



## Application for Licence Amendment

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

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<b>Licence Number</b>	L8199/2007/2
<b>Licence Holder</b>	Chichester Metals Group Ltd
<b>ACN</b>	109 264 262
<b>File Number</b>	DER2013/001073-2
<b>Premises</b>	Cloudbreak Iron Ore Mine  Mining Tenements M45/1126, M46/401, M46/404, M46/405, M46/356, M46/402, M46/410, M46/411, M46/357, M46/409, M46/453, M45/1128, M46/449, M46/452, M46/451, M46/454, M46/450, M45/1084, M45/1140, M45/1139, M45/1102, M45/1105, M45/1124, M45/1103, M45/1106, M45/1125, M45/1104, M45/1107, L46/48, L46/49, M45/1082, M45/1083, M45/1127, M45/1138, M45/1263, M46/403, M46/406, M46/407, M46/408, M46/409, M46/412, M46/413, M46/414, L46/52, L46/99, L46/46, L46/96, L46/64, L45/152, L46/47, L46/48, L46/51, L46/57, L46/62, L46/130 and Exploration Leases E45/2498, E46/590, E46/612, E45/2499, E45/2652, E45/2497  MULGA DOWNS WA 6751
<b>Date of Report</b>	16 December 2020
<b>Decision</b>	Revised licence granted

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# 1. Decision summary

Licence L8199/2007/2 is held by Chichester Metals Pty Ltd (Licence Holder) for the Cloudbreak Iron Ore Mine (the Premises), located at Mining Tenements M45/1126, M46/401, M46/404, M46/405, M46/356, M46/402, M46/410, M46/411, M46/357, M46/409, M46/453, M45/1128, M46/449, M46/452, M46/451, M46/454, M46/450, M45/1084, M45/1140, M45/1139, M45/1102, M45/1105, M45/1124, M45/1103, M45/1106, M45/1125, M45/1104, M45/1107, L46/48, L46/49, M45/1082, M45/1083, M45/1127, M45/1138, M45/1263, M46/403, M46/406, M46/407, M46/408, M46/409, M46/412, M46/413, M46/414, L46/52, L46/99, L46/46, L46/96, L46/64, L45/152, L46/47, L46/48, L46/51, L46/57, L46/62, L46/130 and Exploration Leases E45/2498, E46/590, E46/612, E45/2499, E45/2652, E45/2497, MULGA DOWNS WA 6751.

This Amendment Report documents the assessment of potential risks to the environment and public health from the proposed changes outlined below, to the emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Revised Licence L8199/2007/2 has been granted.

## 2. Scope of assessment

### 2.1 Regulatory framework

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

### 2.2 Application summary

On 23 September 2020, the Licence Holder submitted an application to the department to amend Licence L8199/2007/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments were sought:

- Construction of additional saline injection bores to assist with an anticipated increase in saline water injection from the dewatering of Bigge mining pits;
- Revision of the saline injection pipeline sample points to allow for sufficient monitoring of the water quality of additional saline water, anticipated to be reinjected into the Oakover aquifer;
- Construct a Bigge Transfer Pond (approximately 50 ML capacity) to receive saline water from the abstraction borefield in the Bigge mining area and discharge saline flow to the injection zones via the conveyance pipeline network;
- Construct a Bigge Settlement Pond (approximately 10 ML capacity) to receive saline/brackish sumping water from the pits in the Bigge mining area. Sumping water will go through the settlement zone in the pond, and then be discharged to injection zones via the conveyance pipeline network;
- Disposal of HDPE liner and piping into existing pits and waste dumps where tyres and conveyor belts are disposed to;
- Updating the definitions of the *Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)* as the definitions of 'Clean Fill' and a new definition of 'Uncontaminated Fill' have been included;
- Changing the WWTP irrigation area to reflect the correct size the irrigation area; and
- Removal of saline injection bores RP208, SRP209, SRP210, SRP211 and SRP212 as compliance documentation has been received

This amendment is limited only to changes to Categories 6, 54 and 64 activities from the Existing Licence. No changes to the aspects of the existing Licence relating to Categories 5, 52, 57 and 73 have been requested by the Licence Holder.

## 2.3 Part IV of the EP Act

The EP Act Part IV approval granted via Ministerial Statements 899, 962 and 1010 is the primary regulatory mechanism which has authorised the dewatering abstraction and reinjection scheme at the Premises.

### Requirements under EP Act Part V approvals

**Condition 6 of MS 899** was recommended by the EPA to minimise the indirect impacts from mounding, drawdown, ponding and shadowing and monitor the vegetation to ensure the indirect impacts are not greater than those predicted. Condition 6-1 of MS 899 specifies: *“The proponent shall manage the proposal in a manner that ensure there is no adverse impact to conservation significant vegetation as a result of implementing this proposal, greater than:*

- 1. 315 hectares of Mulga vegetation;*
- 2. 763 hectares to Samphire vegetation; and*
- 3. 3 hectares to Coolibah/river Red Gum creekline vegetation, outside the Mine Envelope.”*

**Condition 6-2 of MS 899** specifies that:

*“Within ten months from the date of issue of this Statement, the proponent shall prepare a Vegetation Health Monitoring and Management Plan for the Project Area to verify and ensure that the requirements of 6-1 shall be met”.*

Trigger levels for management actions to prevent further impacts have been established under the Plan and in the event that a trigger is exceeded, the Licensee is required to report such findings to the Chief Executive Officer (CEO) of the EPA.

**Condition 7 of MS 899** was recommended by the EPA to restrict groundwater mounding and drawdown at the fringe of the Fortescue Marsh to one metre to prevent impacts to groundwater dependant vegetation.

**MS 962 amended Condition 7-1 of MS 899**, specifying that:

*The proponent shall manage the injection of surplus water to ensure that groundwater levels do not rise or drop by more than one metre at the fringe and within the Fortescue Marsh, from the baseline groundwater level, using a suitable network of bores at the fringe of the Fortescue Marsh as shown in Figure 2 and delineated by co-ordinates in Schedule 2, having regard for climatic trends and seasonal variation, unless prior written authorisation of the CEO has been received.*

**MS 962 amended Condition 7-2 of MS 899**, specifying that:

*To verify that the requirements of Condition 7-1 are being met the proponent shall, to the requirements of the CEO:*

- 1. undertake baseline monitoring at groundwater monitoring bores located on the fringe of the Fortescue Marsh and a control bore outside impacts areas within one month of the date of issue of this Statement for currently installed bores and as soon as is practicable for the new fringe bores and the control bore...*
- 2. establish trigger groundwater levels at locations identified in Condition 7-2(1) having regard for climatic trends and seasonal variation; and*
- 3. monitor groundwater levels monthly at a minimum at locations identified in Condition 7-2(1).*

**MS 1010**, which approved the increase in mine dewatering and reinjection to 150 GLpa, requires the Licence Holder to implement the increased rate of abstraction and reinjection subject to the

implementation conditions in MS 899, as amended by the implementation agreement set out in MS 962.

### Cloudbreak Groundwater Operating Strategy

The Licence Holder has developed the *Cloudbreak Groundwater Operating Strategy (CB-PHHY- 0009)* which supported the EP Act Part IV approval process. Key aspects of the Groundwater Operating Strategy (GWOS) relating to disposal of abstracted water are summarised below.

#### **Brackish water disposal:**

- Cloudbreak mine is typically operated with a deficit of brackish water supply, with nondewatering sources making up the brackish deficit. Occasionally there may be brackish water surplus when dewatering is initiated at new mining areas and/or when ore processing is interrupted for maintenance shutdown. Brackish water surplus is disposed primarily via reinjection.
- Brackish injection areas are Hillside West, Hillside East and Lefthanders Injection borefields with reinjection typically targeting the Marra Mamba Formation.
- Other options for Brackish water disposal include storage in transfer ponds, transfer to Christmas Creek mine site or contingency discharge if reuse, injection, in-pit disposal and temporary storage options are unavailable or exhausted.

#### **Saline water disposal:**

- Cloudbreak is constantly operated with a saline water surplus. Water demand for saline water is low since it is only used for dust suppression in mining areas. Saline injection is undertaken between the southern limit of the resource area and the northern limit of the Fortescue Marsh. The Oakover formation is the target aquifer of the injection. The Oakover formation is considered to have high transmissivity and aquifer storage due to the presence of calcrete and silcretes.

#### **Trigger System**

The GWOS has defined 'Trigger Level Framework' to ensure management objectives specified in Ministerial Statement are maintained. A two-tiered trigger level system is used.

- **Class 1** trigger levels serve as an internal early warning for potential unexpected groundwater level, water quality and water chemistry changes which may require operational changes.
- **Class 2** trigger levels are aligned with unexpected groundwater level changes that may potentially impact upon the environment and future beneficial use of the aquifer which require operational changes. Class 2 triggers are based on regulatory requirements and are required to be reported.

Accordingly, internal 'Class 1' Trigger levels have been set to manage saline injection and brackish injection as below:

- Water table to be maintained 3m below ground level;
- Oakover formation to be maintained 0.5m below ground level; and
- Marra Mamba formation to be maintained 3m below ground level.

The GWOS notes that trigger levels in the Oakover aquifer have been set to pressure levels within the deep aquifer which will not adversely impact upon the shallow aquifer at locations defined in MS962. Following trigger values have been applied to Oakover monitoring locations in Zone B:

- Class 1 water level trigger values have been set at 0.5 mbgl;
- No Class 2 water level trigger values have been set as potential environmental impacts are managed through the watertable monitoring bores; and

- Class 1 water salinity trigger values have been proposed at 9,000  $\mu\text{S}/\text{cm}$  where water quality is naturally  $<9,000 \mu\text{S}/\text{cm}$ .

The GWOS commits that Exceedance of Class 1 Trigger will be investigated by initiating hydrogeological assessment and changes to the water management system, including redirecting disposal to void mine pits and adjusting abstraction/ injection volumes in impacted area, will be implemented as necessary.

Scope of EP Act Part V licence assessment is limited to assessment of impacts on groundwater quality associated with injection of groundwater.

### 3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

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

#### 3.1 Source-pathways and receptors

##### 3.1.1 Emissions and controls

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

**Table 1: Licence Holder controls**

Emission	Sources	Potential pathways	Proposed controls
Dust	Drilling of new saline reinjection bores	Air/windborne pathway	Inform personnel of dust management responsibilities
	Installation of new pipeline between the Bigge mining pits to the saline injection bores	Air/windborne pathway	Minimise clearing and vegetation disturbance and conduct vegetation clearing in accordance with permits  Implement dust suppression measures including the use of water carts, vehicle speed restrictions etc.
	Construction of the Settlement Pond to receive saline/brackish sumping from the Bigge mining pits	Air/windborne pathway	Dust mitigation measures are to be implemented while earthworks are conducted
	Construction of the Transfer Pond to receive saline water from the abstraction borefield in the Bigge mining area and discharge saline flow	Air/windborne pathway	

Emission	Sources	Potential pathways	Proposed controls
	to the saline injection bores		
Noise	Drilling of new saline reinjection bores	Air/windborne pathway	Low noise plant and equipment will be used where practicable
	Installation of new pipeline between the Bigge mining pits to the saline injection bores	Air/windborne pathway	Noise emissions monitoring conducted on mobile plant where potential exceedance is identified Noise emissions reduction will be addressed through the maintenance process
	Construction of the Bigge Transfer Pond	Air/windborne pathway	As necessary noise emissions monitoring conducted on fixed plant and noise and emissions reduction addressed through maintenance processes
	Construction of the Bigge Settlement Pond	Air/windborne pathway	
Saline/brackish water	Dewatering of Bigge mining pits and reinjection to the Oakover aquifer	Direct discharge to aquifer	The Licence Holder has stated that additional saline water reinjected into the Oakover aquifer is unlikely to have any additional environmental impacts as the additional reinjection bores along the reinjection zone will assist in distributing the saline water over the length of the reinjection system and the water quality of the additional saline water abstracted from the Bigge mining pits is similar quality of the saline water currently reinjected into the Oakover aquifer.
	Dewatering of Bigge mining pits and reinjection to the Oakover aquifer	Direct discharge from pipeline rupture	Pipelines will be constructed aboveground, but buried under roads and through creeks. Bunding along pipelines have a buffer of seven hours. Saline injection bunds have an alarm to alert and indicate overflows. High risk saline pipelines are: <ul style="list-style-type: none"> <li>• Either equipped with telemetry;</li> <li>• Equipped with automatic cut-outs in the event of a pipe failure; or</li> <li>• Provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
	Bigge Transfer Pond (to receive saline water from the abstraction borefield in the Bigge mining area and discharge saline flow to the injection zones via the conveyance pipeline network)	Direct discharge from overtopping of transfer pond	Minimum vertical freeboard of 200mm
		Seepage/infiltration	HDPE liner/concrete or similar impermeable layer
	Bigge Settlement Pond (to receive saline/brackish sumping from the pits in the Bigge mining area.  Sumping water will go through the settlement zone in the pond, and then be discharged to injection zones via the conveyance pipeline network).	Direct discharge from overtopping of the settlement pond	Minimum vertical freeboard of 200mm
		Seepage/infiltration	HDPE liner/concrete or similar impermeable layer
Disposal of HDPE liner and piping into existing pits and waste dumps with tyres and conveyors belts	TSF pipelines and saline network pipelines as they require regular change out from general wear and tear  All HDPE pipelines from these sources would have no potential contaminants. TSF and saline network pipelines are flushed prior to decommissioning so the pipelines are empty.	Direct disposal	Disposal to specific locations defined in the licence.
Uncontaminated Fill leaching from rainfall	Potential contaminants within the Uncontaminated Fill	Infiltration	Testing conducted and thresholds met in compliance with the <i>Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)</i>

### 3.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guidance Statement: Environmental Siting* (DER 2016)).

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

Human receptors	Distance from prescribed activity
<p><b>No significant residential receptors</b> are located in the vicinity of the Premises.</p> <p>The nearest sensitive land uses include Marillana Homestead and Bamboo Springs.</p>	<p>Marillana Homestead located approximately 31.5 km from the Premises</p> <p>Bamboo Springs located approximately 34.8km from the Premises.</p> <p>Town of Newman located approximately 120km from the Premises.</p>
Environmental receptors	Distance from prescribed activity
<p>Surface water</p>	<p>The Fortescue Marsh which is listed in A Directory of Important Wetlands in Australia and also listed as a Priority 1, Priority Ecological Community (PEC) (PEC, 2017) is located approximately 2.3km south from the premises boundary.</p> <p>Broad scale flooding of the Fortescue Marsh occurs on a frequency of about one year in ten, with inundation persisting for three to six months (EPA Report 1429). Yintas (semi-permanent pools) are located along the northern shoreline of the Fortescue Marsh, with two of these having part of their catchment area within the Cloudbreak project area.</p>
<p>Livestock bores</p>	<p>There are five pastoral bores located within the premises boundary; these being Cooks bore, Moojarri bore, Muirs bore, Mulga bore and Nicks bore.</p>
<p>Groundwater</p>	<p>Groundwater in the project area is generally brackish (&gt;500 mg/L TDS) and becomes increasingly saline towards the Fortescue Marsh and with depth (&gt;100,000 mg/L TDS). Salinity increases with depth, with the upper tertiary detritals having a salinity of 1,000 to 2,000 mg/L TDS, Marra Mamba Formation reaching up to 6,000 mg/L TDS and the deeper Lower Marra Mamba and Wittenoom Formations having a salinity of 5,000 to 11,000 mg/L TDS. The Oakover Formation to the south of the resource area has monitored TDS of up to 150,000 mg/L (EPA Report 1429).</p> <p>The primary mechanisms for groundwater recharge in the area are infiltration recharge from direct rainfall and local stream flow on Marra Mamba Formation and Tertiary detritals/alluvium, infiltration recharged associated with ponding on the Fortescue Marsh and inflow from aquifers located to the north of the project area. The groundwater system beneath the Fortescue Marsh is considered to be a closed system with limited outflow to the west beneath the Goodardarie Hills.</p>
<p>Flora</p>	<p>Flora and vegetation surveys have identified seven priority flora species in and near the mining area, including <i>Eremophila spongicarpa</i> (Priority 1), <i>Nicotiana heterantha</i> (Priority 1), <i>Gymnanthera cunninghamii</i> (Priority 3), <i>Phyllanthus aridus</i> (Priority 3), <i>Rostellulaira adscendens var. latifolia</i> (Priority 3), <i>Themeda asp.</i> Hamersley Station (Priority 3), <i>Eremophila youngii subsp. Lepidota</i> (Priority 4) and <i>Goodenia nuda</i> (Priority 4).</p>

	<p>There are no Threatened flora species pursuant to the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) or Declared Rare Flora (DRF) pursuant to the <i>Wildlife Conservation Act 1950</i> (WC Act) recorded with the survey area.</p> <p>Twenty one vegetation communities have been mapped in the Cloudbreak survey area; none of these communities are considered to be Threatened Ecological Communities under the WC Act or the EPBC Act.</p> <p>Ecologically important vegetation communities have been identified within the survey area including Samphire (<i>Tecticornia sp.</i>), Mulga (<i>Acacia aneura</i>) and groundwater dependant vegetation Coolibah (<i>Eucalyptus victrix</i>) and River Red Gum (<i>Eucalyptus camaldulensis</i>).</p>
Fauna	<p>Fauna studies conducted within and adjacent to the project area recorded 25 species of conservation significance, including the Night Parrot (<i>Pezoporus occidentalis</i>), Greater Bilby (<i>Macrotis lagotis</i>), Pilbara Leaf-Noise Bat (<i>Rhinoicteris aurantia</i>) and Pilbara Olive Python (<i>Liasis olivacea barroni</i>) which are listed under the EPBC Act.</p> <p>Stygofauna surveys conducted in the vicinity of the Cloudbreak area have identified 23 stygofauna species. Of these, two appear to be restricted to the vicinity of the proposal area.</p>

Hydrogeology:

Cloudbreak mine is located in the foothills of the Chichester ranges where the primary aquifer is the Marra Mamba Formation (MMF). Partially saturated porous media exists within saturated Tertiary sediments overlying the MMF and structurally controlled aquifer zones underlie the MMF within the Jeerinah Formation.

The saline injection borefield is located between the CDB and the Fortescue Marsh where the Oakover formation (part of the Tertiary sedimentary package) is the primary aquifer. The Oakover formation is overlain by a clay dominated sequence which acts as a confining layer between the Oakover Formation and groundwater occurrence within the overlying alluvial sequence.

Based on the water quality distribution and beneficial use considerations, two classes of groundwater quality are defined for the purpose of groundwater management:

Brackish water ( $\leq 6,000$  milligrams per litre (mg/L) total dissolved solids (TDS)) occurs in shallow aquifer zones within the mineralised Marra Mamba Formation (MMF) and overlying Tertiary Detritals sediments located on the upper slopes of the Chichester Range.

Saline – hypersaline water ( $\geq 6,000$  mg/L to 150,000 mg/L TDS). The aquifer within the Oakover Formation, which overlies the MMF to the south of the resource area, is entirely of saline quality.

Figure 1 shows the distance to sensitive receptors.

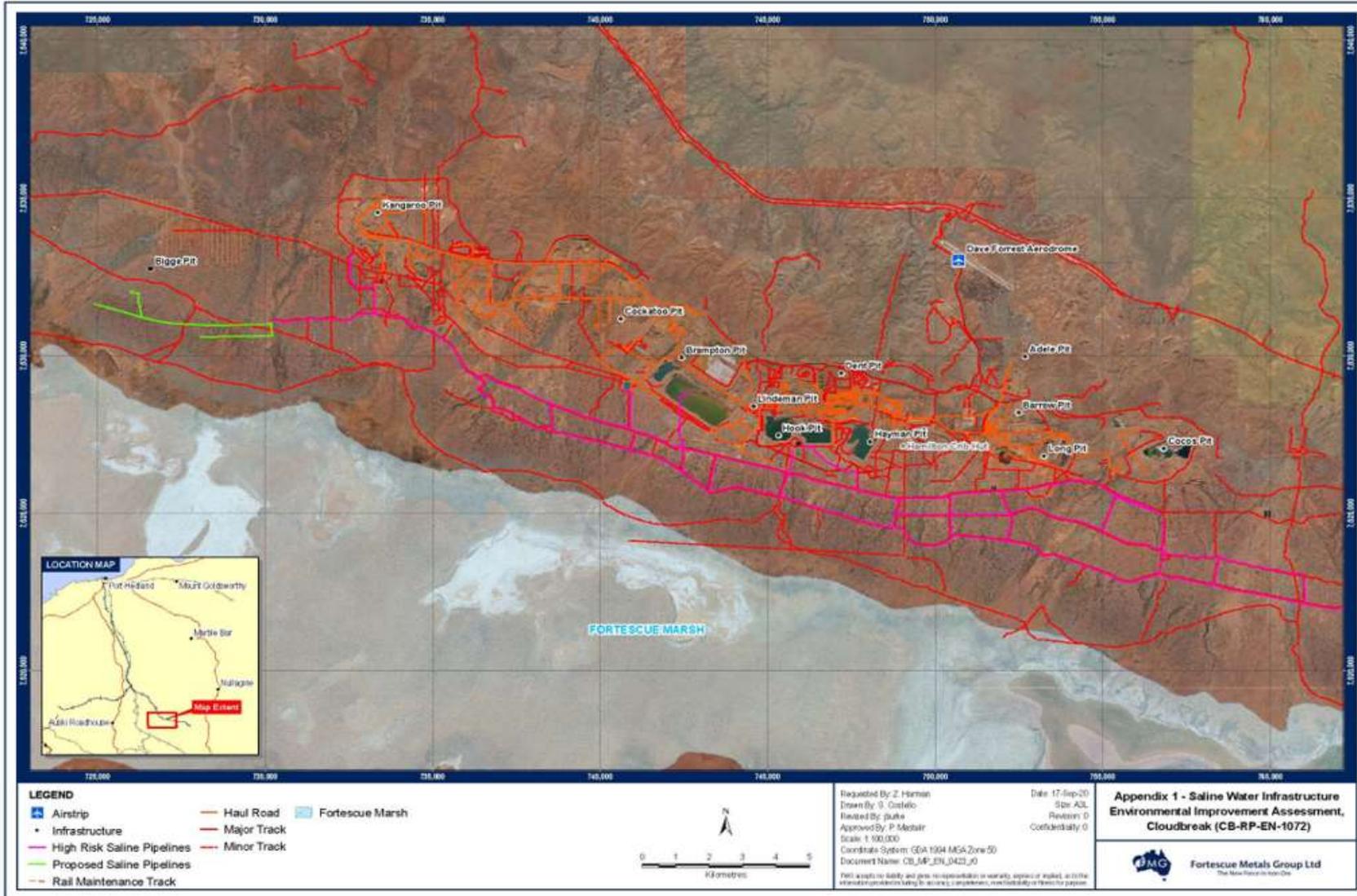


Figure 1: Distance to sensitive receptors

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IR-T15 Amendment Report Template v2.0 (July 2020)

## 3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

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

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

The Revised Licence L8199/2007/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. saline reinjection activities.

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

**Table 3. Risk assessment of potential emissions and discharges from the Premises during construction and operation**

Risk Event					Risk rating <sup>1</sup>	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood			
<b>Construction</b>								
Drilling of the additional saline rejection bores  Construction of the Bigge Transfer Pond and the Bigge Settlement Pond, along with pipelines, will require movement of materials and use of equipment	Dust	Air/windborne pathway causing impacts to health and amenity	Marillana Homestead located approximately 31.5 km from the Premises	Refer to Section 3.1.1	C = Slight L = Rare <b>Low Risk</b>	Y	N/A	N/A
	Noise		Bamboo Springs located approximately 34.8km from the Premises  Town of Newman located approximately 120km from the Premises	Refer to Section 3.1.1	C = Slight L = Rare <b>Low Risk</b>	Y	N/A	N/A
<b>Operation</b>								
Transfer of saline water along pipelines to the Bigge Transfer Pond and Bigge Settlement Pond	Saline water discharged from the pipelines	Direct discharges from the pipelines from ruptures	Ecologically important vegetation communities	Refer to Section 3.1.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Condition 1.2.1 requires pipelines to: (a) either equipped with telemetry; or (b) equipped with automatic cut-outs in the event of a pipe failure; or (c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.  Condition 1.2.3, Table 1.2.2 Inspection of infrastructure requires	<b><u>Condition 1.2.9, Table 1.2.6</u></b> <b><u>Provided the Bigge pipelines are constructed correctly, the environmental risk is reduced so including as Infrastructure requirements</u></b>  <b><u>Condition 4.3.1, Table 4.3.1</u></b> <b><u>Compliance is required for the</u></b>

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							<p>that saline injection infrastructure (transfer ponds and pipelines) are inspected daily for visual integrity.</p> <p><b><u>Condition 1.2.9, Table 1.2.6 Infrastructure requirements for Bigge pipelines:</u></b></p> <p><b><u>(a) either equipped with telemetry; or</u></b></p> <p><b><u>(b) equipped with automatic cut-outs in the event of a pipe failure; or</u></b></p> <p><b><u>(c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.</u></b></p> <p><b><u>Condition 4.3.1, Table 4.3.1 Notification requirements amended to include the Bigge pipelines</u></b></p>	<b><u>Bigge pipelines</u></b>
Use of the Bigge Transfer Pond and Bigge Settlement Pond to store abstracted saline water and sumping water from the dewatering of Bigge mining are and pits, prior to rejection into the Oakover aquifer	Seepage of saline water	Seepage through the base and embankments of the storage ponds	Soils, vegetation, groundwater	Refer to Section 3.1.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	<p>Condition 1.2.2, Table 1.2.1 Containment infrastructure requires that Transfer Ponds and Settlement Ponds are HDPE liner/concrete or similar impermeable layer.</p> <p>Condition 1.2.3, Table 1.2.2 Inspection of infrastructure requires that saline injection infrastructure (transfer ponds and pipelines) are inspected daily for visual integrity.</p> <p><b><u>Condition 1.2.9, Table 1.2.6 Infrastructure requirements amended for the Bigge Transfer Pond and the Bigge Settlement Pond to be constructed to have HDPE liner/concrete or similar impermeable layer</u></b></p> <p><b><u>Condition 4.3.1, Table 4.3.1 Notification requirements amended</u></b></p>	<b><u>Condition 1.2.9, Table 1.2.6 Provided the Bigge Transfer Pond and Bigge Settlement Pond are constructed correctly, the environmental risk is reduced so including as Infrastructure requirements</u></b>  <b><u>Condition 4.3.1, Table 4.3.1 Compliance is required for the Bigge Transfer Pond and the Bigge Settlement</u></b>

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Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							<u>to include the Bigge Transfer Pond and the Bigge Settlement Pond</u>	<u>Pond</u>
	Overtopping of saline water	Direct discharge over the banks of the storage ponds	Soils, vegetation, groundwater	Refer to Section 3.1.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	Condition 1.2.2, Table 1.2.1 Containment infrastructure requires that Transfer Ponds and Settlement Ponds have a minimum vertical freeboard of 200mm  <u>Condition 1.2.9, Table 1.2.6 Infrastructure requirements amended for the Bigge Transfer Pond and the Bigge Settlement Pond to constructed to allow a minimum vertical freeboard of 200mm</u>  <u>Condition 4.3.1, Table 4.3.1 Notification requirements amended to include the Bigge Transfer Pond and the Bigge Settlement Pond</u>	<u>Condition 1.2.9, Table 1.2.6 Provided the Bigge Transfer Pond and Bigge Settlement Pond are constructed correctly, the environmental risk is reduced so including as Infrastructure requirements</u>  <u>Condition 4.3.1, Table 4.3.1 Compliance is required for the Bigge Transfer Pond and the Bigge Settlement Pond</u>
Reinjection of abstracted saline water from the dewatering of Bigge mining pits to the Oakover aquifer (via the Bigge Transfer Pond and Bigge Settlement Pond)	Saline water	Direct discharge	Contamination, modifications to aquifer	Refer to Section 3.1.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	<u>Condition 1.2.9, Table 1.2.6 Infrastructure requirements amended for the Bigge saline injection bores</u>  <u>Condition 2.3.1, Table 2.3.1 Point source emissions to groundwater amended to add in the 25 new saline injection bores</u>  <u>Condition 3.3.1, Table 3.3.1 Monitoring of point source emissions to groundwater refers to monitoring each saline and brackish reinjection emission point referred in Table 2.3.1 so the Bigge saline injection bores are included.</u>	<u>Condition 1.2.9, Table 1.2.6 Lining and freeboard requirements included</u>  <u>Condition 2.3.1, Table 2.3.1 These must be included as point source discharges</u>  <u>Condition 3.3.1, Table 3.3.1 Bigge saline monitoring points</u>

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							<p><u>Also amended to include SP0032 BIG SINJ, SP0033 BIG SINJ and SP0034 BIG SINJ Bigge saline monitoring points.</u></p> <p><u>There are no construction requirements specified for installation of the new sampling points as these have an existing tap installed on the pipework available for sampling. There is no infrastructure required to be constructed/installed.</u></p> <p>Condition 3.6.1 includes ambient groundwater monitoring requirements to identify potential impacts to groundwater quality and levels as a result of reinjection of mine dewatering water</p> <p>Condition 4.2.1 requires the Licence Holder to report the results of monitoring in the AER for review</p> <p><u>Condition 4.3.1, Table 4.3.1 Notification requirements amended to include the Bigge saline injection bores</u></p>	<p><u>included to allow for sufficient monitoring of the water quality of additional saline water that is anticipated to be reinjected into the Oakover aquifer</u></p> <p><u>Condition 4.3.1, Table 4.3.1 Compliance is required for the Bigge saline injection bores.</u></p>
Disposal of HDPE liner and piping into existing pits and waste dumps with tyres and conveyors belts	HDPE liner and piping	Direct disposal	Soils and groundwater	Refer to Section 3.1.1	C = Slight L = Rare <b>Low Risk</b>	Y	Condition 1.2.5, Table 1.2.3 Management of waste stipulates where the waste can be disposed of.	N/A
Clean Fill / Uncontaminated Fill	Infiltration of potentially contaminated stormwater	Leaching from rainfall events	Soils and groundwater	Refer to Section 3.1.1	C = Slight L = Rare <b>Low Risk</b>	Y	<p><u>Definitions updated for Landfill Definitions and 'Uncontaminated Fill'</u></p> <p><u>Condition 1.2.5, Table 1.2.3 Management of waste Uncontaminated Fill included and Clean Fill and Uncontaminated Fill</u></p>	<p><u>Definitions Required updating in compliance with the Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)</u></p>

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							<u>can also be disposed of into waste rock materials or completed mining voids and/or waste rock dumps</u>	<u>Condition 1.2.5, Table 1.2.3 Required updating in compliance with the Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)</u> <u>Modifications to locations as per Licence Holder request.</u>
Modification of Cloudbreak Camp WWTP irrigation area from 18.3 ha up to 20.05 ha	This is an administrative amendment as the Compliance Document submitted 03 April 2013 (A1959783) reported the irrigation area as 20.05 ha and the Department noted this in the Compliance Certificate on 11 April 2013 (A620278), however, this was not updated in the licence							

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

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

## 4. Consultation

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

**Table 4: Consultation**

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on 11 December 2020 and comments received 16 December 2020	Refer to Appendix 1	Refer to Appendix 1

## 5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

### 5.1 Summary of amendments

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

**Table 5: Summary of licence amendments**

Condition no.	Proposed amendments
Introduction	General updates made to the Introduction Section
Definitions	<p>“Landfill Definitions” amended to refer to the Landfill Waste Classification and Waste Definitions 1996</p> <p>“Uncontaminated Fill” added</p>
1.2.5, Table 1.2.3	<p>Addition of Clean Fill and Uncontaminated Fill disposal to mining voids and/or waste rock dumps</p> <p>Addition of HDPE liner and HDPE piping as Inert Waste Type 2 description and locations</p>
1.2.9, Table 1.2.6	<p>Removal of SRP208, SR209, SR210, SRP211 and SRP212 as these have been constructed and Compliance Report received</p> <p>Addition of new Saline Reinjection Bores SRP213, SRP214, SRP215, SRP216, SRP217, SRP218, SRP219, SRP220, SRP221, SRP222, SRP223, SRP224, SRP225, SRP226, SRP227, SRP228, SRP229, SRP230, SRP231, SRP232, SRP233, SRP234, SRP235, SRP236, SRP237</p> <p>Bigge Transfer Pond and Bigge Settlement Pond HDPE liner/concrete or similar impermeable layer and Minimum vertical freeboard of 200mm included</p> <p>Bigge pipelines included with the following requirements:</p> <ul style="list-style-type: none"> <li>(a) either equipped with telemetry; or</li> <li>(b) equipped with automatic cut-outs in the event of a pipe failure; or</li> <li>(c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.</li> </ul>
2.3.1, Table 2.3.1	Addition of SRP208, SR209, SR210, SRP211 and SRP212 as Compliance Report received

	<p>Addition of new Bigge saline injection bores SRP213, SRP214, SRP215, SRP216, SRP217, SRP218, SRP219, SRP220, SRP221, SRP222, SRP223, SRP224, SRP225, SRP226, SRP227, SRP228, SRP229, SRP230, SRP231, SRP232, SRP233, SRP234, SRP235, SRP236, SRP237</p> <p>Removal of unused Brackish Injection Bores</p>
2.4.1, Table 2.4.1	Amended irrigation area from 18.3 ha up to 20.05 ha
3.1.2	Updated monitoring frequency condition to the Conditions Library
3.1.3	Updated manufacturer's specifications and calibrations conditions to the Condition Library
3.3.1, Table 3.3.1	<p>Reformatting so clearer</p> <p>Addition of the Bigge Saline monitoring points</p> <p>Addition of Note 3 that sampling at saline monitoring locations (Brampton, Long, Kangaroo, Norfolk and Bigge Saline) only required when reinjection of saline water occurring</p>
4.1.1	Updated records condition to the Conditions Library
4.1.2	Updated records condition to the Conditions Library
4.1.3	Updated complaints condition to the Conditions Library
4.2.1, Table 4.2.1	<p>Updated Annual Environmental Report condition to the Conditions Library</p> <p>Updated Table 4.2.1 to include HDPE liner and HDPE piping locations</p>
4.2.3	Updated Annual Audit Compliance condition to the Conditions Library
4.3.1	Amended to include Compliance Report for the Bigge saline injections bores, Bigge Transfer Pond and Bigge Settlement Pond

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

Condition	Summary of Licence Holder's comment	Department's response
Condition 1.2.9, Table 1.2.6	Bigge Transfer and Settlement Pond – The pond capacity of Bigge Transfer Pond and Bigge Settlement Pond are indicative only. It is subject to change based on the pond operating philosophy that will be developed as part of the detailed design of the pond and associated transfer pumps. Please add a footnote to Table 1.2.6 indicating that the volumes of the proposed Bigge Transfer and Settlement ponds are an estimated capacity only.	Removed capacities from the licence. Approximately capacities are listed in this Amendment Report.
Condition 1.2.10	Condition needs to include reference to the proposed 'Bigge transfer pond, Bigge settlement pond and Bigge pipelines' as outlined in Condition 1.2.9.	Updated as requested.
Figure 4	Please update caption for Figure 4 to include the text 'HDPE liner and HDPE piping' as indicated in Table 1.2.3.	Updated as requested.
Figure 5 and Figure 6	Figure 5 and Figure 6 are not the updated maps provided. Maps to be updated to include new bores proposed as part of licence amendment. These new maps with the proposed new injection bores (updated Figure 5 and Figure 6) were provided to you by email on 17 November (see attached). The Figure 5 and Figure 6 captions also references Table 1.2.7, which does not exist in the licence. Please remove reference to Table 1.2.7 also.	Updated as requested.
Figure 7	Please update caption for Figure 7 as Table 1.2.7 does not exist in licence.	Updated as requested.
Figure 12 and Figure 13	Caption references Table 1.3.1, but should be changed to reference Table 1.2.1.	Updated as requested.

## Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY				
<b>Application type</b>				
Works approval	<input type="checkbox"/>			
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>
		Has the works approval been complied with?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Date Report received:		
Renewal	<input type="checkbox"/>	Current licence number:		
Amendment to works approval	<input type="checkbox"/>	Current works approval number:		
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L8199/2007/2	
		Relevant works approval number:	N/A	<input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:	None	<input type="checkbox"/>
Date application received	23 September 2020			
<b>Applicant and Premises details</b>				
Applicant name/s (full legal name/s)	Chichester Metals Pty Ltd			
Premises name	Cloudbreak Iron Ore Mine			
Premises location	E45/2498, E46/590, M46/356 and M46/410, MULGA DOWNS WA 6751			
Local Government Authority	Shire of East Pilbara			
<b>Application documents</b>				
HPCM file reference number:	DWERDT341791			
Key application documents (additional to application form):	Licence Amendment Supporting Document 17/09/2020			
<b>Scope of application/assessment</b>				

Summary of proposed activities or changes to existing operations.	Licence amendment for: <ul style="list-style-type: none"> <li>• Construction of additional saline injection bores to assist with an anticipated increase in saline water injection from the dewatering of Bigge mining pits;</li> <li>• Revision of the saline injection pipeline sample point to allow for sufficient monitoring of the water quality of additional saline water is anticipated to be reinjected into the Oakover aquifer;</li> <li>• Construct a Bigge transfer and settlement pond to support the additional saline water abstracted from the Bigge mining pits;</li> <li>• Disposal of HDPE liner and piping into existing pits and waste dumps where tyres and conveyor belts are disposed of; and</li> <li>• Changing the WWTP irrigation area to reflect the correct size the irrigation area.</li> </ul>
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Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
5 Processing or beneficiation of metallic or non-metallic ore	50,000,000 tonnes per Annual Period	50,000,000 tonnes per Annual Period
6 Mine dewatering	Maximum of 150,000,000 tonnes per Annual Period (reinjected)	Maximum of 150,000,000 tonnes per Annual Period (reinjected)
52 Electric power generation	50.6 megawatts	50.6 megawatts
54 Sewage facility	694.5 cubic metres per day	694.5 cubic metres per day
57 Used tyre storage	2,000 tyres	2,000 tyres
64 Class II putrescible landfill site	10,000 tonnes per Annual Period	10,000 tonnes per Annual Period
73 Bulk storage of chemicals, etc.	7,700.5 cubic metres	7,700.5 cubic metres

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: 721, 899, 962, 1010 EPA Report No: 1216, 1429, 1498, 1547
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Reference No: EPBC 2005/2205 & 2010/5696

Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CPS No: Ministerial 899
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Application reference No: Licence/permit No: Provided in Groundwater documents
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Type: N/A Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: N/A
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to <a href="#">WQPN 25</a> )? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i> , <i>Environmental Protection (Controlled Waste) Regulations 2004</i> , <i>State Agreement Act xxxx</i> )	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>Dangerous Goods Safety Act 2004</i> <i>Environmental Protection (Controlled Waste) Regulations 2004</i> <i>Iron Ore (FMG Chichester Pty Ltd) Agreement Act 2006</i>

Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Classification: Acid Sulphate Soil Date of classification: N/A