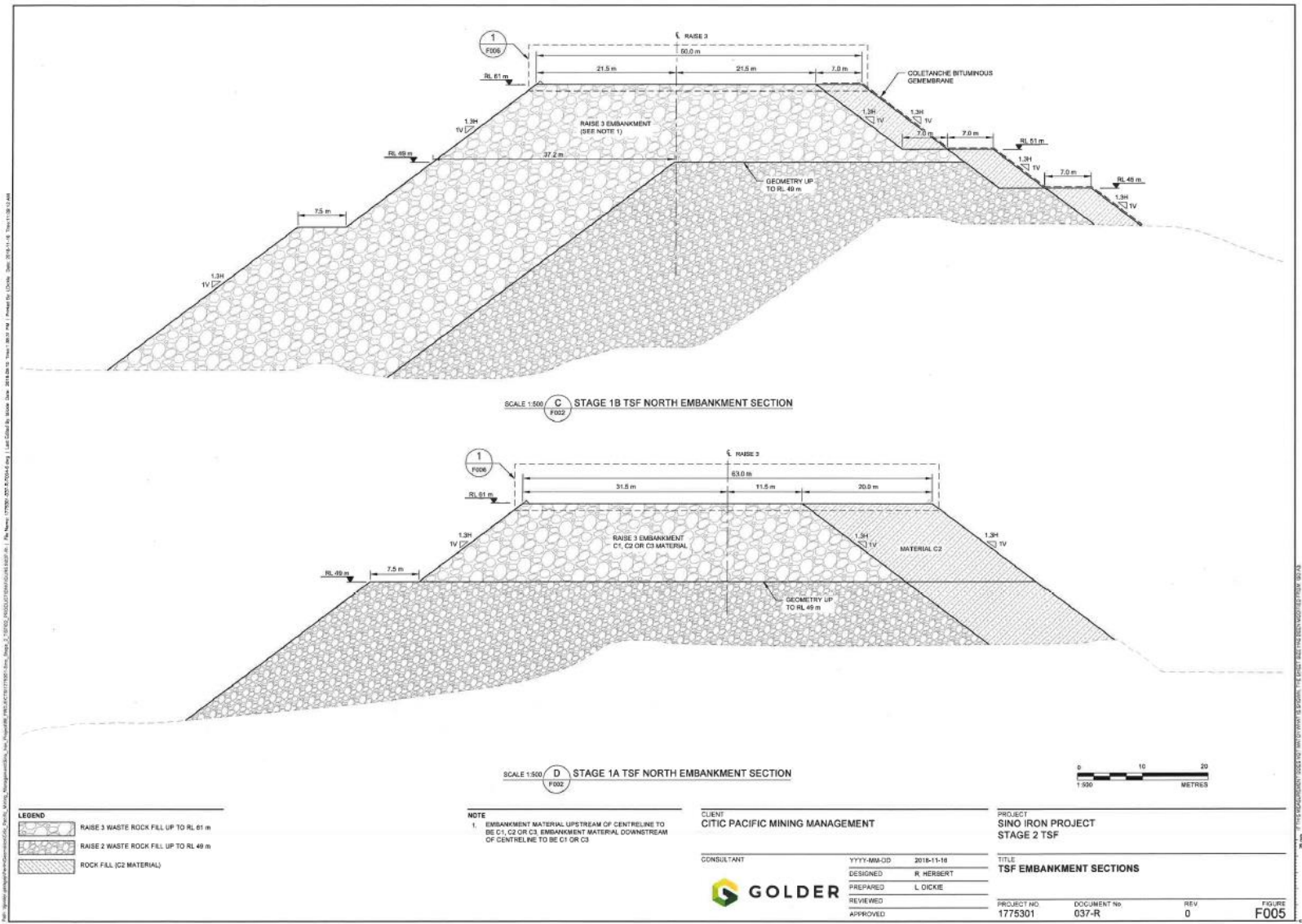


Figure 3: TSF Embankment Sections, north (CITIC Design Drawings, 2019)

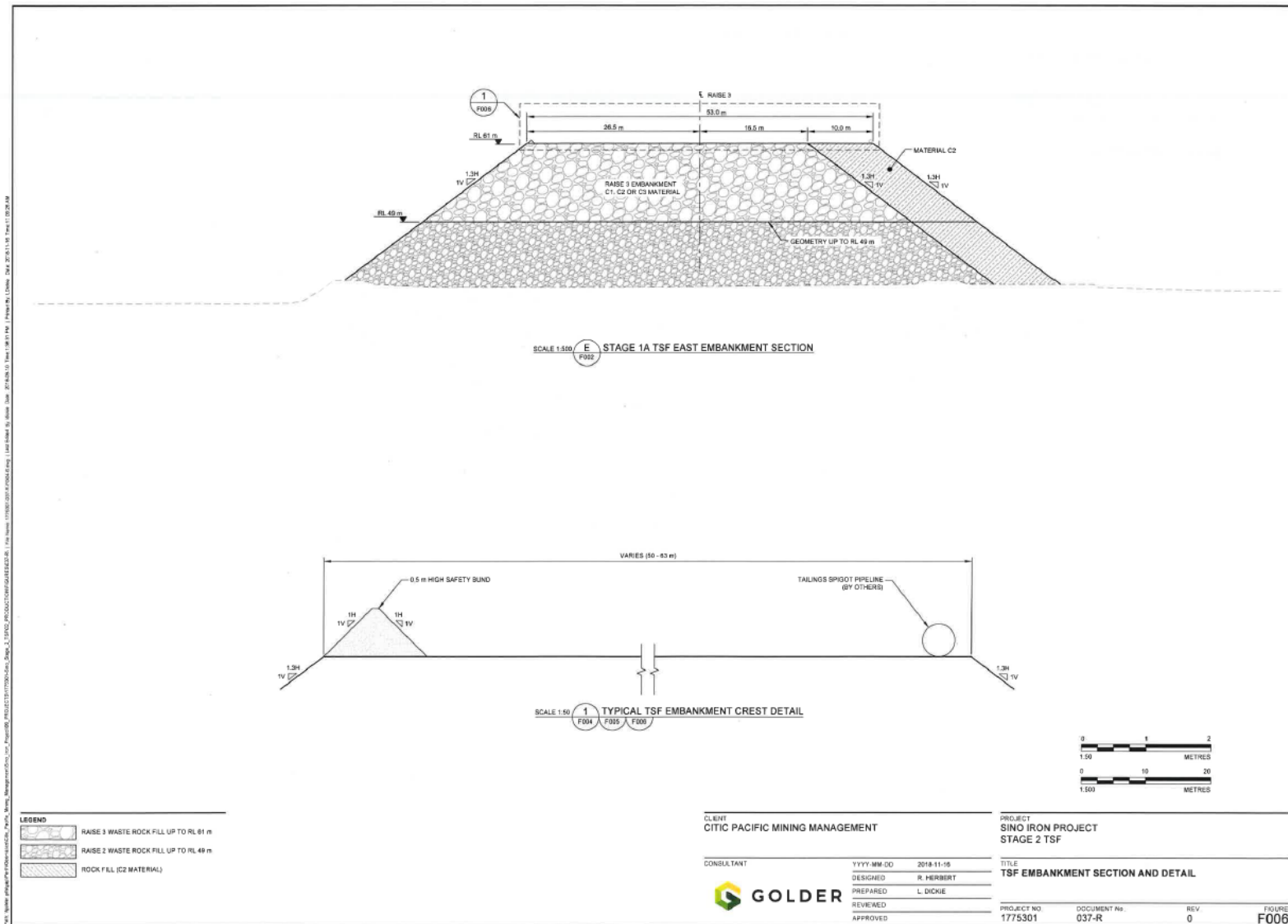


Figure 4: TSF Embankment Section, east, and detail (CITIC Design Drawings, 2019)

The original works approval W4447/2008/1 assessed and approved the construction of an 800 ha TSF with a maximum embankment height of 54 m (68 mRL).

It should be noted that TSF2 has been and continues to be constructed with steeper design angles on the walls due to tenure constraints. Low permeability zones have been included in the design of the northern and western embankments.

A linear low density polyethylene (LLDPE) geomembrane liner system was installed in TSF2 up to 39 mRL, however, due to the steeper design slopes for this next raise, an elastomeric bituminous geomembrane (BGM) is to be used as it has greater puncture resistance and does not require the same degree of surface preparation to install. The permeability of the BGM liner is approximately 4×10^{-14} m/s.

DC2 Discharge Event

The Licence Holder is seeking approval to discharge up to 1 GL/annum of TSF decant and seepage water via emission point DC2. Discharge will only occur when:

- 1) Process water TDS is greater than 2,000mg/L making it unsuitable for use within the processing plant;
- 2) TSF decant and seepage water is surplus to operational dust suppression requirements; and
- 3) All other options for storage and/or reuse of TSF decant and seepage water, including discharge to the future PMPL Algae Ponds, have been exhausted.

The water of this higher salinity cannot be reused within the processing plant, which is why the discharge to emission point DC2 is requested. The increase in TDS of the TSF return water is due to evaporative loss of water from the TSF surface, capture of higher salinity groundwater seepage into the drain, recirculating higher TDS back into the TSF creating more concentrated TDS in the water.

DC2 discharge limits for TDS on the licence is <50,000mg/L; the water quality to be discharged is ~5,000mg/L, which will remain within this licence limit.

Error! Reference source not found. shows the water quality of the TSF decant and seepage water compared to the DuBoulay Creek Baseline Range. Some of the historic decant water and seepage water dissolved metals were marginally above the DuBoulay baseline range, however, all parameters are below both the ANZECC/ARMCANZ, 2000 Freshwater and Marine 95% protection guidelines.

Table 3: TSF decant and seepage water quality

Parameters		Decant Water Range [†]	Seepage Water Range [‡]	Decant/Seepage [DC2 In-Pipe] (13/3/19)	DuBoulay Creek Baseline Range*	Duboulay Creek Baseline [500m downstream DC2] (13/3/19)	ANZECC 95% Guidelines	
							Freshwater	Marine
Major Analytes								
pH Value	pH Unit	8.17 – 8.81	7.72 – 8.41	7.95	7.8 – 8.6	8.28	-	-
Electrical Conductivity @ 25°C	µS/cm	1,190 – 6,570	2,590 – 13,600	9,980	1,530 – 106,000	60,000	-	-
Total Dissolved Solids @180°C	mg/L	1,160 – 4,140	1,470 – 10,400	5,620	859 – 92,000	42,800	-	-
Total Suspended Solids	mg/L	-	-	6.0	BD – 96.0	BD	-	-
Dissolved Oxygen	mg/L	-	-	8.7	8.2 – 10.9	9.7	-	-
Total Nitrogen	mg/L	-	-	-	BD – 1.2	-	-	-
Total Phosphorus	mg/L	-	-	-	BD – 0.5	-	-	-
Nitrate	mg/L	-	-	9.17	BD – 0.06	0.68	0.7	ID
Total Nitrogen	mg/L	-	-	15.0	BD – 1.2	1.2	0.25 (estuaries)	
Total Phosphorus	mg/L	-	-	BD	BD – 0.5	0.02	0.02 (estuaries)	
Dissolved Metals								
Aluminium	mg/L	BD – 0.02	Below Analytical Detection Limit (BD)	BD	BD – 0.0013	BD	0.055	-
Arsenic	mg/L	0.002 – 0.006	BD – 0.002	BD	BD – 0.0028	BD	0.024	-
Boron	mg/L	-	-	1.33	0.26 – 7.68	5.86	0.37	-
Cadmium	mg/L	BD	BD	BD	BD	BD	0.0002	0.0055
Cobalt	mg/L	BD – 0.001	BD	BD	BD – 0.001	BD	-	0.001
Chromium	mg/L	BD – 0.013	BD	BD	BD – 0.0003	BD	-	0.0274
Copper	mg/L	BD – 0.001	BD – 0.001	BD	BD – 0.017	BD	0.0014	0.0013
Iron	mg/L	BD – 0.037	BD	BD	BD – 0.009	BD	-	-
Lead	mg/L	BD	BD	BD	BD – 0.169	BD	0.0034	0.0044
Manganese	mg/L	BD – 0.003	BD – 0.021	BD	BD – 0.0186	0.014	1.9	-
Nickel	mg/L	BD – 0.003	BD – 0.002	BD	BD – 0.0013	BD	0.011	0.07
Zinc	mg/L	BD	BD	BD	BD	BD	0.008	0.015
Mercury	mg/L	BD	BD	BD	-	BD	0.0006	0.0004

BD Background Data

[†] Opportunistic sampling conducted as part of the TSF quarterly groundwater monitoring program. Total of 12 laboratory samples collected from Sept-14 to Apr-18 and analysed for Major Analytes; three samples included dissolved metals.

[‡] Opportunistic sampling conducted as part of the TSF quarterly groundwater monitoring program. Total of 16 laboratory samples collected from Sept-14 to Jul-18 and analysed for Major Analytes; four samples included dissolved metals.

* Range of 14 monthly opportunistic sampling events conducted between Apr-14 and Feb-16 at 408643, 7673190 (approximately 350m downstream of emission)

The results indicate that some metals are elevated over the DuBoulay Creek Baseline Range, however, for those parameters that have values listed in the ANZECC/ARMCANZ, 2000 95% level of protection trigger values for marine water, these values are within the criteria.

With regards to nitrogen levels the Licence Holder has stated:

While the decant/seepage water has nitrogen levels above the DuBoulay Creek baseline range, the proposed discharge and receiving environment have low phosphorus levels meaning that the system is phosphorus limiting and unlikely to result in algal blooms. The DuBoulay Creek sampling results in the table above also show that rapid dilution in the Creek occurs, such that 500m downstream of the discharge the nitrate concentration is below the ANZECC Freshwater (95% level of protection) guideline. Given the only additives in the processing of magnetite ore are process water from the desalination plant and a polyacrylamide flocculent, the only notable source of nutrients would be from naturally occurring nutrients in the ground. As detailed in the Jul-16 excess mine dewater discharge submission, nitrate levels in groundwater bores are variable and do not display a trend with distance from the mine area, with some of the highest levels recorded at bores many kilometres from the pit area. Variation in groundwater nitrate concentrations is expected to be a result of natural factors and there is no evidence that the nitrates are from the blasting emulsion used in the mine area“.

Mine Dewatering

Mine Dewatering Staging Facility

The Licence Holder is proposing to construct a dewatering staging facility to accommodate the increased (up to 12GL/annum) dewatering rates approved via MS1066 (s45C 18 July 2018). This will replace the existing dewatering staging ponds that are located within the boundary of the future mine pit. The new facility will allow temporary storage of excess mine dewatering water prior to reuse and/or discharge to the Fortescue River (FR2) or PMPL Algae Ponds (AP1).

This will be a single pond with two internal cells. The dimensions of the two cells are 124m x 194m & 250m x 194m with a combined storage capacity of ~0.3GL. The layout plan is shown in Figure 5.

The facilities are to be located west of the existing 123 Turkeys Nest. Table 4Table 4 provides the design characteristics.

Table 4: Key characteristics of the mine dewatering staging facilities

Storage volume	~0.3GL
Holding time	~9 days (assuming dewatering rate of 12GL/annum)
Lining	2mm HDPE with a minimum permeability of $<10^{-9}$ m/s
Operation freeboard	0.5m

Mine Dewatering Discharge Completion Reports

Condition 5.2.3 of the licence requires non-annual reporting to provide a completion report for the 4GL/a, 6GL/a and 8GL/a mine dewatering within 3 months of completion of a 12 months ambient surface water quality monitoring campaign. As the monitoring periods for these will overlap, there will be duplication in monitoring and the Licence Holder has requested that this data instead be provided in the AER.

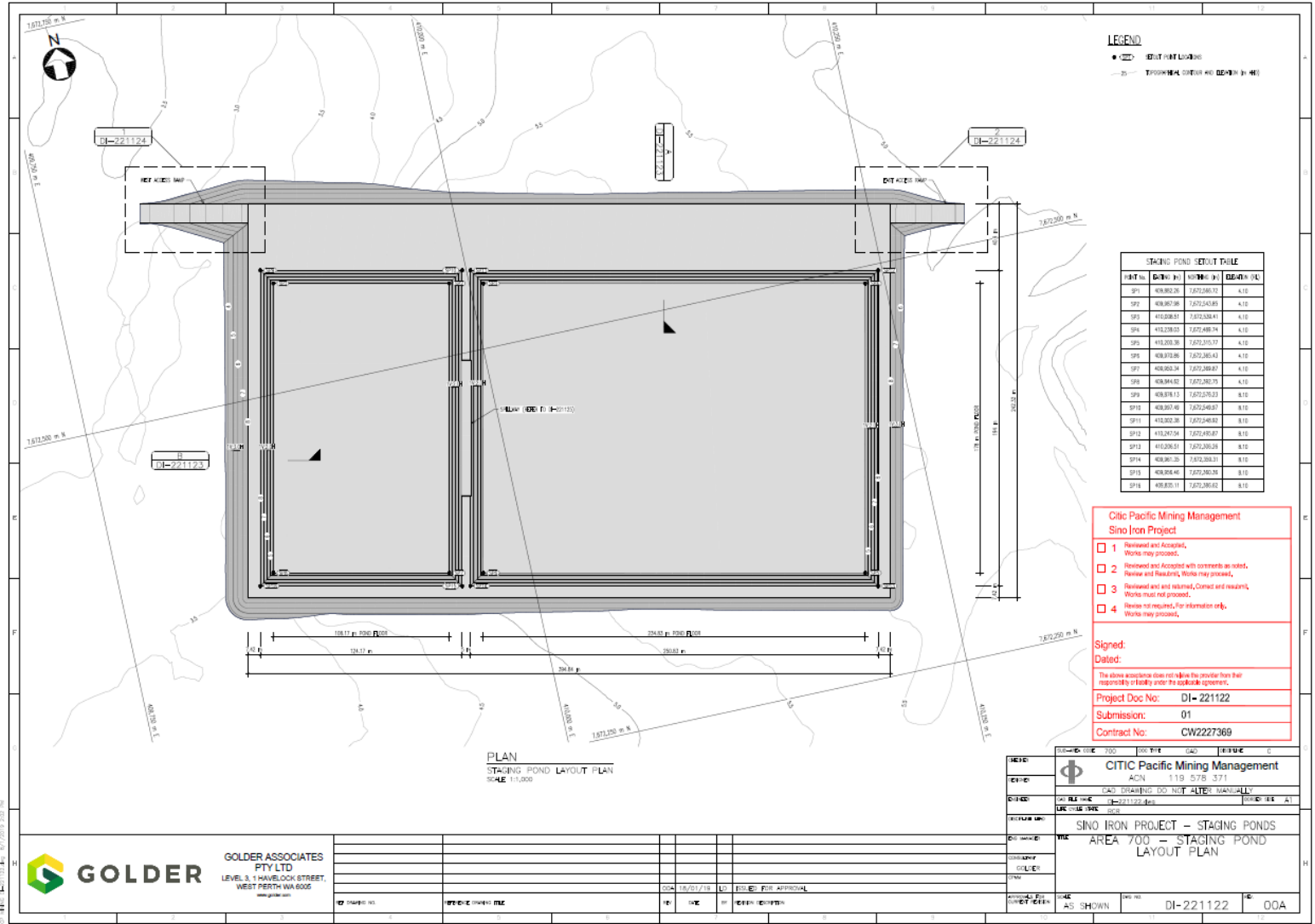


Figure 5: Mine dewatering staging facilities layout plan (CITIC Design Drawings, 2019)

Other approvals

The Licence Holder holds a licence to extract water for the purpose of mine dewatering and other mining related operations under section 5C of the *Rights in Water and Irrigation Act 1914* (GWL167151(6)).

The Sino Iron Project Mine Site is also subject to three Ministerial Statements, MS 635, MS 822 and MS 1066 under Part IV of the *Environmental Protection Act 1986*.

TSF2 (61 mRL) design report was submitted to DMIRS on 23 November 2018. DMIRS have stated they have no objections to the proposed 61m RL raise of the facility on 20 March 2019. There are no issues on the geotechnical stability aspects of the TSF and downstream construction method means that the facility is not as prone to failure as other types of construction methods. DMIRS has advised that the raise could exacerbate seepage issues by increasing the 'hydraulic head' and that seepage control measures in place should be maintained and monitoring required and reporting applied.

This is a major project with State Agreement Act *Iron Ore Processing (Mineralogy Pty Ltd) Agreement Act 2002*. The State Agreement Act covers the mining and concentration of iron ore, processing, transport, port facilities and shipping.

Amendment history

Table 4 provides the amendment history for L8308/2008/2.

Table 4: 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 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.
L8308/2008/2	12/01/2018	Amendment Notice 4 Licence amendment to increase the category 6 design capacity from 2 GL/a to 8 GL/a.
L8308/2008/2	19/06/2018	Amendment Notice 5 Licence amendment to change the date of completion for Improvement program IR1 from 30 June 2018 to 31 December 2018 and to allow for the disposal of other Inert Waste Type 2 (besides tyres) to be disposed of within sites landfill facility and waste rock landforms.

L8308/2008/2	6/11/2018	<p>Amendment Notice 6</p> <p>Licence amendment to include a secondary emission point (AP1), to the current FR2 discharge point to the Fortescue River, on the existing dewatering pipelines to enable diversion of up to 6 GL/annum of excess mine dewatering water to Pastoral Management Pty Ltd's algae ponds trial.</p> <p>Relocation of current discharge location approximately 600 m upstream within the same remnant tributary of Edwards Creek, as the current discharge location is within the footprint for future TSF development.</p> <p>Removal of Improvement program IR1 from the Licence as point source air emissions have been confirmed.</p> <p>Removal of Improvement program IR2 from the Licence as replacement bore TSF_017 (17NC764) has been installed to replace BH08-16.</p>
L8308/2008/2	18/04/2019	<p>Amendment Notice 7</p> <p>Licence amendment to include TSF Stage 2, Raise 3 up to 61 mRL.</p> <p>Replacement of the pit dewatering staging ponds by constructing a HDPE lined dewatering staging facility to accommodate increased dewatering rates of up to 12GL/annum permitted via MS1066. A request to provide completion reports, for mine dewatering water discharges to the Fortescue River, in the AER is also included.</p>

Location and receptors

Table 5 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 5: Receptors and distance from activity boundary

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

Table 6 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 6: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Fortescue River	Fortescue River
More than 5 km to the north-west.	More than 5 km to the north-west.
De Boulay Creek	De Boulay Creek
More than 2.5 km to the north	More than 2.5 km to the north

Risk assessment

Tables 7 and 8 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 7: 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					
Category 5 Processing or beneficiation of metallic or non- metallic ore Category 6 Mine dewatering	Vehicle movements on unsealed access roads	Dust: associated with vehicles and equipment	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	Slight	Unlikely	Low	The Delegated Officer considers the distance to the receptor to be too great for impacts to occur; given this is over 5km away and not a registered camp area (seasonal only).
		Noise: associated with vehicles and equipment				Slight	Unlikely	Low	The Delegated Officer considers the distance to the receptor to be too great for impacts to occur; given this is over 5km away and not a registered camp area (seasonal only).
	Construction of TSF Stage 2 Raise 3 Mine dewatering staging facilities	Dust: associated with construction of the TSF Stage 2 Raise 3	Fortescue River Mouth recreational area is the nearest receptor located more than 5 km to the north-west Vegetation	Air / wind dispersion	Health and amenity impacts	Slight	Unlikely	Low	The Delegated Officer considers the distance to the receptor to be too great for impacts to occur; given this is over 5km away and not a registered camp area (seasonal only). Licence Holder controls include: <ul style="list-style-type: none"> • keeping the area of exposed surfaces to a minimum requirements for construction activities; • applying sufficient water to dry dust prone areas; • not using tailings as construction material; and • no mechanical disturbance to existing tailings surface.
		Noise: associated with construction of the TSF Stage 2 Raise 3				Slight	Unlikely	Low	The Delegated Officer considers the distance to the receptor to be too great for impacts to occur; given this is over 5km away and not a registered camp area (seasonal only).
	Land disturbance: Disturbance of vegetation for the mine dewatering staging facilities (no emissions)	Terrestrial vegetation in the pathway of the mine dewatering staging facilities	Direct impact	Loss of local biodiversity	N/A	N/A	N/A	Managed under Part IV (Ministerial Statement)	

Table 8: 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					
<p>Category 5 Processing or beneficiation of metallic or non- metallic ore</p>	<p>TSF Stage 2 Raise 3 lift</p>	<p>Dust: associated with increased tailings storage within the TSF</p>	<p>Fortescue River Mouth recreational area is the nearest receptor located more than 5 km to the north-west</p> <p>Vegetation</p> <p>Public while utilizing access to the Fortescue River</p>	<p>Air / wind dispersion</p>	<p>Health and amenity impacts</p>	<p>Slight</p>	<p>Unlikely</p>	<p>Low</p>	<p>The Delegated Officer considers the distance to the receptor to be too great for impacts to occur; given this is over 5km away and not a registered camp area (seasonal only).</p> <p>Licence Holder controls include:</p> <ul style="list-style-type: none"> • keeping tailings beach wet to prevent fugitive dust emissions; • No mechanical disturbance once tailings surface is dry; • Rotating discharge spigots to maximize evaporation and consolidation of tailings; • Controlling channeling of tailings discharge by maximizing number of spigots; • Daily visual inspections of the tailings beach for signs of drying or dust generation; • Use of a polyacrylamide flocculant to reduce fibre lift off. Material Data Safety Sheets have been provided for these; • Inactive areas of tailings beach to be covered following deposition. Once the tailings have settled and it is deemed safe to do so, a waste rock cover system will be progressively advanced behind the active deposition points to limit the area of exposed tailings beach, preventing the escape of mineral fibres and minimise the potential for erosion of the tailings. At the end of operations, the tailings spigots will be progressively decommissioned and a waste rock cover placed over the tailings beach as soon as practicable to reduce the potential for drying and dust generation; and • Ambient dust monitoring of 5 continuous beta attenuation monitoring stations

									<p>(EBAMS), with hourly internal action trigger of PM₁₀ 250µg/m³ and daily average PM₁₀ 70µg/m³. These verify management measures are effective.</p> <p>Two dust events were listed in the 2017/2018 AER. ON 3 August 2017 there was dust lift on the TSF Dam 1A due to high winds and construction activity. The Licence Holder commenced depositing slurry into the TSF Dam 1A south wall section to minimize dust lift off. On 23 November 2017 the 24hr PM₁₀ dust limit at NW, NE and SW EBAMS was triggered, however, regional dust levels contributed to the event and operations were not occurring at the time.</p> <p>The Delegated Officer considers that impacts from dust from the TSF would be slight due to the distance to the sensitive receptors and the likelihood is expected to be unlikely due to the process controls in place. The risk rating for TSF dust is, therefore, low.</p>
		<p>Waste: Increased tailings seepage from increased tailings disposal</p>	<p>Groundwater with beneficial use (Groundwater Dependent Ecosystem)</p>	<p>Seepage of leachate</p>	<p>Contamination of groundwater resource</p>	<p>Minor</p>	<p>Likely</p>	<p>Medium</p>	<p>The required finger drains, seepage trenches and pumps and monitoring bores are already in place to support the TSF Stage 2 lift.</p> <p>Licence Holder Controls include:</p> <ul style="list-style-type: none"> • Bituminous Geomembrane along the northern and westerns flanks of TSF Stage 2 to limit seepage through the embankments; • Low permeability zone to be constructed within the upstream TSF Stage 2 northern embankment and south-western corner to reduce seepage should the supernatant pond exceed normal operating levels; • Ongoing monitoring of the supernatant pond and groundwater monitoring bore SWLs and quality; and • Operating Strategy. <p>The Delegated Officer considers that impacts from seepage from the TSF would be minor</p>

									due to the benign tailings quality. Potential groundwater contamination and the likelihood is expected to be likely due to the depth to groundwater <10 mbgl. The risk rating for TSF seepage is, therefore, medium .
		Waste: Overtopping of tailings from increased tailings disposal	Vegetation adjacent to the TSF2	Direct discharges	Inundation of vegetation Soil contamination inhibiting vegetation growth and survival Potential discharge flow to surface waters	Moderate	Unlikely	Medium	<p>Licence Holder controls to prevent overtopping include:</p> <ul style="list-style-type: none"> • 0.5m free maintained; • Surface water diversions in place; • Regular surveys are conducted of the TSF surface to monitor freeboard level; • Discharge points listed on the Licence enable controlled water discharges from the TSF staging pond of decant water; • Eight piezometers are installed within the TSF embankment; and • Daily visual inspections. <p>The Delegated Officer considers that impacts from overtopping of the TSF would be moderate as discharge could gain access to surface water and the likelihood is expected to be unlikely due to the process controls in place. The risk rating for TSF overtopping is, therefore, medium.</p>
		Waste: Pipeline leaks/spills of tailings, tailings decant water	Vegetation adjacent to tailings pipelines	Direct discharges	Soil contamination inhibiting vegetation growth and survival	Minor	Unlikely	Medium	<p>There are no modifications to the pipelines as a result of the TSF Stage 2 Raise 3. All infrastructure is already in place.</p> <p>Discharges would be limited to onsite local areas. Daily inspections of the pipelines occur whilst operational.</p> <p>All pipelines containing tailings or tailings thickener overflow return water are operated with telemetry and process alarms and diversion containment; (sumps) leaks/spills are detected and managed quickly.</p> <p>The Delegated Officer considers that impacts from a rupture of tailings pipelines would be minor as tailings would be contained onsite in an already disturbed area (so offsite impacts are not expected). The likelihood is</p>

									<p>expected to be unlikely due to the process controls in place. The risk rating for pipeline rupture is, therefore, medium.</p>
		<p>Waste: Discharge of TSF decant and seepage water via emission point DC2 and/or AP1</p>	<p>Vegetation and soils within the drainage channels</p> <p>Increased TDS and contaminant discharged: Impacts on flora/fauna within the creek and river</p>	<p>Direct discharges</p>	<p>Contamination of drainage channel</p> <p>Erosion/scouring</p>	<p>Moderate</p>	<p>Possible</p>	<p>Medium</p>	<p>Water >2,000mg/L is unsuitable to be reused within the processing plant. Only water that is in excess of dust suppression requirements is to be discharged via emission point D2. TDS of this water is approximately 5,000mg/L, which is below the current licence limit of <50,000mg/L at DC2.</p> <p>With regards to the proposed ongoing TSF decant water and seepage water discharge regime, the proposed discharge limit of 1GL/a has been based on a seepage rate of 30L/sec (~0.95GL/a). Based on recent data, discharges appears to have stabilised at around 50,000m³ per month. Subject to uncontrollable events, actual discharges are anticipated to be approximately 0.6GL/a, well below the proposed 1GL/annum limit. Where possible decant water and seepage water is utilised by mining operations for dust suppression. Decant water and seepage water may also be diverted to the proposed algae ponds. Typically discharges via DC2 will not be continuous (~4-5hrs/day) and will only occur as required to maintain minimum freeboard within the seepage sump and/or maintain process water quality within the required operating range.</p> <p>In most instances, discharges are associated with rainfall events and water is either present within the receiving environment and/or flushing of the receiving environment is likely to be imminent. DC2 is within the tidal portion of Duboulay Creek and tidal waters can extend a further 1.5km upstream past the emission point. The temporary and infrequent nature of discharges enable the receiving environment to re-establish baseline conditions shortly after discharge as a result of rainfall and/or tidal fluctuations.</p>

									<p>The results indicate that some metals are slightly elevated over the DuBoulay Creek Baseline Range, however, are fairly comparable and discharges are only to occur on an adhoc basis. ANZECC/ARMCANZ, 2000 Freshwater and Marine 95% protection guidelines are met.</p> <p>Licence Holder controls include:</p> <ul style="list-style-type: none"> • TSF decant and seepage water monitored prior to discharge and limits for pH and TDS in place for receiving environment; • Vegetation monitoring in place; • Water containing hydrocarbons is not be discharged; • Erosion controls in place. DC2 is located within a cobble stone creek bed and inherently presents a low risk of erosion. Flow rates are managed so that erosion and scouring is minimised. No significant erosion has been noted to date. <p>The Delegated Officer considers that impacts from discharge of TSF decant and seepage water via emission point DC2 would be moderate as contamination and erosion/scouring impacts could result and the likelihood is expected to be possible due to the direct discharges, however, discharges are to occur on an adhoc basis and water quality and vegetation monitoring is in place. The risk rating for TSF decant and seepage water discharge is, therefore, medium.</p> <p>Discharge via AP1 is regulated via Pastoral Management Pty Ltd's Algae Ponds W6147/2018/1.</p>
Cat 6 Mine dewatering	Mine dewatering staging facilities	Waste: Dewatering water seepage	Groundwater with beneficial use (Groundwater Dependent Ecosystem)	Seepage of leachate	Contamination of groundwater resource with discharge water elevated in salinity, nitrates and	Slight	Rare	Low	<p>Dewatering water is elevated in salinity, nitrates and temperature.</p> <p>Licence Holder controls include:</p> <ul style="list-style-type: none"> • Lined with HDPE liner to meet permeability of $<10^{-9}$ m/s; and • Facility is located within mine pit cone of

					temperature.				depression so any seepage would be recaptured via mine dewatering. The Delegated Officer considers that impacts from seepage of dewatering water would be slight as it would be limited to a local scale (so offsite impacts are not expected) and the groundwater is already elevated in salinity due to the proximity to the coast and the likelihood is expected to be rare due to the HDPE liner in place. The risk rating for mine dewatering water seepage is, therefore, low .
		Waste: Overtopping of dewatering water	Vegetation adjacent to the mine dewatering staging facilities	Direct discharges	Inundation of vegetation Soil contamination inhibiting vegetation growth and survival Potential discharge flow to surface waters	Slight	Unlikely	Low	Dewatering water is elevated in salinity, nitrates and temperature. Licence Holder controls include: <ul style="list-style-type: none"> Operational freeboard of 0.5m maintained. The Delegated Officer considers that impacts from overtopping of dewatering water would be slight as it would be limited to a local scale (so offsite impacts are not expected) and the areas adjacent to the staging facilities are already disturbed and the likelihood is expected to be unlikely due to the process controls in place. The risk rating for mine dewatering water overtopping is, therefore, low .
		Waste: Pipeline leaks/spills of mine dewatering water	Vegetation adjacent to mine dewatering water pipelines	Direct discharges	Soil contamination inhibiting vegetation growth and survival	Slight	Unlikely	Low	Dewatering water is elevated in salinity, nitrates and temperature. Licence Holder controls include: <ul style="list-style-type: none"> Top soil is to be stripped and stored prior to construction of the staging facility so this soil wouldn't be impacted; The areas in the vicinity of the staging facility will be developed in the future; and Telemetry monitoring of flow volumes is in place from the mine to the staging facility. It does not contain pressure monitoring alarms like the Fortescue River Mouth pipeline has however.

									<p>The Delegated Officer considers that impacts from leaks/spills of dewatering water would be slight as it would be limited to a local scale (so offsite impacts are not expected) and the areas adjacent to the staging facilities are already disturbed and the likelihood is expected to be unlikely due to the process controls in place. The risk rating for mine dewatering water overtopping is, therefore, low.</p>
		Groundwater: drawdown	Groundwater dependent vegetation	Access to groundwater depleted	Vegetation degradation	N/A	N/A	N/A	<p>Assessment conducted under Part IV of the EP Act (EPA Report 1602). Condition 6 of Ministerial Statement 635 requires the Pit Dewatering and Vegetation Monitoring Plan. Although the Licence Holder has approval for up to 12GL/a of pit dewatering, they only have approval for up to 8GL/a of dewatering discharge as water is reused onsite where possible.</p>

Decision

TSF Stage 2

Raise 3

The Delegated Officer has determined that it is acceptable to include the TSF Stage 2, Raise 3 lift. All infrastructure to accommodate this is already in place (finger drains, seepage trenches and pumps and groundwater monitoring bores).

The maximum height of the TSF has been increased and the Elastomeric Bituminous Geomembrane Liner has been included for containment infrastructure requirements for Condition 1.2.8, Table 1.2.3.

Construction requirements have been included in Condition 1.2.14, Table 1.2.6.

Notification requirements have been updated in Condition 5.3.1, Table 5.3.1 to include compliance documentation (which will be staged compliance documents).

The TSF Stage 2 Raise 3 lift has been included into Condition 1.2.15 to operate as per the conditions of the Licence following submission of the compliance document.

DC2 Discharge Event

The Delegated Officer has determined that it is acceptable to allow discharges of up to 1GL/annum of TSF decant and seepage water to be discharged to emission point DC2. Discharge to AP1 is to be assessed as part of the Pastoral Management Pty Ltd's Algae Ponds.

Daily inspections of the TSF decant and seepage water discharge pipeline to DC2 are to be included in Condition 1.2.10, Table 1.2.4.

TSF decant and seepage water disposal volumes to DC2 and/or AP1 are to be included in the annual water balance in Condition 1.2.12.

TSF decant and seepage water has been included as a source for DC2 and/or AP1 in Condition 2.2.1, Table 2.2.1.

Volume of TSF decant and seepage water disposed of to DC2 and/or AP1 has been included for process monitoring Condition 3.6.1, Table 3.6.1.

The AER Condition 5.2.1, Table 5.2.1 has been updated to include the volume of TSF decant and seepage water disposed of to DC2 and/or AP1.

Mine Dewatering

Mine Dewatering Staging Facility

The Delegated Officer has determined that the construction of a new staging facility is acceptable in the new location.

Containment infrastructure requirements have been updated in Condition 1.2.8, Table 1.2.3 to include the requirements for the staging facility.

Condition 3.3.2, Table 3.3.1 has been updated to include monitoring of the discharges to DC2.

The premises map has been updated to include the mine dewatering staging facility.

Mine Dewatering Discharge Completion Reports

The Delegated Officer has determined that it is acceptable for the mine dewatering discharge completion reports to be included as part of the AER reporting as opposed to non-annual reporting requirements. This avoids duplication of the monitoring data and consolidation of the reports into one efficient report.

The non-annual reporting requirements have been removed from Condition 5.2.3, Table 5.2.2 and have instead been included into Condition 5.2.1, Table 5.2.1 to be reported in the Annual Environmental Report.

Notification Condition 5.3.1, Table 5.3.1 to provide compliance documentation for the Fortescue River discharges up to 8GL/a have been removed as these have been submitted.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 16 April 2019. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

Amendment

1. Condition 1.2.8, Table 1.2.3 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 2	Tailings and decant water	<p>987 ha facility to a maximum height of 49 61 mRL (TSF Stage 2)¹.</p> <p>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.</p> <p>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 up to 39 mRL.</p> <p><u>TSF Stage 2 northern and western flanks includes a liner system comprising of Elastomeric Bituminous Geomembrane Liner above 39 mRL up to 61 mRL.</u></p> <p>Tailings to be deposited from multiple discharge locations around the southern and eastern embankment perimeters of the TSF Stage 2.</p> <p>Maintain an operational freeboard of 0.5 m.</p>
Process Water Dam	Process water, return water from the TSF thickeners and treated wastewater from the Biomax WWTP and the MBBR WWTP	Lined process water dam, which will store process water, return water from the TSF and treated wastewater from the Biomax WWTP and the MBBR WWTP 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 will collect any potential seepage.
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.
<u>Dewatering Staging Facility</u>	<u>Mine dewatering water</u>	<u>Lined with High Density Polyethylene Liner to meet a permeability of $<10^{-9}$ m/s</u> <u>Maintain an operational freeboard of 0.5m</u>

2. Condition 1.2.10, Table 1.2.4 of the Licence is amended by the insertion of the bold text shown in underline below:

1.2.10 The Licensee shall:

- (a) undertake inspections as detailed in Table 1.2.4;
- (b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and
- (c) maintain a record of all inspections undertaken.

Table 1.2.4: Inspection of infrastructure		
Scope of inspection	Type of inspection	Frequency of inspection
Decant return water pipeline	Visual integrity	Daily while operational
Mine dewatering water pipeline	Visual integrity	Daily while operational
<u>TSF decant and seepage water discharge pipeline</u>	<u>Visual integrity</u>	<u>Daily while operational</u>

3. Condition 1.2.12 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:

1.2.12 The Licensee shall undertake an annual water balance for the TSF. The water balance shall as a minimum consider the following:

- (a) site rainfall;
- (b) evaporation;
- (c) combined decant water and seepage water recovery volumes; ~~and~~
- (d) volumes of tailings deposited; ~~and~~
- (e) **TSF decant and seepage water disposal volumes to each discharge point, DC2 and/or AP1.**

4. Condition 1.2.14 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:

1.2.14 The Licensee shall construct the mine dewatering discharge infrastructure, controlled surface water discharge points, the MBBR WWTP, ~~and~~ TSF Stage 2 **and TSF Stage 2 Raise 3 lift** 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
MBBR WWTP	<ul style="list-style-type: none"> - 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); - Common Balance Tank (50 m³) provides in-built emergency storage capacity of 0.5 – 1.0 days assuming normal flow; - WWTP placed within a 2 mm HDPE lined bund to capture overflow; - Audible alarm fitted; - Process interlocks fitted; - Sampling point and flow meter installed on the outflow pipeline; - WWTP provides a further in-built emergency storage capacity of 0.8 – 1.0 days flow assuming normal flow; and - Daily inspections
TSF Stage 2	<ul style="list-style-type: none"> - The embankment height shall be 49 mRL²; - 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 up to 39 mRL; - Low permeability zones comprising highly weathered waste rock material shall be installed along the upstream zone of the northern and the south-western embankments; - The existing series of finger drains shall be extended to the toe of the TSF Stage 2 embankment; and - The seepage collection trench shall be relocated to the toe of the TSF Stage 2 embankment
Mine dewatering discharge infrastructure	<p>Discharge rate of 4 GL/a - the diffuser length shall be 42 m with 28 diffuser ports 1.5 m apart, orientated downstream</p> <p>Discharge rate of 6 GL/a - the diffuser length shall be 63 m with 42 diffuser ports 1.5 m apart, orientated downstream</p> <p>Discharge rate of 8 GL/a - the diffuser length shall be 84 m with 56 diffuser ports 1.5 m apart, orientated downstream</p>
<u>TSF Stage 2 Raise 3 lift</u>	<ul style="list-style-type: none"> - <u>The embankment height shall be 61 mRL²;</u> - <u>TSF Stage 2 northern and western flanks includes a liner system comprising of Elastomeric Bituminous Geomembrane Liner above 39 mRL up to 61 mRL; and</u> - <u>Existing finger drains, seepage trenches and pumps and groundwater monitoring bores are all in place and functional to support the TSF Stage 2, Raise 3 lift</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 **and TSF Stage 2 Raise 3 lift** beyond 39 mRL.

5. 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:

1.2.15 The Licensee shall operate the mine dewatering discharge infrastructure, controlled surface water discharge points, the MBBR WWTP, ~~and TSF Stage 2~~ **and TSF2 Raise 3 lift** in accordance with the conditions of this Licence, following submission of the compliance document required under condition 5.3.1.

6. Condition 2.2.1, Table 2.2.1 of the Licence is amended by the insertion of the bold text shown in underline below:

2.2.1 The Licensee shall ensure that where waste is emitted to surface water from the emission points in Table 2.2.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.2.1: Emission points to surface water		
Emission point reference and location on Map of emission points	Description	Source including abatement
FR2	Discharge pipe to Fortescue River Mouth	Mine dewatering water discharged through a diffuser: (a) the diffuser shall be submerged beneath the water; (b) the diffuser shall be offset approximately 25 m from the low water mark; and (c) the pipeline shall be equipped with a pressure monitoring system.
AP1	Discharge pipe to Pastoral Management Pty Ltd's Algae Ponds	Mine dewatering water <u>and/or TSF decant and seepage water</u> transferred to the Algae Ponds via a pipeline: (a) the pipeline is equipped with a flow meter; and (b) the pipeline is inspected daily whilst operational.
EC1	Discharge pipe to Edwards Creek located approximately 300m north of the enviro dam	Stormwater and process water discharged in a controlled manner as a result of an uncontrollable event: (a) control the discharge rate so that erosion and scouring is minimised; (b) use multiple discharge points to spread the flow; and (c) maintain a layer of riprap to protect the receiving water bank from erosion.
EC2	Discharge pipe to Edwards Creek	
EC3	Discharge pipe to a tributary of Edwards Creek	
EC4	Discharge pipe to a remnant tributary of Edwards Creek	
DC1	Discharge pipe to a tributary of Du Boulay Creek within footprint of proposed west pit	<u>TSF decant and seepage water</u> <u>Stormwater and process water discharged in a controlled manner as a result of an uncontrollable event:</u> <u>(a) control the discharge rate so that erosion and scouring is minimised;</u> <u>(b) use multiple discharge points to spread the flow; and</u>
DC2	Discharge pipe to a tributary of Du Boulay Creek with a width of 100 metres	

Table 2.2.1: Emission points to surface water		
Emission point reference and location on Map of emission points	Description	Source including abatement
		<u>(c) maintain a layer of riprap to protect the receiving water bank from erosion.</u>

7. Condition 3.3.2, Table 3.3.1 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:

3.3.2 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

Table 3.3.1: Monitoring of point source emissions to surface water				
Emission point reference	Parameter	Units	Frequency	Method
<u>FR2 – monitoring conducted in-pipe from a sampling tap</u>	<u>Volumetric flow rate</u>	<u>m³/day</u>	<u>Daily</u>	<u>AS/NZS 5667.6</u>
	<u>pH¹</u>	<u>pH units</u>	<u>Monthly</u>	<u>AS/NZS 5667.1</u>
	<u>Temperature¹</u>	<u>°C</u>		
	<u>Dissolved Oxygen¹</u>	<u>mg/L</u>		
	<u>Electrical Conductivity¹</u>	<u>µS/cm</u>		
	<u>Total Dissolved Solids</u>	<u>mg/L</u>		
	<u>Total Suspended Solids</u>	<u>mg/L</u>		
	<u>Total Nitrogen</u>	<u>mg/L</u>		
	<u>Bioavailable Nitrogen</u>	<u>mg/L</u>		
	<u>Nitrate</u>	<u>mg/L</u>		
	<u>Ammonia</u>	<u>mg/L</u>		
	<u>Total Phosphorus</u>	<u>mg/L</u>		
	<u>Bioavailable Phosphorus</u>	<u>mg/L</u>		
	<u>Bioavailable Organic Carbon</u>	<u>mg/L</u>		
	<u>Chlorophyll a</u>	<u>mg/L</u>		
	<u>Aluminium</u>	<u>mg/L</u>		
	<u>Arsenic</u>	<u>mg/L</u>		
	<u>Boron</u>	<u>mg/L</u>		
	<u>Cadmium</u>	<u>mg/L</u>		
	<u>Chromium (III)</u>	<u>mg/L</u>		
	<u>Chromium (VI)</u>	<u>mg/L</u>		
	<u>Cobalt</u>	<u>mg/L</u>		
	<u>Copper</u>	<u>mg/L</u>		
	<u>Iron</u>	<u>mg/L</u>		
	<u>Lead</u>	<u>mg/L</u>		
	<u>Mercury</u>	<u>mg/L</u>		
	<u>Manganese</u>	<u>mg/L</u>		
	<u>Nickel</u>	<u>mg/L</u>		
	<u>Selenium</u>	<u>mg/L</u>		
	<u>Silver</u>	<u>mg/L</u>		
<u>Strontium</u>	<u>mg/L</u>			
<u>Vanadium</u>	<u>mg/L</u>			
<u>Zinc</u>	<u>mg/L</u>			
<u>Total Recoverable Hydrocarbons</u>	<u>mg/L</u>			
<u>Camp 123 Turkey's nest</u>	<u>pH¹</u>	<u>pH units</u>	<u>Monthly</u>	<u>AS/NZS 5667.1</u>
	<u>Temperature¹</u>	<u>°C</u>		

<u>or Dewatering Staging Facility</u>	<u>Dissolved Oxygen</u> ¹	<u>mg/L</u>		
	<u>Electrical Conductivity</u> ¹	<u>µS/cm</u>		
	<u>Total Dissolved Solids</u>	<u>mg/L</u>		
	<u>Total Suspended Solids</u>	<u>mg/L</u>		
	<u>Total Nitrogen</u>	<u>mg/L</u>		
	<u>Bioavailable Nitrogen</u>	<u>mg/L</u>		
	<u>Nitrate</u>	<u>mg/L</u>		
	<u>Ammonia</u>	<u>mg/L</u>		
	<u>Total Phosphorus</u>	<u>mg/L</u>		
	<u>Bioavailable Phosphorus</u>	<u>mg/L</u>		
	<u>Bioavailable Organic Carbon</u>	<u>mg/L</u>		
	<u>Chlorophyll a</u>	<u>mg/L</u>		
	<u>Aluminium</u>	<u>mg/L</u>		
	<u>Arsenic</u>	<u>mg/L</u>		
	<u>Boron</u>	<u>mg/L</u>		
	<u>Cadmium</u>	<u>mg/L</u>		
	<u>Chromium (III)</u>	<u>mg/L</u>		
	<u>Chromium (VI)</u>	<u>mg/L</u>		
	<u>Cobalt</u>	<u>mg/L</u>		
	<u>Copper</u>	<u>mg/L</u>		
	<u>Iron</u>	<u>mg/L</u>		
	<u>Lead</u>	<u>mg/L</u>		
	<u>Mercury</u>	<u>mg/L</u>		
	<u>Manganese</u>	<u>mg/L</u>		
	<u>Nickel</u>	<u>mg/L</u>		
	<u>Selenium</u>	<u>mg/L</u>		
	<u>Silver</u>	<u>mg/L</u>		
<u>Strontium</u>	<u>mg/L</u>			
<u>Vanadium</u>	<u>mg/L</u>			
<u>Zinc</u>	<u>mg/L</u>			
<u>Total Recoverable Hydrocarbons</u>	<u>mg/L</u>			
<u>EC1</u> <u>EC2</u> <u>EC3</u> <u>EC4</u> <u>DC1</u> <u>DC2</u> <u>(Stormwater and/or Process Water)</u>	<u>pH</u> ¹	<u>pH units</u>	<u>Prior to discharge</u>	<u>AS/NZS 5667.6</u>
	<u>Total Dissolved Solids</u> ¹	<u>mg/L</u>		
<u>DC2 (TSF Decant and Seepage) in-pipe (or if discharges are not occurring at the time sampling, samples can be collected directly from the TSF seepage sump)</u> <u>500m downstream of</u>	<u>Oxidation Reduction Potential</u> ¹	<u>mV</u>	<u>Quarterly</u>	<u>AS/NZS 5667.6</u>
	<u>pH</u> ¹	<u>pH units</u>		
	<u>Dissolved Oxygen</u> ¹	<u>mg/L</u>		
	<u>Temperature</u> ¹	<u>°C</u>		
	<u>Electrical Conductivity</u> ¹	<u>µS/cm</u>		
	<u>Total Dissolved Solids</u>	<u>mg/L</u>		
	<u>Total Sulfur</u>	<u>mg/L</u>		
	<u>Calcium</u>	<u>mg/L</u>		
	<u>Sodium</u>	<u>mg/L</u>		
	<u>Total Alkalinity</u>	<u>mg/L</u>		
	<u>Chloride</u>	<u>mg/L</u>		
	<u>Magnesium</u>	<u>mg/L</u>		
	<u>Potassium</u>	<u>mg/L</u>		
	<u>Sulfate (SO₄²⁻)</u>	<u>mg/L</u>		
	<u>Bicarbonate (HCO₃⁻)</u>	<u>mg/L</u>		

<u>DC2 (where it is safe to do so)</u>	<u>Carbonate (CO₃²⁻)</u>	<u>mg/L</u>		
	<u>Aluminium</u>	<u>mg/L</u>		
	<u>Lead</u>	<u>mg/L</u>		
	<u>Mercury</u>	<u>mg/L</u>		
	<u>Copper</u>	<u>mg/L</u>		
	<u>Chromium (hexavalent)</u>	<u>mg/L</u>		
	<u>Nickel</u>	<u>mg/L</u>		
	<u>Zinc</u>	<u>mg/L</u>		
	<u>Cadmium</u>	<u>mg/L</u>		
	<u>Cobalt</u>	<u>mg/L</u>		
	<u>Iron</u>	<u>mg/L</u>		
	<u>Manganese</u>	<u>mg/L</u>		

¹ *In-field non-NATA accredited analysis permitted.*

8. Condition 3.6.1, Table 3.6.1 of the Licence is amended by 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 and the MBBR WWTP Treated effluent is stored in the process water dam, prior to recirculating it in the process plant	pH ¹	-	pH units	Quarterly	
		Biochemical Oxygen Demand	-	mg/L		
		Total Suspended Solids	-	mg/L		
		<i>E.coli</i>	-	cfu/100mL		
		Total Nitrogen	-	mg/L		
		Total Phosphorus	-	mg/L		

	for use in the hoppers and mills					
TSF Stage 2	-	Combined decant water and seepage water recovery volumes	-	m ³	Cumulative monthly total	None specified
	-	Volume of tailings deposited	-	m ³		
	=	<u>Volume of TSF decant water and seepage water disposed of to DC2 and/or AP1</u>	=	<u>m³</u>		

9. Condition 5.2.1, Table 5.2.1 of the Licence is amended by the insertion of the bold text shown in underline below:

5.2.1 The Licensee shall submit to the CEO an Annual Environmental Report within 120 calendar days after the end of the Anniversary Date. The report shall contain the information listed in Table 5.2.1 in the format or form specified in that table.

Table 5.2.1: Annual Environmental Report		
Condition or table (if relevant)	Parameter	Format or form¹
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
Table 3.3.1	Volumetric flow rate, pH, Temperature, Dissolved Oxygen, Electrical Conductivity, Total Dissolved Solids, Total Suspended Solids, Total Nitrogen, Bioavailable Nitrogen, Nitrate, Ammonia, Total Phosphorus, Bioavailable Phosphorus, Bioavailable Organic Carbon, Chlorophyll a, Aluminium, Arsenic, Boron, Cadmium, Chromium (III), Chromium (VI), Cobalt, Copper, Iron, Lead, Mercury, Manganese, Nickel, Selenium, Silver, Strontium, Vanadium, Zinc, Total Recoverable Hydrocarbons	WR1
Table 3.4.1	pH, Biochemical Oxygen Demand, Total Suspended Solids, <i>E.coli</i> , Total Nitrogen and Total Phosphorus	LR1
Table 3.5.1	Inert Waste Type 1, Inert Waste Type 2, Special Waste Type 1, Special Waste Type 2, Clean Fill, Putrescible Waste, Contaminated Solid Waste and Other wastes	None specified
Table 3.6.1	pH, Biochemical Oxygen Demand, Total Suspended Solids, <i>E.coli</i> , Total Nitrogen, Total Phosphorus, Total Recoverable Hydrocarbons, Combined decant water and seepage water recovery volumes and volume of tailings deposited <u>Volume of TSF decant water and seepage water disposed of to DC2 and/or AP1</u>	None specified
Table 3.7.1	pH, Total Nitrogen, Total Phosphorus, Total Dissolved Solids, Lead, Mercury, Copper, Chromium (hexavalent), Arsenic, Nickel, Zinc, Cadmium, Total Recoverable Hydrocarbons, Standing Water Level, Oxidation Reduction Potential,	None specified

Table 5.2.1: Annual Environmental Report		
Condition or table (if relevant)	Parameter	Format or form¹
	Dissolved Oxygen, Temperature, Electrical Conductivity, Total Sulfur, Calcium, Sodium, Total Alkalinity, Chloride, Magnesium, Potassium, Sulfate (SO ₄ ²⁻), Bicarbonate (HCO ₃), Carbonate (CO ₃ ²⁻), Aluminium, Cobalt, Iron and Manganese	
Table 3.7.2	pH, Temperature, Dissolved Oxygen, Electrical Conductivity, Total Dissolved Solids, Total Suspended Solids, Total Nitrogen, Bioavailable Nitrogen, Nitrate, Ammonia, Total Phosphorus, Bioavailable Phosphorus, Bioavailable Organic Carbon, Chlorophyll a, Aluminium, Arsenic, Boron, Cadmium, Chromium (III), Chromium (VI), Cobalt, Copper, Iron, Mercury, Lead, Manganese, Nickel, Selenium, Silver, Strontium, Vanadium, Zinc, Total Recoverable Hydrocarbons A comparison of the data obtained against baseline results shall be provided. <u>The data obtained for the increase in mine dewatering discharge up to 8GL/annum - monitoring of ambient surface water quality during discharge to obtain dilution data and to verify dilution modelling, including a comparison against the initial modelling.</u>	None specified
Table 3.7.3	Visually estimate the average foliage cover Score the health condition General environmental description of the site and record any changes since previous monitoring Take replicate photographs of foliage density and shadow areas beneath trees. Signs of stress on native flora and fauna at areas of stream discharge: EC1, EC2, EC3, EC4 DC1, DC2	None specified
1.2.12	Annual water balance for the TSF	None specified
3.3.1	Discharge commencement and cessation date and times recorded, along with tidal data from measurement locations.	None specified
5.1.2	Compliance	Annual Audit Compliance Report
5.1.3	Complaints summary	None specified

10. Condition 5.2.3, Table 5.2.2 of the Licence is amended by the deletion of the text shown in strikethrough below:

5.2.3 The Licensee shall submit the information in Table 5.2.2 to the CEO according to the specifications in that table.

Table 5.2.2: Non-annual reporting requirements				
Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form
-	Copies of original monitoring reports submitted to the Licensee by third parties	Not Applicable	Within 14 days of the CEOs request	As received by the Licensee from third parties

3.7.1 (Table 3.7.2)	Monthly monitoring of ambient surface water quality during discharge to obtain dilution data and to verify dilution modelling, including a comparison against the initial modelling.	12 month period from the date of submission of the compliance documentation for the mine dewatering discharge infrastructure required by Condition 5.3.1.	Within 3 months of completion of the 12 months monitoring period.	N/A.
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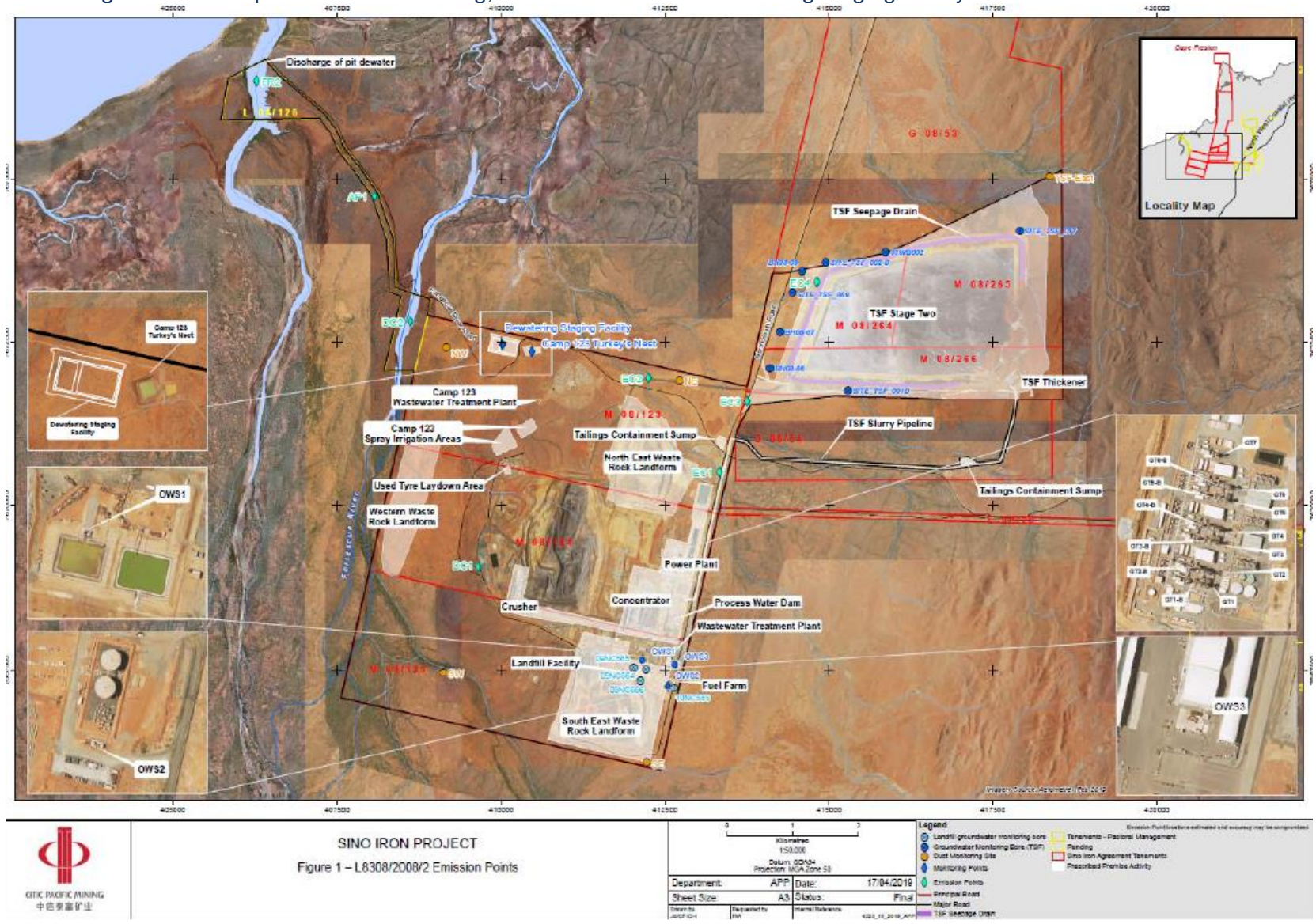
11. Condition 5.3.1, Table 5.3.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

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
1.2.14	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: <ul style="list-style-type: none"> 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) note the TSF Stage 2 embankment height at the time of submission; c) provide a list of departures from the specified works certified by a suitably qualified engineer; and d) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company. 	Within 7 days of the completion of construction	None specified
1.2.14	The Licensee shall submit a compliance document to the CEO, following construction of the mine dewatering discharge infrastructure for each of the discharge rates 4-	Within 7 days of the completion of construction	None specified

	<p>GL/a, 6 GL/a and 8 GL/a. The compliance document shall:</p> <ul style="list-style-type: none"> a) certify that the works were constructed in accordance with the specifications 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. 		
<u>1.2.14</u>	<p><u>The Licensee shall submit compliance documentation to the CEO, following construction of the TSF Stage 2 Raise 3 lift to 61 mRL and the Mine Dewatering Staging Facilities. The compliance document shall:</u></p> <ul style="list-style-type: none"> <u>a) be certified by a suitably qualified professional engineer that each item of infrastructure listed in Table 1.2.6 meets the corresponding specifications and has been constructed with no material defects;</u> <u>b) provide a list of departures from the specified works certified by a suitably qualified engineer; and</u> <u>c) 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>
3.1.4	Calibration report	As soon as practicable	None specified

12. The first map in Schedule 1 *Premises map, map of waste management facilities, containment infrastructure, emission point and monitoring locations* is updated to the following, to include the mine dewatering staging facility:



Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L8308/2008/2 – Sino Iron Project	L8308/2008/2	accessed at www.dwer.wa.gov.au
2	Ministerial Statement 1066	MS1066	accessed at www.epa.wa.gov.au/
3	Ministerial Statement 822	MS822	accessed at www.epa.wa.gov.au/
4	Ministerial Statement 635	MS635	accessed at www.epa.wa.gov.au/
5	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	N/A	accessed at www.dwer.wa.gov.au
6	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.	N/A	
7	DER, August 2016. <i>Guidance Statement: Licence duration</i> . Department of Environment Regulation, Perth.	N/A	
8	DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	N/A	
9	DER, November 2016. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	N/A	
10	DR046609 LTR 2018.12.19 CPM to DWER L8308 TSF2 Raise 3 (61mRL) dated 19 December 2018, 10:13am and authored by CITIC Pacific Mining Management Pty Ltd	CITIC Application, 2019	DWER records A1750451
11	RE: L8308 Queries Amendment, dated 11 January 2019, 1:29pm and authored by CITIC Pacific Mining Management Pty Ltd	N/A	DWER records A1754775
12	RE: TSF decant and seepage water dated 13 March 2019, 4:02pm and authored by CITIC Pacific Mining Management Pty Ltd	N/A	DWER records A1772050
13	RE: TSF decant and seepage water dated 20 March 2019, 10:33am and authored by CITIC Pacific Mining Management Pty Ltd	N/A	DWER records A1773808
14	RE: TSF decant and seepage water dated 20 March 2019, 1:32pm and authored by CITIC Pacific Mining Management Pty Ltd	N/A	DWER records A1773953
15	RE: Sino Iron Project dated 29 March	N/A	DWER records A1780909

	2019, 12:19pm and authored by the Department of Mines, Industry Regulation and Safety		
16	RE: L8308 Sino Iron Amendment, dated 2 April 2019, 2:50pm and authored by CITIC Pacific Mining Management Pty Ltd	CITIC Design Drawings, 2019	DWER records A1780910
17	RE: Seepage Controls, dated 2 April 2019, 3:04pm and authored by CITIC Pacific Mining Management Pty Ltd	N/A	DWER records A1780908
18	Sino Iron Project TSF query dated 8 April 2019, 10:36am and authored by the Department of Mines, Industry Regulation and Safety	N/A	DWER records A1780288

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 16 April 2019 for review and comment. The Licence Holder responded on 18 April 2019 waiving the remaining comment period. Minor comments were submitted on the draft Amendment Notice as outlined below.

Condition	Summary of Licence Holder comment	DWER response
Conditions 1.2.14 and 5.3.1	CPM propose to submit compliance documentation in the second half of 2020 for TSF2 Raise 3 up to an embankment height of 51mRL (prior to the operating pond level exceeding 45mRL which is the current lining level). A second compliance document will be submitted in the second half of 2010 for TSF2 raise 3 up to an embankment height of 61mRL (prior to the operating pond level exceeding 51mRL which will be the new lining level). As the TSF2 Raise 2 (49mRL) compliance documentation dated 9 march 2018 (DR045463) certified the installation of all finger drains and the seepage interception trench, it is anticipated the scope of the TSF2 Raise 3 compliance documentation will be limited to certification of the installation of the elastomeric bitumous geomembrane liner.	DWER acknowledges this is happy for partial compliance documentation to be submitted as works are completed.
Table 3.3.1	Reflect transition from Camp 123 Turkey's Nest to Dewatering Staging Facility.	Noted, 'or Dewatering Staging Facility' added to Table 3.3.1
Table 3.3.1	As per L8308/2008/2 Amendment Notice 4, propose sampling regime associated with stormwater and process water discharges via DC2 remain limited to in-field pH and TDS analysis. Comprehensive laboratory analysis restricted to DC2 decant/seepage discharges. Include provision that downstream ambient sampling is only conducted where it is safe to do so.	Noted, table updated accordingly.
Table 3.3.1	Reinstate footnote: <i>In-field non-NATA accredited analysis permitted</i>	Noted and updated.
Figure 1	Emission Point layer has been revised to omit surface water monitoring sites FR1, FR3, FR4 and FR5	Noted and Figure 1 updated in amendment.