



## 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 Pty Ltd
<b>ACN</b>	109 264 262
<b>File Number</b>	DER2013/001073-2
<b>Premises</b>	<p>Cloudbreak Iron Ore Mine</p> <p>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, 45/1083, M45/1127, M45/1138, M45/1263, M45/1303 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</p> <p>MULGA DOWNS WA 6751</p> <p>As defined by Figure 1 in Schedule 1 of the Revised Licence</p>
<b>Date of Report</b>	21 July 2023
<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 multiple Mining Tenements<sup>1</sup> at Mulga Downs, WA.

This Amendment Report documents the assessment of potential risks to the environment from proposed changes 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 14 November 2022, 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 are being sought:

- Rename the existing “Bigge Transfer Pond” to “Garden Transfer Pond 1”;
- Include the existing Cloudbreak Compliance Construction (CBCC) Saline Transfer Pond that was constructed in 2014, yet not included on the Licence;
- Include the proposed installation of multiple additional spigots required at Brampton tailings storage facility (TSF);
- Include additional dewatering infrastructure to equip the additional bores required at existing saline infrastructure due to new point source emissions required to supplement the groundwater table; and
- Construction and operation of a new 250 equivalent persons (EP) Wastewater Treatment Plant (WWTP), the Cloudbreak West Village WWTP, to support the accommodation of personnel adjacent to the Bigge Mining area. Maintenance upgrades are requested to the existing Cloudbreak WWTP as approved by DWER on the 07 September 2022.

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

Table 1 below outlines the proposed changes to the existing Licence.

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<sup>1</sup> Mining Tenements include all of or part of 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, 45/1083, M45/1127, M45/1138, M45/1263, M45/1303 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.

**Table 1: Proposed design or throughput capacity changes**

Category	Current design throughput capacity	Proposed design throughput capacity	Description of proposed amendment
5	50,000,000 tonnes per Annual Period	N/A	N/A
6	Maximum of 150,000,000 tonnes per Annual Period (reinjecting)	N/A	No proposed change to production or design capacity. Equipping of additional saline injection bores and extension of infrastructure.
52	50.6 megawatts	N/A	N/A
54	694.5 cubic metres per day	812 cubic metres per day	The proposed change will increase the production/design capacity to 812 m <sup>3</sup> per day, owing to an additional 117.5 m <sup>3</sup> wastewater input to the proposed Cloudbreak West Village WWTP.
57	2,000 tyres	N/A	N/A
64	10,000 tonnes per Annual Period	N/A	N/A
73	7,700.5 cubic metres	N/A	N/A

### 2.2.1 Garden Transfer Pond 1

Administrative amendment to rename “Bigge Transfer Pond” to “Garden Transfer Pond 1”.

### 2.2.2 CBCC Existing Transfer Pond

The existing CBCC Transfer Pond was constructed between May 2014 - April 2015, however, has not been included on the licence. Existing conditions on the licence for liner, freeboard and inspection requirements for all transfer ponds will apply to the CBCC Transfer Pond.

### 2.2.3 Installation of multiple spigots at Brampton TSF

Brampton TSF is the primary TSF at Cloudbreak. Tailings is deposited via a single spigot positioned on the western corner of the haul ramp and due to this, the maximum allowed level of RL 423m will be met sooner. Therefore, the Licence Holder is requesting to use additional spigots within the TSF so that the tailings can be rotated through multiple open-ended points.

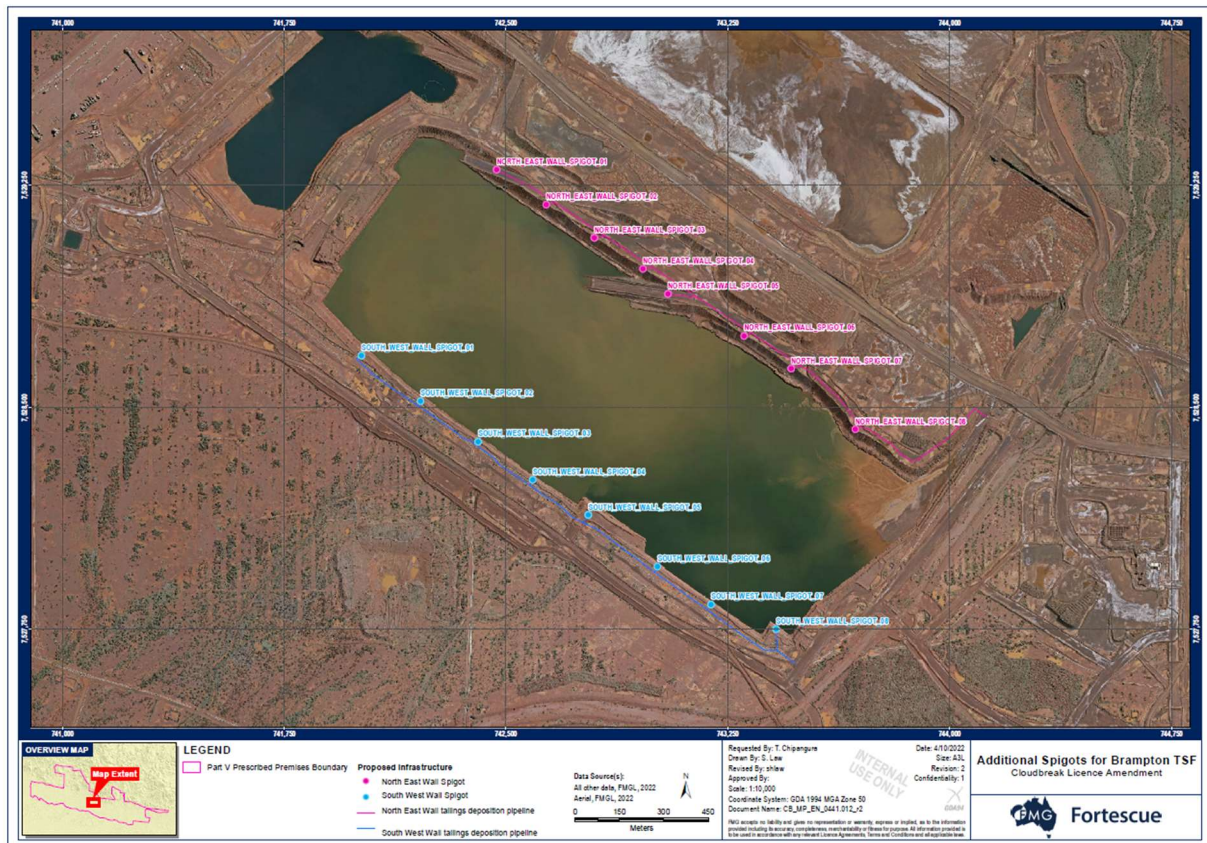
A tailings deposition strategy has been implemented and indicative locations of the proposed additional spigot locations along the north-eastern and south-western crest walls are shown in Figure 1.

The indicative slurry alignment assumes a 15 m offset from the pit wall crest. Spigot spacing of approximately 200 m was adopted, resulting in denser spacing. Indicative spigot locations use existing ramps down to the waterline where feasible.

The proposed north-eastern wall tailings pipeline alignment runs approximately 15 m offset from the pit crest and would join the existing tailings pipeline for the current single spigot at the TSF.

The alignment benefits from the access roads already in place along the crest.

The south-western slurry line benefits are that is away from the waste rock dump between Brampton Phase 3 and the In-Pit TSF. The pit floor topography generally trends high to low from the north-east to the south-west, aiding beach development. It should be noted that the pit walls and floor are generally more irregular, especially in the north-west quadrant, than for the southern alignment, which would aid beach development.



**Figure 1: Brampton TSF indicative spigot locations**

## 2.2.4 Garden Mining Pit Saline Injection infrastructure

The Licence Holder operates saline injection infrastructure to allow dewatering and mining of the Garden Pit. However, the existing saline reinjection network in the Garden area is not sufficient to manage the volumes of water from dewatering the Garden pits. The Licence Holder is requesting to construct additional reinjection infrastructure, including 48 saline injection bores and an extension to the saline pipeline and Garden Transfer Pond 2, to assist with the rejection of additional saline water abstracted from the Garden pits. The following injection bores are proposed to be installed:

- SRP319, SRP320, SRP321, SRP322, SRP323, SRP324, SRP325, SRP326, SRP327, SRP328, SRP329, SRP330, SRP331, SRP332, SRP333, SRP334, SRP335, SRP336, SRP337, SRP338, SRP339, SRP340, SRP341, SRP342, SRP343, SRP344, SRP345, SRP346, SRP347, SRP348, SRP349, SRP350, SRP351, SRP352, SRP353, SRP354, SRP355, SRP356, SRP357, SRP358, SRP359, SRP360, SRP361, SRP362, SRP363, SRP364, SRP365 and SRP366.

The Licence Holder has stated that expansion of the reinjection zone will assist in distributing the saline water over the length of the injection system and that the quality of the water abstracted from the Garden mining pits is of similar quality to water currently reinjected into the Oakover aquifer. It is proposed that an additional sampling point SP0035\_GAR\_SINJ will be

installed to monitor point source emissions to groundwater.

### 2.2.5 Saline Injection Bores for Zones A-G

An additional 30 saline injection bores are required across the existing saline infrastructure network to support and maintain injection rates in line with increased abstraction volumes of Eastern and Central Cloudbreak mining areas.

The following injection bores are proposed to be installed:

- SRP367, SRP368, SRP369, SRP370, SRP371, SRP372, SRP373, SRP374, SRP375, SRP376, SRP377, SRP378, SRP379, SRP380, SRP381, SRP382, SRP383, SRP384, SRP385, SRP386, SRP387, SRP388, SRP389, SRP390, SRP391, SRP392, SRP393, SRP394, SRP395 and SRP396.

The Licence Holder has stated that the inclusion of the additional infrastructure will assist in distributing the saline water over the length of the injection system. The quality of the saline water abstracted from the Eastern and Central Cloudbreak mining areas is similar in quality to that reinjected into the Oakover aquifer. There will be no additional sample points to the conveyance system as there is no extension of the current network.

### 2.2.6 Cloudbreak West Village Camp WWTP

The Licence Holder is proposing to construct a new accommodation village and associated infrastructure west of Cloudbreak to accommodate personnel for the Bigge Mining area. A new WWTP will process a maximum throughput of 87 m<sup>3</sup>/day plus 30 m<sup>3</sup>/day reverse osmosis reject water, with combined 117.5 m<sup>3</sup>/day treated effluent/reverse osmosis reject water discharged to a 3.0 hectare native vegetation irrigation area. The design of the WWTP is shown in Figure 2.



Figure 2: Cloudbreak West Village Camp WWTP

Expected treated effluent quality for the WWTP is shown in Table 2. Raw bore water will be reticulated to the village via an overland pipe and processed through a reverse osmosis unit. The reverse osmosis reject water will be blended with treated effluent from the WWTP prior to final discharge to the irrigation area. The irrigation spray field will use an above-ground sprinkler system to discharge the effluent and reverse osmosis reject onto existing, sparsely vegetated ground.

**Table 2: Treated effluent quality and reverse osmosis reject water concentrations**

Parameters	Expected Effluent Discharge Concentrations
Total Dissolved Solids	2,500 mg/L
5-Day Biochemical Oxygen Demand (BOD5)	<20 mg/L
pH	6.5 – 8.5
Total Suspended Solids (TSS)	<30 mg/L
Total Nitrogen (TN)	30 mg/L
Total Phosphorus (TP)	10 mg/L
<i>Escherichia coli</i> ( <i>E. coli</i> )	<1000 cfu/100 mL
Residual Free Chlorine	0.2 – 2.0 mg/L

### 2.2.7 Maintenance to existing Cloudbreak WWTP

Maintenance upgrades to the existing Cloudbreak Camp WWTP have resulted in an updated map for the Cloudbreak Camp WWTP.

## 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. The scope of the EP Act Part V licence assessment is limited to assessment of impacts on groundwater quality and surface water quality associated with injection of groundwater, rather than management of impacts from potential changes to water table levels.

### 2.3.1 Groundwater management conditioned in Ministerial Statements

A summary of regulatory requirements relevant to dewatering and reinjection operation at the Premises is provided below:

**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”.*

Groundwater elevation trigger levels for management actions to prevent further impacts to vegetation were established under the Plan and if a trigger is exceeded, the Licence Holder 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**, published on 04 August 2015, 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.

### **2.3.2 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 non-dewatering 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 a 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.

## **2.4 North West Region Water**

This proposal was referred to Northwest Regional Water team with advice provided stating that the application is unlikely to result in an increase in risks of impact on surface water or groundwater considering there is no increase to abstraction and reinjection volumes. The advice is dependent on ensuring operations adhere to proposed environmental commitments and all relevant Ministerial Statement conditions.

## **3. Risk assessment**

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

To establish a Risk Event there must be an emission, a receptor which may be exposed to that

emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

### 3.1 Source-pathways and receptors

#### 3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

**Table 3: Licence Holder controls**

Emission	Sources	Potential pathways	Proposed controls
<b>Construction</b>			
Dust	Construction of the Cloudbreak West Village WWTP and installation of new saline injection infrastructure	Air/windborne pathway	<ul style="list-style-type: none"> <li>Managed in accordance with the 'Mine and Rail Dust Management Plan (45-PL-EN-0030). The management actions include: <ul style="list-style-type: none"> <li>informing all personnel and contractors working in the project area of their responsibilities concerning dust management;</li> <li>minimising vegetation clearing and vegetation disturbance, and;</li> <li>developing and implementing dust suppression measures where necessary (e.g., water carts, vehicle speed restrictions) to minimise the potential for dust deposition on vegetation or a reduction in amenity.</li> </ul> </li> </ul>
Noise	Construction of the Cloudbreak West Village WWTP and installation of new saline injection infrastructure	Air/windborne pathway	N/A Emission screened out due to distance to sensitive receptors.
Hydrocarbons and chemicals	Use of these during the construction phase	Direct discharges	<ul style="list-style-type: none"> <li>Storage of these materials will be in line with Australian Standards and the relevant company-wide plans and procedures;</li> <li>Chemical storage areas will be fully contained and installed where necessary to prevent environmental spillage;</li> <li>Chemicals and Hydrocarbons will be managed in accordance with the Chemical and Hydrocarbon Management Plan (100-PL-EN-</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
			0011); <ul style="list-style-type: none"> <li>Australian Standards AS 1940:2017 <i>The storage and handling of flammable and combustible liquids</i>;</li> <li>Australian Standards AS 3780-2008 <i>The storage and handling of corrosive substances</i>; and</li> <li>Australian Standards AS/NZS 3833:2007 <i>The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers</i>.</li> </ul>
<b>Commissioning and Operations (including time-limited-operations operations)</b>			
<i>Rename the existing "Bigge Transfer Pond" to "Garden Transfer Pond 1" – Administrative Change</i>			
N/A	N/A	N/A	N/A
<i>CBCC Existing Transfer Pond – Administrative Change</i>			
N/A	N/A	N/A	N/A
<i>Installation of multiple spigots at Brampton TSF</i>			
Tailings	Pipeline leaks / spills	Direct discharges	<ul style="list-style-type: none"> <li>Constructed of HDPE and/or steel;</li> <li>All pipeline routes to follow existing road networks and pipeline corridors, where possible;</li> <li>Flow meters installed at the start and near the end of the deposition pipelines (or as close to the end as operationally possible); and</li> <li>Pressure sensors installed along deposition pipelines.</li> </ul>
<i>Garden Mining Pit Saline Injection infrastructure</i>			
Abstracted saline water from Garden mining pits	Pipeline leaks / spills	Direct discharges to soils, vegetation	<ul style="list-style-type: none"> <li>Daily visual integrity monitoring of saline injection infrastructure (transfer ponds and pipelines).</li> </ul>
	Reinjection to Oakover aquifer	Standard operations via reinjection for disposal of mine dewatering water to allow mining of ore in the Garden mining area	<ul style="list-style-type: none"> <li>The extension of the current re-injection zone would assist in distributing the saline water over the length of the injection system, and there are unlikely to be any localised impacts;</li> <li>An additional sampling point SP0035_GAR_SINJ will be installed to monitor point source emissions to</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
			<p>groundwater;</p> <ul style="list-style-type: none"> <li>The quality of the saline injection water abstracted from the Garden mining pits is similar to that of water currently being re-injected into the Oakover aquifer; and</li> <li>Impacts to vegetation will be monitored in accordance with MS 899 Vegetation Health Monitoring and Management Plan.</li> </ul>
<i>Saline Injection Bores for Zones A-G</i>			
Abstracted saline water from Eastern and Central Cloudbreak mining areas	Pipeline leaks / spills	Direct discharges to soils, vegetation	<ul style="list-style-type: none"> <li>Daily visual integrity monitoring of saline injection infrastructure (transfer ponds and pipelines).</li> </ul>
	Reinjection to Oakover aquifer	Standard operations via reinjection for disposal of mine dewatering water to allow mining of ore in the Eastern and Central Cloudbreak mining areas	<ul style="list-style-type: none"> <li>The extension of the current re-injection zone would assist in distributing the saline water over the length of the injection system, and there are unlikely to be any localised impacts;</li> <li>The quality of the saline injection water abstracted from the from Eastern and Central Cloudbreak mining areas is similar to that of water currently being re-injected into the Oakover aquifer; and</li> <li>Impacts to vegetation will be monitored in accordance with MS 899 Vegetation Health Monitoring and Management Plan.</li> </ul>
<i>Cloudbreak West Village Camp WWTP</i>			
Odour	WWTP tanks and irrigation area	Air / windborne pathway	<ul style="list-style-type: none"> <li>Maintain WWTP to operating standards;</li> <li>designed to be fully contained as an additional odour control measure;</li> <li>Each pump station will be fitted with a carbon scrubber vent to absorb any odours, ensuring that all air is treated before being released into the atmosphere;</li> <li>maintenance schedule for the WWTP will include a check for any odours outside the facility; and</li> <li>Should the facility be found to be producing odours, the source of these odours will be identified, and</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
			<p>any necessary repairs to the facility will be performed.</p> <p>N/A</p> <p>Emission screened out due to distance to sensitive receptors.</p>
Raw sewage, partially treated sewage	Tank overtopping and/or pipeline leaks / spills	Direct discharges	<ul style="list-style-type: none"> <li>• The plant control system is designed to provide alarms for the following: <ul style="list-style-type: none"> <li>▪ tank excessively high level;</li> <li>▪ tank excessively low level;</li> <li>▪ motor overload;</li> <li>▪ effluent pump low flow.</li> </ul> </li> <li>• Alarms are enunciated as follows: <ul style="list-style-type: none"> <li>▪ an indicating light on the control panel is illuminated for the relevant fault;</li> <li>▪ the HMI screen advises which alarm is present;</li> <li>▪ a common flashing strobe and audible alarm unit is activated;</li> <li>▪ the alarm is communicated to the client's monitoring centre via a Fibre Optic link (SCADA or equivalent).</li> </ul> </li> <li>• Process tanks are monitored for excessive levels</li> <li>• Back-up float type switches are installed on tanks as additional monitoring for excessive tanks levels;</li> <li>• If an excessive tank level is detected, the pumps which feed that tank are automatically inhibited from operating and an alarm is generated Tank Hi-Level;</li> <li>• Main tanks have an overflow pipe installed and plumbed to a below-ground spill containment pond;</li> <li>• Overflow Lagoon with storage capacity of 200,000 L, equivalent to more than two days storage of influent sewage from a fully occupied village;</li> <li>• WWTP compound is surrounded by an earthen bund designed to contain any potential leaks / spills and direct them to the spill containment pond;</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
			<p>and</p> <ul style="list-style-type: none"> <li>The WWTP will be installed on the compact ground to control the unplanned release of wastewater.</li> </ul>
Sludge	WWTP Tanks Sludge	Direct discharges	<ul style="list-style-type: none"> <li>Sludge produced by the WWTP will be collected in sludge tanks. The sludge will be removed periodically from the tanks by a licensed carrier and taken off-site for disposal at the Cloudbreak Class II licensed facility under the <i>Environmental Protection (Controlled Waste) Regulations 2004</i>.</li> </ul>
Hydrocarbons / chemicals	Leaks / spills from storage areas or transfers	Direct discharges	<ul style="list-style-type: none"> <li>Chemical storage tanks within the facility are of sufficient capacity for several weeks of normal operation;</li> <li>Custom-fabricated HDPE chemical containment bunding;</li> <li>Chemical dosing tanks and bunds shall be installed in the plant container in a segregated area, complete with a safety shower and positive ventilation;</li> <li>Storage of these materials will be in line with Australian Standards and the relevant company-wide plans and procedures;</li> <li>Chemical storage areas will be fully contained and installed where necessary to prevent environmental spillage;</li> <li>Chemicals and Hydrocarbons will be managed in accordance with the Chemical and Hydrocarbon Management Plan (100-PL-EN-0011);</li> <li>Australian Standards AS 1940:2017 <i>The storage and handling of flammable and combustible liquids</i>;</li> <li>Australian Standards AS 3780-2008 <i>The storage and handling of corrosive substances</i>; and</li> <li>Australian Standards AS/NZS 3833:2007 <i>The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers</i>.</li> </ul>
Contaminated	Stormwater flowing	Clean rainfall	<ul style="list-style-type: none"> <li>WWTP compound is surrounded by</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
stormwater	in the vicinity of the WWTP during rainfall events	flowing into the contaminated areas of the irrigation area	an earthen bund designed to contain any potential leaks / spills and direct them to the spill containment pond and divert stormwater around the WWTP area.
<i>Cloudbreak West Village Camp WWTP irrigation area</i>			
Nutrient rich treated effluent and RO brine	WWTP Final Irrigation tank	<p>The effluent solution will be disposed of through the irrigation of native vegetation via the designated spray field</p> <p>The Licence Holder has advised that the water level in the underlying Alluvial (topmost) aquifer is between 7 and 9 metres below ground level (mbgl), and unlikely to be impacted by the emission associated with the irrigation area, including seasonality of rainfall.</p>	<ul style="list-style-type: none"> <li>• Effluent quality and reverse osmosis reject water targeted at the values presented in Table 2;</li> <li>• Regular monitoring of effluent quality;</li> <li>• Irrigation area will be fenced to prevent ingress of fauna and livestock with warning signage preventing unauthorised entry fixated around the perimeter of the fence;</li> <li>• The nitrogen and phosphorus loading rates to the irrigation area will not exceed the Water Quality Protection Note 22: Irrigation with nutrient-rich wastewater of 480 kg/ha/yr and 120 kg/ha/yr respectively;</li> <li>• Proposed spray field area will be approximately 3.0 hectares, allowing an additional contingency buffer of 0.3 ha;</li> <li>• The size and location of the spray field have been designed to meet relevant design guidelines and allow for the appropriate acceptance of nutrient loading;</li> <li>• The Licence Holder has stated that weeds are expected to be present within the irrigation area due to the nature of the activity and emission. The Licence Holder will manage weeds within the irrigation area in accordance with the elements of the Fortescue Weed Management Plan (100-PL-EN-1017), where relevant and practicable. The contained controlled irrigation area will be monitored to minimise the potential risks of weeds spreading outside the containment, thus minimising any potential impacts to conservation values (namely conservation significant flora, vegetation and/or fauna habitat). The Licence Holder</li> </ul>



Emission	Sources	Potential pathways	Proposed controls
			<p>will control and/or eradicate weeds as reasonably practicable to ensure that weeds do not spread outside the irrigation area;</p> <ul style="list-style-type: none"> <li>• low hydraulic application rate mitigates the possibility of effluent pooling or run-off from the disposal area; and</li> <li>• The minimum design area also includes a 5 m drift allowance from the edge of the sprinkler radius; and</li> <li>• Appropriately fenced with lockable gates and have visible safety signage to advise of effluent disposal occurring within the area. The fence and lockable gates will be maintained and assessed by visual inspections to maintain the security integrity of the spray field facility.</li> </ul>
Contaminated stormwater	Stormwater flowing in the vicinity of the WWTP during rainfall events	Clean rainfall flowing into the contaminated areas of the irrigation area	<ul style="list-style-type: none"> <li>• The Licence Holder treats all stormwater run-off as sheet flow and is a requirement to be diverted away from the irrigation area, complying with the FMG Standard Engineering Specification (100-SP-CI-0004). It states that diversion drains should have a minimum of 0.5m freeboard that will be implemented as a risk control. Please refer to the attached civil concept drawing (CB22OP037A-10023-DR-CI-0005-B) depicting the proposed diversion drains and bunding to ensure the diversion of stormwater around the external perimeter of the irrigation area;</li> <li>• the management control measures through the implementation of both the Fortescue's Surface Water Management Plan (CB-PL-EN-0023) and surface water management conditions as required under Ministerial Statement 899 will also be applied to this prescribed activity, in addition to the installation of the physical diversion drains and bunding; and</li> <li>• The Licence Holder does not expect any potential impacts to the diverted perimeter surface water flows such as alteration to run-off water and surface water losses to the Fortescue Marshes, changes to</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
			downstream vegetation health or to surface water volumes and flow regimes.
<i>Maintenance to existing Cloudbreak WWTP – Administrative Change</i>			
N/A	N/A	N/A	N/A

### 3.1.2 Receptors

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

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

**Table 4: Sensitive human and environmental receptors and distance from prescribed activity**

Human receptors	Distance from prescribed activity
No significant residential receptors are in the vicinity of the Premises.  The nearest sensitive land uses include Marillana Homestead and Bamboo Springs.	Marillana Homestead located approximately 31.5 km from the Premises. Bamboo Springs located approximately 34.8 km from the Premises. Town of Newman located approximately 120 km from the Premises. Given the significant distance to these receptors, human receptors have been screened out and are not considered further in this risk assessment.
Environmental receptors	Distance from prescribed activity
Surface water	The Fortescue Marsh which is listed in <i>A Directory of Important Wetlands in Australia</i> and also listed as a Priority 1, Priority Ecological Community (PEC) (PEC, 2017) is located approximately 2.3km south from the premises boundary.  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.
Livestock bores	There are five pastoral bores located within the premises boundary; these being Cooks bore, Moojarri bore, Muirs bore, Mulga bore and Nicks bore.
Groundwater	Groundwater in the project area is generally brackish (>500 mg/L TDS) and becomes increasingly saline towards the Fortescue Marsh and with depth(>100,000 mg/L TDS). Salinity increases with depth, with the upper

	<p>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>
Flora	<p>Flora and vegetation surveys have identified seven priority flora species in and near the mining area, including <i>Eremophila spongocarpa</i> (Priority 1), <i>Nicotiana heterantha</i> (Priority 1), <i>Gymnanthera cunninghamii</i> (Priority 3), <i>Phyllanthus aridus</i> (Priority 3), <i>Rostellulaira adscendens</i> var. <i>latifolia</i> (Priority 3), <i>Themeda</i> asp. Hamersley Station (Priority 3), <i>Eremophila youngii</i> subsp. <i>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</i> sp.), 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>Rhinonicteris 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>

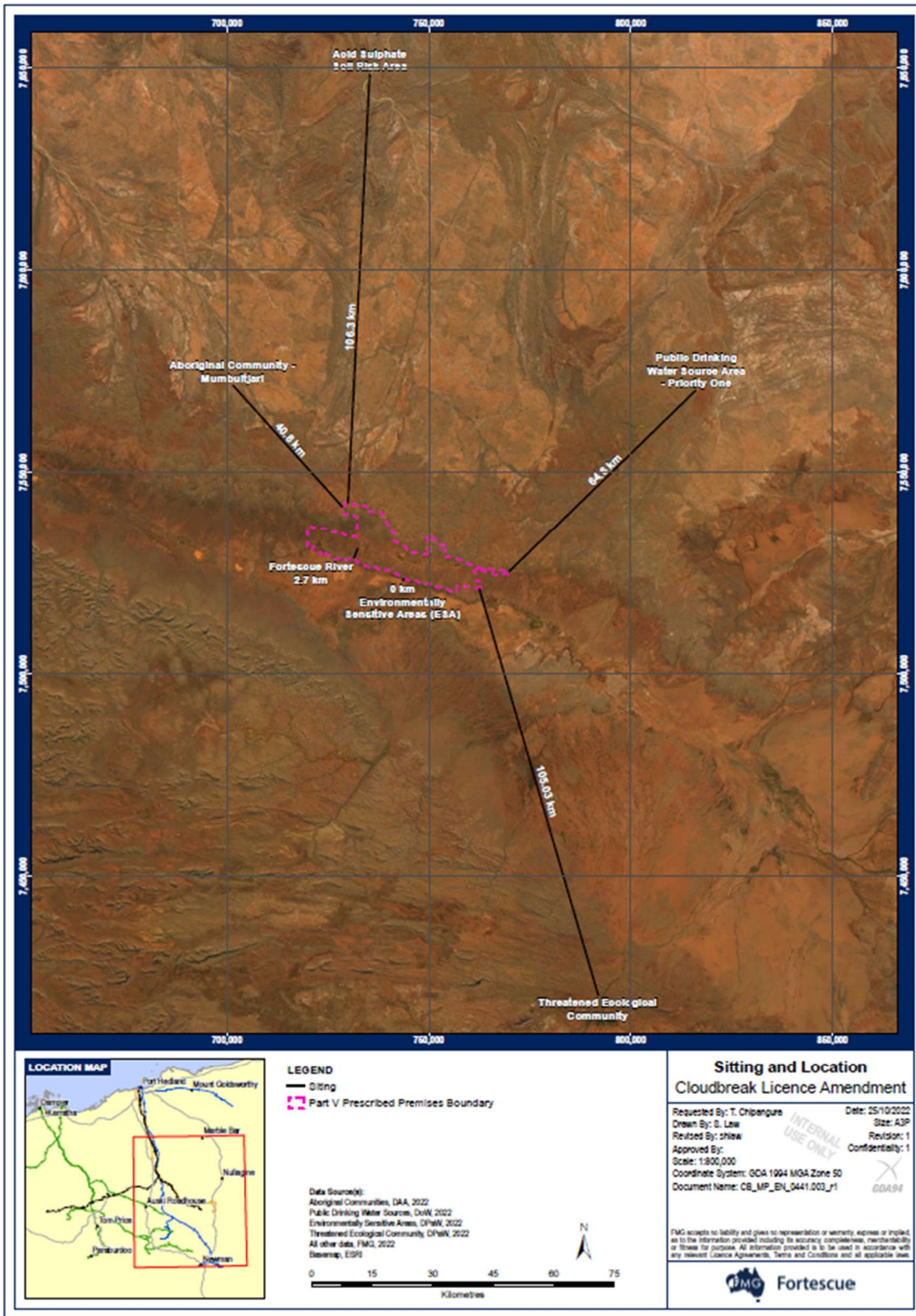


Figure 3: Proximity to sensitive receptors.

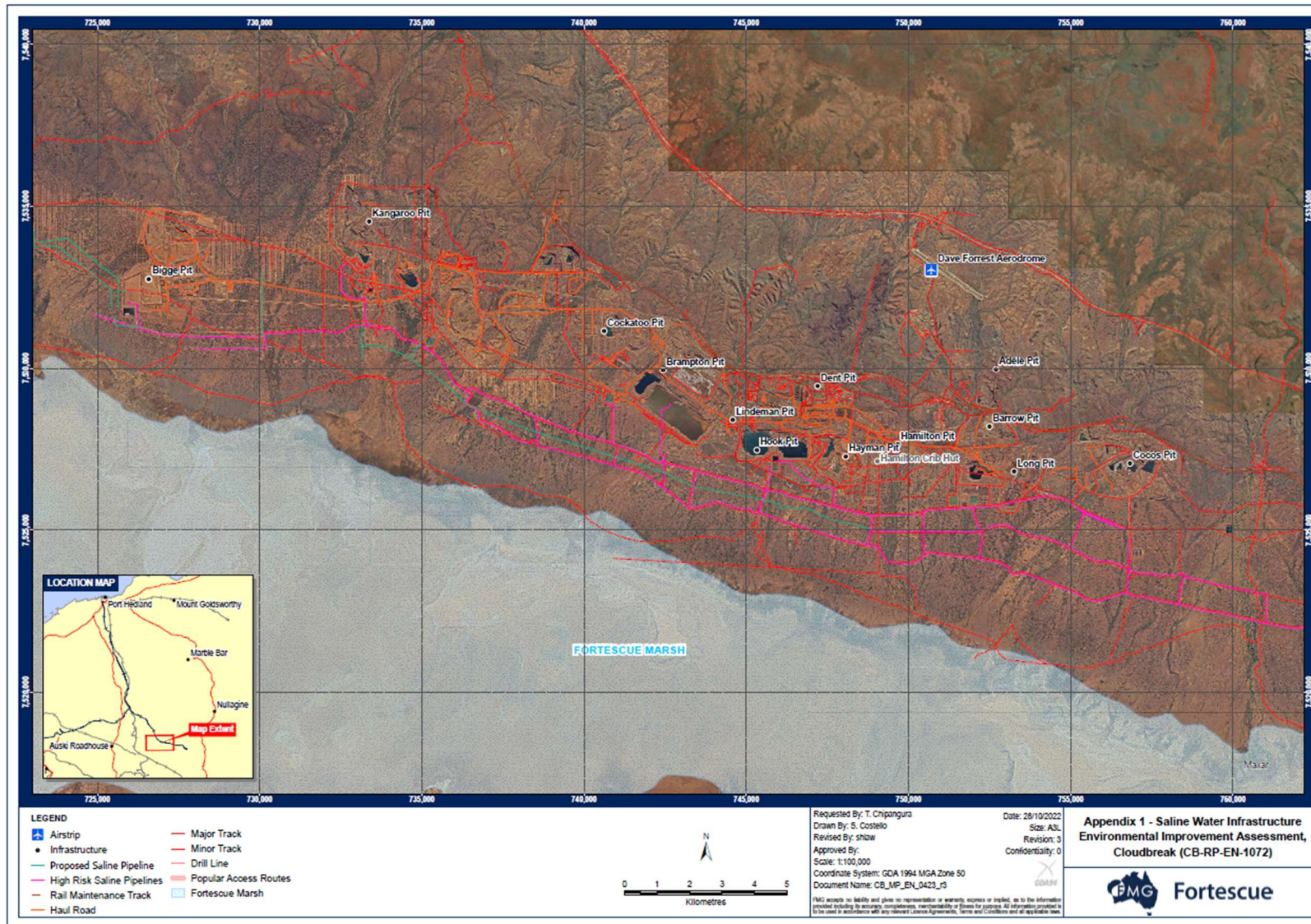


Figure 4: Proximity to Fortescue Marsh

## 3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

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

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The Revised Licence L8199/2007/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. categories 6 and 54 activities.

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

**Table 5. Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and operation**

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				
<b>Construction</b>								
Construction of the Cloudbreak West Village WWTP and installation of new saline injection infrastructure	Dust	Air/windborne pathway causing impacts to health and amenity	Vegetation	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	N/A	N/A
	Hydrocarbons / chemicals	Direct discharges	Soils, vegetation and groundwater	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	N/A	N/A
<b>Commissioning and Operations (including time-limited-operations operations)</b>								
Installation of multiple spigots at Brampton TSF	Tailings	Pipeline leaks / spills	Soils, vegetation	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	Condition 2 requires that pipelines containing tailings have telemetry, automatic cut-outs or secondary containment Condition 4, Table 3 Inspection of infrastructure Requires tailings pipelines be visually inspected on a daily basis Condition 9, Table 6 Infrastructure construction requirements Requires tailings pipelines be constructed of high-density polyethylene (HDPE) / steel, routes following existing road networks / pipeline corridors, flow meters installed and pressure sensors	N/A
Garden Mining Pit Saline Injection infrastructure	Abstracted saline water from Garden mining pits	Pipeline leaks / spills	Soils, vegetation	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Condition 2 requires that pipelines containing saline water have telemetry, automatic cut-outs or secondary containment Condition 4, Table 3 Inspection of infrastructure Requires saline injection infrastructure (transfer ponds and pipelines) be inspection daily for visual integrity	N/A
		Reinjection to Oakover aquifer	Water quality and vegetation	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Condition 3, Table 2 Containment infrastructure Requires that saline water transfer ponds have HDPE / concrete lining and minimum vertical freeboard of 200mm Condition 4, Table 3 Inspection of infrastructure Requires saline injection infrastructure (transfer ponds and pipelines) be inspection daily for visual integrity Condition 9, Table 6 Infrastructure construction requirements Requires saline injection bores be constructed to target reinjection into Oakover aquifer, flow control valves, flow meters, pressure gauges, installation surveys and well network map Condition 10 requires that the saline injection bores be operated in accordance with the licence Condition 13, Table 9 Point source emissions to groundwater Requires the new saline injection bores to be included as emission points to groundwater Condition 19, Table 12 Monitoring of point source emissions to groundwater Requires that new monitoring point SP0035_GAR_SINJ be included to monitor point source emissions to groundwater Condition 22, Table 15 Monitoring of ambient groundwater quality Requires ambient groundwater monitoring for mine dewater reinjection across the stie	N/A
Saline Injection Bores for Zones A-G	Abstracted saline water from Eastern and Central Cloudbreak mining areas	Pipeline leaks / spills	Soils, vegetation	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Condition 2 requires that pipelines containing saline water have telemetry, automatic cut-outs or secondary containment Condition 4, Table 3 Inspection of infrastructure Requires saline injection infrastructure (transfer ponds and pipelines) be inspection daily for visual integrity	N/A
		Reinjection to Oakover aquifer	Water quality and vegetation	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Condition 3, Table 2 Containment infrastructure Requires that saline water transfer ponds have HDPE / concrete lining and minimum vertical freeboard of 200mm Condition 4, Table 3 Inspection of infrastructure Requires saline injection infrastructure (transfer ponds and pipelines) be inspection daily for visual integrity Condition 9, Table 6 Infrastructure construction requirements Requires saline injection bores be constructed to target reinjection into Oakover aquifer, flow control valves, flow meters, pressure gauges, installation surveys and well network map	N/A

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				
							Condition 10 requires that the saline injection bores be operated in accordance with the licence Condition 13, Table 9 Point source emissions to groundwater Requires the new saline injection bores to be included as emission points to groundwater Condition 22, Table 15 Monitoring of ambient groundwater quality Requires ambient groundwater monitoring for mine dewater reinjection across the stie	
Cloudbreak West Village Camp WWTP	Raw sewage, partially treated sewage	Overtopping causing contamination	Soils, vegetation and groundwater	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	Condition 9, Table 6 Infrastructure construction requirements Requires alarms on tanks	N/A
		Pipeline leaks/spills causing contamination	Soils, vegetation and groundwater	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	Condition 9, Table 6 Infrastructure construction requirements Requires that compound is surrounded by an earthen bund designed to contain any potential spills and direct it to the spill containment pond and installed on compact ground to controlled unplanned release of wastewater	N/A
	Sludge	Direct discharges from WWTP Sludge Tanks	Soils, vegetation and groundwater	Refer to Section 3.1	C = Minor L = Rare <b>Low Risk</b>	Y	N/A	N/A
	Hydrocarbons / chemicals	Leaks / spills from storage areas or transfers	Soils, vegetation and groundwater	Refer to Section 3.1	C = Minor L = Rare <b>Low Risk</b>	Y	N/A	N/A
	Contaminated stormwater	Stormwater flowing in the vicinity of the WWTP during rainfall events	Soils, vegetation and groundwater	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	Condition 9, Table 6 Infrastructure construction requirements Requires WWTP to be surrounded by an earthen bund	N/A
Cloudbreak West Village Camp WWTP irrigation area	Nutrient rich treated effluent and reverse osmosis reject brine	Direct discharges to irrigation area of native vegetation	Native vegetation	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	Condition 9, Table 6 Infrastructure construction requirements Requires adequate sizing of irrigation area, fencing, maximum loading rates Condition 10 requires that the irrigation area be operated as per the licence following compliance documents Condition 13, Table 9 Emissions to land Requires new emission point L2 be added as an emission to land Condition 20, Table 13 Monitoring of emissions to land Requires monitoring of the L2 emissions to land Condition 29, Table 17 Notification requirements Requires compliance report be submitted following construction of the irrigation area	N/A
	Contaminated stormwater	Stormwater flowing in the vicinity of the irrigation area during rainfall events	Soils, vegetation and groundwater	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	Condition 9, Table 6 Infrastructure construction requirements Requires stormwater to be diverted away from the irrigation area by diversion drains and bunding	N/A

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

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



## 4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

**Table 6: Consultation**

Consultation method	Comments received	Department response
Application advertised on the department's website (23/12/2022)	None received	N/A
Local Government Authority advised of proposal (23/12/2022)	No comments received.	No comments received.
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal (23/12/2022)	No comments received.	No comments received.
Department of Biodiversity, Conservation (DBC) and Attractions advised of proposal (23/12/2022)	DBC replied on 12/01/2023 stating that they are <i>"of the understanding that the Cloudbreak Iron Ore Mine is the subject of an existing approval under Part IV of the EP Act, with environmental conditions issued under Ministerial Statement (MS) 899. DBC provided substantial input into the environmental impact assessment for this project. On this basis and noting the capacity of DWER to assess the application and apply appropriate regulatory measures to the prescribed premises under Part V of the EP Act, DBC has no comments on the application."</i>	Noted.
Department of Planning, Lands and Heritage (DPLH) advised of proposal (23/12/2022)	No comments received.	No comments received.
Karlka Niyaparli Aboriginal Corporation RNTBC advised of proposal (23/12/2022)	No comments received.	No comments received.
Palyku-Jartayi Aboriginal Corporation RNTBC advised of proposal (23/12/2022)	Comments received 03/01/2023 referring to the native title rights and interests of the Palyku People. The Palyku People's native title rights and interests were recognised by the Federal Court of Australia in 2019 and 2021 (Palyku Determination).	Although the comments received do not explicitly relate to concerns in relation to the current proposal under assessment, the department has noted the response and will ensure ongoing engagement with this stakeholder group.

Licence Holder was provided with draft amendment on (22/05/2023)	Applicant replied 02/06/2023. Refer to Appendix 1.	Applicant replied 02/06/2023. Refer to Appendix 1.
Licence Holder requested to view the finalised drafts prior to issuing the amended licence. Licence Holder was provided with draft amendment on (07/07/2023)	Applicant replied on 14/07/2023. Refer to Appendix 1.	Applicant replied on 14/07/2023. 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 7 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 7: Summary of licence amendments**

Condition no.	Proposed amendments
Cover page	Increased capacity of Category 54. Addition of M to 45/1140 and addition of M45/1303.
3, Table 4	The constructed components for the Brampton In-Pit TSF which were previously required to be constructed under Table 6, have been moved into Table 2 which specifies containment infrastructure requirements. The requirements of the Tailings Deposition Pipeline in this table has been amended to allow for multiple disposal points as requested by the Licence Holder as part of this amendment.
9, Table 6	The previous wording in condition 9 was outdated and referred to infrastructure that has already been constructed. This condition has been replaced with an updated version which now only specifies construction for new infrastructure proposed under this amendment, and bores not yet constructed as part of the previous amendment.  Infrastructure that has been constructed to date has been removed from this table and placed either in Table 2 or is already covered in the wording of conditions in the licence.  Table 6 has been amended to allow the inclusion of additional dewatering infrastructure to equip the additional bores required at the existing saline infrastructure due to new point source emissions required to groundwater.  Inclusion of new 250 EP WWTP and Irrigation Area, the Cloudbreak West Village WWTP, to support the accommodation of personnel adjacent to the Bigge Mining area.
10	References to infrastructure that has already been constructed have been removed. Ongoing operations are now captured in either Table 2 or existing licence conditions.  Wording of this condition has been modified to refer back to Table 6 so that when infrastructure required under that table has been constructed and the compliance documents submitted to the department, the Licence Holder may begin operation of them.

13, Table 9	Inclusion of new saline injection bores as point source emissions to groundwater. SRP215R as SRP215 had to be redrilled.
14, Table 10	Addition of L2 – Cloudbreak West Village irrigation area.
19, Table 12	An additional sampling point SP0035_GAR_SINJ will be installed to monitor point source emissions to groundwater.
20, Table 13	Addition of L2 monitoring of emissions to land for the Cloudbreak West Village irrigation area.
26, Table 16	Addition of L2 monitoring of emissions to land for the Cloudbreak West Village irrigation area.
29, Table 17	Removal of reference to individual infrastructure names and now refers to any infrastructure included in Table 6, Condition 9. Updating to wording to reflect current licence format.
Schedule 1	Updated Figure 2. Updated Figure 5. Updated Figure 6. Updated Figure 7. Updated Figure 8. Updated Figure 9. Removal of former Figure 15. Inclusion of new Figure 15. Inclusion of new Figure 16. Inclusion of new Figure 17.
Schedule Prescribed Premises Categories 2:	Increased capacity of Category 54.

## References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Fortescue Metals Group Ltd, Fortescue submission of the Cloudbreak Licence Amendment L8199/2007/2 under s59 of the EP Act 1986. Email 1 of 2 14/11/2022, East Perth, Western Australia.
5. Fortescue Metals Group Ltd, Fortescue submission of the Cloudbreak Licence Amendment L8199/2007/2 under s59 of the EP Act 1986. Email 2 of 2 14/11/2022, East Perth, Western Australia.
6. Fortescue Metals Group Ltd, RE: L8199 Cloudbreak Amendment 02/12/2022, East Perth, Western Australia.
7. Department of Climate Change, Energy, the Environment and Water, Directory of Important Wetlands in Australia 2005, Canberra, Australian Capital Territory.
8. Fortescue Metals Group Ltd, FMG Response to the review of the Cloudbreak L8199/2007/2 amendment 02/06/2023, East Perth, Western Australia.
9. Fortescue Metals Group Ltd, RE: FMG Response to the review of the Cloudbreak L8199/2007/2 amendment 14/06/2023, East Perth, Western Australia.
10. Fortescue Metals Group Ltd, RE: Notification: Application for a works approval W6802/2023/1 – Draft instrument and decision report (Licence Holder incorrectly titled) 14/07/2023, East Perth, Western Australia.

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

Condition	Summary of Licence Holder's comment	Department's response
Licence Holder comments 02/06/2023		
Premises details	Inclusion of missing mining tenement M45/1303.	Updated as requested following submission of certificate of title.
3, Table 2 TSFs	<p>The Licence Holder considers this request for the installation of visual markers retrospectively to be unachievable in undertaking the task safely and practically. The TSF is located within an old mine pit and is inaccessible from most sites.</p> <p>The intended outcome of this new requirement, to enable the monitoring of minimum freeboard from the operational pond surface to the lowest elevation of the perimeter embankment, can still be achieved through another monitoring alternative at the deposition ramp.</p> <p>In addition to the above, the Licence Holder has noted a minor numerical error in the maximum tailings elevation at the Brampton In-Pit TSF deposition point. This requires a correction to state 427.5 m.</p> <p>The tailings delivery pipelines are currently visually monitored daily for structural integrity and are also fitted with flow meters, both at the start and end of the delivery pipeline. In the event of a failure of the tailings delivery pipeline, a fault can be easily traced using a combination of the above monitoring methods.</p> <p>The requirement to install pressure sensors is considered a duplication of the existing current onsite monitoring program.</p> <p>The Licence Holder requests for the removal of the requirement to install pressure sensors along the deposition pipelines.</p>	<p>Updated as requested.</p> <p>Emailed Licence Holder about the Reduced Level and confirmed that 423 m is the approved level.</p> <p>Emailed Licence Holder as the pressure sensors were confirmed to have been installed as per Environmental Compliance Report dated 08 January 2020. Licence Holder confirmed these have been installed.</p>

Condition	Summary of Licence Holder's comment	Department's response
3, Table 2 Settlement ponds	<p>The Licence Holder requested removal of visual freeboard markers as daily inspections conducted.</p> <p>The Licence Holder is required to conduct daily inspections of saline injection infrastructure (inclusive of transfer ponds and pipelines). The installation of visual markers along the embankments for freeboard monitoring is considered by the Licence Holder to be a duplication of the existing current onsite monitoring program. The Licence Holder considers the existing daily saline injection infrastructure monitoring requirements as adequate</p>	Updated as requested.
3, Table 2 Transfer ponds	<p>The Licence Holder requested removal of visual freeboard markers as daily inspections conducted.</p> <p>The Licence Holder is required to conduct daily inspections of saline injection infrastructure (inclusive of transfer ponds and pipelines). The installation of visual markers along the embankments for freeboard monitored is considered by the Licence Holder to be a duplication of the existing current onsite monitoring program. The Licence Holder considers the existing daily saline injection infrastructure monitoring requirements as adequate and sufficient to address the intended outcome of freeboard monitoring.</p>	Updated as requested.
3, Table 2 Sumps at Bulk Fuel Facilities	<p>The Licence Holder requested removal of visual freeboard markers as daily inspections conducted.</p> <p>The Licence Holder is required to conduct daily inspections of the bulk fuel facility. The installation of visual markers along the embankments for freeboard monitored is considered by the Licence Holder to be a duplication of the existing current onsite monitoring program. The existing bulk fuel facility monitoring and inspection of the leak detection system to identify potential leaks are considered by the Licence Holder as adequate and sufficient to address the intended outcome of freeboard monitoring.</p>	Updated as requested.
3, Table 2 Heavy vehicle wash down facility treated oily water storage ponds	<p>The Licence Holder requested removal of visual freeboard markers as daily inspections conducted.</p> <p>The Licence Holder is required to conduct daily inspections of the bulk fuel facility and saline injection infrastructure (including transfer ponds and pipelines). The installation of visual markers along the embankments for freeboard monitoring is considered by the Licence Holder to be a duplication of the existing current onsite monitoring program. The existing</p>	Updated as requested.

Condition	Summary of Licence Holder's comment	Department's response
	daily bulk fuel facility monitoring requirements and leak detection system to identify potential leaks and daily saline injection infrastructure (transfer ponds and pipelines) are considered by the Licence Holder as adequate and sufficient to address the intended outcome of freeboard monitoring.	
3, Table 2 Jacanas WWTP treatment tanks	The Licence Holder requested removal of visual freeboard markers as daily inspections conducted. The Licence Holder considers the minimum vertical freeboard requirement of 300mm to be adequate and sufficient.	Updated as requested.
6, Table 4	Update cumulative volume of sewage from 694.5 m <sup>3</sup> /day to 812 m <sup>3</sup> /day.	Updated as requested.
8	Formatting issues with conditions.	Updated as requested.
9, Table 6	Formatting issues with conditions.	Updated as requested.
9, Table 6 Brampton In-Pit TSF	Reworded Decant water pipeline from the In-Pit TSF for reuse at the Ore Processing Facility.	Updated as requested.
9, Table 6 Bigge and Garden saline injection bores	Removal of SRP266 as this has been constructed.	Updated as requested.
9, Table 6 Cloudbreak West Village Camp WWTP	Typographical error updated to Reverse Osmosis Brine Tank. Units updated to cfu/100mL for <i>E.coli</i> . Applicant requested construction consistent with Preliminary Concept design in Figures section removed.	Updated as requested.
9, Table 6 Cloudbreak West Village Camp WWTP Irrigation Area	Applicant requested removal of Total Nitrogen and Total Phosphorus loading rates and stormwater diversions.	Retained as these are part of the construction / installation requirements.
10	Formatting issues with conditions.	Updated as requested.
11	Formatting issues with conditions.	Updated as requested.
12	Formatting issues with conditions.	Updated as requested.

Condition	Summary of Licence Holder's comment	Department's response
19, Table 12	Updated naming of three Long Saline and one Bigge Saline injections bore names.	Updated as requested.
19, Table 12	Addition of the Garden saline monitoring location to Note 3.	Updated as requested.
23	Formatting issues with conditions.	Updated as requested.
26, Table 16	Formatting issues with conditions.	Updated as requested.
29, Table 17	Applicant requested addition of Part B: As soon as practicable.	Updated as requested and updated N1 form.
29, Table 17	Applicant requested Environmental Compliance Report be provided within 30 days of completion of construction rather than 7 days.	Updated as requested.
29, Table 17	Formatting issues with conditions.	Updated as requested.
Premises Boundary, Figure 1	Updated map provided.	Updated as requested.
Premises Boundary, Figure 3	Updated map provided.	Updated as requested.
Premises Boundary, Figure 4	Updated map provided.	Updated as requested.
Premises Boundary, Figure 11	Updated map provided.	Updated as requested.
Premises Boundary, Figure 14	Updated map provided.	Updated as requested.
Premises Boundary, Figure 15	Updated map provided.	Updated as requested.
Licence Holder comments 14/07/2023		
9, Table 6	<p>Fortescue requests for the <b>removal of the incorrect condition and insertion of the correct condition</b>, as highlighted in <b>bold text</b> below.</p> <p>"The Licence Holder must construct and/or install the infrastructure listed in Table 6, in accordance with:</p> <p>(a) the corresponding design and construction requirement / installation requirement; and</p> <p>(b) at the corresponding infrastructure location; and <b>except</b></p>	Condition updated to contemporary wording applied to all new or amended instruments as noted in Table 7 of this document.



Condition	Summary of Licence Holder's comment	Department's response
	<p>(c) <b>Where such departure is minor in nature and does not materially change or affect the infrastructure; or</b>  (d) <b>Where such departure improves the functionality of the infrastructure and does not increase risks to public health, public amenity or the environment; and</b>  (e) <b>All other conditions in this Licence are still satisfied; and</b>  <del>(e) (f) within the corresponding timeframe,</del></p> <p>as set out in Table 6."</p>	
9, Table 6	<p>Fortescue requests for the <b>removal of the wording in the condition</b>, as highlighted in <b>bold text</b> below.</p> <ul style="list-style-type: none"> <li>• HDPE liner/concrete or similar impermeable layer;</li> <li>• Minimum vertical freeboard of 200 mm; and</li> <li>• <del>Visual markers installed along embankments for freeboard monitoring.</del></li> </ul>	Updated as requested.
9, Table 6	<p>Fortescue requests for the <b>removal of the requirements in the condition</b>, as highlighted in <b>bold text</b> below.</p> <ul style="list-style-type: none"> <li>• 3.0 hectares;</li> <li>• Fenced with warning signage preventing unauthorised entry fixated around the perimeter of the fence;</li> <li>• Maximum design Total Nitrogen and Total Phosphorus loading rates: <ul style="list-style-type: none"> <li>➢ Total Nitrogen 480 kg/ha/yr; and</li> <li>➢ Total Phosphorus 120 kg/ha/yr; and</li> </ul> </li> <li>• <del>Stormwater diverted away from the irrigation area by diversion drains and bunding.</del></li> </ul>	Retained as the Delegated Officer determine this licence holder proposed control significantly reduces the risk of excessive hydraulic loading and contamination within the irrigation area.
29, Table 17	<p>Fortescue requests for the <b>removal of the requirements in the condition</b>, as highlighted in <b>bold text</b> below.</p> <p><del><b>Part A: As soon as practicable but no later than 5pm of the next usual working day.</b></del></p> <p><del><b>Part B: As soon as practicable</b></del></p>	Retained as standard condition. Part A and Part B refer to different sections of the N1 Notification Form.

Condition	Summary of Licence Holder's comment	Department's response
29, Table 17	<p>Fortescue requests for a <b>minor update to the wording in the condition</b>, as highlighted in <b>bold text</b> below.</p> <p>The Licence Holder shall submit a compliance document to the CEO, following the construction and/or installation of an item of infrastructure or equipment required by Condition 9, Table 6. The compliance document/s shall:</p> <p>(a) be certified by a suitably qualified engineer and certify that the works were constructed in accordance with the construction requirements specified in Condition 9, Table 6;</p> <p>(b) include as constructed plans <b>and or</b> a detailed site plan for each item of infrastructure or component of infrastructure specified in condition; and</p> <p>(c) be signed by a person authorised to represent the Licence Holder and contain the printed name and position of that person within the company</p> <p>The Licence Holder shall submit a compliance document to the CEO, following the construction and/or installation of an item of infrastructure or equipment required by Condition 9, Table 6.</p>	Amended to specify plans to be provided as constructed.
Schedule 1: Maps Premises map	Licence Holder provided coordinates	Coordinates to be saved to internal department records and cited in map title.