Application to Amend the Whaleback Hub Environmental Licence L4503/1975/14

Licence Amendment Supporting Documentation (Including Information relating to Attachments 1 to 11)

October 2025

Contents

List of Tables

List of Figures

Attachments

1. Introduction

1.1. Background

BHP Iron Ore Pty Ltd (BHP) currently operates a number of Iron Ore mines and associated rail and port infrastructure within the Pilbara region of Western Australia (WA). Current mining operations include the:

- Newman Joint Venture (NJV) hub located approximately two kilometres (km) west of Newman Township and consists of Mount Whaleback, and Orebodies 29, 30 and 35 (**Attachment 2A**)
- Mining Area C / Southern Flank located approximately 90 km north west of Newman Township
- Wheelarra Hill (Jimblebar) Mine, Orebody 18 and Orebody 31 (Jimblebar Hub) are located approximately 35 km east of Newman Township
- Eastern Ridge hub located approximately 5 km east of Newman Township and consists of Orebodies 23, 24, 25 and 32
- Yandi Mine located approximately 100 km north west of Newman Township.

Ore from the NJV hub, Mining Area C, Eastern Ridge, Wheelarra Hill (Jimblebar) and Yandi mining operations is transported to Port Hedland via the BHP Newman to Port Hedland Mainline (and associated spur lines). Ore is then shipped out through Port Hedland at the BHP facilities at Nelson Point and Finucane Island.

1.2. Purpose of this Document

The NJV (Whaleback) Hub currently operates under Native Vegetation Clearing Permit (NVCP) CPS 5617/6 (Whaleback Strategic NVCP) (**Attachment 5A**), Ministerial Statement (MS) 963 (below water table mining at Orebodies 29, 30 and 35) (**Attachment 5B**) and Environmental Licence L4503/1975/14 (**Attachment 5C**).

On 03 December 2024 BHP referred a significant amendment to MS 963 under s38 of the *Environmental Protection Act 1986* (EP Act). Approval of the Revised Proposal is anticipated to be May 2026. Key changes in the significant amendment include:

1. Increasing the OB29/30/35 annual surplus water disposal limit from 8 gigalitres per annum (GL/a) to 20.8 GL/a
2. Duplicating of existing surplus water pipeline from XD57 to Ophthalmia Dam.

BHP is therefore seeking to amend the existing Environmental Licence L4503/1975/14 by implementing the following changes:

Category 5

1. Update Table 1 of Environmental Licence L4503/1975/14 to:
    - Remove Rows 6 to 8 as the associated infrastructure has been constructed
    - Insert the construction and commissioning requirements of Works Approval W6714/2022/1 to enable the remaining wall lifts to be undertaken at a future date[1]
2. Update Figure 6 to show the new location of WBAQRT027 – Western Ridge Boundary
3. Update the completion date for the replacement meteorological station for WBWS001 – Whaleback AWS to 31 March 2026[2], as it has just been identified that the proposed location cannot be used
4. Updated Table 12 (Definitions) to include the definition of “Continuous” to align with the Port Licence.

Category 6

1. Increase the volume of surplus water discharge to Ophthalmia Dam

    Update Table 2 of Environmental Licence L4503/1975/14 to:
    - allow the following minor modifications to enable surplus water disposal to Ophthalmia Dam to increase to 14.6 GL/a:
        - Construction of a 250 m DN500 pipeline around Tank XD57 (**Attachment 2I**)
        - Construction of a 400 m DN500 pipeline around the Corner B Tank (**Attachment 2I**)
        - Adjust the valve at the Ophthalmia Dam Valve Station near Point W1 (**Attachment 2I**)
    - include the construction requirements outlined in the Whaleback TSF Lift Works Approval W6714/2022/1 (**Attachment 5F**)

[1] Note: No changes to the Whaleback TSF design are proposed.
[2] Note: BHP aims to have this work completed by the end of December 2025.

2. Overall surplus water disposal
   Increased the licence surplus water disposal limit to 15.5 GL/a consisting of the following sources:
   a) Discharge to Ophthalmia Dam: 14.6 GL/a
      - a maximum of 14.6 GL/a (14,600,000 tonnes per annual period) from Orebodies 29, 30 and 35
      - a maximum of 13 GL/a[3] (13,000,000 tonnes per annual period) from Western Ridge
   b) Discharge to the ARD facility:
      - a maximum of 0.9 GL/a of potentially acidic groundwater from Whaleback pit
3. Update Condition 37 of Environmental Licence L4503/1975/14 to clarify that RO wastewater from Yarnima Power Station also be sent to Cell 5 (P11)
4. Minor update to the location of a number of monitoring bores associated with the ARD facility as they were slightly offset from the correct locations (**Attachment 2E**)
5. Replace blocked ARD monitoring bore WBGW010 with adjacent monitoring bore HHS0095 (**Attachment 2E**).

This supporting document has been prepared to provide supplementary information to the "Application form: Works Approval / Licence / Renewal Amendment / Registration" for the proposed Project as required under Section 53 of the EP Act.

1.3. Premises

1.3.1. Location

The Whaleback Hub is located approximately 2 km west of Newman in the Pilbara Region of Western Australia (**Attachment 2A**).

Western Ridge is located immediately south of the Whaleback Hub (**Attachment 2A**).

1.3.2. Tenement Details

The proposed Prescribed Premises is located within Tenements E52/2009-I, ML244SA, ML266SA, G52/019-G52/256, G52/258-G52/274, G52/276, G52/277, G52/279, L47/92, L52/99, L52/185, L52/199, K858923 and N088235.

1.3.3. Local Government

The Project is located within the Shire of East Pilbara.

1.4. Proponent

This Licence Amendment application has been submitted by BHP on behalf of the owners the Mt Newman Joint Venture (NJV). The split between the partners of the NJV is as follows:

- BHP Minerals Pty Ltd 85%
- Mitsui – Itochu Iron Pty Ltd 10%
- Itochu Minerals and Energy of Australia Pty Ltd 5%

The key contact for this proposal is:

[redacted]
Principal Environment Approvals
BHP
Phone: [redacted]
Email: [redacted]
Level 37, 125 St Georges Terrace
Perth WA 6000 Australia

[3] This is an increase of 1 GL/a and aligned to the maximum approved surplus water disposal from Western Ridge.

2. Proposed amendments to L4503/1975/14

2.1. Proposed changes to Project Categories in L4503/1975/14

Table 1 provides a breakdown of existing (including descriptions), current production or design capacity and the proposed amendments to the relevant prescribed category.

Table 1: Summary of proposed changes by category

Category	Current	Proposed Changes
Category 5: Processing or beneficiation of metallic or non-metallic ore	80,000,000 tonnes per year.	Unchanged.
Category 6: Mine dewatering	**15,500,000** tonnes per annual period in aggregate consisting of a maximum of: • **14,600,000** ~~8,000,000~~ tonnes per annual period form OB29, 30 and 35; • **13,000,000** ~~12,000,000~~ tonnes per annual period from Western Ridge; and • **900,000** ~~300,000~~ tonnes per annual period from Whaleback Pit to the ARD facility.	Increased to allow for the increased disposal associated with Orebodies 29, 30 and 35 following the grant of the Part IV significant amendment and a future increase in the volume of potentially acidic bore water from WB pit to the ARD facility.
Category 54: Sewage facility	183.2 cubic metres per day.	Unchanged.
Category 61: Liquid waste facility	9,348,600 tonnes per year.	Unchanged.
Category 64: Class II putrescible landfill site	14,500 tonnes per annual period.	Unchanged.
Category 73 Bulk storage of chemicals etc	13,000 cubic metres.	Unchanged.

2.2. Proposed changes to Maps / Schedule 1 of L4503/1975/14

Figures 1, 2, 3, 5 and 7 (**Attachments 2A, 2B, 2C, 2F and 2G**) have been refreshed, but the contents have not been altered.

Figure 5 (**Attachment 5E**) ARD monitoring bores have been updated.

Figure 6 (**Attachment 5F**) location of monitor WBAQRT027 – Western Ridge Boundary has been updated.

A new figure, Figure 9, (**Attachment 2I**) has been included showing the proposed pipework at XD57 and Corner B, and the location of the Ophthalmia Dam Valve Station.

2.3. Proposed changes to Licence Conditions and Schedules of L4503/1975/14

Table 2 below details the proposed amendments L4503/1975/14 and the rationale for the amendments. All proposed additions are depicted in **bold text** with text to be removed ~~struck out~~.

Table 2: Summary of proposed changes by condition

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td>Condition 6</td><td>Remove Row 6 to 8 from Table 1, as the required infrastructure has been constructed.
Table 1: Dust control and monitoring infrastructure/equipment to be constructed/ installed
<table>
<tr><th>No.</th><th>Infrastructure/Equipment</th><th>Design and construction/installation requirements</th><th>Required completion date</th></tr>
<tr><td>1</td><td>OHP2 and OHP3 truck unloading hoppers</td><td>Install tipping hopper sprays designed to minimise dust generated during the transfer of ore from the tipped haul truck to the gyratory crusher hopper.</td><td>30 November 2025</td></tr>
<tr><td>2</td><td>OHP4 screenhouse</td><td>Replace screen top covers to improve the enclosure of the screens and minimise dust escape.</td><td><s>31 December 2025</s>
14 February 2026</td></tr>
<tr><td>3</td><td>OHP2 secondary crusher</td><td>Install a partial enclosure at the M101 shuttle transfer.</td><td>30 November 2025</td></tr>
<tr><td>4</td><td>VVVF Drive Upgrade Procurement</td><td><s>Structural and electrical design upgrades to following infrastructure are completed and procured (but not installed until the old equipment requires replacing):</s>
New procured equipment to be installed as per design:
a) Key Water Pump VVF Drive (PW691A);
b) Dust Collector VVF Fan Drives (DC507, DC508, DC415, DC455); and
c) Dust Collector VVF Long Travel Drives (DC415, DC416 and DC455).</td><td><s>30 June 2025</s>
To be installed when the old equipment requires replacing</td></tr>
<tr><td><s>5</s></td><td><s>Mobile screening Plant</s></td><td><s>a) Screening Plant with a capacity of 2 mtpa;
b) Water sprays at the transfer point between the screen and stacker;
c) Water sprays between stacker to the relevant 9conveyor;
d) Stacker to be positioned immediately prior to an existing water spray (on the relevant conveyor to be loaded); and
e) To be located within Fixed Plant West area and no closer than 3.5 km to the Town of Newman.</s></td><td><s>Prior to operation of plant</s></td></tr>
<tr><td><s>6</s></td><td><s>PM_{10} monitor</s></td><td><s>One beta attenuation monitor (BAM) installed at location labelled "WBAQRT032" as detailed in Figure 6 to measure PM10 in accordance with AS3580.9.11 and sited in accordance with AS3580.1.1, for the purpose of monitoring PM10 concentrations.
The monitor must also include an ES642 sensor for the measurement of PM10 over 10 minute averaging periods.</s></td><td><s>30 June 2025</s></td></tr>
<tr><td><s>7</s></td><td><s>WBAQRT017 monitor</s></td><td><s>Dust monitor should be re-located to approximate location with coordinates 23.37132 S and 119.69277 E, and in accordance with the following requirements:
a) Elevating the monitor in proposed location by approximately 3 metres; and
b) Sited in accordance with AS3580.1.1, for the purpose of monitoring PM10 concentrations</s></td><td><s>30 June 2025</s></td></tr>
</table></td><td>Category 6
OHP4 screenhouse: Update the date for Row 2 as while procurement of the equipment is complete the Modular Shut team will only be able to install 9 out of 12 will be complete by due date. The remaining 3 will need to occur in the February 2026 shutdown.
VVVF Drive Upgrade Procurement: Update the wording for Row 4 as the studies and procurement are complete
Dust Monitors: Remove Rows 5 to 8 as these works have been completed
Update the timeframe for the AWS installation (note that BHP aims to have this work completed by the end of December 2025).
Whaleback AWS: A new location needs to be identified for the replacement meteorological station for WBWS001 – Whaleback AWS as the proposed location cannot be used due to potential interactions with Western Ridge infrastructure.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td></td><td>
<table>
<tr><td>~~8~~</td><td>~~WBAQRT027 monitor~~</td><td>~~Dust monitor should be re-located to the proposed location advised in "Newman Improvement Plan: Network review" and in accordance with the following requirements:
a) Located approximately 700 m northeast of existing locations; and
b) Sited in accordance with AS3580.1.1, for the purpose of monitoring PM10 concentrations~~</td><td>~~30 June 2025~~</td></tr>
<tr><td>~~69~~</td><td>Replacement meteorological station for WBWS001 – Whaleback AWS</td><td>Meteorological station installed to measure temperature, rainfall, relative humidity, wind speed and wind direction in accordance with method AS/NZS 3580.14.</td><td>**31 March 2026**
~~30 September 2025~~</td></tr>
</table>
</td><td></td></tr>
<tr><td>Condition 7</td><td>
Update the title of Table 2 and include the new surplus water infrastructure at Tank XD57, Corner B Tank and the Ophthalmia Dam Valve Station.
Table 2: Other Authorised ~~landfill~~ infrastructure to be constructed
<table>
<tr><th>Infrastructure/</th><th>Specifications (design and construction)</th></tr>
<tr><td>New inert landfill</td><td>a) Inert waste disposal;
b) Hydrocarbon contaminated wastes will not be disposed of at the facility; and
c) Waste disposal in designated areas depicted in Figure 3 of Schedule 1.</td></tr>
<tr><td>New putrescible landfill</td><td>a) Facility designed to prevent runoff leaving the facility;
b) Hydrocarbon contaminated wastes will not be disposed of at the facility;
c) Windrows implemented to direct clean stormwater around the landfill; and
d) Waste disposal in designed areas depicted in Figure 3 of Schedule 1.</td></tr>
<tr><td>Two new asbestos disposal areas</td><td>a) Asbestos waste is managed in accordance with the Environmental Protection (Controlled Waste) Regulations 2004, the Code of Practice for the Management and Control of Asbestos in Workplaces, Code of Practice for the Safe Removal of Asbestos, Australian Standard 2601 – The Demolition of Structure;
b) Disposed in accordance with Table 5 and Table 6 of this licence; and
c) Waste disposal in designated areas depicted in Figure 3 Figure 1of Schedule 1.</td></tr>
<tr><td>New pipes and valve adjustment associated with the Ophthalmia Dam surplus water scheme</td><td>Construction of the infrastructure as shown on Figure 8 (**Attachment 2I**):
• Approximately 250 m of DN500 pipeline around Tank XD57.
• Approximately 400 m of DN500 pipeline around the Corner B Tank.
• Adjust the valve at the Ophthalmia Dam Valve Station near Point W1 to enable discharge of 14.6GL/a.</td></tr>
<tr><td>**TSF1 and TSF3**</td><td>**Whaleback TSF as shown in Figure 1 (Attachment 2A):**
Dust controls to be implemented during construction phase:
• **Occupational and ambient dust levels are controlled by the implementation of the following measures:**
➢ **Water tankers are used to apply water to sites within areas of operation which have the potential to generate dust, including unsealed roads, haul roads and construction areas;**
➢ **Areas of exposed soil (land disturbance) are minimised; and**</td></tr>
</table>
</td><td>**Category 5**
TSF construction requirements have been translated directly from Table 1 of Works Approval W6714/2022/1

Category 6
Details of the new pipes and valve adjustment to enable to increase in surplus water disposal to Ophthalmia Dam have been added to the renamed "Other infrastructure" table
Note that these changes are currently under Part IV significant amendment to MS 963.</td></tr>
</table>

Condition	Proposed Changes	Rationale
	➢ Disturbed areas are rehabilitated as they become available; • Routine maintenance and housekeeping practices are employed to ensure that waste materials in or around the premises do not accumulate and lead to the generation of unacceptable airborne dust; • Chemical suppressants will be used for general site dust suppression where required; • Major traffic thoroughfares will be sealed and kerbing or bunding will be installed to discourage off-road passage. Vehicle traffic will preferably be directed along routes that are regularly maintained and sprayed with dust suppressants; • Speed limits will be enforced to minimise dust emissions; and • Site personnel will be required to undergo training and be made aware of their responsibility to reduce and report excessive dust emissions. Design and construction / installation requirements: • Raising facilities by a total of 9 m in 3 x 3 m raises; • Increase TSF1 from crest level of RL 594 m up to RL 603 m; • Increase TSF2 from crest level of RL 593 m up to RL 602 m; • Perimeter embankment raises will be progressively constructed from Beneficiation rejects or suitable site won materials (imported fill), typically in 3 m upstream raises; • The height of the raises may vary but are expected to be between 2 and 3 m, depending on the availability of construction materials; • The raises will be constructed with downstream and upstream side slopes of 3.3H:1V and 2H:1V, respectively, consistent with the existing slope batters on the TSFs; • The first proposed raise will include a bench at the existing crest level to accommodate existing infrastructure at the crest; • Surface water management measures will be put in place to manage stormwater runoff from the future embankment raises; • Stormwater will be diverted away from the TSFs consistent with existing practice; and • The TSFs are designed and operated to maintain a minimum of a 300mm freeboard. Pipeline requirements: • Pipeline has leak detection alarms provided by flow meters installed at the processing plant and on the TSF embankment; • Pipeline has pressure alarms provided by pressure transmitters at the discharge of the transfer pumps; • Pipeline is installed through brownfields areas of the site, typically the pipeline runs in a pipeline trace bordered by earthen windrows to contain any potential spillage, or adjacent to existing roads which are bounded by edge protection windrows that will perform the same function in containing spills; and • Where the pipeline is buried it is fully enclosed in a HDPE pipe sleeve, including where it crosses a local watercourse.	

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td>New Condition 1</td><td>Insert a new Condition after Condition 10 to detail the commissioning requirements of the Whaleback TSF.
The licence holder may only commence environmental commissioning of TSF1 and TSF3 once the Environmental Compliance report has been submitted for that item of infrastructure in accordance with Condition 8 of this licence.</td><td>Category 5
Taken from Works Approval W6714/2022/1 (with timeframe aligned to that of the current licence)</td></tr>
<tr><td>New Condition 2</td><td>Insert a new Condition and associated Table after Condition 10 to detail the commissioning requirements of the Whaleback TSF.
Any environmental commissioning activities undertaken for an item of infrastructure for TSF1 and TSF3 specified in Table 2 may only be carried out:
a. in accordance with the corresponding commissioning requirements; and
b. for the corresponding authorised commissioning duration.
New Table: Environmental commissioning requirements
<table>
<tr><th>Infrastructure/ Equipment</th><th>Commissioning requirements</th><th>Authorised commissioning duration</th></tr>
<tr><td>TSF1 and TSF3 wall lifts</td><td>• Testing and verification of tailings transfer pumps and gland water system;
• Testing and verification of TSF decant return pumps, including instrumentation;
• Testing and verification of the tailings transfer pipeline and spigot assembly components;
• Verification of dam monitoring instrumentation;
• Tailings deposited to the TSF are wet. As the tailings dry they set in a hard crust preventing the lift off of dust from the facility;
• Tailings will be actively discharged into the TSFs at a rate of up to ~1 Mtpa through multiple spigots around most of the perimeter and from the dividing wall, with deposition adjusted as required to maintain the supernatant ponds around the water recovery systems of TSF 1 and TSF 3, located near the ridgeline bounding the TSFs to the southwest. consistent with the existing operation of the TSF;
• Tailings deposition will periodically be rotated between TSF 1 and TSF 3 to allow the tailings to dry and consolidate prior to each embankment raise;
• Supernatant water from the TSFs will be removed via pump-out decant systems that are consistent with existing operations;
• An annualised average of ~30% to 40% of the process water transported with the tailings should be available for recycling to the process plant under normal operating conditions, depending on Beneficiation Plant through-put; and
• The TSFs are designed and operated to maintain a minimum of a 300mm freeboard.</td><td>Six months per wall lift</td></tr>
</table></td><td>Category 5
TSF commissioning requirements have been translated directly from Table 2 of Works Approval W6714/2022/1</td></tr>
<tr><td>New Condition 3</td><td>Insert a new Condition after Condition 10 to detail the commissioning requirements of the Whaleback TSF.
The licence holder must submit to the CEO an Environmental Commissioning Report within 60 calendar days of the completion date of environmental commissioning for TSF1 and TSF3 each item of infrastructure specified in Table 2.</td><td>Category 5
Taken from Works Approval W6714/2022/1 Condition 6</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td>New Condition 4</td><td>Insert a new Condition after Condition 10 to detail the commissioning requirements of the Whaleback TSF.
The works approval holder must ensure the Environmental Commissioning Report required by New Condition 3 includes the following:
a. a summary of the environmental commissioning activities undertaken, including timeframes and amount of tailings discharged to the TSFs;
b. a summary of the environmental performance of each item of infrastructure or equipment as constructed or installed (as applicable), which at minimum includes records detailing the (for example):
(i) environmental commissioning of the infrastructure;
(ii) testing and verification of the:
• tailings transfer pumps and gland water system;
• TSF decant return pumps, including instrumentation;
• tailings transfer pipeline and spigot assembly components; and
• dam monitoring instrumentation;
c. a review of the works approval holder's performance and compliance against the conditions of this works approval; and
d. where they have not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.</td><td>Category 5
Taken from Works Approval W6714/2022/1 Condition 7</td></tr>
<tr><td>Condition 31</td><td>Update the volume of surplus water going to Ophthalmia Dam (W1) detailed in Table 7.
Table 7: Monitoring of point source emissions to surface water, including limits
<table>
<tr><th>Monitoring point location</th><th>Parameter</th><th>Units</th><th>Averaging period</th><th>Limit</th><th>Frequency</th></tr>
<tr><td rowspan="2">RO reject water monitoring point: P3</td><td>Volumetric flow rate (cumulative)</td><td>ML/day</td><td>Daily</td><td>Not more than 6 ML/day. Discharges occur for a cumulative period of no more than 8 weeks per annual period</td><td rowspan="2">Weekly when discharging to Ophthalmia Dam (W1)</td></tr>
<tr><td>pH[1]</td><td>–</td><td rowspan="2">Spot sample</td><td>N/A</td></tr>
<tr><td rowspan="4">• Ophthalmia Dam discharge point: W1
• Whaleback Creek discharge point: W2</td><td>Total dissolved solids (TDS)[1]</td><td>mg/L</td><td>6,000 mg/L</td></tr>
<tr><td>Volumetric flow rate (cumulative)</td><td>ML/day</td><td>Monthly</td><td>W1: 14.6 ~~12~~ GL/year[2]
W2: N/A</td><td>Continuous when discharging</td></tr>
<tr><td>Total recoverable hydrocarbons (TRH)</td><td>mg/L</td><td>Spot sample</td><td>15 mg/L</td><td>Quarterly when discharging</td></tr>
<tr><td>Total suspended solids (TSS)</td><td rowspan="2">mg/L</td><td rowspan="2">Spot sample</td><td rowspan="2">N/A</td><td rowspan="2">Quarterly when discharging</td></tr>
<tr><td rowspan="6">Ophthalmia Dam discharge point: W1[3]</td><td>Total dissolved solids (TDS)[1]</td></tr>
<tr><td>pH[1]</td><td>-</td><td rowspan="5">Spot sample</td><td rowspan="5">N/A</td><td rowspan="5">Quarterly when discharging</td></tr>
<tr><td>Aluminium (Al)</td><td rowspan="4">mg/L</td></tr>
<tr><td>Arsenic (As)</td></tr>
<tr><td>Calcium (Ca)</td></tr>
<tr><td>Cadmium (Cd)</td></tr>
</table></td><td>Category 6
Increases the volume of surplus water disposal to Ophthalmia Dam As per Condition 7.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>Chloride (Cl^-)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Carbonate (CO_3)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Chemical Oxygen Demand (COD)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Chromium (Cr)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Copper (Cu)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Iron (Fe)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Bicarbonate (HCO_3)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Mercury (Hg)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Potassium (K)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Magnesium (Mg)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Manganese (Mn)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Molybdenum (Mo)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Sodium (Na)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Nickel (Ni)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Nitrate (NO_3)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Lead (Pb)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Selenium (Se)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Silver (Ag)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Sulfate (SO4)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Zinc (Zn)</td><td></td><td></td><td></td><td></td></tr>
</table>
Note 1: In-field non-NATA accredited analysis permitted.
Note 2: Discharge from W1 emission point shall comprise of a maximum of **14.6** ~~8~~ GL/year derived from dewatering associated with Orebodies 29, 30 and 35 and a maximum of 13 ~~12~~ GL/year derived from dewatering associated with Western Ridge to achieve a maximum volume of **14.6** ~~12~~ GL/year in aggregate.
Note 3: Water quality monitoring parameters are for dissolved ions.
</td><td></td></tr>
<tr><td>Condition 32</td><td>
Update Table 8 to increase the volume of potentially acidic groundwater and stormwater from Whaleback Pit:
Table 8: Monitoring of emissions to land
<table>
<tr><th>Monitoring point location</th><th>Parameter</th><th>Units</th><th>Limit</th><th>Averaging period</th><th>Frequency</th></tr>
<tr><td rowspan="5">EPCO STP: L1</td><td>Volumetric flow rate (cumulative)</td><td>m^3/day</td><td>183.2 m^3/day</td><td>Daily</td><td>Continuous</td></tr>
<tr><td>pH[1]</td><td>-</td><td rowspan="4">N/A</td><td rowspan="4">Spot sample</td><td rowspan="4">Quarterly</td></tr>
<tr><td>Biochemical Oxygen Demand (BOD)</td><td rowspan="3">mg/L</td></tr>
<tr><td>Total Suspended Solids (TSS)</td></tr>
<tr><td>Total Nitrogen (TN)</td></tr>
</table>
</td><td>Category 6
Allows for the increased volume in potentially acidic water going to the ARD facility.</td></tr>
</table>

Condition	Proposed Changes						Rationale
		Total Phosphorous (TP)					
		E.coli	cfu/100ml				
	Newman Water Treatment Plant discharge to Tank XD57	Volumetric flow rate (cumulative)	ML/year	6,205 ML/year	Annual	Continuous	
		TDS[1]	mg/L	2,000 mg/L	Spot sample		
	Contingency discharge from Tank XD57 in the event that temporary storage and reuse and tank storage has been exhausted (L2)	Volumetric flow rate (cumulative)	ML/year	–	Monthly	Each discharge event	
		TDS[1]	mg/L	2,000 mg/L	Spot sample		
	Hub Turkey's Nest discharge in the event that temporary storage and reuse, and Turkey's Nest storage has been exhausted (L3)	Volumetric flow rate (cumulative)	ML/year	N/A	Annual	Continuous	
		TDS[1]	mg/L	2,000 mg/L	Spot sample		
	Newman Water Treatment Plant discharge to: • ARD facility within Dam C (L4); and • ARD facility within evaporation Cells 1 to 5 (P7, P8, P9, P10 and P11)	Volumetric flow rate (cumulative)	ML/year	2,080.5 ML/year	Annual	Continuous	
		Total dissolved solids (TDS)[1]	mg/L	6,257mg/L	Spot sample		
	Yarnima Power Station discharge to: • ARD facility within Dam C (L4); and • ARD facility within evaporation Cells 1 to 5 (P7, P8, P9, P10 and P11)	Volumetric flow rate (cumulative)	ML/year	1,058 ML/year	Annually	Continuous	
		pH[1]	-	N/A	Spot sample	Quarterly	
		TDS[1]	mg/L	5,900			
	Potentially acidic groundwater from Whaleback pit discharge to: • ARD facility within Dam C (L4); • ARD facility within evaporation Cells 2 and 3 (P8 and P9); and • ARD facility within evaporation Cell 1 (P7)[3]	pH[1]	-	N/A	Spot sample	Quarterly	
		Volumetric flow rate (cumulative)	ML/year	**900** ~~**300**~~ ML/year	Annually	Continuous	
	Stormwater from Whaleback pit discharge to: • ARD facility within Dam C (L4); • ARD facility within evaporation	Volumetric flow rate (cumulative)	ML/year	N/A	Annually	Continuous	

Cells 2 and 3 (P8 and P9); and • ARD facility within evaporation Cell 1 (P7)[3]						
Water from ARD facility within Dam C (L4) and evaporation Cells 2 and 3 (P8 and P9) discharged to: • ARD facility within evaporation Cells 4 and 5 (P10 and P11).	Volumetric flow rate (cumulative)	ML/year	N/A	Annually	Continuous
	Standard water quality suite (as per the current table)	mg/L	N/A	Spot sample	In the event pH is lower the Limit
OWWTP Evaporation Pond: P2	Volumetric flow rate	ML/year	N/A	Annually	Continuous
	pH[1]	-	N/A	Spot sample	Each discharge event
	Total dissolved solids (TDS)[1]	mg/L	N/A		
	Total recoverable hydrocarbons (TRH)	mg/L	15		
P4 – ARD facility within Dam A P5 – ARD facility within Dam B P6 – ARD facility within Dam C P7 – ARD facility within Evaporation Cell 1 P8 – ARD facility within Evaporation Cell 2 P9 – ARD facility within Evaporation Cell 3 P10 – ARD facility within Evaporation Cell 4 P11– ARD facility within Evaporation Pond 5 As depicted in Figure 8 of Schedule 1	pH[1]	-	N/A	Spot sample	Quarterly
	Oxidation-reduction potential[1]	Volts (v)			
	Total dissolved solids (TDS)[1]	mg/L			
	Aluminium (Al)				
	Antimony (Sb)				
	Arsenic (As)				
	Bicarbonate (HCO_3^-)				
	Cadmium (Cd)				
	Calcium (Ca)				
	Chloride (Cl^-)				
	Chromium (Cr)				
	Cobalt (Co)				
	Copper (Cu)				
	Iron (Fe)				
	Mercury (Hg)				
	Magnesium (Mg)				
	Molybdenum (Mo)				
	Manganese (Mn)				
	Nickel (Ni)				
	Lead (Pb)				
	Potassium (K)				
	Selenium (Se)				

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>Sodium (Na)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Sulfate (SO4)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Sulfide (S^{2-})</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Thallium (Tl)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Uranium (U)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Zinc (Zn)</td><td></td><td></td><td></td><td></td></tr>
</table>
Note 1: In-field non-NATA accredited analysis permitted.
</td><td></td></tr>
<tr><td>Condition 35</td><td>
Update Table 9 to replace all references to WBGW010 with HHS0095
Table 9: Groundwater Monitoring
<table>
<tr><th>Monitoring point reference and location[1]</th><th>Parameter[2]</th><th>Unit</th><th>Averaging period</th><th>Frequency</th></tr>
<tr><td rowspan="39">Upstream of ARD Facility:
• WBGW050S
• WBGW050D
Around Evaporation Cells:
• WBGW022
• WBGW023
• WBGW041D
• WBGW041S
• WBGW042S
• WBGW043D
• WBGW043S
• WBGW044S
• WBGW045D
• WBGW045S
• WBGW046D
• WBGW046S
• WBGW047S
• WBGW048D
• WBGW048S
• WBGW049D
• WBGW049S
• WBGW051D
• WBGW051S
Downstream of ARD Facility:
• WBGW009
• WBGW015
• WBGW016
• WBGW017
• WBGW018
• WBGW019</td><td>pH[3]</td><td>-</td><td rowspan="39">Spot sample</td><td rowspan="39">Quarterly</td></tr>
<tr><td>Oxidation-reduction potential[3]</td><td>Volts (v)</td></tr>
<tr><td>Total dissolved solids (TDS)</td><td rowspan="37">mg/L</td></tr>
<tr><td>Electrical conductivity[3]</td></tr>
<tr><td>Total Acidity ($CaCO_3$)[3]</td></tr>
<tr><td>Total Alkalinity ($CaCO_3$)[3]</td></tr>
<tr><td>Aluminium (Al)</td></tr>
<tr><td>Antimony (Sb)</td></tr>
<tr><td>Arsenic (As)</td></tr>
<tr><td>Bicarbonate (HCO_3-)</td></tr>
<tr><td>Cadmium (Cd)</td></tr>
<tr><td>Calcium (Ca)</td></tr>
<tr><td>Chloride (Cl-)</td></tr>
<tr><td>Chromium (Cr)</td></tr>
<tr><td>Cobalt (Co)</td></tr>
<tr><td>Copper (Cu)</td></tr>
<tr><td>Iron (Fe)</td></tr>
<tr><td>Mercury (Hg)</td></tr>
<tr><td>Magnesium (Mg)</td></tr>
<tr><td>Molybdenum (Mo)</td></tr>
<tr><td>Manganese (Mn)</td></tr>
<tr><td>Nickel (Ni)</td></tr>
<tr><td>Lead (Pb)</td></tr>
<tr><td>Potassium (K)</td></tr>
<tr><td>Selenium (Se)</td></tr>
<tr><td>Sodium (Na)</td></tr>
<tr><td>Sulfate (SO_4)</td></tr>
<tr><td>Sulfide (S^{2}-)</td></tr>
</table>
</td><td>Category 6
Blocked monitoring bore WBGW010 has been replaced with adjacent monitoring bore HHS0095.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td></td><td>
<table>
<tr><td>• WBGW020
• WBGW021
Near Power Station Creek:
• HHS0095
• WBGW011
• HHS0060
• HHS0061
• HHS0062
• HHS0063
• HHS0065
• HHS0064
• HHS0066
• HHS0067
• HHS0068
• HHS0070
• HHS0071
• HHS0072
• HHS0073
Other:
• HHS0108
• HHS0110</td><td>Thallium (Tl)
Uranium (U)
Zinc (Zn)</td><td></td><td></td><td></td></tr>
</table>
Note 1: Monitoring bore locations as depicted in Figure 5.
Note 2: Water quality monitoring parameters are for dissolved ions.
Note 3: In-field non-NATA accredited analysis permitted.
Note 4: Frequency increased to monthly when discharging into Evaporation cells 4 (P10) and/or 5 (P11).</td><td></td></tr>
<tr><td>Condition 37</td><td>Amend the wording of 37(a)(iii):
The licence holder must operate the ARD facility in the following manner:
a) During normal operations:
(i) water from the following sources will be discharged to the ARD Dam (L4):
i. Whaleback pit acidic bore water;
ii. Potentially acidic stormwater from Whaleback pit; and
iii. RO waste from Yarnima Power Station and Newman WTP;
(ii) water from the ARD DAM will be pumped, as required, to Evaporation cells 2 (P8) and 3 (P9);
(iii) during filling of evaporation cell 3 (P9):
i. RO wastewater from Yarnima Power Station will be discharged to evaporation cell 4 (P10) and cell 5 (P11), if required; and
ii. Discharge of RO wastewater from Yarnima Power Station to evaporation cell 4 (P10) and cell 5 (P11) shall cease once evaporation cell 3 (P9) is filled to its maximum operating capacity (freeboard level) and all water will</td><td>Category 6
Clarification of the use of Cell 5 (P11) to align with Table 8</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Proposed Changes</th><th>Rationale</th></tr>
<tr><td></td><td>be directed back to the ARD Dam;
b) During a 72hr-ARI event, if required:
(i) Water from the ARD Dam may be discharged to evaporation cell 4 (P10) and evaporation cell 5 (P11) in the event where the ARD Dam, evaporation cell 2 (P8) and evaporation cell 3 (P9) are at maximum operating capacity;
c) For up to six months following a 72hr-ARI event, if required:
(ii) Water from the ARD Damn may be discharged to evaporation cell 4 (P10) and evaporation cell 5 (P11) in the event where the ARD Dam, evaporation cell 2 (P8) and evaporation cell 3 (P9) are at maximum operating capacity;
(iii) Where discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) is longer than 3 months, the CEO is to be notified:
i. Where discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) commenced and the likely date discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) will cease; and
ii. When discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) ceases.</td><td></td></tr>
<tr><td>~~Condition 38~~</td><td>Remove Condition 38 as Improvement requirements 1 and 2 have been completed.
~~**Table 11: Acid Rock Drainage improvement requirements**~~
<table>
<tr><th>~~No.~~</th><th>~~Improvement requirements~~</th><th>~~Design and construction/installation requirements~~</th><th>~~Required completion date~~</th></tr>
<tr><td>~~1~~</td><td>~~Groundwater monitoring bores~~</td><td>~~a) Undertake an investigation to demonstrate that existing groundwater monitoring program is sufficient in monitoring the gap of information from destroyed bore (WBGW014), with consideration to the downstream location of the destroyed bore, screening depth and targeted aquifers; or~~
~~b) Provide a replacement bore to be drilled next to the destroyed bore (WBGW014); and;~~
~~c) Submit a report to the CEO within 30 days from either the completion of the investigation outlining the findings of any investigation undertaken with part a) or construction report for replacement bore undertaken with part b).~~</td><td>~~Part c) must be completed 6 months following the granting of this amendment~~</td></tr>
<tr><td>~~2~~</td><td>~~Vegetation monitoring result~~</td><td>~~Submission of 2024 vegetation monitoring results to be provided with:~~
~~a) Groundwater monitoring results, including a comparison to vegetation monitoring results to determine any trends or correlation between the two data sets; and~~
~~b) Comparison of groundwater monitoring results between groundwater quality upstream of ARD facility to downstream and along Powerstation Creek~~</td><td>~~Submission date 1 October 2025~~</td></tr>
</table></td><td>**Improvement requirement 1**
Bore WBGW016 has been confirmed as suitable to cover any potential information gap associated with destroyed bore WBGW014.
Improvement requirement 2
Report was submitted to DWER.</td></tr>
<tr><td>Table 12</td><td>Add the following definition to Table 12:
Continuous: means a data recovery rate of above 90% averaged annually.</td><td>**Category 5**
Proposed definition is the same as the definition for continuous as the Port Licence.</td></tr>
</table>

3. Existing Environment

3.1. Climate

Newman Aero meteorological site (007176) is the closest Bureau of Meteorology (BoM) station to Whaleback Hub. Average annual rainfall at Newman Aero is 319.7 mm (BOM 2025a). This is mainly derived from tropical storms and cyclones during summer, producing sporadic, heavy rains over the area. Mean monthly rainfall varies from 5.5 mm in September to 70.1 mm in February (BoM 2023a). Daily rainfall is highly variable; the highest maximum daily rainfall ranges from 34.8 mm in October, to 305.6 mm in February (BoM, 2025a). The mean maximum temperature in summer months (October to March) is 35.2°C to 39.4°C and mean maximum temperature in winter (April to September) is between 23.1°C and 32.1°C (BoM 2025a).

Wittenoom meteorological site (005026) is the closest station to Whaleback Hub that records daily evaporation. Wittenoom is located approximately 100 km north west of Whaleback Hub. Mean daily evaporation at Wittenoom throughout the year is 8.6 mm/day (BoM 2025b), which equates to 3.1 metres per year. Evaporation greatly exceeds rainfall in the region throughout the year and on a month-by-month basis (BoM 2025b).

3.2. Nearby Land Uses and Sensitive Receptors

The nearest sensitive receptor is the Newman Townsite. The closest residence is approximately:

- 350 m east of the Premises Prescribed boundary
- 1.8 km from the closest mining operations
- 3.5 km north east of the ore processing facilities.

The adjacent Newman Water Treatment Plant and the Newman and Yarnima Power Stations are not sensitive land uses as they are industrial premises.

3.3. Soils and Landform

The proposed Prescribed Premises is located within the Boolgeeda, Egerton, Elimunna, McKay, Newman, River, Rocklea and Spearhole Land systems as mapped by van Vreeswyk *et al*. (2004):

- The Boolgeeda Land system is described as: “Stony lower slopes, level stony plains and narrow sub-parallel drainage floors, relief up to 20 m. A common system in shallow valleys below hill systems such as Newman and Rocklea.”
- The Egerton Land system is described as: “Highly dissected hardpan plains supporting mulga shrublands and hard spinifex hummock grasslands.”
- The Elimunna Land system is described as: “Stony plains on basalt supporting sparse acacia and cassia shrublands and patchy tussock grasslands.”
- The McKay Land system is described as: “Hills, ridges, plateaux remnants and minor breakaways of sedimentary and meta sedimentary rocks, relief up to 100 m.”
- The Newman Land system is described as: “Rugged high mountains, ridges and plateaux with near vertical escarpments of jaspilite, chert and shale, the second largest system in the survey area and prominent in southern parts (e.g. Ophthalmia Range, Hamersley Range), relief up to 450 m.”
- The River Land system is described as: “Narrow floodplains and major channels.”
- The Rocklea Land system is described as: “Basalt hills, plateaux, lower slopes and minor stony plains supporting hard Spinifex (and occasional soft Spinifex) grasslands”.
- The Spearhole Land system is described as: “Level to gently undulating hardpan wash plains with abundant to very abundant surface mantles of ironstone pebbles and prominent grove patterns of vegetation, widely spaced tributary drainage channels, low rises and dissected slopes with relief up to 35 m.”

Soils of the Pilbara region have been defined and mapped at a scale of 1:2,000,000 by Bettenay *et al.* (1967). Four soil units occur within the proposed Prescribed Premises: BE6, Fa13, Fa14 and OC64.

- Soil Unit BE6 is described as: “Extensive flat and gently sloping plains, which sometimes have a surface cover of gravels and on which redbrown hardpan frequently outcrops: chief soils are shallow earthy loams (Um5.3), with associated (Gn) soils of units My5O and Mz23 of Sheet 6. As mapped, there are inclusions of units Oc47 and BB9.”
- Soil Unit Fa13 is described as: “Ranges of banded jaspilite and chert along with shales, dolomites, and iron ore formations; some areas of ferruginous duricrust as well as occasional narrow winding valley plains and steeply dissected pediments. This unit is largely associated with the Hamersley and Ophthalmia Ranges. The soils are frequently stony and shallow and there are extensive areas without soil cover: chief soils are shallow stony earthy loams (Um5.51) along with some (Uc5.11) soils on the

steeper slopes. Associated are (Dr2.33, Dr2.32) soils on the limited areas of dissected pediments, while (Um5.52) and (Uf6.71) soils occur on the valley plains."

- Soil Unit Fa14 is described as: "Steep hills and steeply dissected pediments on areas of banded jaspilite and chert along with shales, dolomite, and iron ore formations; some narrow winding valley plains: chief soils are shallow stony earthy loams (Um5.51) along with some (Uc5.11) soils on the steeper slopes. (Dr2.33, Dr2.32) soils which occur on the pediments are more extensive in this unit than in unit Fa13. (Um5.52) and (Uf6.71) soils occur on the valley plains."
- Soil Unit OC64 is described as: "Low stony hills and dissected pediments on granite with occasional basic dykes: chief soils are hard, alkaline red soils (Dr2.33) having shallow stony A horizons. Associated are shallow stony (Uc5.11) soils on steep slopes; (Uc1.22) soils along creek lines; and (Um5.11) soils on patches of calcrete (kunkar)."

No disturbance of vegetation is proposed as part of this licence amendment.

3.4. Regional Groundwater

The proposed Prescribed Premises lies within the following regional aquifers:

- Hamersley – Fractured Rock Aquifer: The Precambrian rocks of the Hamersley Basin are principally volcanics, shales and iron formations. Groundwater is contained within fractures within these rocks. The groundwater level may be deep below the surface, and is generally fresh. The main use of this aquifer is for mining and mine dewatering from iron ore mines. Bores have also been drilled for road and railway construction. There will be increasing dewatering from the fractured rocks around iron ore mines as the pits become deeper (DoW 2015).

Discharge activities occur at the licenced Ophthalmia Dam Discharge Point (W1) which overlays this aquifer and is in a P1 public drinking water source area.

3.5. Regional Surface water

Whaleback is located in the Pilbara Surface Water Area, proclaimed under the RIWI Act (DoW 2009b). There are no permanent watercourse or wetlands within or associated with the premises. Whaleback Creek along with other unnamed minor drainage lines within the premises are dry for most of the year, only flowing intermittently during rainfall event.

Discharge activities occur at the licensed Ophthalmia Dam Discharge Point (W1) and the licensed discharge points (W2, L3 and L4).

3.6. Ethel Gorge and Ophthalmia Dam

Ethel Gorge (the Gorge) is downstream (north) of the confluence of Homestead, Shovelanna and Warrawanda Creeks within the Fortescue River catchment. The Gorge is formed where the Fortescue River flows through the Ophthalmia Range in a northerly direction. Surface and groundwater flows from the entire upstream catchment area are focused into the Gorge resulting in relatively shallow groundwater levels, typically less than 10 mbgl. The area hosts the Ethel Gorge Stygobiont Threatened Ecological Community (TEC) (RPS Aquaterra 2015).

The proposed amendment will not impact on groundwater or surface water and is therefore unlikely to impact the TEC.

3.7. ARD Facility

The ARD Facility was constructed in 1996 to contain and store acid mine drainage (AMD) runoff and seepage from the adjacent overburden storage areas (OSA). The dam has a capacity of 821 ML and is designed to contain two back-to-back 1 in 100, 72-hour duration rainfall events from the OSA catchment. Since commissioning, the dam has undergone several modifications aimed at reducing seepage and increasing facility capacity.

Five clay lined evaporation ponds cells were constructed in 2000 to provide additional storage and increase the evaporative discharge capacity of the facility, following above average rainfall of 1142 mm during the 1999/2000 wet season. Seepage from the evaporation ponds to perimeter toe drains was detected shortly after commissioning.

The ARD Facility currently receives wastewater from four main streams:

- Potentially acidic mine water from dewatering bores and sumps in the Whaleback pit
- Yarnima power station demineralisation water treatment plant (WTP) cooling water brine
- Newman reverse osmosis (RO) potable WTP brine stream
- Surface water runoff from within the Whaleback mine pit after significant rainfall events
- Surface water runoff from the OSAs located to the west and south of the facility.

Time series groundwater level data indicates that the 1999/2000 wet season induced significant recharge. Groundwater levels have generally been declining since, except for groundwater levels immediately adjacent to the ARD Facility, due to seepage from the facility. All bores distal from the ARD Facility and evaporation ponds do not reflect any impact on groundwater levels from these facilities (that is, seepage impacts are limited to areas immediately surrounding each facility, due to the low permeability of the basement rock type and thin colluvium cover).

Groundwater chemistry data also indicates that local seepage from the ARD Facility and evaporation ponds is occurring (**Plate 1 and Table 3**). Water quality in the ARD Facility was originally acidic; however, this has been mitigated by addition of brine post 2010.

Table 3: Annual Evaporation and Infiltration Capacity of the ARD Facility

Facility Component	Evaporation Potential Annual Average (ML/a)	Infiltration Potential Annual Average (ML/a)	Combined disposal capacity (ML/a)
ARD DAM (unlined)	365	547	912
EP 1 (unlined inoperable)	255	474	729
EP 2 (lined)	219	0	219
EP 3 (lined)	219	0	219
EP 4 (unlined)	219	365	584
EP 5 (unlined)	146	255	401
Total (excluding EP1)	**1,168**	**1,167**	**2,335**

All discharges from Whaleback Pit are directed / prioritised to the ARD Dam. The evaporation ponds are filled from the dam with prioritisation of lined Evaporation Ponds 2 and 3. During high water management demand, Evaporation Ponds 4 and 5 are utilised. Evaporation Pond 1 is currently inoperable.

3.8. Whaleback TSF

Works Approval W6714/2022/1 (**Attachment 5F**) approves the raising of the walls of the Mount Whaleback Tailings Storage Facilities (TSFs) (referred to as TSF 1 and TSF 3) by a total of 9 m, in three 3 m raises. This will provide approximately 25 Mt of additional tailings storage capacity over the Life of Asset of approximately 37 years.

The first 3 m lifts to TSF 1 and 3 have been completed with the remaining lifts yet to be completed.

The full design of the TSF lift to the full 9 m remains unchanged from *Whaleback TSF Wall Lift* (Golder 2022) which submitted with and approved by Works Approval W6714/2022/1

3.9. Flora and Vegetation

No significant flora species listed under the *Environmental Protection and Biodiversity Protection Act 1999* (EPBC Act) or the *Biodiversity Conservation Act 2016* (BC Act) have been identified within the proposed Prescribed Premises.

There are seven Priority Flora species listed by the Department of Biodiversity, Conservation and Attractions (DBCA) located within the proposed Prescribed Premises:

1. *Eremophila magnifica* subsp. *magnifica* (Priority 4)
2. *Eremophila naaykensii* (Priority 3)
3. *Euphorbia inappendiculata* var. *inappendiculata* (Priority 2)
4. *Gymnanthera cunninghamii* (Priority 3)
5. *Indigofera gilesii* (Priority 3)
6. *Isotropis parviflora* (Priority 3)
7. *Lepidium catapycnon* (Priority 4).

Onshore Environmental (2014) and Biologic (2020a) identified 37 broad floristic communities with 107 vegetation associations within the proposed Prescribed Premises.

None of these vegetation associations represent or are associated with a TEC listed under the EPBC Act or an Environmentally Sensitive Area under the EP Act or a Priority Ecological Community (PEC) listed by the DCBA.

No disturbance of vegetation is proposed as part of this licence amendment.

3.10. Vertebrate Fauna

Biologic (2014 and 2020) identified eleven habitat types within the proposed Prescribed Premises: Breakaway / Cliff, Drainage Area / Floodplain, Gorge / Gully, Hillslope / Hillcrest, Major Drainage Line. Medium Drainage Line, Minor Drainage Line, Mulga Woodland, Sand Plain and Stony Plain.

Thirteen significant fauna species have been identified within the proposed Prescribed Premises:

1. Common Greenshank (*Tringa nebularia*) Migratory (EPBC Act) Schedule 5 (BC Act)
2. Common Redshank (*Tringa tetanus*) Migratory (EPBC Act) Schedule 5 (BC Act)
3. Common Sandpiper (*Actitis hypoleucos*) Migratory (EPBC Act) Schedule 5 (BC Act)
4. Ghost Bat (*Macroderma gigas*) Vulnerable (EPBC Act) Schedule 3 (WC Act)
5. Long-tailed Dunnart (*Sminthopsis longicaudata*) Priority 4 (DBCA)
6. Marsh Sandpiper (*Tringa stagnatilis*) Migratory (EPBC Act) Schedule 5 (BC Act)
7. Northern Quoll (*Dasyurus hallucatus*) Endangered (EPBC Act) Schedule 3 (BC Act)
8. Peregrine Falcon (*Falco peregrinus*) Schedule 7 (BC Act)
9. Pilbara Flat-headed Blind-snake (*Anilios ganei*) Priority 1 (DBCA)
10. Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) Vulnerable (EPBC Act) Schedule 3 (WC Act)
11. Pilbara Olive Python (*Liasis olivaceus barroni*) Vulnerable (EPBC Act) Schedule 3 (WC Act)
12. Western Pebble-Mound Mouse (*Pseudomys chapmani*) Priority 4 (DPaW)
13. Wood Sandpiper (*Tringa glareola*) Migratory (EPBC Act) Schedule 5 (WC Act).

No disturbance of vegetation is proposed as part of this licence amendment.

3.11. Contaminated Sites

Various contaminated sites have been identified within the Mount Whaleback Mine and reported to DWER in accordance with the requirements of the *Contaminated Sites Act 2004* (CS Act). The Mount Whaleback Mine was classified by the Department of Water and Environmental Regulation (DWER) on 29 October 2012 as “contaminated – remediation required’. The CS Act classification identified 23 areas across the Mount Whaleback Mine as contaminated areas, this includes the ARD facility.

BHP is initiating a trial of a portable and modular groundwater remediation system within multiple sites in the Mount Whaleback Mine area, to treat light non-aqueous phase liquid (LNAPL), dissolved phase hydrocarbons and PFAS compounds. BHP will continue to work with research partner, CRC CARE, to assess other potential remediation/treatment options available and implement the most suitable remediation/treatment option, when required.

4. Environmental Management

4.1. Corporate Level Plans and Procedures

The environmental aspects of BHP's operations for the proposed Prescribed Premises are managed under the company's AS/NZS ISO 14001:2016 certified Environmental Management System (EMS). The EMS describes the organisational structure, responsibilities, practices, processes and resources for implementing and maintaining environmental objectives at all BHP sites.

Additionally, operational controls for environmental management for the proposed Prescribed Premises are guided by BHP's Charter values. The Charter Values outline a commitment to develop, implement and maintain management systems for sustainable development that drive continual improvement and set and achieve targets that promote efficient use of resources. In order to give effect to the Charter Values, a series of "Global" documents have been developed.

BHP has also developed a Sustainable Development Policy for its Iron Ore operations. The Sustainable Development Policy outlines a commitment to setting objective and targets to achieve sustainable outcomes and to continually improve our performance.

To support these documents BHP has an internal Project Environmental and Aboriginal Heritage Review (PEAHR) system for its Iron Ore operations. The purpose of the system is to manage implementation of environmental, Aboriginal heritage, land tenure and legal commitments prior to and during land disturbance. All ground disturbance activities will meet the requirements of the PEAHR system.

4.2. Premises Level Plans and Procedures

The Whaleback Hub operates under NVCP CPS 5617/6 and Environmental Licence L4503/1975/14. In addition, OB29/30 and 35 are managed under MS 963 (or the pending significant amendment), while above and below water operations at Western Ridge are managed under the Western Ridge Derived Proposal and the associated *Eastern Pilbara Water Resources Management Plan Rev 8.1* (**Attachment 5E**). All water associated activities are undertaken in accordance with the Eastern Pilbara Water Resources Management Plan.

5. Proposed Changes to Category 5 – Update to Dust Monitor Locations

5.1. Project Description

BHP submitted the *Newman Dust Monitoring Network Review and Improvement Plan* to DWER on 15 January 2024. This review detailed a number of changes to the dust monitoring network associated with the Whaleback environmental licence L4503/1975/14.

This amendment contains an update to Tables 1 and 3 of Environmental Licence L4503/1975/14 and the revised Figure 6 (**Attachment 2F**), which replaces the current Figure 6, to reflect the updates to the network as outlined in the *Newman Dust Monitoring Network Review and Improvement Plan*.

6. Proposed Changes to Category 5 – Inclusion of the Construction and Commissioning requirements of Works Approval W6714/2022/1

6.1. Project Description

BHP is seeking to bring the construction and commissioning requirements of Works Approval W6714/2022/1 (**Attachment 5F**) into the licence given the wall lifts are likely to occur over the next 10 to 20 years which would require ongoing renewal of the works approval.

The full design of the TSF lift to the full 9 m remains unchanged from *Whaleback TSF Wall Lift* (Golder 2022) which submitted with and approved by Works Approval W6714/2022/1

6.2. Existing Approvals

Works Approval W6714/2022/1 approves the raising of the walls of the Mount Whaleback Tailings Storage Facilities (TSFs) (referred to as TSF 1 and TSF 3) by a total of 9 m, in three 3 m raises. This will provide approximately 25 Mt of additional tailings storage capacity over the Life of Asset of approximately 37 years.

The first 3 m lifts to TSF 1 and 3 have been completed with the remaining lifts yet to be completed.

6.3. Environmental Impact Assessment and Associated Management Strategies: Whaleback TSF

The potential impacts and management strategies associated with the remaining lifts to TSF1 and 3 (**Tables 4 to 6**) remain unchanged from those presented in the application for Works Approval W6714/2022/1. The lifts will be constructed, commissioned and operated in accordance with the approved *Whaleback TSF Wall Lift* (Golder 2022) and the proposed updated conditions of L4503/1975/14, which have been replicated from Works Approval W6714/2022/1.

The risk rating determination has been undertaken in accordance with Guidance Statement: Risk Assessments (DER 2017).

Table 4: Construction of the Whaleback TSF Lifts Environmental Impact Assessment and Associated Management Strategies

Risk Event						Management Measures	Residual Risk Ranking (Consequence / Likelihood)
Sources / Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Category 5 Processing or beneficiation of metallic or non-metallic ore	Construction of TSF lifts	Dust	Town of Newman – closest residential property is approximately 4.5 km from the ore processing facilities	Air / wind dispersion	Impact on amenity — visible dust leaving the Premises and dust fallout onto cars, businesses and recreational areas.	Only minor additional clearing is required with the TSF lifts to be constructed upstream within the existing facility. There is a risk that construction earthworks will generate localised dust however this will be managed in accordance with the following dust control methods for Mount Whaleback: • Occupational and ambient dust levels are controlled by the implementation of the following measures: o Water tankers are used to apply water to sites within areas of operation which have the potential to generate dust, including unsealed roads, haul roads and construction areas o Areas of exposed soil (land disturbance) are minimised o Disturbed areas are rehabilitated as they become available • Routine maintenance and housekeeping practices are employed to ensure that waste materials in or around the premises do not accumulate and lead to the generation of unacceptable airborne dust • Chemical suppressants will be used for general site dust suppression where practicable • Major traffic thoroughfares will be sealed and kerbing or bunding will be installed to discourage off-road passage where practicable. Vehicle traffic will preferably be directed along routes that are regularly maintained and sprayed with dust suppressants • Speed limits will be enforced to minimise dust emissions • Site personnel will be required to undergo training and be made aware of their responsibility to reduce and report excessive dust emissions.	**Medium (Minor, Possible)** The construction of the TSF lifts are not anticipated to significantly add to the dust emissions already being produced at the Whaleback Mining Operations, and will therefore not significantly impact any sensitive receptors.
		Noise	Town of Newman – closest residential property is approximately 4.5 km from the ore processing facilities	Air / wind dispersion	Impact on amenity	There may be some minor noise during construction activities but these will be adjacent to active mining areas. Therefore specific mitigations are not required to manage noise beyond the monitoring of noise at the major noise sources avoid the occurrence of noise induced hearing loss	**Medium (Minor, Possible)** The proposed TSF lifts are not anticipated to significantly add to the noise emissions already being produced at the Whaleback Mining Operations, and will therefore not significantly impact any sensitive receptors.

Table 5: Commissioning of the Whaleback TSF Lifts Environmental Impact Assessment and Associated Management Strategies

Risk Event						Management Measures	Residual Risk Ranking (Consequence / Likelihood)
Sources / Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Category 5 Processing or beneficiation of metallic or non-metallic ore	Commissioning of the TSF	Release of tailings due to failure of the TSF	Town of Newman – closest residential property is approximately 4.5 km from the ore processing facilities. Whaleback Creek and other drainage lines adjacent to the TSF	Discharge to drainage lines / creeks	Loss of life Change in surface water quality Tailings deposition	The results of Golder (2022) quantitative risk analysis indicates that construction of the TSF raises does not result in additional risks to the facility and therefore the existing management measures are remain appropriate to manage the risk of facility failure. Sections 5 and 6 of Golder (2022) detail the potential failure scenarios and associated outflows from the facility. Section 8 of Golder (2022) provides a modelled results of the different potential failure scenarios summarised below. • Northern embankment failure: o Scenario 1V:5H failure slope: All material will be captured and contained behind the existing bund wall meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure o Scenario 1V:10H failure slope: While material will be captured and contained behind the existing bund wall meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure, tailings would flow approximately 10 km to the south of the TSF facility along an unnamed drainage line • Eastern embankment failure: o Scenario 1V:5H failure slope: All material will flow south of the TSF meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure. Tailings material would flow approximately 9 km to the south of the TSF facility along an unnamed drainage line o Scenario 1V:10H failure slope: All material will flow south of the TSF meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure. Tailings material would flow approximately 12 km to the south of the TSF facility along an unnamed drainage line. The TSF will continue to be operated in accordance with the *Tailings Storage Facility Operating Manual* (BHP 2022) and the *Catastrophic Dam Wall Failure / Tailings Dam Wall Failure TRP-MWB-E-002*, as per the existing facility. These documents outline the TSF Operating Guidelines including: • Procedures for tailings placement, operation of spigots, pipeline flushing and instrument monitoring • How tailings are to be deposited and distributed in the facility including requirements for pipe maintenance, facility freeboard, decant water management, spillway management and seepage control • Facility inspection and review requirements • Emergency response procedures.	**High (Severe, Rare)** The TSF will continue to be operated in accordance with the *Tailings Storage Facility Operating Manual* (BHP, 2022) and the *Catastrophic Dam Wall Failure / Tailings Dam Wall Failure TRP-MWB-E-002*, as per the existing facility. The safety bund constructed north of the northern embankment will prevent tailings released as a result of a dam failure from entering the Whaleback Hub, Whaleback Creek or the Town of Newman. A quantitative risk assessment (QRA) has been undertaken consistent with the ANCOLD (2003) guidance. The results of the QRA indicate that the TSFs fall into the 'Broadly Acceptable Zone' as defined by CDA (2013) and hence would be considered as low as reasonably practicable (Golder 2022). Full details of the QRA can be found in Appendix I of Golder (2022)
		Dust	Town of Newman – closest residential property is approximately 4.5 km from the ore processing facilities	Air / wind dispersion	Impact on amenity — visible dust leaving the Premises and dust fallout onto cars, businesses and recreational areas.	The TSF will continue to be operated as per the existing facility. Commissioning of the TSF lifts will not result in an increase in dust emissions as the initial tailings deposited to the TSF are wet. As the tailings dry they set in a hard crust preventing the lift off of dust from the facility. Site personnel will be required to undergo training and be made aware of their responsibility to reduce and report excessive dust emissions.	**Medium (Minor, Possible)** Commissioning of the TSF lifts is not anticipated to significantly add to the dust emissions already being produced at the Whaleback Mining Operations, and will therefore not significantly impact any sensitive receptors.
		Infiltration of supernatant water from the TSF	Groundwater	Infiltration	Change in groundwater quality	The operation and commissioning of the TSF will continue to be operated as per the existing facility. Commissioning of the facility will not increase potential leaching from the facility. While the tailings material shows slightly elevated levels of trace metals these are at or close to the laboratory limit or reporting (LOR). The tailings supernatant / process water composition is characterised as alkaline pH, non-saline and containing very high alkalinity. Concentrations of most trace metal(loid)s were consistently low to very low or below the laboratory LOR, with exceptions being Al, Fe and Mn. These results reflect the presence of colloidal particles in addition to the fact that the analytical results represent total analysis. In line with the existing operating, maintenance and surveillance (OMS) manual for the TSF, tailings will be actively discharged into the TSF at a rate of up to ~1 Mtpa through multiple spigots around most of the perimeter and from the dividing wall, with deposition adjusted as required to maintain the supernatant ponds around the water recovery systems of TSF 1 and TSF 3, located near the ridgeline bounding the TSFs to the southwest. This is consistent with the existing operation of the TSF. Tailings deposition will periodically be rotated between TSF 1 and TSF 3 to allow the tailings to dry and consolidate prior to each embankment raise. Supernatant water from the TSFs will be removed via pump-out decant systems that are consistent with existing operations.	**Medium (Minor, Unlikely)** Seepage from the TSF, is unlikely to have an adverse impact upon the surrounding natural environment. This is consistent with past and present performance of the existing storages.

Risk Event						Management Measures	Residual Risk Ranking (Consequence / Likelihood)
Sources / Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Category 5 Processing or beneficiation of metallic or non-metallic ore (cont)	Commissioning of the TSF	Discharge of supernatant water from the TSF	Surface water	Discharge to drainage lines from spillways	Change in surface water quality	The operation and commissioning of the TSF will continue to be operated as per the existing facility. The TSF is designed and operated to maintain a minimum of a 300mm freeboard as required by Environmental Licence L4503/1975/14, with supernatant water from the TSFs removed via pump-out decant systems that are consistent with existing operations. In addition the TSF has been designed to contain a 72-hour probable maximum precipitation (PMP) event, with emergency spillways constructed to manage a combined 1:1,000-year ARI storm event when storage cell capacities are exceeded.	**Low (Minor, Rare)** Discharge from the TSF is unlikely to have an adverse impact upon the surrounding natural environment. This is consistent with past and present performance of the existing storages.

Table 6: Operation of the Whaleback TSF Lifts Environmental Impact Assessment and Associated Management Strategies

Risk Event						Management Measures	Residual Risk Ranking (Consequence / Likelihood)
Sources / Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Category 5 Processing or beneficiation of metallic or non-metallic ore	Operation of the TSF	Release of tailings due to failure of the TSF	Town of Newman – closest residential property is approximately 4.5 km from the ore processing facilities. Whaleback Creek and other drainage lines adjacent to the TSF	Discharge to drainage lines / creeks	Loss of life Change in surface water quality Tailings deposition	The results of Golder (2022) quantitative risk analysis indicates that construction of the TSF raises does not result in additional risks to the facility and therefore the existing management measures are remain appropriate to manage the risk of facility failure. Sections 5 and 6 of Golder (2022) detail the potential failure scenarios and associated outflows from the facility. Section 8 of Golder (2022) provides a modelled results of the different potential failure scenarios summarised below. • Northern embankment failure: o Scenario 1V:5H failure slope: All material will be captured and contained behind the existing bund wall meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure o Scenario 1V:10H failure slope: While material will be captured and contained behind the existing bund wall meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure, tailings would flow approximately 10 km to the south of the TSF facility along an unnamed drainage line • Eastern embankment failure: o Scenario 1V:5H failure slope: All material will flow south of the TSF meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure. Tailings material would flow approximately 9 km to the south of the TSF facility along an unnamed drainage line o Scenario 1V:10H failure slope: All material will flow south of the TSF meaning it is unlikely that material would impact on Whaleback Creek or the existing mining operations and infrastructure. Tailings material would flow approximately 12 km to the south of the TSF facility along an unnamed drainage line The TSF will continue to be operated in accordance with the *Tailings Storage Facility Operating Manual* (BHP 2022) and the *Catastrophic Dam Wall Failure / Tailings Dam Wall Failure TRP-MWB-E-002*, as per the existing facility. These documents outline the TSF Operating Guidelines including: • Procedures for tailings placement, operation of spigots, pipeline flushing and instrument monitoring • How tailings are to be deposited and distributed in the facility including requirements for pipe maintenance, facility freeboard, decant water management, spillway management and seepage control • Facility inspection and review requirements • Emergency response procedures.	**High (Severe, Rare)** The TSF will continue to be operated in accordance with the *Tailings Storage Facility Operating Manual* (BHP 2022) and the *Catastrophic Dam Wall Failure / Tailings Dam Wall Failure TRP-MWB-E-002*, as per the existing facility. The safety bund constructed north of the northern embankment will prevent tailings released as a result of a dam failure from entering the Whaleback Hub, Whaleback Creek or the Town of Newman. A quantitative risk assessment (QRA) has been undertaken consistent with the ANCOLD (2003) guidance. The results of the QRA indicate that the TSFs fall into the 'Broadly Acceptable Zone' as defined by CDA (2013) and hence would be considered as low as reasonably practicable (Golder ,2022). Full details of the QRA can be found in Appendix I of Golder (2022).
		Dust	Town of Newman – closest residential property is approximately 4.5 km from the ore processing facilities	Air / wind dispersion	Impact on amenity — visible dust leaving the Premises and dust fallout onto cars, businesses and recreational areas.	The operation of the TSF will continue to be operated as per the existing facility. The operation of the TSF will not result in an increase in dust emissions as the initial tailings deposited to the TSF are wet. As the tailings dry they set in a hard crust preventing the lift off of dust from the facility. Dust in pen areas around the facility will be managed in accordance with the following dust control methods for Mount Whaleback: • Occupational and ambient dust levels are controlled by the implementation of the following measures: o Water tankers are used to apply water to sites within areas of operation which have the potential to generate dust, including unsealed roads, haul roads and construction areas o Areas of exposed soil (land disturbance) are minimised o Disturbed areas are rehabilitated as they become available • Routine maintenance and housekeeping practices are employed to ensure that waste materials in or around the premises do not accumulate and lead to the generation of unacceptable airborne dust • Chemical suppressants will be used for general site dust suppression where practicable • Major traffic thoroughfares will be sealed and kerbing or bunding will be installed to discourage off-road passage where practicable. Vehicle traffic will preferably be directed along routes that are regularly maintained and sprayed with dust suppressants • Speed limits will be enforced to minimise dust emissions. Site personnel will be required to undergo training and be made aware of their responsibility to reduce and report excessive dust emissions.	**Medium (Minor, Possible)** The operation of the TSF at an increase wall height is not anticipated to significantly add to the dust emissions already being produced at the Whaleback Mining Operations, and will therefore not significantly impact any sensitive receptors.

Risk Event						Management Measures	Residual Risk Ranking (Consequence / Likelihood)
Sources / Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Category 5 Processing or beneficiation of metallic or non-metallic ore (cont)	Operation of the TSF	Infiltration of supernatant water from the TSF	Groundwater	Infiltration	Change in groundwater quality	The operation of the TSF will continue to be operated as per the existing facility. While the tailings material shows slightly elevated levels of trace metals these are at or close to the laboratory limit or reporting (LOR). The tailings supernatant / process water composition is characterised as alkaline pH, non-saline and containing very high alkalinity. Concentrations of most trace metal(loid)s were consistently low to very low or below the laboratory LOR, with exceptions being Al, Fe and Mn. These results reflect the presence of colloidal particles in addition to the fact that the analytical results represent total analysis. In line with the existing operating, maintenance and surveillance (OMS) manual for the TSF, tailings will be actively discharged into the TSF at a rate of up to ~1 Mtpa through multiple spigots around most of the perimeter and from the dividing wall, with deposition adjusted as required to maintain the supernatant ponds around the water recovery systems of TSF 1 and TSF 3, located near the ridgeline bounding the TSFs to the southwest. This is consistent with the existing operation of the TSF. Tailings deposition will periodically be rotated between TSF 1 and TSF 3 to allow the tailings to dry and consolidate prior to each embankment raise. Supernatant water from the TSFs will be removed via pump-out decant systems that are consistent with existing operations.	**Medium (Minor, Unlikely)** Seepage from the TSF, is unlikely to have an adverse impact upon the surrounding natural environment. This is consistent with past and present performance of the existing storages.
		Discharge of supernatant water from the TSF	Surface water	Discharge to drainage lines from spillways	Change in surface water quality	The operation of the TSF will continue to be operated as per the existing facility. The TSF is designed and operated to maintain a minimum of a 300mm freeboard as required by Environmental Licence L4503/1975/14, with supernatant water from the TSFs removed via pump-out decant systems that are consistent with existing operations. In addition the TSF has been designed to contain a 72-hour probable maximum precipitation (PMP) event, with emergency spillways constructed to manage a combined 1:1,000-year ARI storm event when storage cell capacities are exceeded.	**Low (Minor, Rare)** Discharge from the TSF is unlikely to have an adverse impact upon the surrounding natural environment. This is consistent with past and present performance of the existing storages.

7. Proposed Changes to Category 6 – Surplus Water Discharge Increase to Ophthalmia Dam

7.1. Project Description

The existing pipeline from XD57 to the Ophthalmia Dam Discharge Point (**Attachment 2E**) currently has a maximum capacity of 12 GL/a. BHP is proposing to increase this capacity to 14.6 GL/a by:

- Construction of a 250 m DN500 pipeline around Tank XD57 (**Attachment 2I**)
- Construction of a 400 m DN500 pipeline around the Corner B Tank (**Attachment 2I**)
- Adjusting the valve at the Ophthalmia Dam Valve Station near Point W1 (**Attachment 2I**).

BHP therefore also seeking to amend the Category 6 limit of L4503/1975/14 to:

- 15.5 GL/a (in aggregate) of surplus mine water to Ophthalmia Dam consisting of:
  - a maximum of 14.6 GL/a (AA tonnes per annual period) from Orebody 29/30/35
  - a maximum of 13 GL/a[4] (13,000,000 tonnes per annual period) from Western Ridge
  - 0.9 GL/a to the ARD facility (**Section 8**).

New abstraction bores and associated pipework to connect to the existing Whaleback Hub Water Supply Network are managed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). These activities are not discussed further in the application.

7.2. Existing Approvals

The Western Ridge Derived Proposal (**Attachment 5D**) and the associated *Eastern Pilbara Water Resources Management Plan* Rev 8 approves the disposal of up to 13 GL/a of surplus mine water to Ophthalmia Dam from the Western Ridge operations.

MS 963 approves the disposal of up to 8 GL/a of surplus mine water from Orebodies 29, 30 and 35 to Ophthalmia Dam. The pending Part IV significant amendment (and the associated *Eastern Pilbara Water Resources Management Plan Rev 8.1* (**Attachment 5E**)) seeks to increase this to 20.8 GL/a.

Environmental Licence L4503/1975/14 authorises the disposal of up to 12 GL/a of water in aggregate to Ophthalmia Dam, comprising of a maximum of 8 GL/a from Orebodies 29, 30 and 35 and 12 GL/a from Western Ridge via the existing surplus water pipeline from XD57 (**Attachment 2C**) to the Ophthalmia dam Discharge Point (**Attachment 2E**).

7.3. Environmental Impact Assessment and Associated Management Strategies: Increase in Surplus Water Discharge to Ophthalmia Dam

Outlined below is a description of proposed changes and the associated discharge for surplus water from Western Ridge and Orebodies 29, 30 and 35 (**Table 7**). The risk rating determination has been undertaken in accordance with Guidance Statement: Risk Assessments (DER, 2017).

[4] This is a increase of 1 GL/a and aligned to the maximum approved surplus water disposal from Western Ridge.

Table 7: Surplus Water Discharge Scheme – Increase to Ophthalmia Dam Environmental Impact Assessment and Associated Management Strategies

Risk Event						Background	Management Measures	Residual Risk Ranking (Consequence / Likelihood)
Sources / Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
Category 6 Mine dewatering	Construction of diversion pipelines and valve adjustment	Dust (PM_{10}) Noise	The closest non-BHP sensitive receptor is the Town of Newman located 1.3 km north of Tank DX57	Air / wind dispersion	Amenity and Health impacts	The purpose of the Project is to manage surplus water from the Whaleback Hub operations by enabling the disposal of up to 14.6 GL/a of surplus mine water to be disposed to Ophthalmia Dam. Construction of the Project will involve: • Minor clearing to install a diversion pipeline around tanks XD57 and Corner B (**Attachment 2I**) • Modification to the value at the Ophthalmia Dam discharge point W1.	The closest dust and noise receptors to the proposed pipeline will be the Town of Newman located approximately 1.3 km from the closest area of clearing associated with the Project No impacts on sensitive receptors are expected due to the nature of construction and operation of the proposed facility and the distance to these receptors. Site preparation works including earthworks and vehicle movement will generate a minor amount of localised dust and noise emissions in the local area. This will be managed via the use of water carts and minimising clearing to the smallest area practicable.	**Low (Slight, Unlikely)** Minimal clearing is required for the construction of the diversion pipelines. Clearing will be short term in nature and dust will be managed via water carts. All clearing will be in accordance with the Whaleback Strategic NVCP CPS 5617/6 and the OB29/30/35 Part IV Significant Amendment (when granted).
	Surface discharge during commissioning and operation	Surplus Water: discharged from the Whaleback Hub to Ophthalmia Dam	Riparian ecosystem	Direct discharge (at pipeline discharge point).	Disruption of normal ecosystem function	Currently surplus water from the Whaleback hub (Western Ridge and OB29/30/35 mining operations) is transported via the internal water network to tank XD57 before being pumped via a 12 GL/a surplus water pipeline to Ophthalmia Dam. A number of minor modifications have been identified to enable the capacity of the surplus water pipeline to be increase to 14.6 GL/a: • Diversion pipelines around tanks XD57 and Corner B • Adjust the valve at the Ophthalmia Dam Valve Station near point W1. Environmental Licence L4503/1975/14 (**Attachment 5C**) currently approves a combined disposal of up to 12 GL/a of surplus water from Orebodies 29, 30 and 35 (8 GL/a approved under MS 963) and Western Ridge (12 GL/a Western Ridge Derived Proposal). The OB29, 30 and 35 Part IV significant amendment will increase the approved discharge volume for this operation to 20.8 GL/a. Total water disposal will be limited to 14.6 GL/a, in aggregate, comprising of a maximum of 12 GL/a from Western Ridge and 14.6 GL/a from Orebodies 29, 30 and 35. Discharge to Ophthalmia Dam is managed under the *Eastern Pilbara Water Resources Management Plan* (**Attachment 5E**) and Environmental Licence L4503/1975/14 (**Attachment 5C**).	BHP has developed the *Eastern Pilbara Water Resource Management Plan* (BHP Billiton Iron Ore, 2025) to manage the range of potential hydrological changes (groundwater, surface water and/or soil moisture) resulting from BHP's Eastern Pilbara operations impacting on receiving receptors to an acceptable level. The Plan will be implemented to manage any potential impacts to Ethel Gorge aquifer and TEC associated with the disposal of surplus water from Newman and Jimblebar operations. .	**Low (Slight, Unlikely)** Although impacts on the receiving environment associated with the disposal of additional surplus water from the Orebodies 29, 30 and 35 mining operations to the Dam is anticipated to be negligible, specific management strategies as detailed in the approved *Eastern Pilbara Water Resource Management Plan* (BHP Billiton Iron Ore, 2025) will be implemented to minimise impacts associated with this activity.
			Phreatophytic vegetation	Groundwater	Changes to groundwater salinity and quality impacting health and survival of deep rooted groundwater dependent vegetation.			
			Ethel Gorge Stygobiont Community (subterranean fauna) TEC		Changes to groundwater salinity and quality impacting health and survival of fauna			
			Newman Water Reserve (PDWSA) (Priority 1)		Health impacts resulting from the deterioration of water quality making it unsuitable for potable reuse			

8. Proposed Changes to Category 6 – Discharge of Potentially Acidic Groundwater to the ARD Facility

8.1. Project Description

The ARD facility (**Attachment 2E**) is currently approved to receive 300 ML/a of potentially acidic water from bores in the Whaleback Pit.

BHP has identified that a there is likely to be an increase in the abstraction of potentially acidic water from bore in the Whaleback Pit from FY26. This increased abstraction will require an additional 600 ML/a of water to be disposed of to the ARD facility. The facility currently has sufficient capacity to manage this volume (depending on rainfall events) and therefore the proposed increase will not require any new infrastructure or changes to the existing management measures. The facility will continue to be managed in accordance with Condition 37 and achieving the new disposal volume of 900 ML/a will be dependent on the size of rainfall events.

A review of the ARD facility's licensed monitoring bores has identified that:

- the locations of some of the bores are slightly offset. An updated Figure 5 (**Attachment 2E**) has been provided showing the correct locations.
- ARD monitoring bore WBGW010 is blocked and so has been replaced with adjacent monitoring bore HHS0095 (**Attachment 2E).**

8.2. Existing Approvals

Environmental Licence L4503/1975/14 contains a detailed monitoring regime for the ARD Facility (Conditions 32 to 36) and operational requirements (Condition 37).

One minor change to Condition 37 (Section 2.3, Table 2) is required to clarify that Cell 5 (P11) can also be sued to receive RO reject water as per Cell 4 (P10). This aligns with the currently approved use of Cell 5 as outline in Condition 32, Table 8.

8.3. Environmental Impact Assessment and Associated Management Strategies: Disposal of Potentially Acidic Groundwater to the ARD Facility

Outlined below is a description of proposed changes and the associated increase in discharge of potentially acidic groundwater from Whaleback Pit to the ARD facility (**Table 8**). The risk rating determination has been undertaken in accordance with *Guidance Statement: Risk Assessments* (DER, 2017).

Table 8: Discharge of Potentially Acidic Groundwater to the ARD Facility Environmental Impact Assessment and Associated Management Strategies

Risk Event						Background	Management Measures	Residual Risk Ranking (Consequence / Likelihood)
Sources / Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
Category 6 Mine dewatering	Surface discharge	Potentially acidic groundwater discharged from Whaleback Pit to the ARD Facility	Riparian ecosystem	Surface water	Loss of riparian vegetation should acidic water overtop the ARD facility	The ARD facility was constructed in 1996 to contain and store acid mine drainage (AMD) runoff and seepage from the adjacent overburden storage areas (OSA). The dam has a capacity of 821 ML and is designed to contain two back-to-back 1 in 100, 72-hour duration rainfall events from the OSA catchment. Since commissioning, the dam has undergone several modifications aimed at reducing seepage and increasing facility capacity. In 2000 five clay lined evaporation ponds cells were constructed to provide additional storage and increase the evaporative discharge capacity of the facility, following above average rainfall in the 1999/2000 wet season. Seepage from the evaporation ponds to perimeter toe drains was detected shortly after commissioning. In 2022 Evaporation Ponds 2 and 3 were lined to prevent infiltration, however there continues to be infiltration from the remainder of the facility (**Table 3**). The ARD facility currently receives wastewater from four main streams: • Potentially acidic mine water from dewatering bores and sumps in the Whaleback pit • Potentially acidic surface water runoff from within the Whaleback mine pit after significant rainfall events • Yarnima power station demineralisation water treatment plant (WTP) cooling water brine • Newman reverse osmosis (RO) potable WTP brine stream. All discharges from Whaleback Pit are directed / prioritised to the ARD Dam. The evaporation ponds are filled from the dam with prioritisation of lined Evaporation Ponds 1 and 2. During high water management demand, Evaporation Ponds 4 and 5 are utilised to manage RO reject water when Ponds 2 and 3 are at capacity. Evaporation Pond 1 is currently inoperable. Water quality in the ARD Facility was originally acidic; however, this has been mitigated by addition of brine post 2010. The facility is operated in accordance with Condition 37 of Environmental Licence L4503/1975/14. Conditions 32 to 36 outline the facilities monitoring requirements to identify any changes in groundwater quality as a result of discharges to the ARD facility and the spatial extent of these changes.	The ARD facility is operated and managed in accordance with controls outlined in Condition 37 and Schedule 4, Table 16, Row 8 of Environmental Licence L4503/1997/14. Monitoring of the facility is undertaken in accordance with Conditions 32 to 36 of Environmental Licence L4503/1975/14. The proposed increase to 900 ML/a will not require a change the management and monitoring requirements of the facility as the discharge volume would be reviewed and adjusted to ensure that the facility maintains the required freeboard. Ponds 2 and 3 have been lined to reduce potential infiltration of potentially acidic water (from Whaleback pit) and saline water (from the Newman Water Treatment Plant and Yarnima Power Station). Discharge from the ARD Dam is preferentially directed to these ponds, with Ponds 4 and 5 only being used during and post high volume or sustained wet weather events to ensure that the facility does not overtop into the surrounding environment. The water continues to infiltrate into the surrounding area from the ARD dam and Evaporation Ponds 4 and 5 (**Table 3**). At present these facilities have not been lined as the reduction in infiltration would mean that the facility would no longer suitable for managing extreme rainfall events. The addition of brine from the Yarnima and Newman Water Treatment Plant acts to neutralise any potentially acidic water in the facility. Ongoing monitoring is undertaken as per the licence conditions to ensure that any potential impacts from the facility remain localised and do not spread to the broader area. BHP is currently undertaking a review of the ARD Facility to determine potential future upgrades to the facility.	**Medium (Minor, Likely)** The facility is operated in accordance with Condition 37 of Environmental Licence L4503/1975/14 Potentially Acidic water from Whaleback Pit is neutralised by the brine from Yarnima Power Station and the Newman Water Treatment Plant. In addition, infiltration from the facility is minimised by preferentially sending water from the ARD Dam to lined Evaporation Ponds 2 and 3, with Ponds 4 and 5 only used for RO reject waste when the dam and Ponds 2 and 3 are at capacity, or to manage total volume during extreme weather events. This is supported by the significant amount of monitoring data and associated reviews, which has shown that any impacts associated with the facility remain localised. The proposed increase to 900 ML/a will not require a change the management and monitoring requirements of the facility as the discharge volume would be reviewed and adjusted to ensure that the facility maintains the required freeboard.
			Phreatophytic vegetation	Groundwater	Changes to groundwater quality impacting health and survival of vegetation.			
			Ethel Gorge Stygobiont Community (subterranean fauna) TEC		Changes to groundwater quality impacting health and survival of fauna			
			Newman Water Reserve (PDWSA) (Priority 1)		Health impacts resulting from the deterioration of water quality making it unsuitable for potable reuse			

9. Heritage

BHP complies with the *Aboriginal Heritage Act 1972*, and all other state and federal heritage legislation. All land disturbance activities are subject to ethnographic and archaeological surveys as part of an internal PEAHR. The PEAHR process ensures that all heritage sites in the vicinity of the Project Area are identified and avoided where practicable.

The proposed Prescribed Premises falls within the Nyiyaparli Native Title Determination Area (Native Title file No. WCD2018/008). Archaeological and ethnographic surveys of the Prescribed Premises have been undertaken by BHP. Heritage sites have been mapped and should any heritage site need to be disturbed as part of the Project, BHP will obtain the relevant Section 18 approval.

10. Community Consultation

BHP will continue to consult with the DWER, and representatives of the Nyiyaparli Native Title Determination Area (Native Title file No. WCD2018/008) and will submit annual reports regarding the operation of the proposed Prescribed Premises as part of the existing annual environmental reporting commitments.

11. Conclusion

The proposed changes to the proposed Prescribed Premises Licence L4503/1975/14 are unlikely to introduce unacceptable discharges to water from the Whaleback Hub. The level of risk associated with each type of impact is believed to be low enough not to cause impacts to nearby sensitive receptors (human or environmental).

12. References

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Attachment 1A: Proof of occupier status

Not Required.

Attachment 1B: ASIC company extracts

Not Required.

Attachment 1C: Authorisation to act as representative of the occupier

Not Required.

Attachment 2A: Figure 1: Mount Whaleback Licence L4503/1975/14 Premises, Facilities and Location – Ore Processing and Hydrocarbons (MWB_012LA_001_RevA_0)

Environmental Approvals

MOUNT WHALEBACK
LICENCE L4503/1975/14
PREMISES, FACILITIES AND LOCATION - ORE PROCESSING AND HYDROCARBONS

SCALE (A3): 1:80,000	DATUM: GDA2020/MGA50	FIGURE 1
Prepared: [redacted]	Revision: FINAL	
Centre: Perth	Date: 22 September 2025	Dwg: MWB_012LA_001_RevA_0

N

Legend

- L4503/1975/14 Licence Boundary

Infrastructure

- Hydrocarbon Storage
- Ore Procesing Plant
- TSF

Waste Oil Storage Area - MEW

Main Fuel Farm

Waste Oil Storage Area Main Fuel Farm

OHP2

OHP3

Beneficiation Plant

2 mtpa Screening Plant (Initial Location)

OHP5

OHP4

Tailings Storage Facility

0 2.5 5 7.5 10
Kilometers

764000 768000 772000 776000 780000 784000 788000

7424000 7420000 7416000 7412000 7408000 7404000

Document Path: G:\AssetDev\Env A&I\01 Approvals\02 WB Hub\03 Licence & WA\012 OB29_30_35 Uplift\05 Spatial\MWB_012LA_001_RevA_0.mxd

Attachment 2B: Mount Whaleback Licence L4503/1975/14 Premises, Facilities and Location – WWTPs, OWWSs and ARD facility (MWB_012LA_002_RevA_0)

Environmental Approvals

MOUNT WHALEBACK LICENCE L4503/1975/14

PREMISES, FACILITIES AND LOCATION - WWTPs, OWWSs AND ARD FACILITY

SCALE (A3): 1:80,000	DATUM: GDA2020/MGA50	FIGURE 2
Prepared: [redacted]	Revision: FINAL	
Centre: Perth	Date: 22 September 2025	Dwg: MWB_012LA_002_RevA_0

N

Legend

- L4503/1975/14 Licence Boundary

Infrastructure

- ARD Dam
- ARD Evaporation Cells
- WWTP
- WWTP Irrigation Area
- WWTP Ponds
- OWS Treated Water Pond
- OWS Discharge Point

ARD Evaporation Pond 1
ARD Evaporation Pond 2
ARD Evaporation Pond 3
ARD Evaporation Pond 4
ARD Evaporation Pond 5
Acid Mine Drainage Dam
Lab STP Irrigation Field
Lab STP
Dyno Nobel STP Irrigation Area
Dyno Nobel STP
OWWTP Evaporation Pond
OWWTP Discharge Point
Security Gate STP Irrigation Area
Security Gate STP
Warehouse STP
Warehouse STP Irrigation Area
Beneficiation STP
Hub STP
Hub Discharge Pond
Tank XD57 Discharge Point
EPCO STP
EPCO Sewage Discharge Ponds
Hub Turkeys Nest Discharge

0 2.5 5 7.5 10
Kilometers

764000 768000 772000 776000 780000 784000 788000

7424000 7420000 7416000 7412000 7408000 7404000

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Attachment 2C: Figure 3: Mount Whaleback Licence L4503/1975/14 Premises, Facilities and Location – Landfills (MWB_012LA_003_RevA_0)

Environmental Approvals

MOUNT WHALEBACK
LICENCE L4503/1975/14
PREMISES, FACILITIES AND LOCATION - LANDFILLS

SCALE (A3): 1:80,000	DATUM: GDA2020/MGA50	FIGURE 3
Prepared: [redacted]	Revision: FINAL	
Centre: Perth	Date: 22 September 2025	Dwg: MWB_012LA_003_RevA_0

N

Legend

- L4503/1975/14 Licence Boundary

Infrastructure

- Landfill

Inert Landfill
Inert Landfill
Putrescible Landfill
Asbestos Disposal Area
Inert Landfill
Inert Landfill
Asbestos Disposal Area
Asbestos Disposal Area
Asbestos Disposal Area
Putrescible Landfill
Asbestos Disposal Area
Asbestos Disposal Area

0 2.5 5 7.5 10
Kilometers

764000 768000 772000 776000 780000 784000 788000 792000

7424000 7420000 7416000 7412000 7408000 7404000

Document Path: G:\AssetDev\Env A&I\01 Approvals\02 WB Hub\03 Licence & WA\012 OB29_30_35 Uplift\05 Spatial\MWB_012LA_003_RevA_0.mxd

Attachment 2D: Figure 4: Existing and proposed dust controls at the ‘fixed plant west’

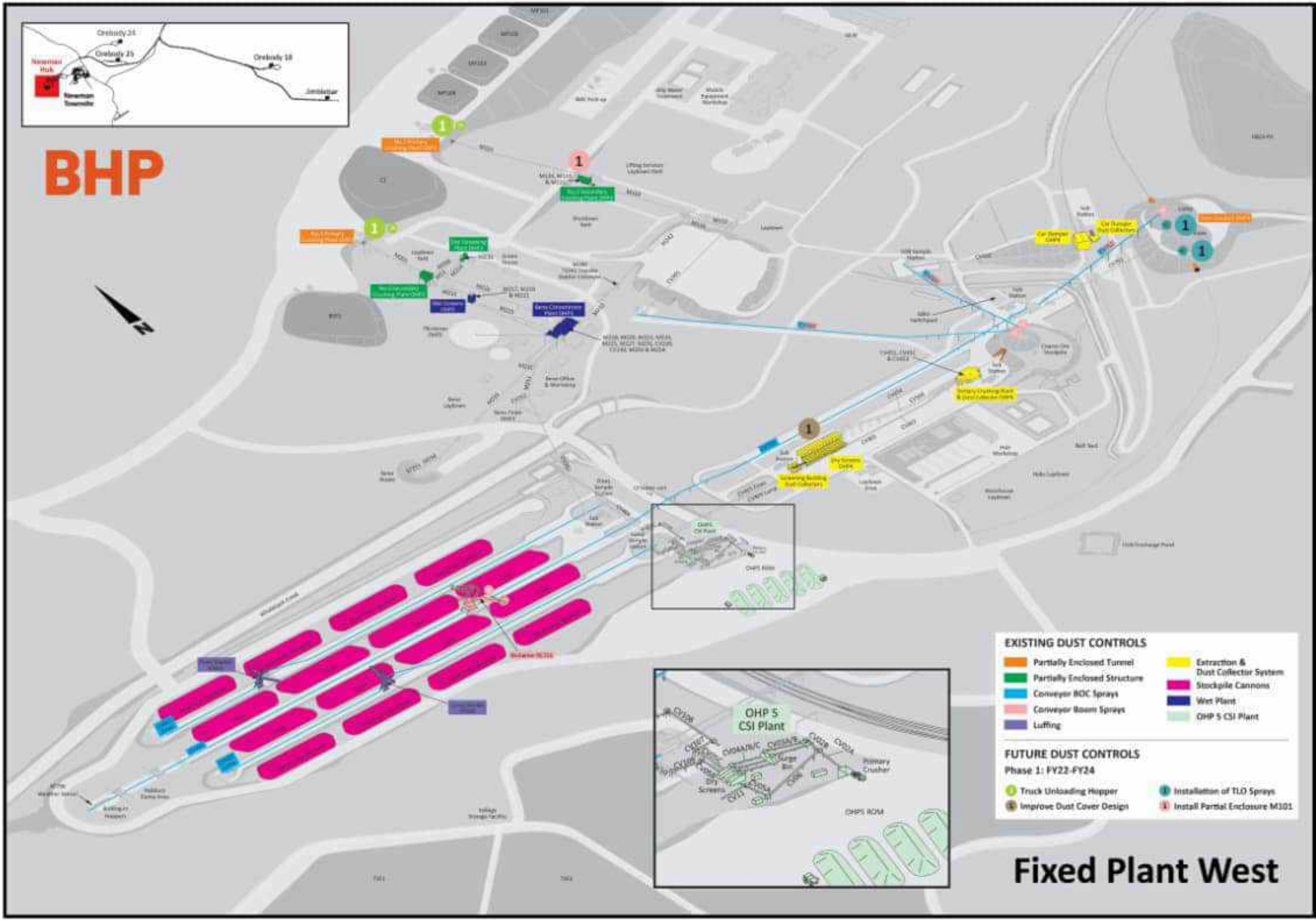

Figure 4: Existing and proposed dust controls at the 'fixed plant west'

Attachment 2E: Figure 5: Mount Whaleback Licence L4503/1975/14 Premises, Facilities and Location – Emission and Monitoring Points (MWB_012LA_005_RevB_0)

Environmental Approvals

MOUNT WHALEBACK LICENCE L4503/1975/14

PREMISES, FACILITIES AND LOCATION - EMISSION AND MONITORING POINTS

SCALE (A3): 1:80,000	DATUM: GDA2020/MGA50	FIGURE 5
Prepared: [redacted]	Revision: FINAL	
Centre: Perth	Date: 17 October 2025	Dwg: MWB_012LA_005_RevB_0

N

Legend

- L4503/1975/14 Licence Boundary
- Emission to Surface Water
- Containment Infrastructure
- Emission to Land
- Ambient Surface Water Monitoring

Ambient Groundwater Monitoring

- Around Evaporation Ponds
- Downstream of AMD Facility
- Near Power Station
- Upstream of ARD Facility
- Other

WBGW042S, WBGW043S, HHS0062, WBGW051S, WBGW043D, HHS0063, HHS0065, HHS0064, WBGW045D, WBGW050D, WBGW044S, HHS0068, WBGW050S, HHS0067, HHS0066, WBGW051D, WBGW041S, WBGW045S, WBGW041D, WBGW046S, WBGW046D, P8, P9, HHS0070, P7, WBGW019, HHS0071, P10, P11, WBGW018, WBGW023, HHS0073, P1, WBGW022, WBGW021, WBGW017, WBGW020, WBGW047S, HHS0072, WBSW049, WBGW049D, WBGW048D, HHS0060, WBGW049S, WBGW048S, HHS0061, P5, WB21, WBGW015, WBGW016, P4, P6, L4, HHS0108, WBGW009

WBGW011, HHS0095M, HHS0110, WBSW043, WBSW042, P2, W1 / P3, W2, L1, L2, L3

0 2.5 5 7.5 10 Kilometers

764000 768000 772000 776000 780000 784000 788000 792000

7424000 7420000 7416000 7412000 7408000

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Attachment 2F: Figure 6: Mount Whaleback Licence L4503/1975/14 Premises, Facilities and Location – Air Quality Monitoring Network (MWB_012LA_006_RevB_0)

Environmental Approvals

MOUNT WHALEBACK LICENCE L4503/1975/14

PREMISES, FACILITIES AND LOCATION - AIR QUALITY MONITORING NETWORK

SCALE (A3): 1:80,000	DATUM: GDA2020/MGA50	FIGURE 6
Prepared [redacted]	Revision: FINAL	
Centre: Perth	Date: 13 October 2025	Dwg: MWB_012LA_006_RevB_0

Legend

- Ambient Air Quality Monitoring
- L4503/1975/14 Licence Boundary

WBAQRT011 – Background 3 North PM10
WBAQRT022 – Background 3 North PM2.5
WBWS001 – (Whaleback AWS)
WBAQRT024 – WB Creek Channel 1
WBAQRT026 – W39 North
WBAQRT012 – Boundary 1 North
WBAQRT031 - WB Gatehouse Boundary
WBAQRT019 – OHP2 Secondary Crusher
WBAQRT010 – Town Centre PM10
WBAQRT027 – Western Ridge Boundary
WBAQRT023 – Town Centre PM2.5
WBAQRT032 – Background 4 West
WBAQRT006 – Town East
WBAQRT013 – Boundary 2 West
WBAQRT020 – WB Stockyard West
WBAQRT004 – Background 2 South
WBAQRT018 – OHP4 Screenhouse
WBAQRT017 – Channel 2 TLO
WBAQRT021 – WB CV751 CV752

0 2.5 5 7.5 10
Kilometers

764000 768000 772000 776000 780000 784000 788000

7424000 7420000 7416000 7412000 7408000 7404000

Document Path: G:\AssetDev\Env A&I\01 Approvals\02 WB Hub\03 Licence & WA\012 OB29_30_35 Uplift\05 Spatial\MWB_012LA_006_RevB_0.mxd

Attachment 2G: Figure 7: Mount Whaleback Licence L4503/1975/14: Management trigger wind arcs for boundary and ambient monitors (MWB_012LA_007_RevA_0)

Environmental Approvals

MOUNT WHALEBACK LICENCE L4503/1975/14

MANAGEMENT TRIGGER WIND ARCS FOR BOUNDARY AND AMBIENT MONITORS

SCALE (A3): 1:32,000	DATUM: GDA2020/MGA50	FIGURE 7
Prepared [redacted]	Revision: FINAL	
Centre: Perth	Date: 22 September 2025	Dwg: MWB_012LA_007_RevA_0

N

Legend

- L4503/1975/14 Licence Boundary

Wind Arcs

- WBAQRT006 - Management Trigger Wind Arc
- WBAQRT010 - Management Trigger Wind Arc
- WBAQRT031 - Management Trigger Wind Arc
- WBAQRT031 - Reportable Event Wind Arc

WBAQRT031 – WB Gatehouse Boundary

WBAQRT010 – Town Centre PM10

WBAQRT006 – Town East

270°
270°
262°
260°
225°
233°
210°
248°

772000 776000 780000

7416000

7412000

0 1 2 3 4
Kilometers

Document Path: G:\AssetDev\Env A&I\01 Approvals\02 WB Hub\03 Licence & WA\012 OB29_30_35 Uplift\05 Spatial\MWB_012LA_007_RevA_0.mxd

Attachment 2H: Figure 8: ARD Facility.

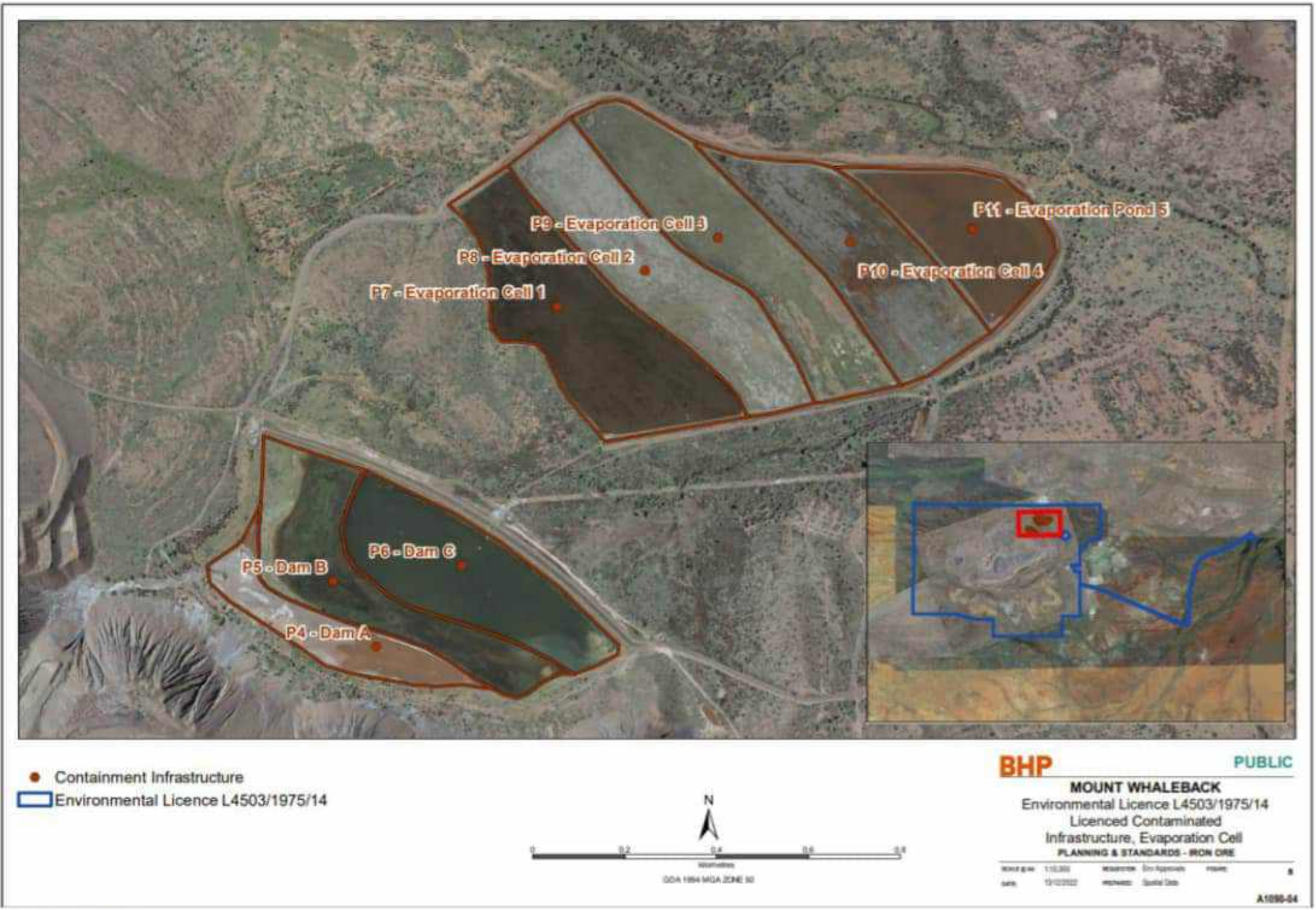

Figure 8: ARD Facility

Attachment 2I: Figure 9:Mount Whaleback Licence L4503/1975/14: Category 6 Infrastructure to be Constructed (MWB_012LA_009_RevA_0)

768000 772000 776000 780000 784000 788000 792000 796000

7420000 7416000 7412000 7408000 7404000

0 2 4 6 8
Kilometers

Legend

- Tank XD57 Bypass Pipeline
- Corner B Tank Bypass Pipeline
- Ophthalmia Dam Valve
- L4503/1975/14 Licence Boundary

N

Environmental Approvals

MOUNT WHALEBACK LICENCE L4503/1975/14

CATEGORY 6 INFRASTRUCTUR TO BE CONSTRUCTED

SCALE (A3): 1:80,000	DATUM: GDA2020/MGA50	FIGURE 9
Prepared: [redacted]	Revision: FINAL	
Centre: Perth	Date: 22 September 2025	Dwg: MWB_012LA_009_RevA_0

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Attachment 2J: Proposed Prescribed Premises Map Coordinates

Coordinates are in GDA 2020 MGA Zone 50.

Easting	Northing
779514.73	7417829.07
779471.31	7415532.69
778815.49	7415544.97
778459.13	7415201.27
778457.45	7415111.54
778103.79	7415118.21
778078.32	7413766.97
778074.64	7413766.81
777905.84	7413792.01
777888.25	7413794.64
777895.71	7413862.86
777881.66	7413864.68
777776.51	7413878.31
777746.70	7413861.76
777735.67	7413837.47
777602.66	7413860.25
777574.51	7413865.07
777488.42	7413831.96
777488.43	7413831.91
777503.87	7413721.58
777718.54	7413687.38
777691.41	7413495.59
777680.33	7413408.25
777704.76	7413405.23
777831.69	7413433.93
778040.53	7413419.79
778067.12	7413417.99
778071.71	7413416.58
778055.90	7412578.02
778067.83	7412574.21
778077.26	7412571.19
778172.20	7412540.86
778245.54	7412517.43
778276.71	7412507.47
778323.96	7412498.73
778363.62	7412493.30
778408.12	7412495.45
778416.18	7412495.84
778422.19	7412496.13
778436.14	7412491.57
778563.65	7412449.85
778615.18	7412433.00
778647.93	7412422.28
778757.43	7412386.46
778765.69	7412383.76
778829.35	7412362.93
778915.80	7412335.51
779041.60	7412295.60

Easting	Northing
779310.03	7412210.44
779411.16	7412178.35
779689.47	7412090.06
779800.11	7412054.96
779823.81	7412044.08
780019.11	7411954.41
780148.91	7411894.81
780490.60	7411737.93
780540.69	7411714.93
780623.11	7411677.09
780949.39	7411531.63
781011.17	7411504.09
781395.50	7411332.74
781492.61	7411289.44
781500.35	7411285.99
781625.82	7411227.52
781780.49	7411155.44
781989.20	7411058.17
782031.45	7411038.49
782114.26	7411002.35
782424.18	7410867.14
782532.81	7410819.74
782629.05	7410777.75
782840.10	7410684.69
782934.83	7410642.93
783348.42	7410460.56
783369.52	7410451.26
783423.91	7410427.28
783811.79	7410250.94
783928.07	7410198.08
784033.79	7410150.01
784037.57	7410148.56
784073.06	7410134.87
784222.59	7410077.22
784241.42	7410069.95
784256.74	7410064.05
784266.95	7410062.31
784274.31	7410061.06
784479.31	7410026.26
784500.12	7410014.67
784549.19	7409987.34
784634.51	7409939.82
784786.33	7409855.27
784850.94	7409833.07
784878.49	7409823.60
784966.30	7409793.43
785184.98	7409718.29
785258.17	7409787.08
785260.37	7409789.14
785251.99	7409827.25

Easting	Northing
785246.85	7409850.63
785244.70	7409860.39
785231.08	7409922.34
785240.87	7409995.32
785263.62	7410164.95
785272.95	7410234.51
785278.15	7410273.30
785285.87	7410330.92
785321.77	7410601.57
785364.28	7410947.32
785324.61	7411322.36
785339.72	7411495.24
785387.67	7411901.94
785393.57	7411951.99
785433.25	7412212.25
785457.90	7412298.30
785608.96	7412825.35
785833.41	7413523.00
785910.88	7413728.00
786069.77	7413984.48
786140.13	7414047.94
786301.22	7414193.25
786580.96	7414300.05
786681.80	7414338.55
786737.30	7414359.74
786906.59	7414424.37
787120.26	7414505.94
787218.15	7414544.22
787790.47	7414768.02
787906.61	7414813.43
788467.37	7415033.55
788779.35	7415230.71
789144.52	7415461.49
789504.02	7415692.40
789533.62	7415711.42
789607.79	7415759.06
789639.04	7415723.12
789693.51	7415660.44
789854.84	7415474.82
789940.32	7415376.46
789920.11	7415360.97
789892.73	7415339.98
789772.74	7415247.99
789702.53	7415325.19
789506.16	7415541.13
789469.49	7415581.46
789072.73	7415334.90
788779.35	7415158.91
788490.05	7414985.37
788411.90	7414952.81

Easting	Northing
787830.09	7414710.46
787081.66	7414420.98
786339.01	7414133.74
786240.45	7414036.53
786131.18	7413928.74
786126.25	7413921.08
785980.78	7413694.93
785909.93	7413506.00
785897.31	7413466.04
785861.72	7413353.34
785690.20	7412810.24
785517.31	7412194.54
785474.81	7411974.67
785455.34	7411802.72
785401.32	7411325.68
785399.24	7411307.25
785436.58	7410948.32
785319.88	7409914.79
785365.23	7409759.86
785364.17	7409758.98
785337.97	7409737.25
785198.96	7409621.94
785104.94	7409651.67
784605.67	7409809.59
784592.67	7409813.71
784496.01	7409809.01
784398.06	7409804.26
784239.36	7409890.23
784192.50	7409990.36
784091.84	7410035.69
783595.56	7410266.15
783257.64	7410423.50
782607.32	7410724.85
782090.67	7410942.31
781704.77	7411119.75
781606.99	7411164.72
781343.31	7411285.96
781335.03	7411289.77
780590.88	7411641.40
780585.33	7411644.03
780257.10	7411796.91
779836.95	7411992.61
779509.13	7412101.21
779324.16	7412162.48
779186.86	7412207.97
779175.74	7412211.65
779018.85	7412263.62
778984.28	7412275.07
778949.79	7412286.27
778922.50	7412295.12

Easting	Northing
778737.28	7412355.22
778587.13	7412403.93
778416.53	7412459.29
778407.55	7412458.67
778407.43	7412458.66
778391.10	7412457.53
778353.72	7412454.94
778349.48	7412454.65
778312.66	7412466.33
778055.34	7412548.02
778017.79	7410556.25
778015.12	7410400.35
777214.23	7410416.22
776775.59	7409079.12
776775.58	7409078.92
776775.16	7409078.92
776735.87	7409068.88
776696.27	7409058.37
776638.76	7409042.43
776581.46	7409025.75
776524.38	7409008.31
776467.53	7408990.13
776410.92	7408971.21
776354.57	7408951.56
776298.48	7408931.17
776242.66	7408910.05
776187.12	7408888.20
776131.86	7408865.63
776076.91	7408842.33
776022.27	7408818.33
775967.95	7408793.61
775913.95	7408768.18
775860.29	7408742.06
775806.97	7408715.23
775754.01	7408687.71
775701.42	7408659.50
775649.20	7408630.61
775597.35	7408601.04
775545.90	7408570.79
775494.85	7408539.87
775444.21	7408508.29
775393.98	7408476.05
775344.18	7408443.16
775294.81	7408409.62
775245.88	7408375.44
775197.41	7408340.62
775149.39	7408305.18
775101.84	7408269.11
775055.29	7408232.83
775009.21	7408195.96

Easting	Northing
774963.61	7408158.49
774918.49	7408120.44
774873.87	7408081.81
774829.76	7408042.61
774786.15	7408002.84
774743.06	7407962.51
774700.50	7407921.62
774658.47	7407880.19
774616.97	7407838.23
774576.02	7407795.73
773612.01	7406880.54
770768.89	7406019.17
770768.88	7406019.17
770525.49	7406023.64
770282.10	7406028.11
770160.40	7406030.34
770038.70	7406032.57
769795.30	7406037.04
769551.91	7406041.50
769308.51	7406045.97
769065.12	7406050.44
768821.72	7406054.87
768578.33	7406059.31
768334.94	7406063.75
768091.54	7406068.19
767848.15	7406072.62
767604.75	7406077.06
767361.36	7406081.50
767117.97	7406085.91
766874.58	7406090.32
766631.19	7406094.73
766387.80	7406099.14
766144.40	7406103.55
765901.01	7406107.96
765657.62	7406112.37
765414.23	7406116.75
765170.84	7406121.13
764927.45	7406125.51
764684.07	7406129.89
764440.68	7406134.27
764197.29	7406138.65
763953.90	7406143.03
763956.55	7406290.99
763732.97	7406295.00
763509.39	7406299.00
763285.80	7406303.01
763062.22	7406307.02
762838.64	7406311.03
762615.05	7406315.03
762391.47	7406319.04

Easting	Northing
762395.39	7406539.11
762399.31	7406759.18
762403.22	7406979.25
762407.14	7407199.32
762411.06	7407419.38
762411.04	7407419.38
762191.19	7407423.30
761971.35	7407427.22
761751.50	7407431.14
761531.66	7407435.07
761311.81	7407438.99
761091.97	7407442.91
761047.94	7407443.77
761014.95	7407444.41
761057.52	7409844.77
761134.41	7409843.40
761370.56	7409839.23
761606.72	7409835.06
761842.88	7409830.89
762079.03	7409826.72
762315.19	7409822.55
762357.88	7409821.78
762361.45	7410022.15
762365.01	7410222.51
762368.58	7410422.87
762372.15	7410623.23
762375.71	7410823.60
762452.60	7410822.22
762667.78	7410818.43
762837.73	7410815.44
762882.97	7410814.64
763098.16	7410810.85
763205.75	7410808.95
763528.53	7410803.27
763901.15	7410796.68
764037.30	7410794.27
764037.63	7410811.98
763901.63	7410814.39
763548.05	7410820.68
763528.83	7410821.02
763528.90	7410824.64
763528.99	7410829.75
763546.79	7411831.07
766766.63	7411773.21
766792.02	7413172.98
766875.23	7413172.19
766878.66	7413355.89
766883.34	7413606.00
766888.02	7413855.98
766892.69	7414105.96

Easting	Northing
766897.37	7414355.95
766902.05	7414605.93
766906.72	7414855.91
766911.40	7415105.90
766916.07	7415355.88
766920.74	7415605.88
766925.42	7415855.88
766930.09	7416105.88
766934.77	7416355.89
766939.44	7416605.89
766948.78	7417105.90
766958.12	7417605.91
766967.99	7418133.92
767163.44	7418126.04
767541.43	7418110.79
767941.44	7418094.66
768341.44	7418078.52
768741.44	7418062.39
769141.45	7418046.26
769541.45	7418030.12
769941.46	7418013.99
770341.46	7417997.86
771041.47	7417969.62
771941.46	7417938.53
772741.48	7417924.93
773941.50	7417904.53
775141.54	7417884.13
775288.58	7417881.63
779514.73	7417829.07
776779.57	7415780.05
776892.21	7415641.72
776944.63	7415684.25
776957.64	7415670.48
776977.49	7415684.87
777007.02	7415648.79
777007.03	7415648.79
776995.48	7415639.39
777025.42	7415603.20
777115.32	7415494.51
777137.48	7415525.60
777156.99	7415549.75
777175.84	7415570.58
777206.60	7415602.33
777230.08	7415624.49
777244.74	7415638.18
777342.20	7415730.18
777350.47	7415736.28
777357.75	7415742.23
777371.30	7415751.49
777392.47	7415764.06

Easting	Northing
777411.32	7415776.63
777432.16	7415792.17
777447.37	7415806.06
777399.50	7415861.69
777201.16	7416092.15
777140.95	7416162.11
777051.89	7416092.15
776965.48	7416024.25
776954.90	7416015.94
776969.96	7415997.38
776969.02	7415996.69
776922.33	7415957.07
776945.67	7415922.32
776779.57	7415780.05
766748.28	7410764.14
766748.14	7410764.14
766748.14	7410764.12
766746.30	7410764.07
766748.20	7410764.03
766683.90	7410030.84
766683.49	7410021.88
766683.90	7410012.91
766685.10	7410004.02
766687.10	7409995.27
766689.87	7409986.74
766693.40	7409978.49
766697.65	7409970.59
766702.59	7409963.10
766708.19	7409956.08
766714.39	7409949.60
766721.14	7409943.70
766728.40	7409938.42
766736.11	7409933.82
766744.19	7409929.93
766752.59	7409926.77
766761.24	7409924.39
766770.07	7409922.78
766779.01	7409921.98
766787.98	7409921.98
766796.92	7409922.78
767174.81	7409990.39
767183.64	7409991.99
767192.29	7409994.38
767200.69	7409997.53
767208.78	7410001.42
767211.18	7410002.76
767696.64	7410281.50
767770.56	7410305.20
767779.14	7410308.41
767787.23	7410312.31

Easting	Northing
767794.93	7410316.91
767802.19	7410322.18
767808.95	7410328.09
767815.15	7410334.57
767820.74	7410341.59
767825.69	7410349.08
767829.94	7410356.98
767833.46	7410365.23
768004.41	7410741.49
766748.32	7410764.14
766748.28	7410764.14

Attachment 3A: Commissioning Plan

Not required

Attachment 3B: Proposed Activities

See Sections 1 to 12.

Attachment 3C: Map of Area Proposed to be cleared

Not required

Attachment 3D: Additional information for clearing assessment

Not required

Attachment 4: Marine surveys

Not required

Attachment 5A: Other Approvals: NVCP CPS 5617/6 (Whaleback Strategic NVCP)

Government of Western Australia
Department of Mines, Industry Regulation and Safety

Our Ref: A1158/201301 / CPS 5617/5
Enquiries: [redacted]
Email: [redacted]

[redacted]
BHP Iron Ore Pty Ltd
Sent via email: [redacted]

Dear [redacted]

AMENDMENT OF CLEARING PERMIT CPS 5617/5 UNDER THE *ENVIRONMENTAL PROTECTION ACT 1986* – AMENDED PERMIT GRANTED (CPS 5617/6)

I refer to the application from BHP Iron Ore Pty Ltd to amend clearing permit CPS 5617/5 under section 51KA(1) of the *Environmental Protection Act 1986* (the EP Act), which was received by the Department of Mines, Industry Regulation and Safety (the department) on 22 February 2023.

A letter was sent to you on 11 May 2023 enclosing a draft amended permit, giving you 28 calendar days' notice to provide comment on the amendment. Thank you for your advice of 11 May 2023 that BHP Iron Ore Pty Ltd waive the 28 calendar day notification period.

Please find enclosed clearing permit CPS 5617/6 amended under section 51KA(1) of the EP Act. This amended permit replaces clearing permit CPS 5617/5 and gives the permit holder approval to clear, subject to conditions.

A copy of the amended permit and the associated decision report is available for the public to view on the department's website at: View notifications of Clearing Permit Applications and Decisions (dmp.wa.gov.au) as required under section 51Q of the EP Act and regulation 8 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

Please read the conditions of the permit carefully and note that there are penalties for non-compliance with those conditions. If you wish to discuss the permit and/or its conditions, please contact the department.

Please note, as your permit requires the submission of an annual report, this should be provided electronically via email to [redacted] prior to the due date.

If BHP Iron Ore Pty Ltd are aggrieved by this amendment, an appeal may be lodged with the Minister for Environment. If lodging an appeal, it must be in writing, setting out the grounds of the appeal, and be received by the Minister within 21 calendar days of being notified of the amendment. More information on lodging an appeal is available from the Office of the Appeals Convenor. Completed appeals must be posted or delivered to:

Office of the Appeals Convenor
Level 22 Forrest Centre
221 St George's Terrace, PERTH WA 6000
Tel: (08) 6364 7990 Fax: (08) 6364 7999
Email: admin@appealsconvenor.wa.gov.au
Website: www.appealsconvenor.wa.gov.au

Please note that while an appeal lodged by the Permit Holder is under consideration, then under section 101A(7) of the EP Act:

- if the amendment being appealed reduced or otherwise restricted the extent or method of clearing, that condition continues to have effect and activity (including clearing) that would contravene the amended permit may not occur until the appeal is determined; and
- if the amendment was for any other matter, the amendment is deemed to have not been made, until the appeal is determined.

In addition, third parties may also appeal against this amendment. Please note that in accordance with section 101A(8) of the EP Act, pending the determination of an appeal lodged by a third party, the amendment continues to have effect.

Please also note that in undertaking the clearing authorised under this permit, the permit holder must have regard to avoiding clearing, minimising clearing, and reducing the impacts of clearing on any environmental value.

Compliance with the terms, conditions or restrictions of this permit does not absolve the permit holder from responsibility for compliance with the requirements of all Commonwealth, State, and local government legislation.

For more information about complying with the amended permit, please refer to *Fact Sheet 4: Complying with your clearing permit* on the Department of Water and Environmental Regulations' website at: https://dwer.wa.gov.au/regulatory-documents.

I declare that I have no conflict of interest that prevents me from making a decision in relation to this proposal (in accordance with the Department of Mines, Industry Regulation and Safety (DMIRS) Conflict of Interest Policy).

If you have any queries regarding this notice, please do not hesitate to contact [redacted]

Yours sincerely

[redacted]

_____

[redacted]

18 May 2023

Officer with delegated authority under Section 20
of the *Environmental Protection Act 1986*

GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	5617/6
Duration of Permit:	From 23 November 2013 to 30 November 2033
Permit Holder:	BHP Iron Ore Pty Ltd

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I - CLEARING AUTHORISED

1. Land on which clearing is to be done

Iron Ore (Mount Newman) Agreement Act 1964, Mineral Lease 244SA (AML 70/244)
Iron Ore (Mount Newman) Agreement Act 1964, Special Lease for Mining Operations 3116/3687 (Document I 154279 L), Lease Extension K846790, Lot 19 on Deposited Plan 48921
Iron Ore (Mount Newman) Agreement Act 1964, Special Lease for Mining Operations 3116/3685, (Lease K858923), Lot 556 on Deposited Plan 400578
Iron Ore (McCamey's Monster) Agreement Authorisation Act 1972, Mining Lease 266SA (AM 70/266)
Miscellaneous Licences 47/92, 52/99, 52/185
General Purpose Leases 52/19, 52/20, 52/21, 52/22, 52/23, 52/24, 52/25, 52/26, 52/27, 52/28, 52/29, 52/30, 52/31, 52/32, 52/33, 52/34, 52/35, 52/36, 52/37, 52/38, 52/39, 52/40, 52/41, 52/42, 52/43, 52/44, 52/45, 52/46, 52/47, 52/48, 52/49, 52/50, 52/51, 52/52, 52/53, 52/54, 52/55, 52/56, 52/57, 52/58, 52/59, 52/60, 52/61, 52/62, 52/63, 52/64, 52/65, 52/66, 52/67, 52/68, 52/69, 52/70, 52/71, 52/72, 52/73, 52/74, 52/75, 52/76, 52/77, 52/78, 52/79, 52/80, 52/81, 52/82, 52/83, 52/84, 52/85, 52/86, 52/87, 52/88, 52/89, 52/90, 52/91, 52/92, 52/93, 52/94, 52/95, 52/96, 52/97, 52/98, 52/99, 52/100, 52/101, 52/102, 52/103, 52/104, 52/105 52/106, 52/107, 52/108, 52/109, 52/110, 52/111, 52/112, 52/113, 52/114, 52/115, 52/116, 52/117, 52/118, 52/119, 52/120, 52/121, 52/122, 52/123, 52/124, 52/125, 52/126, 52/127, 52/128, 52/129, 52/130, 52/131, 52/132, 52/133, 52/134, 52/135, 52/136, 52/137, 52/138, 52/139, 52/140, 52/141, 52/142, 52/143, 52/144, 52/145, 52/146, 52/147, 52/148, 52/149, 52/150, 52/151, 52/152, 52/153, 52/154, 52/155, 52/156, 52/157, 52/158, 52/159, 52/160, 52/161, 52/162, 52/163, 52/164, 52/165, 52/166, 52/167, 52/168, 52/169, 52/170, 52/171, 52/172, 52/173, 52/174, 52/175, 52/176, 52/177, 52/178, 52/179, 52/180, 52/181, 52/182, 52/183, 52/184, 52/185, 52/186, 52/187, 52/188, 52/189, 52/190, 52/191, 52/192, 52/193, 52/194, 52/195, 52/196, 52/197, 52/198, 52/199, 52/200, 52/201, 52/202, 52/203, 52/204, 52/205, 52/206, 52/207, 52/208, 52/209, 52/210, 52/211, 52/212, 52/213, 52/214, 52/215, 52/216, 52/217, 52/218, 52/219, 52/220, 52/221, 52/222, 52/223, 52/224, 52/225, 52/226, 52/227, 52/228, 52/229, 52/230, 52/231, 52/232, 52/233, 52/234, 52/235, 52/236, 52/237, 52/238, 52/239, 52/240, 52/241, 52/242, 52/243, 52/244, 52/245, 52/246, 52/247, 52/248, 52/249, 52/250, 52/251, 52/252, 52/253, 52/254, 52/255, 52/256, 52/258, 52/259, 52/260, 52/261, 52/262, 52/263, 52/264, 52/265, 52/266, 52/267, 52/268, 52/269, 52/270, 52/271, 52/272, 52/273, 52/274, 52/276, 52/277, 52/279

2. Clearing authorised (purpose)

The Permit Holder is authorised to clear native vegetation for the purpose of mineral production, mineral exploration, construction and maintenance of infrastructure and associated activities.

3. Area of Clearing
The Permit Holder must not clear more than 2,010.3 hectares of native vegetation within the area cross-hatched yellow or shaded blue in Figure 1 of Schedule 1.

4. Type of Clearing Authorised
The Permit Holder shall not clear native vegetation unless the purpose for which the clearing is authorised is enacted within six months of the authorised clearing being undertaken.

5. Period in which clearing is Authorised
The Permit Holder must not clear any native vegetation after 30 November 2028.

PART II - MANAGEMENT CONDITIONS

6. Avoid, minimise and reduce the impacts and extent of clearing
In determining the amount of native vegetation to be cleared under this Permit, the Permit Holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of native vegetation;
(b) minimise the amount of native vegetation to be cleared; and
(c) reduce the impact of clearing on any environmental value.

7. Weed control
When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
(b) ensure that no known *weed*-affected soil, *mulch, fill* or other material is brought into the area to be cleared; and
(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared;

8. Watercourse Management
Where the area shaded blue in Figure 1 of Schedule 1 is to be impacted by clearing, the Permit Holder shall maintain the existing surface flow of Whaleback Creek.

9. Retain and spread vegetative material and topsoil
The Permit Holder shall:
(a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared;

(b) within 12 months following completion of clearing authorised under this Permit, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by:

(i) ripping the ground on the contour to remove soil compaction; and
(ii) laying the vegetative material and topsoil retained under Condition 9(a) on the cleared area.

(c) within 4 years of undertaking *revegetation* and *rehabilitation* in accordance with Condition 9(b) of this Permit:

(i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
(ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under Condition 9(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-*clearing* vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-*clearing* vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

(d) where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with Condition 9(c)(ii) of this Permit, the Permit Holder shall repeat Condition 9(c)(i) and 9(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.

(e) where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in Condition 9(c)(i) and (ii) of this Permit, that determination shall be submitted for the *CEO*'s consideration. If the *CEO* does not agree with the determination made under Condition 9(c)(ii), the *CEO* may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under Condition 9(c)(ii).

10. Retain vegetative material and topsoil, revegetation and rehabilitation
The Permit Holder shall:

(a) prior to 5 October 2023, *revegetate* and *rehabilitate* 10 hectares of *temporary works* previously cleared within the area crossed-hatched yellow in Figure 1 of Schedule 1 by:

(i) laying vegetative material and topsoil previously retained within the area cross-hatched yellow in Figure 1 of Schedule 1 on the cleared areas; and
(ii) ripping the ground on the contour to remove soil compaction.

(b) within 4 years of undertaking *revegetation* and *rehabilitation* in accordance with Condition 10(a) of this Permit:

(i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
(ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under Condition 10(b)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

(c) where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with Condition 10(b)(ii) of this permit, the Permit Holder shall repeat Condition 10(b)(i) and 10(b)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.

(d) where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in Condition 10(b)(i) and (ii) of this permit, that determination shall be submitted for the *CEO*'s consideration. If the *CEO* does not agree with the determination made under Condition 10(b)(ii), the *CEO* may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under Condition 10(b)(ii).

PART III - RECORD KEEPING AND REPORTING

11. Records to be kept
The Permit Holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) the date that the area was cleared; (c) the size of the area cleared (in hectares); (d) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with Condition 6; (e) actions taken to minimise the risk of the introduction and

No.	Relevant matter	Specifications
		spread of *weeds* in accordance with Condition 7; and (f) actions taken in accordance with Condition 8.
2.	In relation to the *revegetation* and *rehabilitation* management pursuant to Condition 9	(a) The location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) a description of the *revegetation* and *rehabilitation* activities undertaken; and (c) the size of the area *revegetated* and *rehabilitated* (in hectares).
3.	In relation to the *revegetation* and *rehabilitation* management pursuant to Condition 10	(a) The location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) a description of the *revegetation* and *rehabilitation* activities undertaken; and (c) the size of the area *revegetated* and *rehabilitated* (in hectares).

12. Reporting

(a) The Permit Holder shall provide a report to the *CEO* by 1 October each year for the life of this Permit, demonstrating adherence to all conditions of this Permit, and setting out the records required under Condition 11 of this Permit in relation to clearing carried out between 1 July and 30 June of the previous financial year.

(b) If no clearing authorised under this Permit was undertaken between 1 July and 30 June of the previous financial year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* by 1 October of each year.

(c) Prior to 30 November 2035, the Permit Holder must provide to the *CEO* a written report of records required under Condition 11 of this Permit where these records have not already been provided under Condition 12(a) or 12(b) of this Permit.

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	the Chief Executive Officer of the Department responsible for administering the clearing provisions contained within the *Environmental Protection Act 1986* or an Officer with delegated authority under Section 20 of the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition/s	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.

Term	Definition
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the *CEO* as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means native vegetation seeds and propagating material from natural sources within 100 kilometres in the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
regeneration	means *revegetation* that can be established from in situ seed banks contained either within the topsoil or seed-bearing *mulch*.
rehabilitate / rehabilitated / rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate / revegetated / revegetation	means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
temporary works	means access tracks, spoil areas, side tracks, site offices, storage areas, laydown areas, extraction sites, camps, project surveys, pre-construction activities, and similar works associated with a project activity that are temporary in nature.
weed/s	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

[redacted]

18 May 2023

Officer with delegated authority under Section 20 of the *Environmental Protection Act 1986*

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

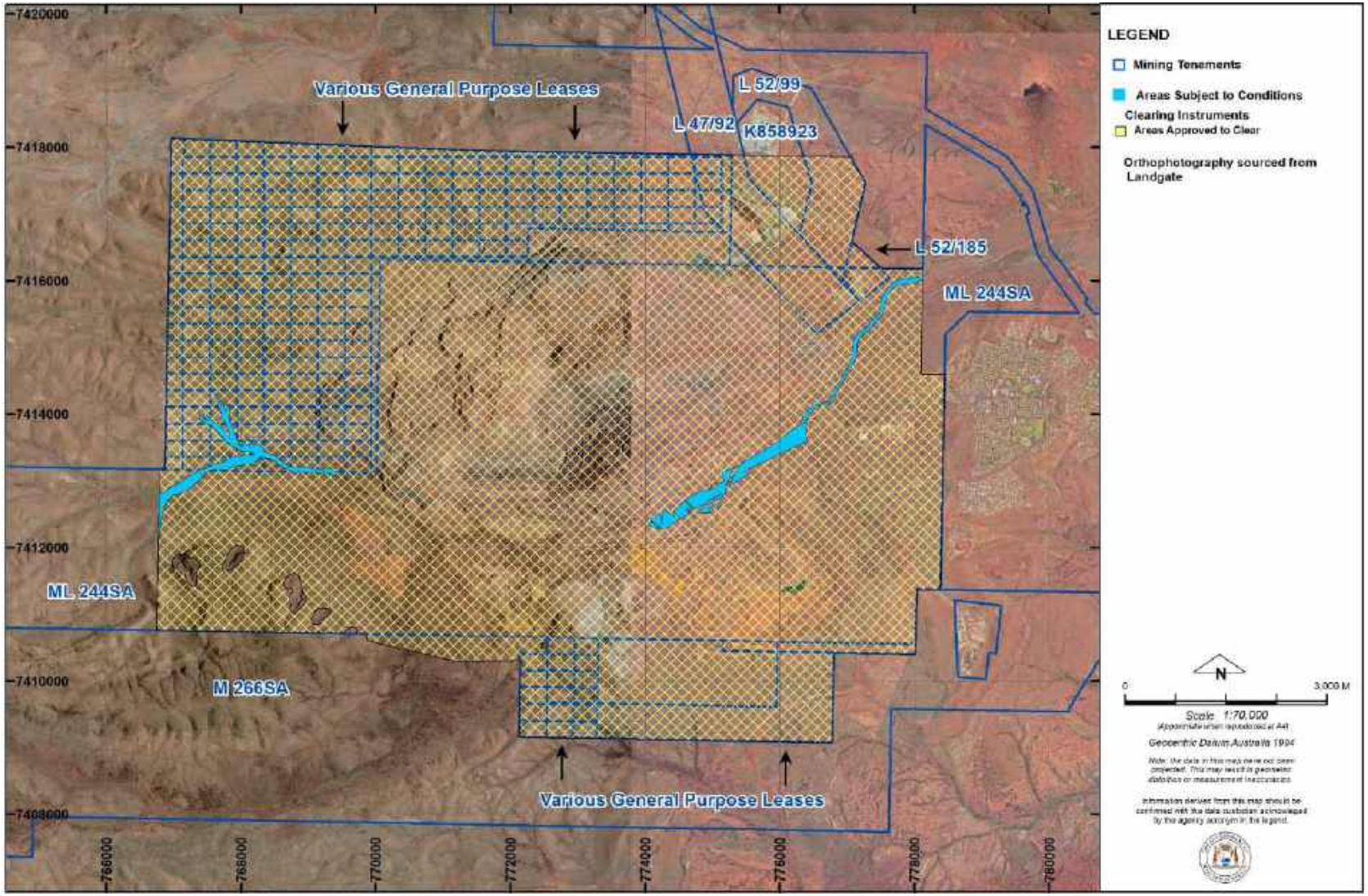

Figure 1: Map of the boundary of the area within which clearing may occur

Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	5617/6
Permit type:	Purpose Permit
Applicant name:	BHP Iron Ore Pty Ltd
Application received:	22 February 2023
Application area:	2,010.3 ha
Purpose of clearing:	Mineral production, mineral exploration, construction and maintenance of infrastructure and associated activities
Method of clearing:	Mechanical Removal
Tenure:	*Iron Ore (Mount Newman) Agreement Act 1964*, Mineral Lease 244SA (AML 70/244) *Iron Ore (Mount Newman) Agreement Act 1964*, Special Lease for Mining Operations 3116/3687 (Document I 154279 L), Lease Extension K846790, Lot 19 on Deposited Plan 48921 *Iron Ore (Mount Newman) Agreement Act 1964*, Special Lease for Mining Operations 3116/3685, (Lease K858923), Lot 556 on Deposited Plan 400578 *Iron Ore (McCamey's Monster) Agreement Authorisation Act 1972*, Mining Lease 266SA (AM 70/266) Miscellaneous Licences 47/92, 52/99, 52/185 General Purpose Leases 52/19, 52/20, 52/21, 52/22, 52/23, 52/24, 52/25, 52/26, 52/27, 52/28, 52/29, 52/30, 52/31, 52/32, 52/33, 52/34, 52/35, 52/36, 52/37, 52/38, 52/39, 52/40, 52/41, 52/42, 52/43, 52/44, 52/45, 52/46, 52/47, 52/48, 52/49, 52/50, 52/51, 52/52, 52/53, 52/54, 52/55, 52/56, 52/57, 52/58, 52/59, 52/60, 52/61, 52/62, 52/63, 52/64, 52/65, 52/66, 52/67, 52/68, 52/69, 52/70, 52/71, 52/72, 52/73, 52/74, 52/75, 52/76, 52/77, 52/78, 52/79, 52/80, 52/81, 52/82, 52/83, 52/84, 52/85, 52/86, 52/87, 52/88, 52/89, 52/90, 52/91, 52/92, 52/93, 52/94, 52/95, 52/96, 52/97, 52/98, 52/99, 52/100, 52/101, 52/102, 52/103, 52/104, 52/105 52/106, 52/107, 52/108, 52/109, 52/110, 52/111, 52/112, 52/113, 52/114, 52/115, 52/116, 52/117, 52/118, 52/119, 52/120, 52/121, 52/122, 52/123, 52/124, 52/125, 52/126, 52/127, 52/128, 52/129, 52/130, 52/131, 52/132, 52/133, 52/134, 52/135, 52/136, 52/137, 52/138, 52/139, 52/140, 52/141, 52/142, 52/143, 52/144, 52/145, 52/146, 52/147, 52/148, 52/149, 52/150, 52/151, 52/152, 52/153, 52/154, 52/155, 52/156, 52/157, 52/158, 52/159, 52/160, 52/161, 52/162, 52/163, 52/164, 52/165, 52/166, 52/167, 52/168, 52/169, 52/170, 52/171, 52/172, 52/173, 52/174, 52/175, 52/176, 52/177, 52/178, 52/179, 52/180, 52/181, 52/182, 52/183, 52/184, 52/185, 52/186, 52/187, 52/188, 52/189, 52/190, 52/191, 52/192, 52/193, 52/194, 52/195, 52/196, 52/197, 52/198, 52/199, 52/200, 52/201, 52/202, 52/203, 52/204, 52/205, 52/206, 52/207, 52/208, 52/209, 52/210, 52/211, 52/212, 52/213, 52/214, 52/215, 52/216, 52/217, 52/218, 52/219, 52/220, 52/221, 52/222, 52/223, 52/224, 52/225, 52/226, 52/227, 52/228, 52/229, 52/230, 52/231, 52/232, 52/233, 52/234, 52/235, 52/236, 52/237, 52/238, 52/239, 52/240, 52/241, 52/242, 52/243, 52/244, 52/245, 52/246, 52/247, 52/248, 52/249, 52/250, 52/251, 52/252, 52/253, 52/254, 52/255, 52/256, 52/258, 52/259, 52/260, 52/261, 52/262, 52/263, 52/264, 52/265, 52/266, 52/267, 52/268, 52/269, 52/270, 52/271, 52/272, 52/273, 52/274, 52/276, 52/277, 52/279
Location (LGA area/s):	Shire of East Pilbara
Colloquial name:	Mt Whaleback Project

1.2. Description of clearing activities

BHP Iron Ore Pty Ltd proposes to clear up to 2,010.3 hectares of native vegetation within a boundary of approximately 8,884 hectares, for the purpose of mineral production, mineral exploration, construction and maintenance of infrastructure and associated activities. The project is located approximately 0.3 kilometres west of Newman, within the Shire of East Pilbara. As of 30 June 2022, 982.40 hectares have been cleared under previous clearing permits (CPS 5617/1, CPS 5617/2, CPS 5617/3, CPS 5617/4, and CPS 5617/5) (BHP, 2022). Out of those 982.40 hectares, 316.96 hectares have been rehabilitated as of 30 June 2022 (BHP, 2022).

Clearing permit CPS 5617/1 was granted by the Department of Mines and Petroleum (now the Department of Mines, Industry Regulation and Safety) on 31 October 2013 and was valid from 23 November 2013 to 23 November 2020. The permit

authorised the clearing of up to 2,100 hectares of native vegetation within a boundary of approximately 8,800 hectares, for the purpose of mineral production, mineral exploration, construction and maintenance of infrastructure and associated activities.

CPS 5617/2 was granted on 14 August 2014, amending the permit to increase the permit boundary to 8,875 hectares and reducing the amount of clearing authorised to 2,010.3 hectares.

CPS 5617/3 was granted on 7 April 2016, amending the permit to remove Conditions 7 and 8 from the permit and extend the permit duration from 23 November 2030 to 30 November 2030.

CPS 5617/4 was granted on 28 June 2018, amending the permit to increase the permit boundary by 10 hectares, from 8,875 to 8,885 hectares. The amount of clearing authorised remained unchanged.

CPS 5617/5 was granted on 11 April 2019, amending the permit to update the tenure on the permit, and amend the area subject to Condition 7. The area of clearing authorised and permit boundary remained unchanged.

On 22 February 2023, the Permit Holder applied to amend CPS 5617/5 to extend the clearing period to 30 November 2028 and the permit duration to 30 November 2033 and to update the permit holder name from BHP Billiton Iron Ore Pty Ltd to BHP Iron Ore Pty Ltd as well as amend the permit boundary to exclude an area where a ghost bat cave is located.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	18 May 2023
Decision area:	2,010.3 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 22 February 2023. DMIRS advertised the application for a public comment for a period of 7 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix E), supporting information provided by the applicant (Appendix D) including the results of a flora and vegetation survey (Appendix D), the clearing principles set out in Schedule 5 of the EP Act (Appendix C), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- potential impacts to waterflows and to vegetation growing in association with a watercourse;
- potential land degradation in the form of erosion; and
- potential loss of native vegetation.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- maintain existing surface flow of Whaleback Creek;
- commence construction no later than six months after undertaking clearing to reduce the risk of erosion; and
- retain cleared vegetation and topsoil and respread this on a cleared area of equivalent size within the adjacent existing gravel extraction area within 12 months of clearing to ensure fauna habitat is not permanently lost.

The assessment has not changed since the assessment for CPS 5617/5, The Delegated Officer determined that the proposed extension of duration, permit holder name change, and reduction of the permit boundary is not likely to lead to an unacceptable risk to environmental values.

1.5. Site map

A site map of proposed clearing is provided in Figure 1 below.

Figure 1. Map of the application area. The yellow area indicates the previous permit area (CPS 5617/5) and the blue area indicates area to be excised for this application.

2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)
- *Iron Ore (Mount Newman) Agreement Act 1964*
- *Iron Ore (McCamey's Monster) Agreement Authorisation Act 1972*

Relevant agreements (treatys) considered during the assessment include:

- Japan-Australia Migratory Bird Agreement
- China-Australia Migratory Bird Agreement
- Republic of Korea-Australia Migratory Bird Agreement

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant advised that disturbance will be kept to the smallest size possible with previously cleared areas used where practicable (BHP, 2023b). Additionally BHP has stated that control of established weed populations will be carried out according to BHP's standard *Weed Control and Management Procedures* (BHP, 2023a). The applicant has committed to place a 10 metre buffer zone around Priority flora where practicable (BHP, 2023a). Additionally, a potential roosting cave for ghost bats has been excised from the application area and a 50 metre buffer has been established (BHP, 2023a). The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

Half of the conservation significant fauna present in the application area, such as the common greenshank, common redshank, common sandpiper, glossy ibis, long-toed stint, marsh sandpiper, pectoral sandpiper, sharp-tailed sandpiper, and wood sandpiper, rely on artificial water sources or wetlands to forage in the application area (BHP, 2023a). Additionally, these species are migratory and are not permanently present in the application area (BHP, 2023a). The rest of the conservation significant fauna recorded in the application have more suitable habitat in better condition occurring outside of the application area and are widespread across the Pilbara region (BHP, 2023a).

The proposed clearing permit boundary intersects protection zone related to bore V18 (DWER, 2023; GIS Database). Mining operations and related activities are incompatible with wellhead protection zones (DWER, 2023). However, Bore V18 currently provides water to the Yarnima Power Station and in July 2020, the bore has been removed from the town supply system (DWER, 2023). For this reason, the proposed amendment is unlikely to have significant impacts to the quality of surface or underground water. There are numerous ephemeral drainage lines within the application area, the most significant being Whaleback Creek (GIS Database). The majority of Whaleback Creek is covered by a number of existing clearing permits. Clearing within drainage lines may lead to a short term increase in turbidity, however, it is not expected to result in the deterioration of surface water quality. Impacts to surface water within Whaleback Creek may be minimised by the implementation of a watercourse management condition.

A review of current environmental information (Appendix A and B) reveals that the assessment against the clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 5617/5. The proposed amendment is not likely to cause significant impacts to the environmental values of the application area. The amendment has been granted without changes to the conditions placed on the previous clearing permit (CPS 5617/5).

3.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 28 March 2023 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WC2005/006) over the area under application (DPLH, 2023). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are 30 registered Aboriginal Sites of Significance within the application area (DPLH, 2023). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Other relevant authorisations required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.
- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia (GIS Database). It is adjacent to the town of Newman and it is surrounded by native vegetation (GIS Database).
Ecological linkage	The application area does not form part of any formal or informal ecological linkages (GIS Database).
Conservation areas	The application area is not located within any known conservation areas (GIS Database). The closest conservation area is approximately 64 kilometres north of the application area (GIS Database).
Vegetation description	The vegetation of the application area is broadly mapped as the following Beard vegetation associations: 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; and 18: Low woodland; mulga (GIS Database). Various flora and vegetation survey were conducted over the application area by Onshore Environmental during 2014 and by Biologic during, 2021, and 2022. The following vegetation associations were recorded within the application area (Biologic, 2021a, 2021b, 2022a; Onshore Environmental, 2014): ***Cenchrus* mid tussock grassland (FP CcCsChf AaApAte Ex):** Mid tussock grassland of **Cenchrus ciliaris*, **Cenchrus setiger*, and *Chrysopogon fallax* with tall sparse shrubland to scattered trees of *Acacia aptaneura*, *Acacia paraneura*, and *Acacia tetragonophylla* with low scattered trees of *Eucalyptus xerothermica* on brown clay loam on drainage areas/ floodplains and minor drainage lines. ***Cenchrus* mid tussock grassland (FP CcCsChfAciAaAinExEgCocd):** Mid tussock grassland of **Cenchrus ciliaris*, **Cenchrus setiger*, and *Chrysopogon fallax* with tall open shrubland of *Acacia citrinoviridis*, *Acacia aptaneura*, and *Acacia incurvaneura* with low open woodland of *Eucalyptus xerothermica*, *Eucalyptus gamophylla*, and *Corymbia candida* subsp. *dipsodes* on brown clay loam on drainage areas/ floodplains. ***Cenchrus* tussock grassland (MA CcTtEuaChCaAbAtpAss):** Tussock Grassland of **Cenchrus ciliaris*, *Themeda triandra* and *Eulalia aurea* with Low Open Woodland of *Corymbia hamersleyana* and *Corymbia aspera* over High Open Shrubland of *Acacia bivenosa*, *Acacia tumida* var. *pilbarensis* and *Acacia sclerosperma* subsp. *sclerosperma* on brown loamy sand on levee banks of major drainage lines. ***Acacia* low open forest (HS AcaoAaAprScaErllAbTbrTw):** Low Open Forest of *Acacia aptaneura*, *Acacia aneura* x *ayersiana* and *Acacia pruinocarpa* over Hummock Grassland of *Triodia epactia* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Grevillea berryana* and *Dodonaea petiolaris* on red brown loamy sand on stony plains. ***Acacia* low open woodland (FP AaAinAte(±ExEg)CcEnpoChfBbClvAbl):** Low open woodland of *Acacia aptaneura*, *Acacia incurvaneura*, and *Acacia tetragonophylla* (± *Eucalyptus xerothermica*, *Eucalyptus gamophylla*) over low open tussock grassland of **Cenchrus ciliaris*, *Enneapogon polyphyllus*, *Chrysopogon fallax* with low scattered herbs of **Bidens bipinnata*, *Arivela viscosa*, *Abutilon lepidum* on brown clay loam on drainage areas/ floodplains and minor drainage lines. ***Acacia* low open woodland (SP Aa AsyErpdCcTt):** Low open woodland of *Acacia aptaneura* over tall open shrubland *Acacia synchronicia* over low sparse grassland of *Eriachne pulchella* subsp. *dominii*, *Cenchrus ciliaris* and *Themeda triandra* on red clay loam on stony plains and floodplains. ***Acacia* low open woodland (SP AaAayAiArAadsAteSeahSeglErffEreTpTw Pacl):** Low open woodland of *Acacia aptaneura*, *Acacia ayersiana* (hybrid) and *Acacia incurvaneura* over tall open shrubland of *Acacia rhodophloia*, *Acacia adsurgens* and *Acacia tetragonophylla* over mid isolated shrubs of *Senna artemisioides* subsp. *helmsii* and *Senna glutinosa* subsp. *×luersenii* over low isolated shrubs of *Eremophila forrestii* subsp. *forrestii* and *Eremophila exilifolia* over mid scattered hummock grasses of *Triodia pungens* and *Triodia wiseana* with low scattered tussock grasses of *Paspalidium clementii* on red clay loam on stony plains. ***Acacia* low woodland (FP AaAprAciRheAaCcChfArin):** Low Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Dodonaea petiolaris* and *Sida ectogama* over Open Tussock Grassland of *Aristida contorta*, *Digitaria ammophila* and *Aristida inaequiglumis* on red orange clay loam on floodplains. ***Acacia* low woodland (FP AcaoAaExErff Tp):** Low Woodland of *Acacia catenulata* subsp. *occidentalis*, *Acacia aptaneura* and *Eucalyptus xerothermica* over Open Shrubland of *Eremophila*

Characteristic	Details
	forrestii subsp. *forrestii* over Open Hummock Grassland of *Triodia pungens* on red sandy loam on floodplains. ***Acacia* low woodland (FP AciChAaAancApypPlTtAriCc):** Low Woodland of *Acacia citrinoviridis*, *Corymbia hamersleyana* and *Acacia aptaneura* over High Shrubland of *Acacia ancistrocarpa*, *Acacia pyrifolia* var. *pyrifolia* and *Petalostylis labicheoides* over Very Open Tussock Grassland of *Themeda triandra*, *Aristida inaequiglumis* and **Cenchrus ciliaris* on brown sandy loam on floodplains and medium drainage lines. ***Acacia* low woodland (FP ApAaAprAsyErffPtoCcAriArc):** Low Woodland of *Acacia paraneura*, *Acacia aptaneura* and *Acacia pruinocarpa* over Open Shrubland of *Acacia synchronicia*, *Eremophila forrestii* subsp. *forrestii* and *Ptilotus obovatus* over Open Tussock Grassland of **Cenchrus ciliaris*, *Aristida inaequiglumis* and *Aristida contorta* on red brown loam on floodplains. ***Acacia* low woodland (MI AaApr CcPacI ChClvBbDiaa):** Low woodland of *Acacia aptaneura* and *Acacia pruinocarpa* over mid open tussock grassland of *Cenchrus ciliaris* over a low sparse grassland of *Paspalidium clementii* with low open herbland of *Cleome viscosa*, *Bidens bipinnata* and *Dipteracanthus australasicus* subsp. *australasicus* with low scattered trees of *Corymbia hamersleyana* mid to low scattered trees on red silty clay loam on minor drainage lines and drainage areas. ***Acacia* low woodland (SP AprAaAlAb Ts):** Low Woodland of *Acacia pruinocarpa* and *Acacia aptaneura* over Scattered Shrubs of *Acacia inaequilatera* and *Acacia bivenosa* over Open Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) on red brown clay loam on stony plains. ***Acacia* tall open to sparse shrubland (HS AaSeglErplErltEnpoEmu):** Tall open to sparse shrubland of *Acacia aptaneura* over mid sparse shrubland of *Senna glutinosa* subsp. ×*luerssenii*, *Eremophila ?platycalyx*, and *Eremophila latrobei* over low scattered tussock grasses of *Enneapogon polyphyllus*, and *Eriachne mucronata* on brown silty loam on hillslopes and upper hillslopes/hillcrests. ***Acacia* tall shrubland (FP ApypAancAbTp Cc AnlCh):** Tall open shrubland of *Acacia pyrifolia* var. *pyrifolia*, *Acacia ancistrocarpa* and *Acacia bivenosa* over mid open hummock grassland of *Triodia pungens* with mid sparse tussock grasses of *Cenchrus ciliaris* with mid isolated shrubs of *Androcalva luteiflora* with low isolated trees of *Corymbia hamersleyana* on brown sandy clay loam on floodplains, drainage areas and minor drainage lines. ***Acacia* tall shrubland to tall open shrubland (FP AaApAteSeglMamEnpoEmuAriTp):** Tall shrubland to tall open shrubland of *Acacia aptaneura*, *Acacia paraneura* and *Acacia tetragonophylla* over mid to low scattered shrubs of *Senna glutinosa* subsp. ×*luerssenii*, and *Maireana melanocoma* over low scattered, tussock and hummock grasses of *Enneapogon polyphyllus*, *Eriachne mucronata*, *Aristida inaequiglumis* and *Triodia pungens* on brown clay loam on stony plains and drainage areas/ floodplains. ***Corymbia* low open woodland (GO CfCocdAhPl DopErhrErmuPacICya Tp CyvCyh):** Low open *Corymbia ferriticola* woodland, with occasional low trees of *Corymbia candida* subsp. *dipsodes*, over low tall sparse shrubland of *Acacia hamersleyensis* and *Petalostylis labicheoides* over mid sparse shrubland of *Dodonaea pachyneura* and *Eremophila* sp. Hamersley Range (K. Walker KW 136) over mid sparse tussock grassland of *Eriachne mucronata*, *Paspalidium clementii* and *Cymbopogon ambiguous* with mid scattered hummock grasses of *Triodia pungens* with occasional mid scattered sedges of *Cyperus vaginatus* and *Cyperus hesperius* on black/brown clay loam in gorges. ***Eucalyptus* mid open woodland (ME EvAcpCcTtEuaApypAciMgCyv Clv):** Low open woodland of *Eucalyptus victrix* and *Acacia coriacea* subsp. *pendens* over mid open tussock grassland of *Cenchrus ciliaris*, *Themeda triandra* and *Eulalia aurea* open tussock grassland with *Acacia pyrifolia* var. *pyrifolia*, *Acacia citrinoviridis* and *Melaleuca glomerata* over tall sparse sedgeland of *Cyperus vaginatus* over sparse herbland of *Cleome viscosa* on red/ brown loamy sand on medium drainage lines. ***Eucalyptus* woodland (MA EcrEvAciApypMgCcEuaTt):** Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over High Open Shrubland of *Acacia citrinoviridis*, *Acacia pyrifolia* var. *pyrifolia* and *Melaleuca glomerata* over Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown clay loam on banks of major drainage lines. ***Senna* mid sparse shrubland (SP SeglAsyAteApErcu):** Mid sparse shrubland of *Senna glutinosa* subsp. ×*luerssenii* with tall isolated shrubs of *Acacia synchronicia*, *Acacia tetragonophylla* and *Acacia paraneura* over low isolated shrubs of *Eremophila cuneifolia* over low scattered chenopods and grasses on stony plains. ***Senna* mid to low sparse shrubland (FP SeaoSesmSeglAaAsyAteArcEnpoDar):** Mid to low sparse shrubland of *Senna artemisioides* subsp. *oligophylla*, *Senna* sp. Meekatharra (E. Bailey 1-36), and *Senna glutinosa* subsp. ×*luerssenii* with tall scattered shrubs of *Acacia aptaneura*, *Acacia synchronicia*, and *Acacia tetragonophylla* over low scattered tussock grasses of *Aristida contorta*,

Characteristic	Details
	Enneapogon polyphyllus, and *Dactyloctenium radulans* on brown clay loam on drainage areas/ floodplain. ***Triodia* hummock grassland (CP TwTaEseAbPlApyp):** Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Open Mallee of *Eucalyptus socialis* subsp. *eucentrica* and Open Shrubland of *Acacia bivenosa*, *Petalostylis labicheoides* and *Acacia pyrifolia* var. *pyrifolia* on light brown clay loam on calcrete plains and rises. ***Triodia* hummock grassland (HC TsTpEkkEg):** Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Very Open Mallee of *Eucalyptus kingsmillii* subsp. *kingsmillii* and *Eucalyptus gamophylla* on red sandy loam on hill crests and upper hill slopes. ***Triodia* hummock grassland (HC TwTbrTpEllChAmaGrwhAb):** Hummock Grassland of *Triodia wiseana*, *Triodia brizoides* and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over High Open Shrubland of *Acacia maitlandii*, *Grevillea wickhamii* subsp. *hispidula* and *Acacia bivenosa* on red brown sandy loam on hill crests and upper hill slopes. ***Triodia* hummock grassland (HS TbrTwAiAprHcErfrErpd):** Hummock Grassland of *Triodia brizoides* and *Triodia wiseana* with High Open Shrubland of *Acacia inaequilatera*, *Acacia prulnocarpa* and *Hakea chordophylla* over Open Shrubland of *Eremophila fraseri* and *Eremophila platycalyx* subsp. *pardalota* on red loamy sand on lower hill slopes and footslopes. ***Triodia* hummock grassland (HS TwEllChHcAancAbAa):** Hummock Grassland of *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Hakea chordophylla* and Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia aptaneura* on red sandy loam on hill slopes. ***Triodia* hummock grassland (ME TpTloExAciChPlApypGoro):** Hummock Grassland of *Triodia pungens* and *Triodia longiceps* with Low Woodland of *Eucalyptus xerothermica*, *Acacia citrinoviridis* and *Corymbia hamersleyana* over High Shrubland of *Petalostylis labicheoides*, *Acacia pyrifolia* var. *pyrifolia* and *Gossypium robinsonii* on red brown clay loam on medium drainage lines and surrounding floodplains. ***Triodia* hummock grassland (SP TpTb EgPlAbAanc):** Hummock Grassland of *Triodia pungens* and *Triodia basedowii* with Open Mallee of *Eucalyptus gamophylla* and Shrubland of *Petalostylis labicheoides*, *Acacia bivenosa* and *Acacia ancistrocarpa* on red brown loamy sand on stony plains and footslopes. ***Triodia* hummock grassland (SP Ts Ai):** Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with High Open Shrubland of *Acacia inaequilatera* on red brown loamy sand on lower hill slopes and stony plains. ***Triodia* low hummock grassland (CP TragTpTwAbAsySeaoEse):** Low hummock grassland of *Triodia angusta*, *Triodia pungens*, and *Triodia wiseana* with mid to tall sparse shrubland to scattered shrubs of *Acacia bivenosa* (wispy form), *Acacia synchronicia*, and *Senna artemisioides* subsp. *oligophylla* with low scattered tree of *Eucalyptus socialis* subsp. *eucentrica* on red-brown clay loam on calcrete stony plains and platforms. ***Triodia* low hummock grassland (FP Tp(±Tw)AssAdErloEnpoTtChf):** Low hummock grassland of *Triodia pungens*, ± *Triodia wiseana* with mid to tall sparse shrubland of *Acacia sclerosperma* subsp. *sclerosperma*, *Acacia dictyophleba*, and *Eremophila longifolia* over mid to low sparse tussock grassland of *Enneapogon polyphyllus*, *Themeda triandra*, and *Chrysopogon fallax* on brown silty clay loam on drainage areas/ floodplains and minor drainage lines. ***Triodia* low hummock grassland (FP Trag(±Tw)AbAsyAsiEgExCh):** Low hummock grassland of *Triodia angusta*, ± *Triodia wiseana* with mid to low scattered shrubs of *Acacia bivenosa*, *Acacia synchronicia*, and *Acacia sibirica* with occasional low scattered trees of *Eucalyptus gamophylla*, *Eucalyptus xerothermica*, and *Corymbia hamersleyana* on brown clay loam on low slopes, drainage areas/ floodplains and undulating hills. ***Triodia* low hummock grassland (HC TvTpEgEkAhAmaHcSeel):** Low hummock grassland of *Triodia vanleeuwenii* and *Triodia pungens* with low sparse woodland of *Eucalyptus gamophylla* and *Eucalyptus kingsmillii* over tall sparse shrubland of *Acacia hamersleyensis*, *Acacia maitlandii* and *Hakea chordophylla* over low isolated shrubs of *Seringia elliptica* on red clay loam on hillcrests and summits. ***Triodia* low hummock grassland (HS Ts(±TragTw)AbHallAadsSeahSeglErfs):** Low hummock grassland of *Triodia vanleeuwenii* ± *Triodia angusta*, and *Triodia wiseana* with mid to tall sparse shrubland to scattered shrubs of *Acacia bivenosa*, *Hakea lorea* subsp. *lorea*, and *Acacia adsurgens* over low scattered shrubs of *Senna artemisioides* subsp. *helmsii*, *Senna glutinosa* subsp. ×*luerssenii*, and *Eremophila fraseri* subsp. *fraseri* on brown silty loam on undulating low hills. ***Triodia* low hummock grassland (HS TvTpEllCddSeelAspCaca HcAmaAhSeggMivErmuErla):** Low hummock grassland of *Triodia vanleeuwenii* and *Triodia pungens* with low sparse woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia deserticola* subsp. *deserticola* over with

Characteristic	Details
	low sparse shrubland of *Seringia elliptica*, *Acacia spondylophylla* and *Calytrix carinata* with tall isolated shrubs of *Hakea chordophylla*, *Acacia maitlandii* and *Acacia hamersleyensis* over mid isolated *Senna glutinosa* subsp. *glutinosa* and *Mirbelia viminalis* low isolated tussock grasses of *Eriachne mucronata* and *Eriachne lanata* on red clay loam on hill crests, hill slopes and ridgelines/ tops. ***Triodia* low hummock grassland (HS TvTpHcAiHllAmaAbSeggAsp EllApr):** Low hummock grassland of *Triodia vanleeuwenii* and *Triodia pungens* with tall isolated shrubs of *Hakea chordophylla*, *Acacia inaequilatera* and *Hakea lorea* subsp. *lorea* over mid isolated shrubs of *Acacia maitlandii*, *Acacia bivenosa* and *Senna glutinosa* subsp. *glutinosa* over low isolated shrubs of *Acacia spondylophylla* with low isolated trees of *Eucalyptus leucophloia* subsp. *leucophloia* and *Acacia pruinocarpa* on red silty clay loam on hillcrests/ upper hillslopes and undulating low hills. ***Triodia* low hummock grassland (HS TwAlnAbAadsEgEllCh):** Low hummock grassland of *Triodia wiseana* with mid to tall sparse shrubland to scattered shrubs of *Acacia inaequilatera*, *Acacia bivenosa*, and *Acacia adsurgens* with low scattered trees of *Eucalyptus gamophylla*, *Eucalyptus leucophloia* subsp. *leucophloia*, and *Corymbia hamersleyana* on brown silty loam on undulating hills and lower slopes. ***Triodia* mid hummock grassland (HS Tw AlErfrSeglSegg Ptro):** Mid hummock grassland of *Triodia wiseana* with tall isolated shrubs of *Acacia inaequilatera* over mid isolated shrubs of *Eremophila fraseri*, *Senna glutinosa* subsp. ×*luerssenii* and *Senna glutinosa* subsp. *glutinosa* over low isolated shrubs of *Ptilotus rotundifolius* mid to tall scattered shrubs on red clay loam on low hills, slopes and undulating hills. ***Triodia* mid open hummock grassland (FP Tp EgAbAteAsiAancAaCc):** Mid open hummock grassland of *Triodia pungens* with low open *Eucalyptus gamophylla* woodland over mid open shrubland of *Acacia bivenosa* and *Acacia tetragonophylla* with tall isolated shrubs of *Acacia sibirica*, *Acacia ancistrocarpa* and *Acacia aptaneura* over mid sparse tussock grassland of *Cenchrus ciliaris* on red sandy clay loam on floodplains. ***Triodia* low hummock grassland (GO TpDopAmAnlAhPl CfErmu):** Mid open hummock grassland of *Triodia pungens* with mid sparse shrubland of *Dodonaea pachyneura*, *Acacia monticola* and *Androcalva luteiflora* with tall sparse shrubland of *Acacia hamersleyensis* and *Petalostylis labicheoides* with low sparse woodland of *Corymbia ferriticola* over low sparse tussock grassland of *Eriachne mucronata* on red sandy clay loam cliffs, upper slopes, gorges and gullies. ***Triodia* low hummock grassland (HS TwTbrAbAlErfsAsp):** Mid open hummock grassland of *Triodia wiseana* and *Triodia brizoides* with mid to tall open shrubland of *Acacia bivenosa*, *Acacia inaequilatera* and *Eremophila fraseri* subsp. *fraseri* over low scattered shrubs of *Acacia spondylophylla* on red silty loam on hillslopes, hillcrest/ upper hillslopes and undulating low hills. ***Triodia* low hummock grassland (SP TwTpAiAadsAancAsiApr Segg):** Mid open hummock grassland of *Triodia wiseana* and *Triodia pungens* with tall sparse shrubs of *Acacia inaequilatera*, *Acacia adsurgens* and *Acacia ancistrocarpa* with isolated low trees of *Acacia sibirica* and *Acacia pruinocarpa* over mid isolated shrubs of *Senna glutinosa* subsp. *glutinosa* on red clay loam on stonyplains, floodplains and minor drainage lines. ***Triodia* open hummock grassland (FP TscTpExAaAprAteAssGrwh):** Open Hummock Grassland of *Triodia schinzii* and *Triodia pungens* with Low Open Woodland of *Eucalyptus xerothermica*, *Acacia aptaneura* and *Acacia pruinocarpa* over Scattered Shrubs of *Acacia tetragonophylla*, *Acacia sclerosperma* subsp. *sclerosperma* and *Grevillea wickhamii* subsp. *hispidula* on red brown clay loam on floodplains. ***Triodia* open hummock grassland (HS TsTpTbAaAprAwAteEreErll):** Open Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *Triodia pungens* and *Triodia basedowii* with Low Open Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia wanyu* and Open Shrubland of *Acacia tetragonophylla*, *Eremophila exilifolia* and *Eremophila latrobei* subsp. *latrobei* on red sandy loam on hill slopes. ***Triodia* open hummock grassland (SP TlAancApaApAprCh):** Open Hummock Grassland of *Triodia lanigera* with Open Shrubland of *Acacia ancistrocarpa* and *Acacia pachyacra* and Scattered Low Trees of *Acacia paraneura*, *Acacia pruinocarpa* and *Corymbia hamersleyana* on red sandy loam on stony plains. Vegetation mapping is available in Appendix D.
Fauna habitats	Biologic (2017, 2020, 2022b and 2022c) identified the following nine vertebrate fauna habitats within the application area: **Hillcrest / Hill slope:** These fauna habitats tend to be more open and structurally simple due to their recent depositional history than other fauna habitats, and are dominated by varying species of spinifex. A common feature of these habitats is a rocky substrate, often with exposed bedrock, and

Characteristic	Details
	skeletal red soils. These are usually dominated by *Eucalyptus* woodlands, *Acacia* and *Grevillea* scrublands and *Triodia* spp. low hummock grasslands. **Breakaway / Cliff:** Breakaways/Cliffs are rugged, incised rocky hills and ranges. They tend to contain large rock fragments and more rock outcropping than other fauna habitats. Significant habitat features such as caves were sometimes encountered in this habitat type. Vegetation can be dense and complex in areas of soil deposition or sparse and simple where erosion has occurred. **Gorge / Gully:** Gorges and gullies are rugged, steep-sided valleys incised into the surrounding landscape. Gorges tend to be deeply incised, with vertical cliff faces, while gullies are more open (but not as open as Minor Drainage Lines). Caves and rock pools are most often encountered in this habitat type. Vegetation can be dense and complex in areas of soil deposition or sparse and simple where erosion has occurred. **Drainage Area / Floodplain:** Characterised by *Eucalyptus xerothermica* and *Corymbia hamersleyana* woodland over broad-leafed *Acacia* shrubland on sandy loam soils sometimes with exposed rocky areas. These can have high vegetation density, complexity and diversity, and because they tend to occur on accretional or depositional areas, often have deeper and richer soils than other fauna habitats. Grasses tend to be dominated by tussock grasses rather than spinifex, or the weed Buffel Grass **Cenchrus ciliaris*. **Minor Drainage Line:** Located within the minor gullies and depressions, generally through the Crest/Slope habitat. Consists primarily of *Acacia* low shrubland. The understorey generally lacks density and often consists solely of sparse tussock grassland, often including the weed Buffel Grass **Cenchrus ciliaris* where it has been introduced. The substrate can be sandy in places but generally consists of a skeletal loam gravel or stone. **Major Drainage Line:** Major Drainage Lines comprise mature River Red Gums (*Eucalyptus camaldulensis*), Coolibahs and stands of Silver Cadjeput (*Melaleuca argentea*) over river pools. Open, sandy or gravelly riverbeds characterise this habitat type. In ungrazed areas, the vegetation adjacent to the main channel or channels is denser, taller and more diverse than adjacent terrain and can include reedbeds around pools. **Mulga Woodland:** This habitat includes woodlands and other ecosystems in which Mulga (*Acacia aneura*) is dominant, either as the principal Acacia species or mixed with others. It consists of disintegrating groves on stony soils with spinifex. This habitat type is grouped with other habitat occurring on the plains; however it is noted that small groves of Mulga occur on ridgelines. **Sand Plain:** Sand Plain habitat is characterised by relatively deep sandy soils supporting dense spinifex grasslands and sparse shrubs. This habitat transitions into patches of Mulga in places. This habitat often occurs as terraces along Major Drainage Lines. **Stony Plain:** These are erosional surfaces of gently undulating plains, ridges and associated footslopes. Mainly support hard spinifex (and occasionally soft spinifex) with a mantle of gravel and pebbles. Habitat mapping is available in Appendix D.
Vegetation condition	The vegetation survey (Biologic, 2021a, 2021b, 2022a; Onshore Environmental, 2014) and aerial imagery indicate the vegetation within the proposed clearing area is in Excellent to Completely Degraded (Trudgen, 1991) condition. The full Trudgen (1991) condition rating scale is provided in Appendix C.
Climate	The application area is located in an arid zone with an annual rainfall average of approximately 323.8 millimetres (BoM, 2023).
Soil description	The soil within the application area is mapped as soil units BE6, Fa13, Fa14, and Oc64 (BHP, 2023a; GIS Database). These soil units are described by Northcote et al, (1960-68) as: **BE6:** Extensive flat and gently sloping plains, which sometimes have a surface cover of gravels and on which redbrown hardpan frequently outcrops: chief soils are shallow earthy loams. **Fa13:** Ranges of banded jaspilite and chert along with shales, dolomites, and iron ore formations; some areas of ferruginous duricrust as well as occasional narrow winding valley plains and steeply dissected pediments. This unit is largely associated with the Hamersley and Ophthalmia Ranges. The soils are frequently stony and shallow and there are extensive areas without soil cover: chief soils are shallow stony earthy loams. **Fa14:** Steep hills and steeply dissected pediments on areas of banded jaspilite and chert along with shales, dolomite, and iron ore formations; some narrow winding valley plains: chief soils are shallow stony earthy loams. **Oc64:** Low stony hills and dissected pediments on granite with occasional basic dykes: chief soils are hard, alkaline red soils having shallow stony A horizons.

Characteristic	Details
Land systems and land degradation risk	The application area is located within the Boolgeeda, Elimunna, McKay, Newman, River, and Rocklea land systems (DPIRD, 2023). These land systems are described by van Vreeswyk et al. (2004) as: **Boolgeda land system:** Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands. Vegetation is generally not prone to degradation and the system is not susceptible to erosion. **Elimunna land system:** Stony plains on basalt supporting sparse acacia and cassia shrublands and patchy tussock grasslands. Gilgai plains and drainage floors support tussock grass vegetation attractive to grazing animals and prone to degradation if grazing pressure is excessive. Some drainage floors are slightly susceptible to erosion but most of the system is inherently resistant. **McKay land system:** Hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands. Some areas are poorly accessible and the system is not prone to degradation or soil erosion. **Newman land system:** Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. The system contains iron ore deposits which are currently being mined and deposits which are likely to be mined in the future. Spinifex is the dominant vegetation and the system is burnt fairly frequently. **River land system:** Active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands. The system is largely stabilised by buffel and spinifex and accelerated erosion is uncommon. However, susceptibility to erosion is high or very high if vegetative cover is removed. **Rocklea land system:** Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. The system is subject to fairly regular burning. The system has very low erosion hazard.
Waterbodies	The desktop assessment and aerial imagery indicated that several minor, non-perennial watercourses including Whaleback Creek transect the area proposed to be cleared (BHP, 2023a; GIS Database).
Hydrogeography	The application area is located within the Pilbara Groundwater Area, which is legislated by the *RIWI Act 1914* (GIS Database). The mapped groundwater salinity is 500-1,000 milligrams per litre total dissolved solids which is described as marginal (GIS Database). The application area is located within the Newman Water Reserve, which is legislated by the *CAWS Act 1947* (GIS Database). The majority of the Newman Water Reserve (approximately 97 per cent) is listed as a Priority 1 Public Drinking Water Source Area (PDWSA) (GIS Database). The rest of the reserve (approximately 2 per cent) is listed as a Priority 3 PDWSA (GIS Database).
Flora	There were no Threatened flora species recorded within the application area (BHP, 2023a; GIS Database). There were five Priority flora species recorded within the application area (BHP, 2023a). Mapping with the location of the Priority flora within the application area is available in Appendix D.
Ecological communities	None of the vegetation associations or landforms identified within the boundaries of the application area are associated with a TEC or PEC (Biologic, 2021a; 2021b; 2022a; Onshore Environmental, 2014).
Fauna	There were 10 fauna species of conservation significance recorded within the application area (BHP, 2023a). Mapping with the location of the conservation significant fauna within the application area is available in Appendix D.

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The vegetation within the application area is represented in the same condition within the broader region and is not considered to be of outstanding biodiversity in the	May be at variance (as per CPS 5617/5)	No

Assessment against the clearing principles	Variance level	Is further consideration required?
bioregion (BHP, 2023a). None of the vegetation associations recorded within the application area were indicative of any known or mapped Priority Ecological Communities or Threatened Ecological Communities (BHP, 2023a). The Priority flora recorded within the application area have been previously assessed are unlikely to be significantly impacted by the proposed amendment given that almost half of the approved clearing has already occurred. Twenty seven weed species have been recorded within the application area (BHP, 2023a). One of these species (**Tamarix aphylla*) is listed as a Declared Pest. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the continued implementation of a weed management condition.		
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The application area contains nine fauna habitats that extend beyond the boundaries of the application area and are common in the surrounding region (BHP, 2023a). The proposed amendment is unlikely to significantly impact conservation significant fauna present in the application area given the high mobility of the species and the lack of natural habitat in the application area.	May be at variance (as per CPS 5617/5/)	Yes (see section 3.2)
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: There are no records of Threatened flora occurring within the application area (BHP, 2023a; GIS Database). In previous decision reports (CPS 5617/1 and CPS 5617/2) *Lepidium catapycnon* was identified as a Threatened flora species occurring within the application area. However, this species has been reclassified to a Priority 4 species, with potential impacts assessed in decision reports CPS 5617/3, 5617/4, and 5617/5.	Not likely to be at variance (as per CPS 5617/5)	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The desktop assessment shows the application area is intersected by a small portion of a mapped Threatened Ecological Community (TEC) buffer zone (GIS Database). However, the field surveys revealed that the vegetation types present in the application area do not correspond to any known or mapped TECs (BHP, 2023a).	Not likely to be at variance (as per CPS 5617/5)	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The application area falls within the Pilbara region of the Interim Biogeographic Regionalisation of Australia (GIS Database). Over 99 percent of the pre-European vegetation still exists in the Pilbara bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 18 and 82 (GIS Database). These vegetation associations have not been extensively cleared as over 99 per cent of the pre-European extent of these vegetation associations remain uncleared at both state and bioregional level (Government of Western Australia, 2019).	Not at variance (as per CPS 5617/5)	No
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest mapped conservation area (64 kilometres), the proposed clearing is unlikely to have an impact on the environmental values of any conservation areas (GIS Database).	Not likely to be at variance (as per CPS 5617/5)	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: There are numerous ephemeral watercourses within the application area (GIS Database). These drainage lines are widespread throughout the surrounding area (GIS Database). The most significant ephemeral watercourse that passes through the application area is Whaleback Creek (GIS Database). Fifteen out of the 45 vegetation types present in the application area grow in association with these drainage lines (see Appendix A). Any potential impacts to Whaleback Creek may be minimised by the implementation of a watercourse management condition.	At variance (as per CPS 5617/5)	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Some of the land systems where the application area is located are susceptible to erosion (see Appendix A). Noting the location of the application area, the proposed clearing is likely to have an appreciable impact on land degradation. Potential impacts from land degradation as a result of the proposed clearing may be minimised by the continued implementation of a staged clearing condition.	May be at variance (as per CPS 5617/5)	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: There are no permanent watercourses within the application area, however, there are several drainage lines that intersect the application area (GIS Database). The application area is located within Newman Water Reserve, listed as a P1 and P3 PDWSA (GIS Database). Some mining operations are 'compatible with conditions' in a P1 Public Drinking Water Source Area (DWER, 2023). The proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.	Not likely to be at variance (as per CPS 5617/5)	Yes (see section 3.2)
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: With an average annual rainfall of 323.8 millimetres and an average annual evaporation rate of 3,200-3,600 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2023). Whilst large rainfall events may result in the flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.	Not likely to be at variance (as per CPS 5617/5)	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.

Condition	Description
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Biological survey mapping

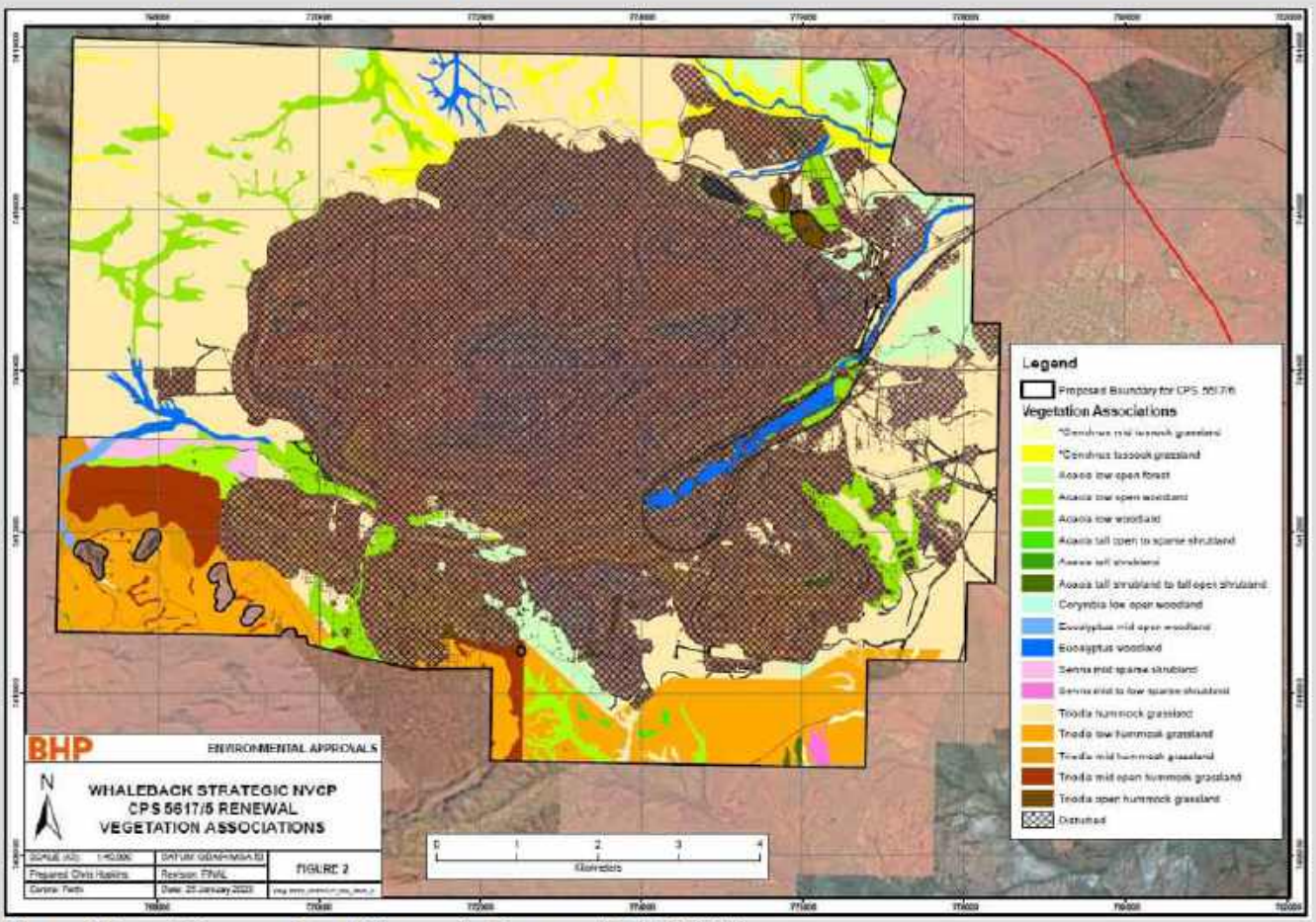

Figure 1. Vegetation mapping of the application area (BHP, 2023a)

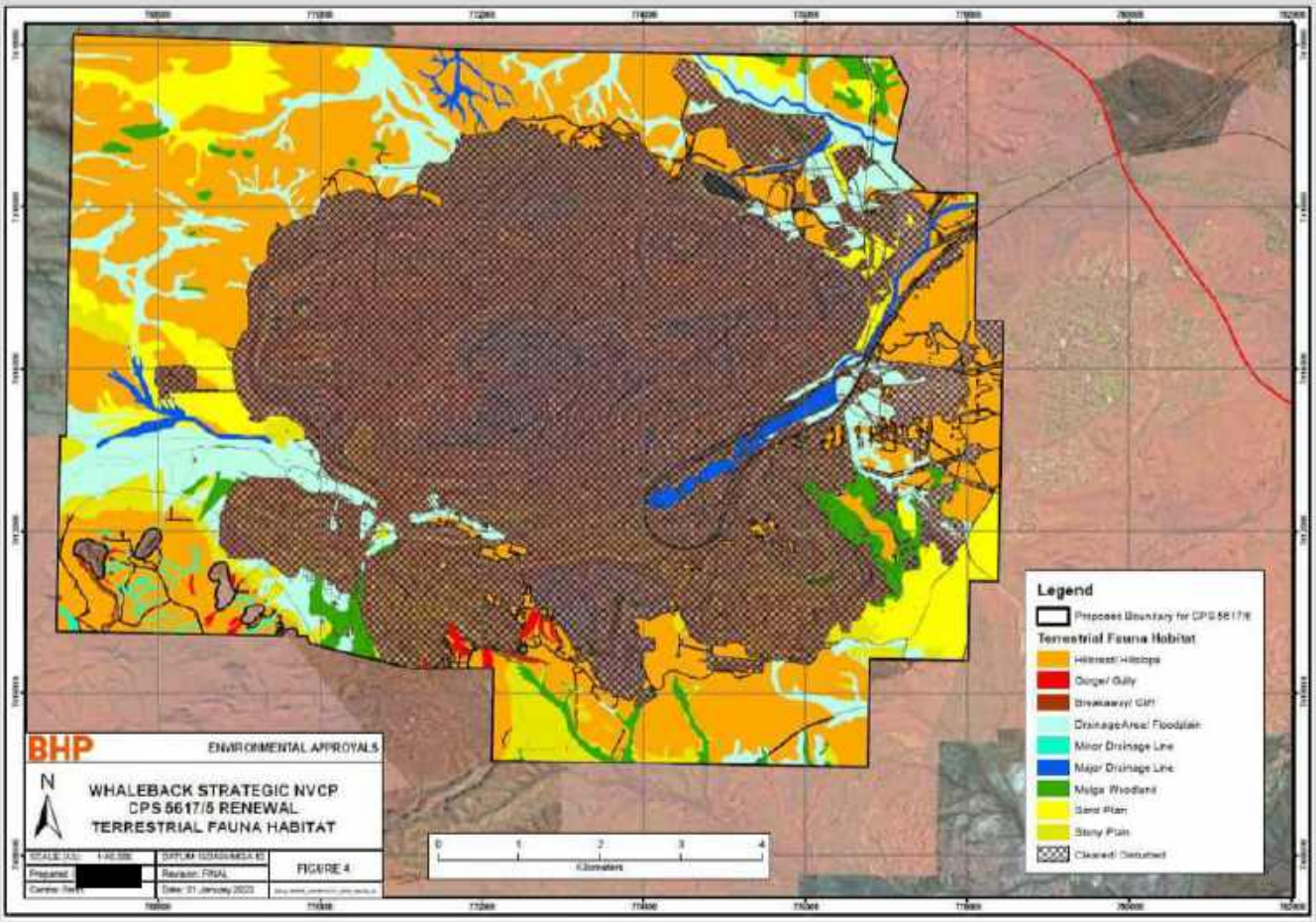

Figure 2. Fauna habitat mapping of the application area (BHP, 2023a)

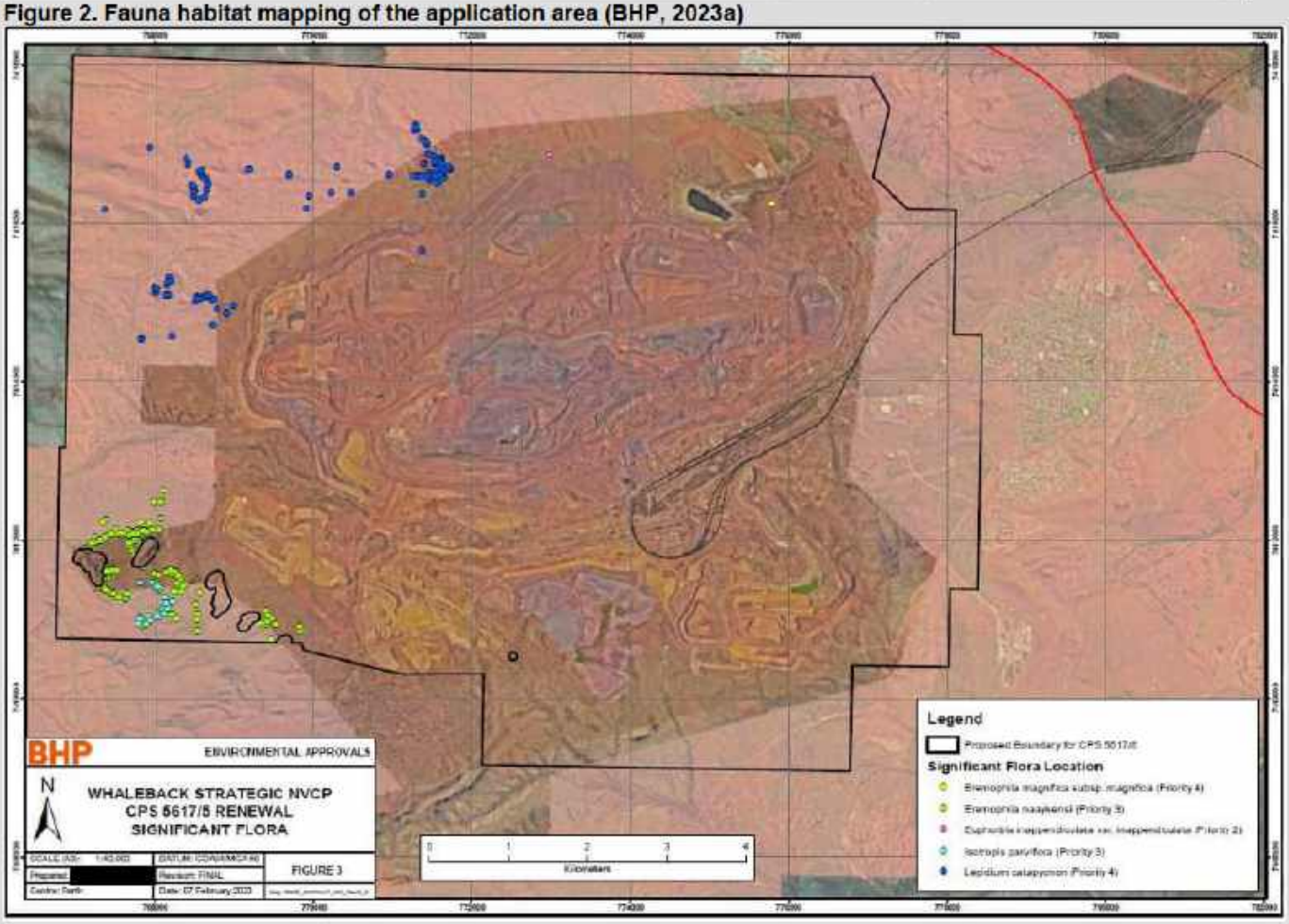

Figure 3. Location of Priority flora in the application area (BHP, 2023a)

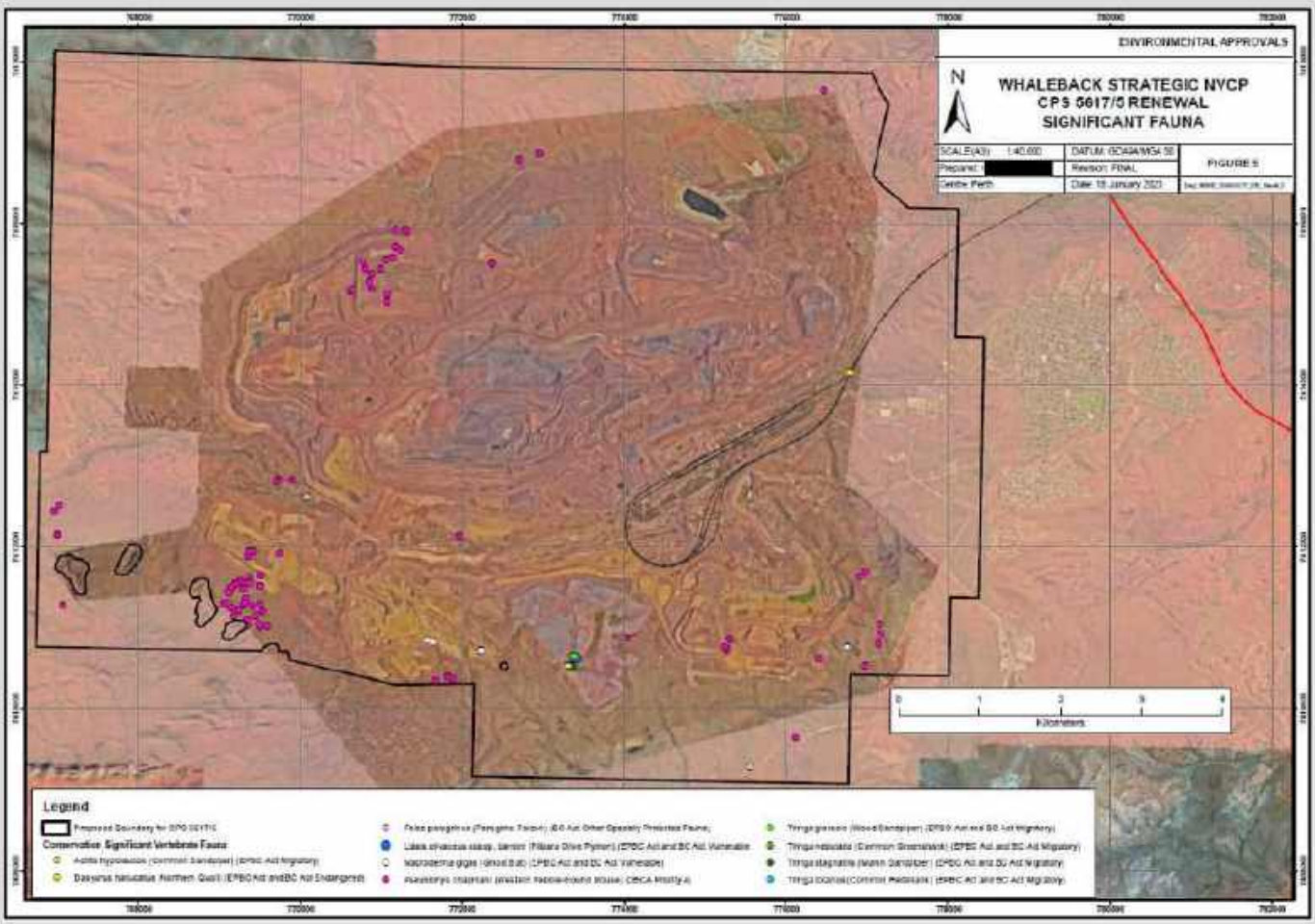

Figure 4. Location of conservation significant fauna in the application area (BHP, 2023a)

Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- Aboriginal Heritage Places (DPLH-001)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.2. References

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Environmental Protection Authority (EPA) (2020) Technical Guidance – Terrestrial Fauna Surveys. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf
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4. Glossary

Acronyms:

BC Act	*Biodiversity Conservation Act 2016*, Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	*Environmental Protection Act 1986*, Western Australia

EPA	Environmental Protection Authority, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	*Rights in Water and Irrigation Act 1914*, Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**
Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**
Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU **Vulnerable species**
Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX **Extinct species**
Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW **Extinct in the wild species**
Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI **Migratory species**

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD **Species of special conservation interest (conservation dependent fauna)**

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS **Other specially protected species**

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P **Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 **Priority One - Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be

included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 **Priority Four - Rare, Near Threatened and other species in need of monitoring**
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Attachment 5B: Other Approvals: Ministerial Statement 963 (Orebodies 29, 30 and 35 Below Water Table)

Published on: 18 March 2014 Statement No: 963

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE *ENVIRONMENTAL PROTECTION ACT 1986)*

OREBODY 29/30/35 MINING BELOW WATERTABLE

Proposal: The proposal is to extend the mining of the existing approved above watertable Orebody 29, 30, and 35 mines located approximately 7 km west-south-west of Newman, in the Shire of East Pilbara, to below the watertable and discharge any excess dewatering from these three orebodies into Ophthalmia Dam.

Proponent: BHP Billiton Iron Ore Pty Ltd
Australian Company Number 008 700 981

Proponent Address: Level 1
125 St Georges Terrace
PERTH WA 6000

Assessment Number: 1982

Report of the Environmental Protection Authority Number: 1501

This Statement authorises the implementation of the proposal described and documented in Columns 1 and 2 of Table 2 of Schedule 1. The implementation of the proposal is subject to the following implementation conditions and procedures and Schedule 2 details definitions of terms and phrases used in the implementation conditions and procedures.

1 Proposal Implementation

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Column 3 of Table 2 in Schedule 1, unless amendments to the proposal and the authorised extent of the proposal has been approved under the EP Act.

2 Contact Details

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within 28 days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after the expiration of five (5) years from the date of this Statement, and any commencement, within this five (5) year period, must be substantial.

3-2 Any commencement of implementation of the proposal, within five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the CEO.

4-2 The proponent shall submit to the CEO the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance assessment report required by condition 4-6, or prior to implementation, whichever is sooner.

The compliance assessment plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of compliance assessment reports; and

(6) public availability of compliance assessment reports.

4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the CEO.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that potential non-compliance being known.

4-6 The proponent shall submit to the CEO the first compliance assessment report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

(1) be endorsed by the proponent's Managing Director or a person delegated to sign on the Managing Director's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved compliance assessment plan; and

(5) indicate any proposed changes to the compliance assessment plan required by condition 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

(1) a secret formula or process; or

(2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make this data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

6 Rehabilitation and Closure

6-1 The proponent shall ensure that the mines are closed, decommissioned and rehabilitated in an ecologically sustainable manner, consistent with agreed post-mining outcomes and land uses for a Priority 1 Public Drinking Water Source Area, and without unacceptable liability to the State of Western Australia.

6-2 The proponent shall prepare a Mine Closure Plan for the proposal.

6-3 The Mine Closure Plan required by condition 6-2 shall:

(1) when implemented, manage the implementation of the proposal to meet the requirements of condition 6-1;

(2) be prepared in accordance with the *Guidelines for Preparing Mine Closure Plans, June 2011* (Department of Mines and Petroleum and Environmental Protection Authority) or its revisions; and

(3) be to the requirements of the CEO on advice of the Department of Mines and Petroleum and the Department of Water.

6-4 Within 12 months of commissioning of the first below watertable mine pit or as otherwise agreed by the CEO the proponent shall implement the approved Mine Closure Plan and continue implementation until otherwise agreed by the CEO.

6-5 Revisions to the Mine Closure Plan may be approved by the CEO on the advice of the Department of Mines and Petroleum and the Department of Water.

6-6 The proponent shall implement revisions of the Mine Closure Plan required by condition 6-5.

[Signed 17 March 2014]

Albert Jacob MLA
MINISTER FOR ENVIRONMENT; HERITAGE

Schedule 1

Table 1: Summary of the Proposal

Proposal Title	Orebody 29/30/35 Mining Below Watertable
Short Description	The proposal is to extend the mining of the existing approved above watertable Orebody 29, 30, and 35 mines located approximately 7 km west-south-west of Newman, in the Shire of East Pilbara, to below the watertable and discharge any excess dewatering from these three orebodies into Ophthalmia Dam. Existing approved facilities at Mt Whaleback will be used to support the proposal, including processing facilities, machinery fleet, support services and facilities and overburden storage areas for waste rock.

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	**Location**	**Authorised Extent**
Dewatering	Figure 2	Groundwater abstraction up to 8 GL/a.
Dewater disposal	Figure 2	Discharge into Ophthalmia Dam up to 8 GL/a.

Table 3: Abbreviations

Abbreviation	Term
GL/a	Gigalitres per annum
km	kilometres

Figures (attached)

Figure 1 Regional location

Figure 2 Proposal development envelope

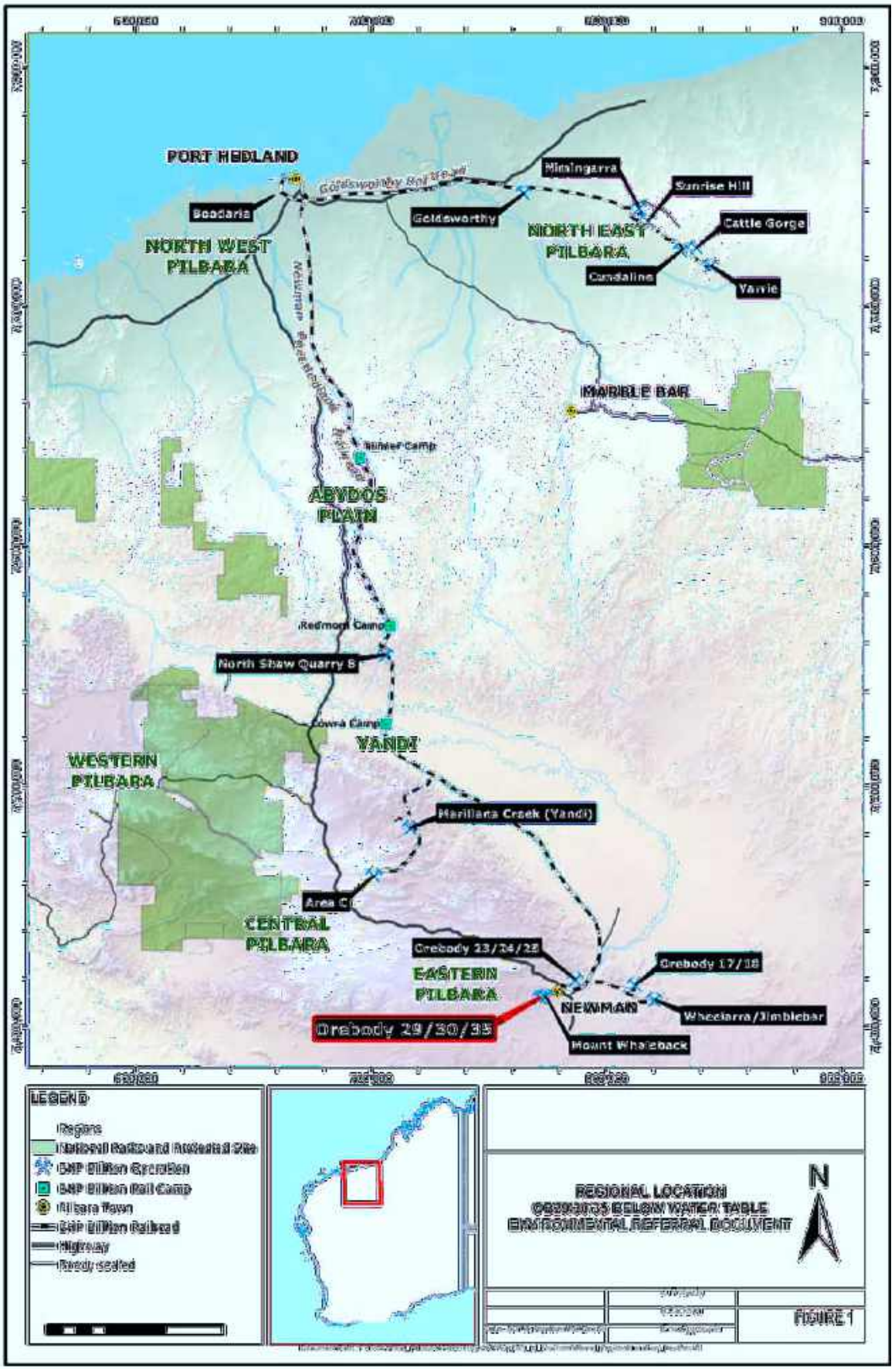

Figure 1: Regional location

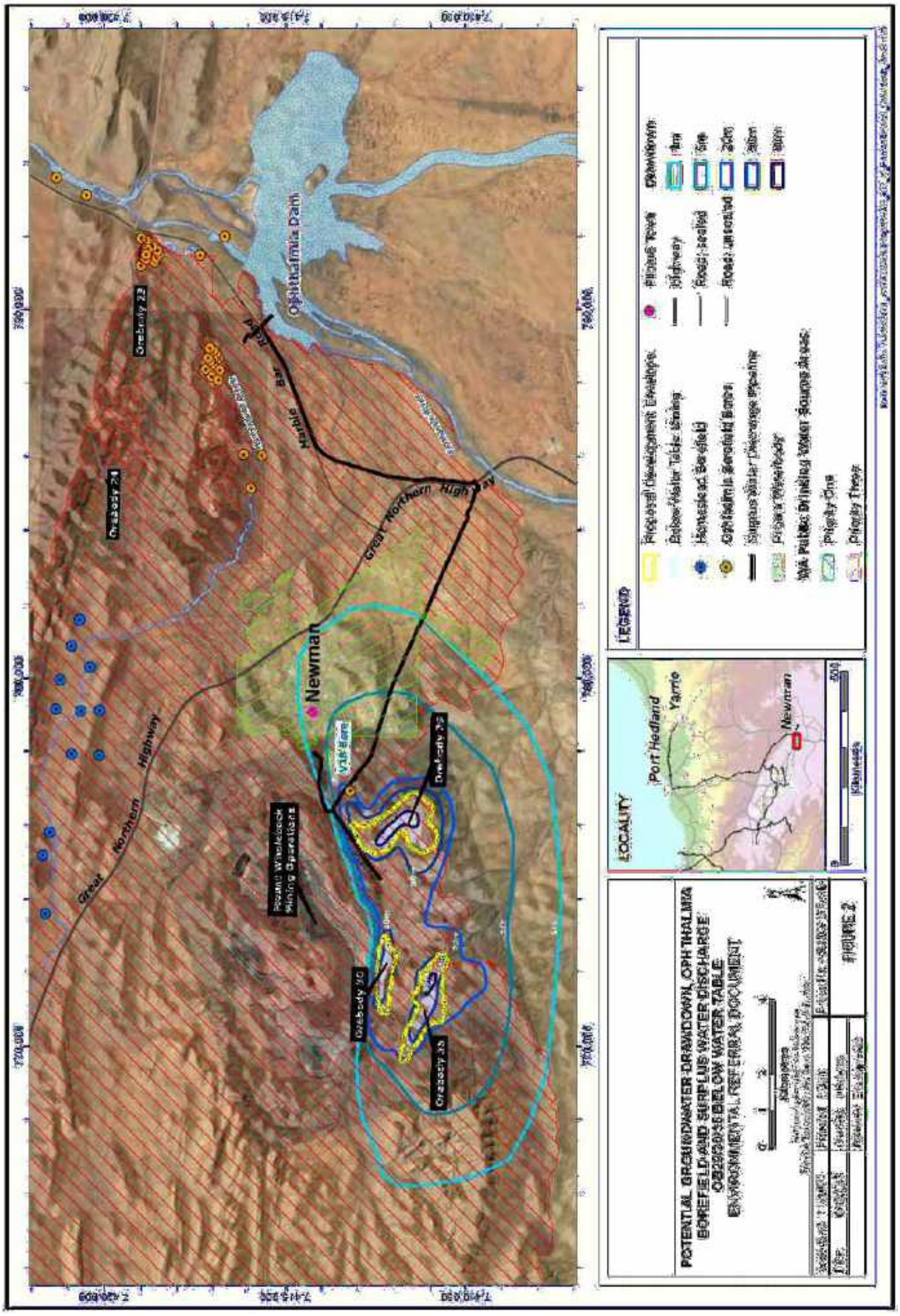

Figure 2: Proposal development envelope

Schedule 2

Term or Phrase	Definition
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*

Schedule 3

OREBODY 29/30/35 MINING BELOW WATERTABLE

Coordinates that define the Development Envelopes

Coordinates defining the Development Envelopes as shown in Figure 2 of the Ministerial Statement are held by the Office of the EPA dated 30 August 2013.

Notes

The following notes are provided for information and do not form a part of the implementation conditions of the Statement:

- The proponent for the time being nominated by the Minister for Environment under section 38(6) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal unless and until that nomination has been revoked and another person is nominated.
- If the person nominated by the Minister, ceases to have responsibility for the proposal, that person is required to provide written notice to the Environmental Protection Authority of its intention to relinquish responsibility for the proposal and the name of the person to whom responsibility for the proposal will pass or has passed. The Minister for Environment may revoke a nomination made under section 38(6) of the *Environmental Protection Act 1986* and nominate another person.
- To initiate a change of proponent, the nominated proponent and proposed proponent are required to complete and submit *Post Assessment Form 1 – Application to Change Nominated Proponent*.
- The General Manager of the Office of the Environmental Protection Authority was the Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986* at the time the Statement was signed by the Minister for Environment.

[Minister's letterhead]

ATTACHMENT 1 TO STATEMENT 963

NOTICE OF CHANGES TO IMPLEMENTATION CONDITIONS

(section 46C of the *Environmental Protection Act 1986*)

OREBODY 29/30/35 MINING BELOW WATERTABLE

Pursuant to section 46C(1)(a) of the *Environmental Protection Act 1986,* the implementation conditions applying to the above proposal are changed in accordance with this Notice. I consider these changes to be of a minor nature and desirable in order to standardise the implementation conditions applying to different proposals.

[Signed 11 November 2015]

[redacted]
MINISTER FOR ENVIRONMENT; HERITAGE

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1. Changes to Condition 4

Condition 4 is deleted, and replaced with:

4 Compliance Reporting

4-1 The proponent shall prepare, submit and maintain a Compliance Assessment Plan to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation, whichever is sooner.

4-2 The Compliance Assessment Plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of Compliance Assessment Reports; and

(6) public availability of Compliance Assessment Reports.

4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.

4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

(1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved Compliance Assessment Plan; and

(5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

Attachment 5C: Other Approvals: Whaleback Environmental Licence L4503/1975/14

Licence

Licence number	L4503/1975/14
Licence holder	BHP Iron Ore Pty Ltd
ACN	008 700 981
Registered business address	Level 1, City Square Brookfield Place 125 - 137 St Georges Terrace PERTH WA 6000
DWER file number	DWERVT15779
Duration	17/11/2013 to 16/11/2032
Date of issue	17 November 2013
Date of amendment	7 April 2025
Premises details	Mt Whaleback/Orebody 29/30/35 and Western Ridge NEWMAN WA 6753 Legal description – Tenements E52/2009-I, ML244SA, ML244SA, ML266SA, G52/019-G52/256, G52/258-G52/274, G52/276, G52/277, G52/279, L47/92, L52/99, L52/185, L52/199, K858923 and N088235 As defined by the premises map in Schedule 1 and defined by the coordinates in Schedule 2

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	Assessed production capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	80,000,000 tonnes per annual period
Category 6: Mine dewatering	12,300,000 tonnes per annual period
Category 54: Sewage facility	183.2 m^3 per day
Category 61: Liquid waste facility	9,348,600 tonnes per annual period
Category 64: Class II or III putrescible landfill site	14,500 tonnes per annual period
Category 73: Bulk storage of chemicals, etc.	13,000 m^3

This amended licence is granted to the licence holder, subject to the attached conditions, on 07 April 2025 by:

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

Licence history

Reference number	Date	Summary of changes
L4503/1975/5	17/11/2000	First licence noted in the Industry Licensing System
L4503/1975/6	17/11/2001	Licence reissue
L4503/1975/7	17/11/2002	Licence reissue
L4503/1975/8	17/11/2003	Licence reissue
L4503/1975/9	17/11/2004	Licence reissue
L4503/1975/10	17/11/2005	Licence reissue
L4503/1975/11	17/11/2006	Licence reissue
W4255/2006/1	8/03/2007	Works approval for the construction of processing infrastructure (car dumper, crushing and screening plant and ore stockyard)
L4503/1975/12	17/11/2007	Licence reissue
L4503/1975/13	17/11/2010	Licence reissue
W4972/2011/1	4/08/2011	Works approval for category 85B
W5017/2011/1	6/10/2011	Works approval for the installation of a Biomax wastewater treatment plant (STP) and hydrocarbon storage area at the expanded warehouse
W5024/2011/1	6/10/2011	Works approval for the installation of a Biomax STP at the new drug and alcohol testing facility at the Newman gatehouse
L4503/1975/13	22/12/2011	Licence amendment to increase capacity of category 5 to 58Mtpa, change premises boundary and include category 61 to the licence
L4503/1975/13	16/02/2012	Licence amendment to include category 85B constructed under W4972/2011/1
W5242/2012/1	6/09/2012	Works approval to construct a new movable (mobile) crushing and screening plant, with a design capacity of 5Mtpa
L4503/1975/13	7/11/2012	Licence amendment to incorporate three additional water treatment cells to the existing Newman temporary water treatment plant
L4503/1975/14	7/11/2013	Licence reissue
L4503/1975/14	9/10/2014	Licence amendment – additional discharge points and REFIRE format
L4503/1975/14	11/06/2015	Licence amendment – two inert landfills, oily water separator treated wastewater evaporation pond and contingency discharge point, extension of the hydrodynamic trial timeframe and disposal of used conveyor belts
L4503/1975/14	28/04/2016	Licence amendment to extend the duration of the hydrodynamic trial.
L4503/1975/14	30/06/2016	Licence amendment to include category 6, increase category 73 approved design capacity, contingency discharge of RO reject water to Ophthalmia Dam, increase in RO reject water discharge to ARD facility, remove WWTPs less than 20 m^3 per day capacity and updates to monitoring requirements.
L4503/1975/14	1/09/2016	Licence amendment to update the premises address and include a new asbestos disposal location.
L4503/1975/14	27/08/2020	Licence amalgamation for Amendment Notices 1, 2 and 3.

L4503/1975/14	16/01/2023	DWER initiated risk-based licence review of dust. Licence also amended to increase landfill capacity and for administrative amendments to conditions in the revised licence format.
L4503/1975/14	10/04/2024	Licence amendment: • For authorisation to install and operate a 2mtpa mobile screening plant for a maximum throughput of 300 ktpa and operational duration (non-consecutive) of 8-weeks per annum; • For administrative aspects to: o Updates to condition 2 to provide clarity on the location of infrastructure; o Updates to condition 13 to provide clarity on the reportable event triggers and when multiple triggers are considered the one event; o Changing reference to 'Real Time Module' to 'ES642'; and o Update to condition 20 to ensure that reporting in accordance with Schedule 5 is undertaken with immediate effect. • Updates to infrastructure tables where relevant; • Updating of the format and appearance of the licence; and • Correcting clerical mistakes and unintentional errors.
L4503/1975/14	07/04/2025	Licence amendment: • Increase to assessed throughput of category 6 from 8,000,000 tpa to 12,300,000 tpa; • Updates to dust and groundwater monitor network including improvements to existing monitoring equipment and re-location / addition of new monitors; • Updates to groundwater monitoring including addition of new analytes and monitoring bores along Powerstation Creek • Administrative updates to wording to reflect existing operations at the ARD Facility; and • Improvement condition associated with ongoing management of the ARD Facility.

Interpretation

In this licence:

(a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this licence:

(i) if dated, refers to that particular version; and

(ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This licence requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this licence.

Licence conditions

The licence holder must ensure that the following conditions are complied with:

Throughput limits

1. The licence holder must not crush, screen or otherwise process more than 80,000,000 tonnes of iron ore per annual period.

Infrastructure and equipment

2. The licence holder must ensure that the premises infrastructure and equipment listed in Table 15 and Table 16 of Schedule 4, and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 15 and Table 16 of Schedule 4.

3. The licence holder must accurately measure and achieve a rate of 90% or more for the:

   (a) Average monthly availability of all:

      (i) water sprays on stackers and reclaimer;

      (ii) transfer station (OHP5) and conveyor dust suppression sprays; and

      (iii) bulk ore conditioning (BOC) sprays, and

   (b) Average monthly performance (time in auto mode) of all stockyard water cannons.

4. The licence holder must maintain a dust control equipment inventory which includes an itemised list for all dust control equipment used at the premises and includes but is not limited to the infrastructure and equipment specified in Table 15 of Schedule 4.

5. The licence holder must not remove any dust control equipment from the dust control equipment inventory, without replacing that equipment with equipment that provides the same or greater level of dust mitigation, unless approved by the CEO in writing.

Further works

6. The licence holder must design and construct/install new infrastructure/equipment in accordance with the requirements specified in Table 1 and by the required completion date specified in Table 1.

Table 1: Dust control and monitoring infrastructure/equipment to be constructed/ installed

No.	Infrastructure/ Equipment	Design and construction/installation requirements	Required completion date
1	OHP2 and OHP3 truck unloading hoppers	Install tipping hopper sprays designed to minimise dust generated during the transfer of ore from the tipped haul truck to the gyratory crusher hopper.	30 November 2025
2	OHP4 screenhouse	Replace screen top covers to improve the enclosure of the screens and minimise dust escape.	31 December 2025

3	OHP2 secondary crusher	Install a partial enclosure at the M101 shuttle transfer.	30 November 2025
4	VVVF Drive Upgrade Procurement	Structural and electrical design upgrades to following infrastructure are completed and procured (but not installed until the old equipment requires replacing): a) Key Water Pump VVF Drive (PW691A); b) Dust Collector VVF Fan Drives (DC507, DC508, DC415, DC455); and c) Dust Collector VVF Long Travel Drives (DC415, DC416 and DC455).	30 June 2025
5	Mobile screening Plant	a) Screening Plant with a capacity of 2 mtpa; b) Water sprays at the transfer point between the screen and stacker; c) Water sprays between stacker to the relevant conveyor; d) Stacker to be positioned immediately prior to an existing water spray (on the relevant conveyor to be loaded); and e) To be located within Fixed Plant West area and no closer than 3.5 km to the Town of Newman.	Prior to operation of plant
6	PM_{10} monitor	One beta attenuation monitor (BAM) installed at location labelled “WBAQRT032” as detailed in Figure 6 to measure PM_{10} in accordance with AS3580.9.11 and sited in accordance with AS3580.1.1, for the purpose of monitoring PM_{10} concentrations. The monitor must also include an ES642 sensor for the measurement of PM_{10} over 10 minute averaging periods.	30 June 2025
7	WBAQRT017 monitor	Dust monitor should be re-located to approximate location with coordinates 23.37132◦S and 119.69277◦E, and in accordance with the following requirements: a) Elevating the monitor in proposed location by approximately 3 metres; and b) Sited in accordance with AS3580.1.1, for the purpose of monitoring PM_{10} concentrations.	30 June 2025
8	WBAQRT027 monitor	Dust monitor should be re-located to the proposed location advised in “*Newman Improvement Plan: Network review”* and in accordance with the following requirements: a) Located approximately 700 m northeast of existing locations; and b) Sited in accordance with AS3580.1.1, for the purpose of monitoring PM_{10} concentrations.	30 June 2025

9	Replacement meteorological station for WBWS001 – Whaleback AWS	Meteorological station installed to measure temperature, rainfall, relative humidity, wind speed and wind direction in accordance with method AS/NZS 3580.14.	30 September 2025

7. The licence holder is authorised to install and undertake the works for the infrastructure and equipment specified in Table 2, to the requirements specified in that table.

Table 2: Authorised landfill infrastructure to be constructed

Infrastructure	Specifications (design and construction)
New inert landfill	(a) Inert waste disposal; (b) Hydrocarbon contaminated wastes will not be disposed of at the facility; and (c) Waste disposal in designated areas depicted in Figure 3 of Schedule 1.
New putrescible landfill	(a) Facility designed to prevent runoff leaving the facility; (b) Hydrocarbon contaminated wastes will not be disposed of at the facility; (c) Windrows implemented to direct clean stormwater around the landfill; and (d) Waste disposal in designed areas depicted in Figure 3 of Schedule 1.
Two new asbestos disposal areas	(a) Asbestos waste is managed in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004*, the *Code of Practice for the Management and Control of Asbestos in Workplaces, Code of Practice for the Safe Removal of Asbestos, Australian Standard 2601 – The Demolition of Structure*; (b) Disposed in accordance with Table 5 and Table 6 of this licence; and (c) Waste disposal in designated areas depicted in Figure 3 Figure 1of Schedule 1.

8. The licence holder must within 30 calendar days of the completion of construction and/or installation of all infrastructure or equipment listed in Table 1 and Table 2:
   (a) undertake an audit of compliance with the requirements in Table 1 and Table 2; and
   (b) prepare and submit to the CEO an Environmental Compliance Report on that compliance and certified by the licence holder.

9. The Environmental Compliance Report required by condition 8, must include as a minimum the following:
   (a) as constructed plans, detailed site plan and/or map for each item of infrastructure or component of infrastructure specified in conditions 6 and 7; and
   (b) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

10. For works undertaken in condition 7, the licence holder must not depart from the specifications detailed in Table 2, except where:
   (a) such departure is minor in nature and does not materially change or affect the infrastructure or equipment; or
   (b) such departure improves the functionality of the infrastructure or equipment and reduces the risk to public health, amenity and/or the environment; or
   (c) the licence holder determines to not construct, install and/or operate

infrastructure in accordance with condition 7, and

all other conditions in this licence are still satisfied.

11. The licence holder is required to undertake an investigation for the replacement of Newman Town Centre ambient air monitors (WBAQRT010 and WBAQRT023) to determine suitable alternative locations for these dust monitors. The investigation must;

(a) consider and align with the existing dust monitoring network to ensure the new location continues to meet the intent of ambient dust monitoring in Newman;

(b) include the installation of beta attenuation monitor (BAM) and nephelometer used for the collection of dust (PM_{10}) and wind measurements (speed and direction) for a period of not less than 12 months;

(c) ensure that monitoring undertaken at the alternate location meets the requirements AS/NZS 3580.1.1, AS/NZS 3580.9.11, and AS/NZS 3580.14[1];

(d) undertake 12 months of monitoring in conjunction with monitoring undertaken at existing dust monitor locations to confirm suitability, reliability and allow for data comparison;

(e) be completed by 31 January 2027**;** and

(f) include the submission of the report to the CEO within 60 days from the completion of the investigation outlining the findings of this investigation, specifically:

(i) the details of the proposed of alternative location, including GPS coordinates, monitors installed and siting;

(ii) the analysis undertaken to confirm the suitability of the proposed location (including with parts (a) and (d) of this condition), that includes an assessment of the suitability of the alternate locations for the detection of air quality impacts in Newman; and

(iii) air quality monitoring data (in the format specified in Schedule 6) for both the existing and alternate locations for the period of the investigation.

Note 1: AS/NZS 3580.14 wind speed (m/s) and wind direction (°) measurement height requirements do not apply to these monitors as they are 2.5 m (AS/NZS 3580.14 requires a height of 10 m)

Dust monitoring and management

12. The licence holder must undertake air quality monitoring for concentrations of the parameters listed in Table 3:

(a) at the corresponding monitoring location;

(b) in the corresponding unit;

(c) at no less than the corresponding frequency;

(d) for the corresponding averaging period; and

(e) using the corresponding method,

as set out in Table 3.

Table 3: Air quality monitoring (locations as specified in Schedule 7)

Monitoring Station ID and Name	Parameter (including units[1])	Averaging period	Frequency	Method
Ambient monitors, as depicted in Figure 6 of Schedule 1: • WBAQRT011 – Background 3 North PM10; • WBAQRT004 – Background 2 South; • WBAQRT010 – Town Centre PM10; and • WBAQRT006 – Town East.	Particles as PM_{10} ($\mu g/m^3$)	1 hour average	Continuous	AS/NZS 3580.9.11 AS/NZS 3580.1.1
		10 minute average	Continuous	AS/NZS 3580.1.1
	Wind speed (m/s)	10 minute average	Continuous	AS/NZS 3580.14[2]
	Wind direction (°)			
Ambient monitors, as depicted in Figure 6 of Schedule 1: • WBAQRT023 – Town Centre PM2.5; and • WBAQRT022 – Background 3 North PM2.5.	Particles as $PM_{2.5}$ ($\mu g/m^3$)	1 hour average	Continuous	AS/NZS 3580.9.12 AS/NZS 3580.1.1
Prescribed premises boundary and ambient monitors: • WBAQRT012 – Boundary 1 North; • WBAQRT013 – Boundary 2 West; • WBAQRT027 – Western Ridge Boundary; • WBAQRT031 – WB Gatehouse Boundary; and • WBAQRT032 – Background 4 West[3], as depicted in Figure 6 of Schedule 1; and The monitor installed in accordance with Table 1 of condition 6, from the date of first operation of that monitor.	Particles as PM_{10} ($\mu g/m^3$)	1 hour average	Continuous	AS/NZS 3580.1.1
		10 minute average		AS/NZS 3580.1.1
	Wind speed (m/s)	10 minute average		AS/NZS 3580.14[2]
	Wind direction (°)			

Prescribed premises boundary and ambient monitors as depicted in Figure 6 of Schedule 1: • WBAQRT017 – Channel 2 TLO; • WBAQRT018 – OHP4 Screenhouse; • WBAQRT019 – OHP2 Secondary Crusher; • WBAQRT020 – WB Stockyard West; • WBAQRT021 – WB CV751 CV752; • WBAQRT024 – WB Creek Channel 1; and • WBAQRT026 – W39 North, as depicted in Figure 6 of Schedule 1.	Particles as PM_{10} (µg/m^3)	10 minute average	Continuous	AS/NZS 3580.1.1
	Wind speed (m/s)	10 minute average	Continuous	AS/NZS 3580.14[2]
	Wind direction (°)	10 minute average	Continuous	
Meteorological station[3] The monitor installed on the premises in accordance with Table 1 of condition 6, from the date of first operation of that monitor.	Temperature	1 hour average	Continuous	AS/NZS 3580.14
	Rainfall (mm)			
	Relative Humidity (%)			
	Wind speed (m/s)	10 minute average		
	Wind direction (°)			
Stockyard weather sensor as depicted in Figure 6 of Schedule 1: • AT796 – AT796 Stockyard	Rainfall (mm)	1 hour average	Continuous	N/A
	Wind speed (m/s)	10 minute average		
	Wind direction (°)			

Note 1: All units are referenced to standard temperature and pressure (STP) dry.

Note 2: AS/NZS 3580.14 wind speed (m/s) and wind direction (°) measurement height requirements do not apply to these monitors as they are 2.5 m (AS/NZS 3580.14 requires a height of 10 m)

Note 3: Monitoring of this monitor only required following installation in accordance with condition 6.

Monitoring and management response

13. The licence holder must maintain a record of any instances where dust (as PM_{10} and/or $PM_{2.5}$) concentrations at the monitoring locations, listed in column 1 of Table 4, exceed the corresponding management trigger criteria and reportable event criteria specified in columns 2 and 3 of Table 4, when monitored in accordance with condition 12.

Table 4: Dust management trigger and reportable dust event criteria

No.	Column 1	Column 2	Column 3
	Monitoring station (Schedule 1)	**Management trigger criteria**	**Reportable event criteria**
1.	Boundary monitor: • WBAQRT031, as depicted in Figure 6 and Figure 7 of Schedule 1.	≥300 µg/m³ PM_{10} (rolling 1 hour average) and wind direction is averaged between 225° and 260° as measured at that monitor, for any three or more ten-minute periods during the rolling 1-hour period. Unless where, 'WBAQRT011 – Background 3 North PM10' monitoring station has recorded ≥100 µg/m³ PM_{10} (rolling 1 hour average) within 3 hours prior to the trigger event.	≥200 µg/m³ PM_{10} (rolling 24-hour average) when wind direction is averaged between wind arc 210° and 270° inclusive, for any 12 or more hours (cumulative) over the rolling 24-hour averaging period.
2.	Ambient monitors, as depicted in Figure 6 and Figure 7 of Schedule 1: • WBAQRT010 – Newman 1 Town Centre; • WBAQRT006 – Newman 3 Town East.	≥100 µg/m³ PM_{10} (rolling 1 hour average) when wind direction is between: a) 233° and 262° as measured at WBAQRT010 –Town Centre PM10; and/or b) 248° and 270° as measured at WBAQT006 –Town East, for three or more ten-minute periods during the hour. Unless where, 'WBAQRT011 – Background 3 North PM10' monitoring station has recorded ≥100 µg/m³ PM_{10} (rolling 1 hour average) within 3 hours prior to the trigger event. Unless where boundary monitors WBAQRT031 monitoring station has recorded ≤100 µg/m³ PM_{10} averaged over the previous hour.	≥70 µg/m³ PM_{10} (24-hour average measured from midnight to midnight)[1]
3.	Ambient monitor, as depicted in Figure 6 of Schedule 1: • WBAQRT023 –Town Centre PM2.5	N/A	≥25 µg/m³ $PM_{2.5}$ (24-hour average measured from midnight to midnight)

Note 1: The reportable event is triggered in the event one or both monitors (WBAQRT010 and WBAQRT006) meet the criteria. If both monitors meet the criteria in the same 24 hour period this is to be considered a single reportable event.

14. Immediately upon being notified of management trigger criteria specified in condition 13 being exceeded, the licence holder must:

(a) conduct a trigger investigation of:

(i) the fixed plant west area, as depicted in Figure 4, within 20 minutes of being alerted to the management trigger criteria exceedance; and

(ii) the broader premises, as depicted in Figure 1, within 60 minutes of being alerted to the management trigger criteria exceedance,

to identify any potential cause of the management trigger criteria exceedance; and

(b) upon identification of a potential on-site source/s during the trigger investigation conducted in accordance with part (a) of this condition, immediately control visible dust emissions by:

(i) ceasing mobile screening activities; and/or

(ii) applying additional dust suppression; and/or

(iii) activating dust extraction equipment, if not already operating and where applicable; and/or

(iv) ceasing or modifying iron ore handling activities for the purpose of eliminating that dust source, for example changing the feed source or adjusting handling rates and/or routes.

15. Where the management trigger criteria is exceeded from the same monitor on multiple occasions within a three-hour period, the source of the exceedance may be considered as one event, requiring one trigger investigation in that period.

16. In the event that the source dust cannot be identified within 60 minutes of the management trigger criteria specified in items 1 and 2 of Table 4 being exceeded, following investigation undertaken in accordance with condition 14, the licence holder must undertake the following management actions:

(a) ceasing or modifying the operation of front-end loading associated with dead ore stockpiles where OHP4 continues to operate during the same period;

(b) operate all available BOC sprays on all conveyors that are handling iron ore, as specified in Table 15 of Schedule 4, unless the moisture content of the iron ore being handled is known to be wet ore;

(c) apply water to all unsealed, untreated trafficable areas within the fixed plant west area where visible dust is generated from vehicle movement, depicted in Figure 4 of Schedule 1;

(d) operate stockpile cannons by increasing watering cycle interval; and

(e) operate all available dust suppression sprays at transfer stations and conveyors, as specified in Table 15 of Schedule 4, when handling lump iron ore.

17. Management actions specified in condition 16 are not required at the relevant location of dust control where:

(a) the operation of the dust control specified in condition 16(a) to 16(e) would adversely impact safe operations; and/or

(b) it can be visually identified on-the-ground and confirmed that the activity is not generating any visible dust.

18. The licence holder must maintain a record of events where management trigger

criteria are exceeded and no management action is undertaken in accordance with condition 17.

19. The licence holder must continue actions specified in condition 16 for the duration of the management trigger criteria being exceeded, unless:

(c) there continues to be no visible, or otherwise identifiable sources of dust from any location within the fixed west plant area; and

(d) wind speed is less than 2 m/s, as measured at the WBAQRT031 – WB Gatehouse Boundary monitor; and

(e) the forecasted mixing height is less than 200 m.

20. The licence holder must investigate, undertake the actions and report in accordance with Schedule 5, in the event that any reportable event criteria (as specified through condition 13) is exceeded.

Waste management

21. The licence holder must ensure that waste types specified in Table 5 are only subjected to the corresponding processes, and corresponding process specifications set out in Table 5.

Table 5: Waste processing

No.	Waste type	Processes	Process specifications [1,2]
1.	• Inert Waste Type 1 (excluding inert concrete waste) • Inert Waste Type 2 • Putrescible Waste • Special Waste Type 1	Receipt, handling, storage prior to disposal by landfilling	(a) Disposal of waste by landfilling must only take place within the areas shown in Schedule 1. (b) No waste shall be temporarily stored or landfilled within 35 m from the boundary of the premises. (c) The separation distance between the base of the landfills and the highest groundwater level must not be less than 2 m.
2.	Inert Waste Type 1 (inert concrete waste)	Disposal of waste by landfilling	Inert concrete waste permitted for burial within landfill facilities depicted in Figure 3 pit backfilling areas, or within overburden storage areas located within the prescribed premises boundary shown in Schedule 1.
3.	Inert Waste Type 2 – Tyres [1], plastics and rubbers including used conveyor belts	Receipt, handling, storage prior to disposal by landfilling	(a) Tyres and rubber must only be buried in landfill and/or overburden storage areas located within the prescribed premises boundary shown in Schedule 1, and: o in batches separated from each other by at least 100 mm of soil and each consisting of not more than 40 m^3 of tyres reduced to pieces; or o in batches separated from each other by at least 100 mm of soil

No.	Waste type	Processes	Process specifications [1,2]
			and each consisting of not more than 1,000 whole tyres. (b) Tyres must be stored in piles of up to 100 units with a 6 m separation distance between piles.
4.	Putrescible Waste	Receipt, handling, storage prior to disposal by landfilling	Must only be placed in the putrescible landfills shown in Figure 3 of Schedule 1.
5.	Special Waste Type 1 (Asbestos Waste[2])	Receipt, handling and disposal by landfilling	(a) Cement bonded and fibrous asbestos only. (b) Must only be disposed of into the designated asbestos disposal areas shown in Figure 3 of Schedule 1. (c) Not to be deposited within 2 m of the final tipping surface of the landfills. (d) No works shall be carried out on the landfills that could lead to a release of asbestos fibres.
6.	Controlled waste: oils and emulsions	Receipt, handling and storage prior to removal from site	(a) No more than 5,100 tonnes/year. (b) Only stored in designated waste oil storage areas as depicted in Figure 3 of Schedule 1.
7.	Reverse osmosis (RO) reject water discharge from Yarnima Power Station	Receipt and disposal by evaporation and infiltration	RO Water Treatment Plant, blowdown water from heat recovery system generation and cooling tower only disposed of at the acid rock drainage (ARD) facility within Dam C (L4) and evaporation cells 1 (P7), 2 (P8), 3 (P9), 4 (P10), 5 (P11) as depicted in Figure 3 of Schedule 1.
8.	RO reject water discharge from Newman Water Treatment Plant	Receipt and disposal by evaporation and infiltration and discharge point	Reject water discharged to Tank XD57 contingency discharge point (L2) and at the ARD facility within Dam C (L4) and evaporation cells 1 (P7), 2 (P8), 3 (P9), 4 (P10), 5 (P11), in accordance with Table 15 of Schedule 4, and as depicted in Figure 8 of Schedule 1.
9.	Tailings	Treatment and storage	(a) Only stored in TSF as depicted in Figure 1 of Schedule 1. (b) A minimum freeboard of 300 mm maintained at the TSF.
10.	Sewage	Biological, physical and chemical treatment	Accepted to sewer facilities only as depicted in Figure 2 of Schedule 1 and discharged in accordance with Table 15 of Schedule 4.

No.	Waste type	Processes	Process specifications [1,2]
11.	Sewage sludge	Drying and storage	None specified.
12.	Hydrocarbon contaminated waste	Bioremediation	Contaminated soil is only to be remediated within bioremediation facilities that meet the design specifications outlined in Table 15 of Schedule 4.
13.	Potentially acidic groundwater and stormwater	Receipt and disposal by evaporation and infiltration and discharge point	Acid groundwater and stormwater from Whaleback Pit disposed of to the ARD facility within Dam C (L4) and evaporation cells 1 (P7)[3], 2 (P8), 3 (P9), 4 (P10), 5 (P11), in accordance with Table 15 of Schedule 4, and as depicted in Figure 8 of Schedule 1.

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

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

Note 3: Discharge only authorised following re-lining of Evaporation Cell 1. Within 30 days of re-lining completion works, the Licence Holder is required to notify CEO.

Landfill operations

22. The licence holder must maintain monthly records of total waste disposed at each disposal location.

23. The licence holder must ensure that where waste does not meet the waste type set out in condition 21 it is removed from the premises by the delivery vehicle or, where that is not possible, stored in a quarantined storage area or container and removed to an appropriately authorised facility as soon as practicable.

24. The licence holder must manage the landfilling activities to ensure:

(a) waste is placed and compacted to ensure all faces are stable and capable of retaining rehabilitation material; and

(b) rehabilitation of a cell or phase takes place within 6 months after final disposal in that cell or phase has been completed.

25. The licence holder must ensure that cover is applied and maintained on landfilled wastes in accordance with Table 6 and that sufficient stockpiles of cover are maintained on site at all times.

Table 6: Cover requirements[1]

Waste type	Cover material	Depth	Timescales
Inert Waste Type 1	N/A	N/A	No cover required
Inert Waste Type 2 (excluding tyres)	Inert Waste Type 1, Clean Fill or Uncontaminated fill	100 mm	As soon as practicable following the achievement of final process limits
Inert Waste Type 2 (tyres)		500 mm	As soon as practicable following the achievement of final process limits
Putrescible Waste		150 mm	As soon as practicable and not later than weekly

		1,000 mm	Within 3 months of achieving final waste contours
Special Waste Type 1		300 mm	As soon as practicable after deposit and prior to compaction
		1,000 mm	By the end of the working day in which the asbestos waste was deposited

Note 1: Additional requirements for the covering of tyres are set out in Part 6 of the Environmental Protection Regulations 1987.

26. The licence holder must prevent unauthorised access to the landfills.

27. The licence holder must ensure that wind-blown waste is contained within the boundary of the premises and that wind-blown waste is returned to the tipping area on at least a monthly basis.

Monitoring and limits

28. The licence holder shall ensure that:

(a) all water samples are collected and preserved in accordance with AS5667.1, with the exception of holding times where these are not achievable;

(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;

(c) all surface water sampling is conducted in accordance with AS/NZS 5667.4 or AS/NZS 5667.6 as relevant;

(d) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and

(e) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters to be measured unless indicated otherwise in the relevant table.

29. The licence holder shall ensure that all monitoring equipment used on the premises to comply with the conditions of this licence is calibrated in accordance with the manufacturer's specifications.

30. The licence holder shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

Emissions to surface water monitoring and limits

31. The licence holder must monitor emissions:

(a) at the corresponding monitoring point location;

(b) for the corresponding parameter;

(c) in the corresponding unit;

(d) for the corresponding averaging period; and

(e) at the corresponding frequency,

as set out in Table 7.

Table 7: Monitoring of point source emissions to surface water, including limits

Monitoring point location	Parameter	Units	Averaging period	Limit	Frequency
RO reject water monitoring point: P3	Volumetric flow rate (cumulative)	ML/day	Daily	Not more than 6 ML/day. Discharges occur for a cumulative period of no more than 8 weeks per annual period.	Weekly when discharging to Ophthalmia Dam (W1)
	pH [1]	-	Spot sample	N/A	
	Total dissolved solids (TDS) [1]	mg/L		6,000 mg/L	
• Ophthalmia Dam discharge point: W1 • Whaleback Creek discharge point: W2	Volumetric flow rate (cumulative)	ML/day	Monthly	W1: 12 GL/year[2] W2: N/A	Continuous when discharging
	Total recoverable hydrocarbons (TRH)	mg/L	Spot sample	15 mg/L	Quarterly when discharging
	Total suspended solids (TSS)	mg/L	Spot sample	N/A	Quarterly when discharging
	Total dissolved solids (TDS) [1]				
Ophthalmia Dam discharge point: W1[3]	pH [1]	-	Spot sample	N/A	Quarterly when discharging
	Aluminium (Al)	mg/L		N/A	
	Arsenic (As)				
	Boron (B)				
	Calcium (Ca)				
	Cadmium (Cd)				
	Chloride (Cl)				
	Carbonate (CO_3)				
	Chemical Oxygen Demand (COD)				
	Chromium (Cr)				
	Copper (Cu)				
	Iron (Fe)				
	Bicarbonate (HCO_3)				
	Mercury (Hg)				
	Potassium (K)				
	Magnesium (Mg)				
	Manganese (Mn)				
	Molybdenum (Mo)				
	Sodium (Na)				
	Nickel (Ni)				

Monitoring point location	Parameter	Units	Averaging period	Limit	Frequency
	Nitrate (NO_3)				
	Lead (Pb)				
	Selenium (Se)				
	Silver (Ag)				
	Sulfate (SO_4)				
	Zinc (Zn)				

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

Note 2: Discharge from W1 emission point shall comprise of a maximum of 8 GL/year derived from dewatering associated with Orebody 29, 30 and 35 and a maximum of 12 GL/year derived from dewatering associated with Western Ridge to achieve a maximum volume of 12 GL/year in aggregate.

Note 3: Water quality monitoring parameters are for dissolved ions.

Emissions to land monitoring and limits

32. The licence holder must monitor emissions to land:

(a) at the corresponding monitoring point location;

(b) for the corresponding parameter;

(c) in the corresponding unit;

(d) for the corresponding averaging period; and

(e) at the corresponding frequency,

as set out in Table 8.

Table 8: Monitoring of emissions to land

Monitoring point location	Parameter	Units	Limit	Averaging period	Frequency
EPCO STP: L1	Volumetric flow rate (cumulative)	m^3/day	183.2 m^3/day	Daily	Continuous
	pH[1]	-	N/A	Spot sample	Quarterly
	Biochemical Oxygen Demand (BOD)	mg/L			
	Total Suspended Solids (TSS)				
	Total Nitrogen (TN)				
	Total Phosphorous (TP)				
	E.coli	cfu/100 ml			
Newman Water Treatment Plant discharge to Tank XD57	Volumetric flow rate (cumulative)	ML/year	6,205 ML/year	Annual	Continuous

Monitoring point location	Parameter	Units	Limit	Averaging period	Frequency
	Total dissolved solids (TDS)[1]	mg/L	2,000 mg/L	Spot sample	Quarterly
Contingency discharge from Tank XD57 in the event that temporary storage and reuse and tank storage has been exhausted (L2)	Volumetric flow rate (cumulative)	ML/day	-	Monthly	Each discharge event
	Total dissolved solids (TDS)[1]	mg/L	2,000 mg/L	Spot sample	
Hub Turkey's Nest discharge in the event that temporary storage and reuse, and Turkey's Nest storage has been exhausted (L3)	Volumetric flow rate (cumulative)	ML/day	N/A	Monthly	Each discharge event
	Total dissolved solids (TDS)[1]	mg/L	2,000 mg/L	Spot sample	
Newman Water Treatment Plant discharge to: • ARD facility within Dam C (L4); and • ARD facility within evaporation Cells 1 to 5 (P7, P8, P9, P10 and P11)	Volumetric flow rate (cumulative)	ML/year	2,080.5 ML/year	Annual	Continuous
	Total dissolved solids (TDS)[1]	mg/L	6,257mg/L	Spot sample	
Yarnima Power Station discharge to: • ARD facility within Dam C (L4); and • ARD facility within evaporation Cells 1 to 5 (P7, P8, P9, P10 and P11)	Volumetric flow rate (cumulative)	ML/year	1,058 ML/year	Annually	Continuous
	pH[1]	-	N/A	Spot sample	Quarterly
	Total dissolved solids (TDS)[1]	mg/L	5,900 mg/L		
Potentially acidic groundwater from Whaleback pit discharge to: • ARD facility within Dam C (L4); • ARD facility within evaporation Cells 2 and 3 (P8 and P9); and • ARD facility within evaporation Cell 1 (P7)[3]	pH[1]	-	N/A	Spot sample	Quarterly
	Volumetric flow rate (cumulative)	ML/year	300 ML/year	Annually	Continuous
Stormwater from Whaleback pit discharge to: • ARD facility within Dam C (L4); • ARD facility within evaporation Cells 2 and 3 (P8 and P9); and • ARD facility within evaporation Cell 1 (P7)[3]	Volumetric flow rate (cumulative)	ML/year	N/A	Annually	Continuous
Water from ARD facility within Dam C (L4) and evaporation	pH[1]	-	≤ pH 5.5	Spot sample	Daily when discharging

Monitoring point location	Parameter	Units	Limit	Averaging period	Frequency
Cells 2 and 3 (P8 and P9) discharged to: • ARD facility within evaporation Cells 4 and 5 (P10 and P11).	Volumetric flow rate (cumulative)	ML/year	N/A	Annually	Continuous
	Standard water quality suite (as per the current table)	mg/L	N/A	Spot sample	In the event pH is lower the Limit
OWWTP Evaporation Pond: P2	Volumetric flow rate	ML/year	N/A	Annually	Continuous
	pH[1]	-	N/A	Spot sample	Each discharge event
	Total dissolved solids (TDS)[1]	mg/L	N/A		
	Total recoverable hydrocarbons (TRH)	mg/L	15 mg/L		
P4 – ARD facility within Dam A; P5 – ARD facility within Dam B; P6 – ARD facility within Dam C; P7 – ARD facility within Evaporation Cell 1; P8 – ARD facility within Evaporation Cell 2; P9 – ARD facility within Evaporation Cell 3 ; P10 – ARD facility within Evaporation Cell 4; P11– ARD facility within Evaporation Cell 5[2] As depicted in Figure 8 of Schedule 1.	pH[1]	-	N/A	Spot sample	Quarterly
	Oxidation-reduction potential[1]	Volts (v)			
	Total dissolved solids (TDS)[1]	mg/L			
	Aluminium (Al)				
	Antimony (Sb)				
	Arsenic (As)				
	Bicarbonate (HCO_3^-)				
	Cadmium (Cd)				
	Calcium (Ca)				
	Chloride (Cl^-)				
	Chromium (Cr)				
	Cobalt (Co)				
	Copper (Cu)				
	Iron (Fe)				
	Mercury (Hg)				
	Magnesium (Mg)				
	Molybdenum (Mo)				
	Manganese (Mn)				
	Nickel (Ni)				
	Lead (Pb)				
	Potassium (K)				
	Selenium (Se)				

Monitoring point location	Parameter	Units	Limit	Averaging period	Frequency
	Sodium (Na)				
	Sulfate (SO_4)				
	Sulfide (S^{2-})				
	Thallium (Tl)				
	Uranium (U)				
	Zinc (Zn)				

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: Water quality monitoring parameters are for dissolved ions.
Note 3: Monitoring required for monitoring point P7 only required once discharge begins pursuant to Note 3 of Table 5.

33. In the event that the limit for pH is exceeded in water in the ARD facility within Dam C (L4) and evaporation Cells 2 and 3 (P8 and P9), discharge to evaporation Cells 4 and 5 (P10 and P11) must cease until such time that the limit is no longer breached.

34. The licence holder must ensure that emissions measured at the monitoring points listed in Table 7 and Table 8 for the corresponding parameter do not exceed the corresponding limit when monitored in accordance with conditions 31 and 32.

Groundwater monitoring

35. The licence holder must undertake groundwater monitoring for concentrations of the parameters listed in Table 9:

(a) at the corresponding monitoring location;

(b) in the corresponding unit;

(c) at no less than the corresponding frequency; and

(d) for the corresponding averaging period,

as set out in Table 9.

Table 9: Groundwater monitoring

Monitoring point location[1]	Parameter[2]	Unit	Averaging period	Frequency
Upstream of ARD Facility: • WBGW050S • WBGW050D Around Evaporation Cells: • WBGW022 • WBGW023 • WBGW041D • WBGW041S • WBGW042S • WBGW043D • WBGW043S • WBGW044S • WBGW045D • WBGW045S • WBGW046D	pH[3]	-	Spot sample	Quarterly
	Oxidation-reduction potential[3]	Volts (v)		
	Total dissolved solids (TDS)[3]	mg/L		
	Electrical conductivity[3]			
	Total Acidity ($CaCO_3$)[3]			
	Total Alkalinity ($CaCO_3$)[3]			
	Aluminium (Al)			
	Antimony (Sb)			

Monitoring point location[1]	Parameter[2]	Unit	Averaging period	Frequency
• WBGW046S • WBGW047S • WBGW048D • WBGW048S • WBGW049D • WBGW049S • WBGW051D • WBGW051S <u>Downstream of ARD Facility[4]:</u> • WBGW009 • WBGW015 • WBGW016 • WBGW017 • WBGW018 • WBGW019 • WBGW020 • WBGW021 <u>Near Power Station Creek:</u> • WBGW010 • WBGW011 • HHS0060 • HHS0061 • HHS0062 • HHS0063 • HHS0065 • HHS0064 • HHS0066 • HHS0067 • HHS0068 • HHS0070 • HHS0071 • HHS0072 • HHS0073 <u>Other:</u> • HHS0108 • HHS0110	Arsenic (As) Bicarbonate (HCO_3^-) Cadmium (Cd) Calcium (Ca) Chloride (Cl^-) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Mercury (Hg) Magnesium (Mg) Molybdenum (Mo) Manganese (Mn) Nickel (Ni) Lead (Pb) Potassium (K) Selenium (Se) Sodium (Na) Sulfate (SO_4) Sulfide (S^{2-}) Thallium (Tl) Uranium (U) Zinc (Zn)			

Note 1: Monitoring bore locations as depicted in Figure 5.
Note 2: Water quality monitoring parameters are for dissolved ions.
Note 3: In-field non-NATA accredited analysis permitted.
Note 4: Frequency increased to monthly when discharging into Evaporation cells 4 (P10) and/or 5 (P11).

36. The licence holder must undertake surface water monitoring for concentrations of the parameters listed in Table 10:

(a) at the corresponding monitoring location;
(b) in the corresponding unit;
(c) at no less than the corresponding frequency; and

(d) for the corresponding averaging period,

as set out in Table 10

Table 10: Monitoring of point source emissions to surface water

Monitoring point location[1]	Parameter[2]	Units	Averaging period	Frequency
Background monitors: • Whaleback Creek upstream (WBSW042) • Whaleback Creek downstream (WBSW043) • Power Station Creek downstream (WBSW049)	pH[3]	N/A	Spot sample	Quarterly when flowing
	Total dissolved solids (TDS)[3]	mg/L		
	Total suspended solids (TSS)			
	Total recoverable hydrocarbons (TRH)			
	Total Nitrogen			
	Total Phosphorous			
	Aluminium (Al)			
	Arsenic (As)			
	Boron (B)			
	Calcium (Ca)			
	Cadmium (Cd)			
	Chloride (Cl)			
	Carbonate (CO_3)			
	Chemical Oxygen Demand (COD)			
	Chromium (Cr)			
	Copper (Cu)			
	Iron (Fe)			
	Bicarbonate (HCO_3)			
	Mercury (Hg)			
	Potassium (K)			
	Magnesium (Mg)			
	Manganese (Mn)			
	Molybdenum (Mo)			
	Sodium (Na)			
	Nickel (Ni)			
	Nitrate (NO_3)			
	Lead (Pb)			
	Selenium (Se)			
	Silver (Ag)			
	Sulfate (SO_4)			
	Zinc (Zn)			

Note 1: Monitoring points as depicted in Figure 5.

Note 2: Water quality monitoring parameters are for dissolved ions.

Note 3: In-field non-NATA accredited analysis permitted.

37. The licence holder must operate the ARD facility in the following manner:

(a) During normal operations:

(i) water from the following sources will be discharged to the ARD Dam (L4):

i. Whaleback pit acidic bore water;
ii. Potentially acidic stormwater from Whaleback pit; and
iii. RO waste from Yarnima Power Station and Newman WTP;

(ii) water from the ARD DAM will be pumped, as required, to Evaporation cells 2 (P8) and 3 (P9);

(iii) during filling of evaporation cell 3 (P9):

i. RO wastewater from Yarnima Power Station will be discharged to evaporation cell 4 (P10), if required; and
ii. Discharge of RO wastewater from Yarnima Power Station to evaporation cell 4 (P10) shall cease once evaporation cell 3 (P9) is filled to its maximum operating capacity (freeboard level) and all water will be directed back to the ARD Dam;

(b) During a 72hr-ARI event, if required:

(i) Water from the ARD Dam may be discharged to evaporation cell 4 (P10) and evaporation cell 5 (P11) in the event where the ARD Dam, evaporation cell 2 (P8) and evaporation cell 3 (P9) are at maximum operating capacity;

(c) For up to six months following a 72hr-ARI event, if required:

(i) Water from the ARD Damn may be discharged to evaporation cell 4 (P10) and evaporation cell 5 (P11) in the event where the ARD Dam, evaporation cell 2 (P8) and evaporation cell 3 (P9) are at maximum operating capacity;

(ii) Where discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) is longer than 3 months, the CEO is to be notified:

i. Where discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) commenced and the likely date discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) will cease; and
ii. When discharge to evaporation cell 4 (P10) and evaporation cell 5 (P11) ceases.

Improvement condition

38. The licence holder must complete the improvements specified in Table 11, at the corresponding specification, by the date of completion in Table 11.

Table 11: Acid Rock Drainage improvement requirements

Item	Improvement requirement	Specification of requirement	Required works completion date
1	Groundwater monitoring bores	a) Undertake an investigation to demonstrate that existing groundwater monitoring program is sufficient in monitoring the gap of information from destroyed bore (WBGW014), with consideration to the downstream location of the	Part c) must be completed 6 months following the granting of this amendment.

		destroyed bore, screening depth and targeted aquifers; or b) Provide a replacement bore to be drilled next to the destroyed bore (WBGW014); and; c) Submit a report to the CEO within 30 days from either the completion of the investigation outlining the findings of any investigation undertaken with part a) or construction report for replacement bore undertaken with part b).	
2	Vegetation monitoring results	Submission of 2024 vegetation monitoring results to be provided with: a) Groundwater monitoring results, including a comparison to vegetation monitoring results to determine any trends or correlation between the two data sets; and b) Comparison of groundwater monitoring results between groundwater quality upstream of ARD facility to downstream and along Powerstation Creek.	Submission date 1 October 2025

Records and reporting

39. The licence holder must record the following information in relation to complaints received by the licence holder (whether received directly from a complainant or forwarded to them by the department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the licence holder to investigate or respond to any complaint.

40. The licence holder must submit to the CEO, no later than 1 October each year, an Annual Audit Compliance Report (AACR) indicating the extent to which the licence holder has complied with the conditions in this licence for the annual period.

41. The licence holder must submit to the CEO, no later than 1 October each year an Annual Environmental Report providing the results of monitoring and any supporting records, information, reports and data as required by:

(a) condition 3 for the average monthly availability and average monthly performance rate of dust control infrastructure, when in effect;

(b) condition 12 for the air quality monitoring data obtained in accordance with Table 3, and in the format specified in Schedule 6;

(c) condition 13 for a summary of the occurrence of reportable events, specified in Table 4;

(d) condition 22 for the monthly waste tonnages of the waste types specified in Table 6;

(e) condition 31 for dewater discharge and surface water monitoring as specified in Table 7;

(f) condition 32 for emissions to land monitoring results as specified in Table 8;

(g) condition 35 for groundwater monitoring results as specified in Table 9; and

(h) condition 36 for monitoring results as specified in Table 10.

42. The licence holder must include, in the Annual Environmental Report, as required by condition 41:

(a) an update on the ongoing ARD Facility study that includes:

(i) any evaluation undertaken during the annual period on ARD Dams and Evaporation Pond maintenance requirements (including actual maintenance undertaken), and/or any prioritised upgrade works through water balance monitoring; and

(ii) details on any quantitative risk assessments undertaken during the annual period to inform engineering solutions for seepage from ongoing operation of ARD Facility.

(b) submission of results from any additional investigations undertaken during the annual period, but not limited to:

(i) opportunistic surface water monitoring; and

(ii) sulphate delineation investigations.

(c) a summary of updates to any management plans developed for the management of the ARD Facility, including the:

(i) Sampling and Analysis plan; and

(ii) Site Management Plan.

43. The licence holder must maintain accurate and auditable books including the following records, information, reports, and data required by this licence:

(a) the calculation of fees payable in respect of this licence;

(b) the works conducted in accordance with conditions 6 and 7 of this licence;

(c) any maintenance of infrastructure that is performed in the course of complying with condition 2 of this licence;

(d) a record of instances where management actions are not initiated for the reasons specified in condition 18;

(e) monitoring programmes undertaken in accordance with conditions 3, 12, 22, 31, 32, 35 and 36 of this licence; and

(f) complaints received under condition 39 of this licence.

44. The books specified under condition 43 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the licence holder for the duration of the licence; and

(d) be available to be produced to an inspector or the CEO as required.

45. The licence holder must comply with a department request, within 14 calendar days from the date of the department request or such other period as agreed to by the Inspector or the CEO.

Definitions

In this licence, the terms in Table 12 have the meanings defined.

Table 12: Definitions

Term	Definition
ACN	Australian Company Number
Annual Audit Compliance Report (AACR)	means a report submitted in a format approved by the CEO (relevant guidelines and templates may be available on the department's website).
annual period	a 12 month period commencing from 1 July until 30 June of the immediately following year.
ARD	acid rock drainage
ARI	average recurrence interval
AS/NZS 3580.1.1	means the Australian Standard AS/NZS 3580.1.1 *Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment.*
AS/NZS 3580.9.11	means the Australian Standard AS/NZS 3580.9.11 *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 beta attenuation monitors.*
AS/NZS 3580.9.12	means the Australian Standard AS/NZS 3580.9.12 *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM2.5 beta attenuation monitors.*
AS/NZS 3580.14	means the Australian Standard AS/NZS 3580.14 *Methods for sampling and analysis of ambient air – Meteorological monitoring for ambient air quality monitoring applications.*
AS 4156.6-2000	means the Australian Standard AS 4156.6-2000 *Coal preparation – Determination of dust/moisture relationship for coal.*
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 *Water quality – Sampling – Guidance of the design of sampling programs, sampling techniques and the preservation and handling of samples.*
AS/NZS 5667.4	means the Australian Standard AS/NZS 5667.4 *Water quality – Sampling – Guidance on sampling from lakes, natural and man-made.*
AS/NZS 5667.6	means the Australian Standard AS/NZS 5667.6 *Water quality – Sampling – Guidance on sampling of rivers and streams.*
AS/NZS 5667.10	means the Australian Standard AS/NZS 5667.10 *Water quality – Sampling – Guidance on sampling of waste waters.*
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 *Water quality – Sampling – Guidance on sampling of groundwaters.*
asbestos	means the asbestiform variety of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals and includes actinolite, amosite, anthophyllite, chrysolite, crocidolite, tremolite and any mixture containing 2 or more of those.
asbestos fibres	has the meaning defined in the Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites, Western Australia, (DOH, 2009).
average monthly availability	means the combined average percentage availability of equipment, calculated for each calendar month by dividing the time that the equipment is operating, by the time the equipment is required to be operating.

Term	Definition
average monthly performance	means the average percentage in automatic mode of equipment, calculated for each calendar month by dividing the time that the equipment is operating in automatic mode, by the time the equipment is required to be operating, taking into account exclusion periods if applicable.
averaging period	means the time over which a limit or target is measured or a monitoring result is obtained.
average recurrence interval	means the average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration.
BAM	beta attenuation monitor
BOC	means bulk ore conditioning
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer of the Department. "submit to / notify the CEO" (or similar), means either: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 or: info@dwer.wa.gov.au
cfu/100 mL	means colony forming units per 100 millilitres
clean fill	has the meaning defined in Landfill Definitions.
controlled waste	has the definition in *Environmental Protection (Controlled Waste) Regulations 2004*.
°	degree
dead ore stockpiles	refers to any stockpile referred to as "Dead Fines Stockpile" or "Dead Lump Stockpile" in that is not reclaimed by the bucketwheel reclaimer BS702A/B, as depicted in Figure 4 of Schedule 1.
DEM level	means the dust extinction moisture number. It is the moisture content of the iron ore at which the dust number is 10 derived from the Australian Standard AS 4156.6-2000 or a standard approved by the CEO.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the licence holder in writing and sent to the licence holder's address for notifications, as described at the front of this Licence, in relation to: (g) compliance with the EP Act or this Licence; (h) the Books or other sources of information maintained in accordance with this Licence; or the Books or other sources of information relating to Emissions from the Premises.
discharge	has the same meaning given to that term under the EP Act.
Dust control equipment inventory	means an itemized list for all dust control equipment used at the premises including but not limited to the infrastructure/equipment described in column 2 of Table 15 in Schedule 4.

Term	Definition
emission	has the same meaning given to that term under the EP Act.
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Exclusion Periods	refers to periods during which the dust controls referred to in condition 3 are not required to be operated, being the following: (a) when iron ore is presenting on the belt at below the minimum throughput threshold of 500 tonnes per hour; and/or (b) conditions in which operation of the dust control equipment would adversely impact safe operations; (c) when iron ore fines are being handled, not including the operation of the following boom sprays: (i) BS752B, BS752C, BS752D; or (ii) BS302B and BS302C unless when fines ore from the Beneficiation Concentrator Plant is running along this route; (d) when the iron ore being handled is Wet Ore; (e) during 1-hour periods where rain is recorded at meteorological station (WBWS001 – Whaleback AWS) or the stockyard weather station (AT796 - AT796 Stockyard); (f) when there is a risk of slumping of, or a machine is operating on, the coarse ore stockpile or stockyard stockpiles; (g) stockyard water cannons when the effectiveness of the cannons is wind inhibited; (h) during the hosing of chutes.
freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point.
GL	gigalitres
HDPE	high density polyethylene.
Inert Waste Type 1	has the meaning defined in Landfill Definitions.
Inert Waste Type 2	has the meaning defined in Landfill Definitions.
Iron ore	means a type of iron ore produced from the Premises or brought to the Premises from another mine site via rail.
ktpa	kilo tonnes per annum
Landfill Definitions	means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer of the Department of Environment as amended from time to time.
licence	refers to this document, which evidences the grant of a licence by the CEO under section 57 of the EP Act, subject to the specified conditions contained within.
licence holder	refers to the occupier of the premises, being the person specified on the front of the licence as the person to whom this licence has been granted.
m	metre
m^3	cubic metre
m^3/day	cubic meter per day
µg/m^3	microgram per cubic metre

Term	Definition
mg/L	milligrams per litre
ML/day	megalitre per day
mm	millimetre
mtpa	million tonnes per annum
moisture content	means the ratio of the mass of water in a sample to the mass of solids in the sample, expressed as a percentage. In equation form: $w = \frac{m1-m2}{m1} \times 100$ Where: w = moisture content of the sample; m1 = initial mass, in grams, of the sample; and m2 = mass, in grams, of the sample after drying.
monthly	monthly, when referring to non-continuous monitoring, means monitoring that is undertaken at least 15 calendar days apart.
m/s	metres per second
N/A	not applicable
NATA	National Association of Testing Authorities (Australia)
NATA accredited	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis.
No.	typographic abbreviation of the word number(s).
PM	means total particulate matter including both solid fragments of material and miniscule droplets of liquid.
$PM_{2.5}$	means particulate matter with an aerodynamic diameter of less or equal to 2.5 µm
PM_{10}	means particulate matter with an aerodynamic diameter of less or equal to 10 µm and includes $PM_{2.5}$.
premises	refers to the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map Figure 1 in Schedule 1 to this licence.
prescribed premises	has the same meaning given to that term under the EP Act.
primary activities	refers to the prescribed premises activities listed on the front of this licence as described in Schedule 3, at the locations shown in Schedule 1.
putrescible	has the meaning defined in Landfill Definitions.
quarterly	means the 4 inclusive periods from, 1 July to 30 September, 1 October to 31 December and in the following year, 1 January to 31 March, 1 April to 30 June. Quarterly, when referring to non-continuous monitoring, means monitoring that is undertaken at least 45 calendar days apart.
rehabilitation	means the completion of the engineering of a landfill cell and includes capping and/or final cover.
RO	reverse osmosis
Special Waste Type 1	has the meaning defined in Landfill Definitions.
spot sample	means a discrete sample representative at the time and place at which the sample is taken.

Term	Definition
STP	sewage treatment plant
STP dry	means standard temperature and pressure (0 degrees celsius and 101.325 kilopascals respectively), dry.
tipping area	means the area of the landfill in which waste other than cover material is being deposited.
TLO	train load out.
TSF	tailings storage facility
trigger investigation	means an investigation which includes but is not limited to a review of monitoring stations for wind speed, direction and PM_{10} concentrations and a visual observation of activities being undertaken within the prevailing wind arc of the monitoring station which recorded the trigger exceedance.
µS/cm	microsiemens per centimetre.
waste	has the same meaning given to that term under the EP Act.
wet ore	means iron ore which: (a) has been mined following dewatering of the orebody; (b) is known to be at or above DEM Level; or (c) is otherwise such that the addition of moisture could lead to the iron ore becoming bogged, bridged, blinded or buried.
wind inhibited	Where wind is recorded as greater than 8 m/s and against the direction of the stockyard cannon sprays (for stockyard cannons only), as measured at the stockyard (AT796 Weather Sensor), depicted in Figure 4.
WWTP	wastewater treatment plant

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below.

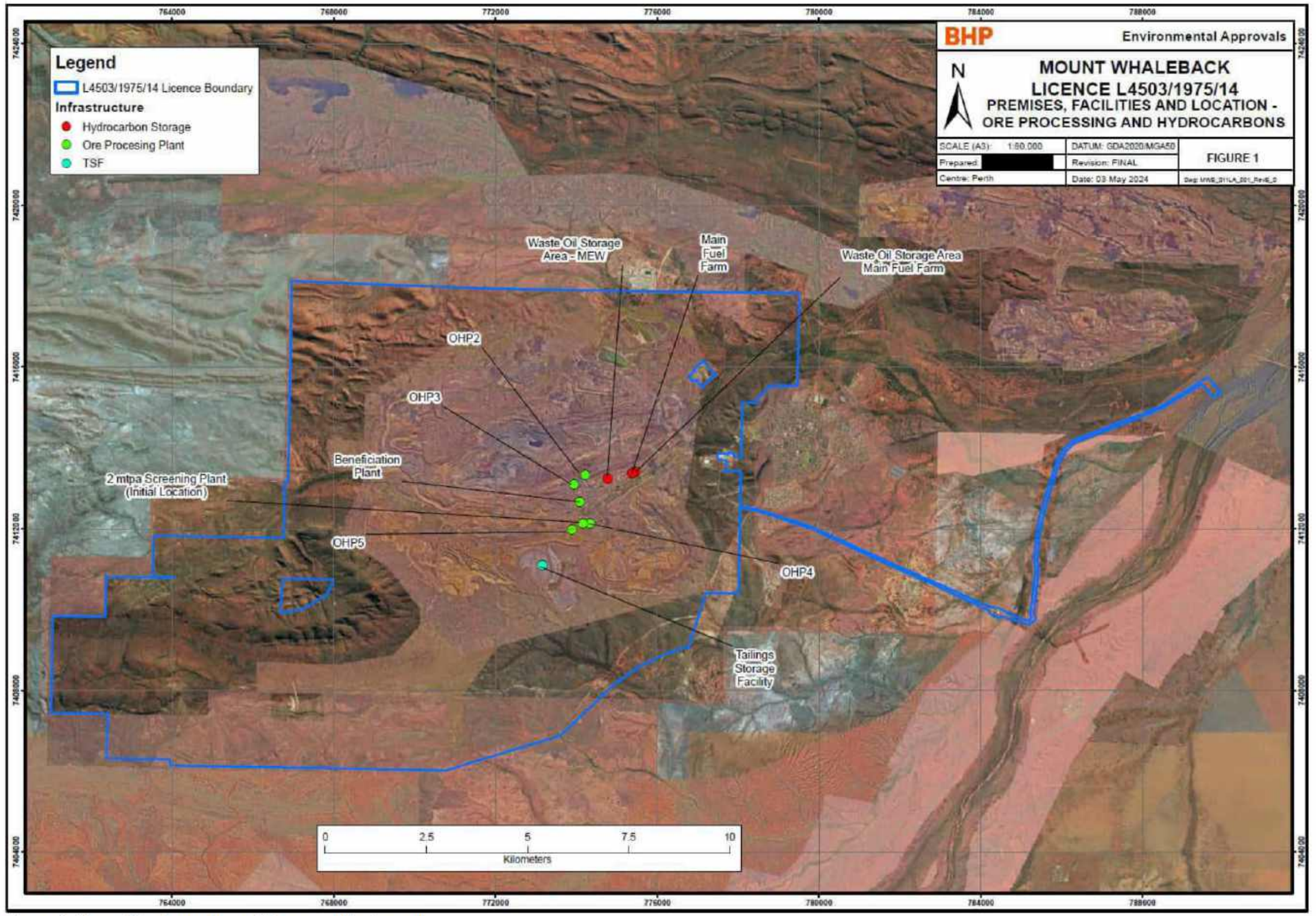


Figure 1: Map of the boundary of the prescribed premises

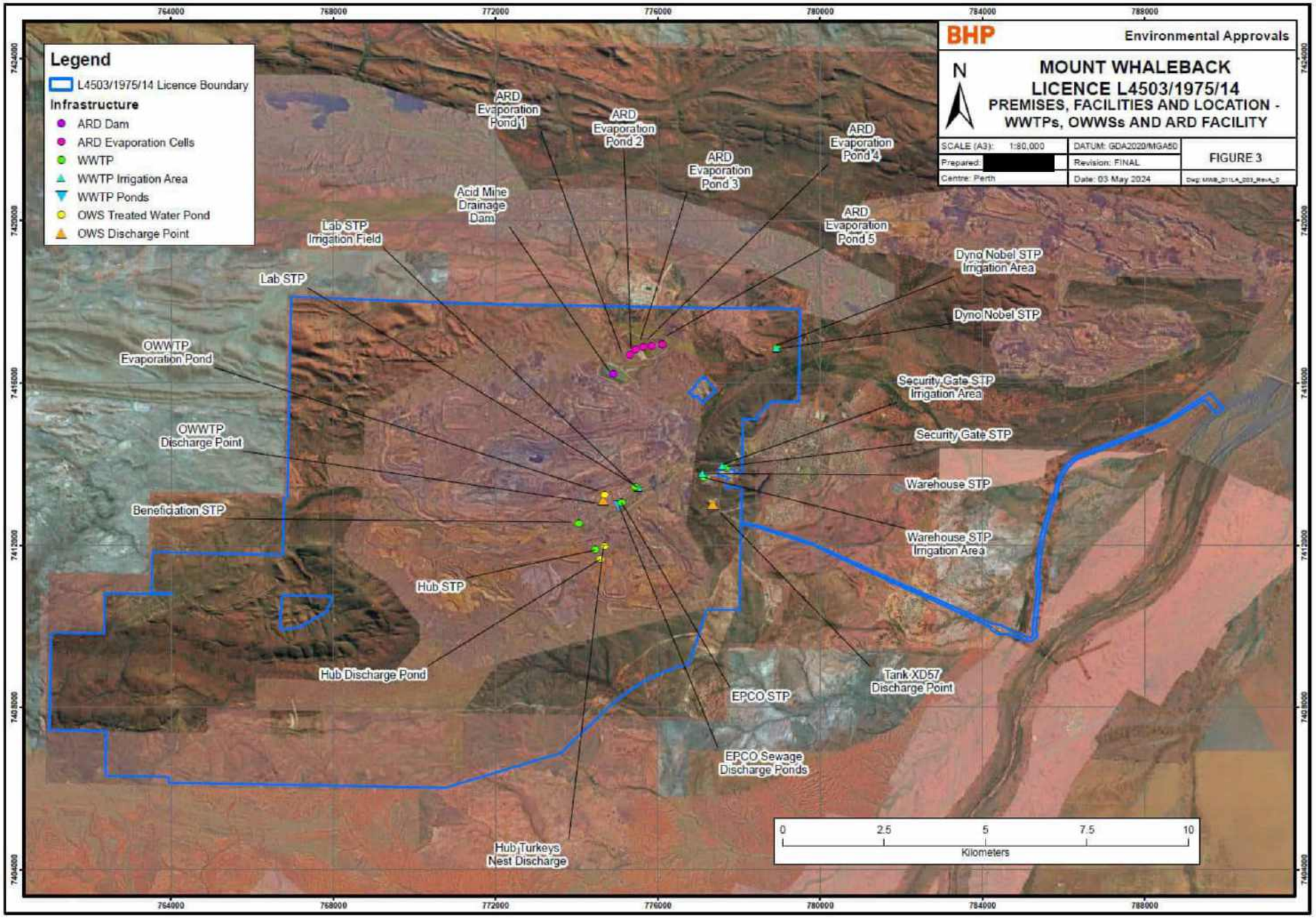


Figure 2: Site plan of premises facilities – wastewater treatment plants, oily water separators and ARD facility.

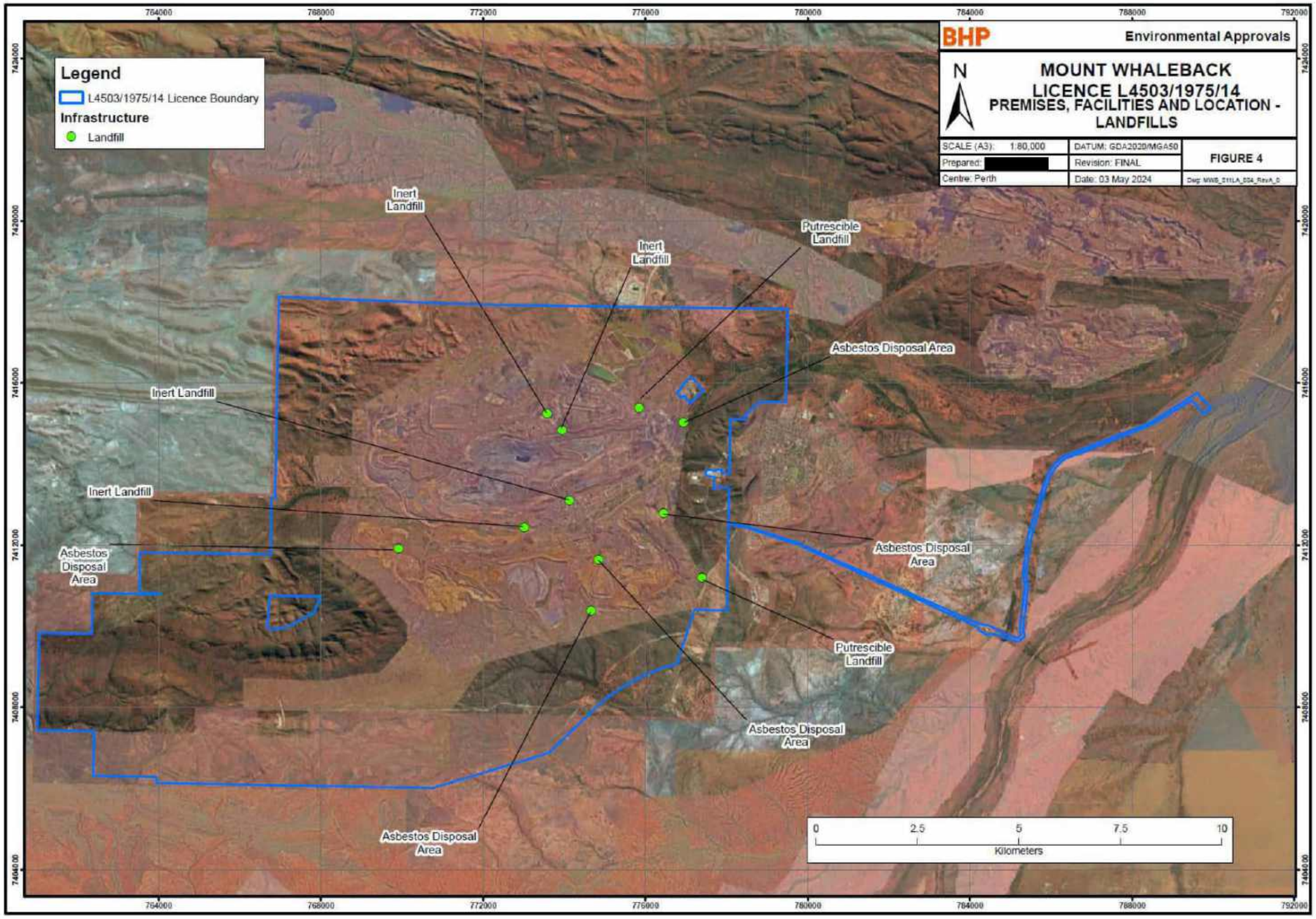


Figure 3: Site plan of premises facilities – landfills.

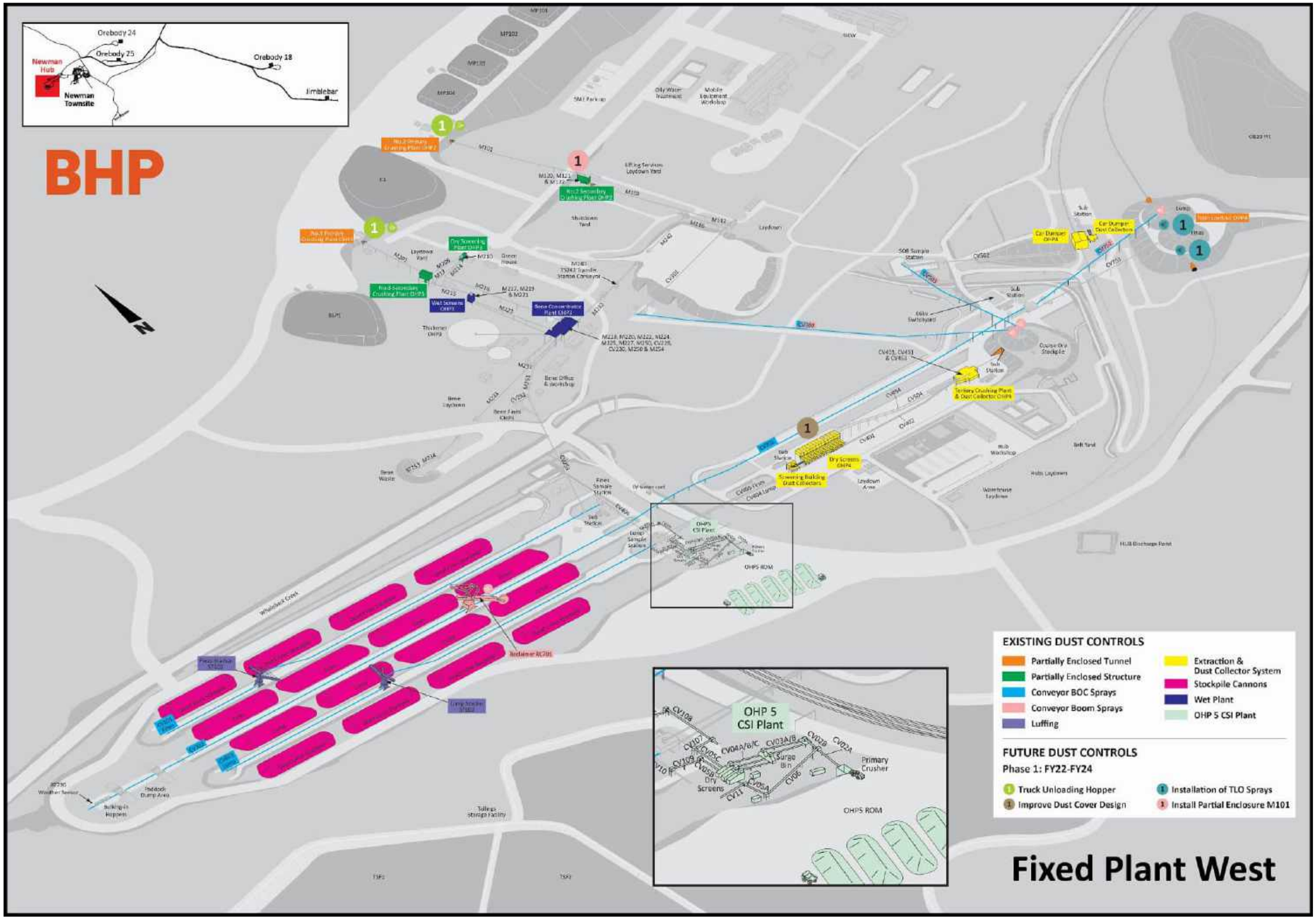


Figure 4: Existing and proposed dust controls at the 'fixed plant west'

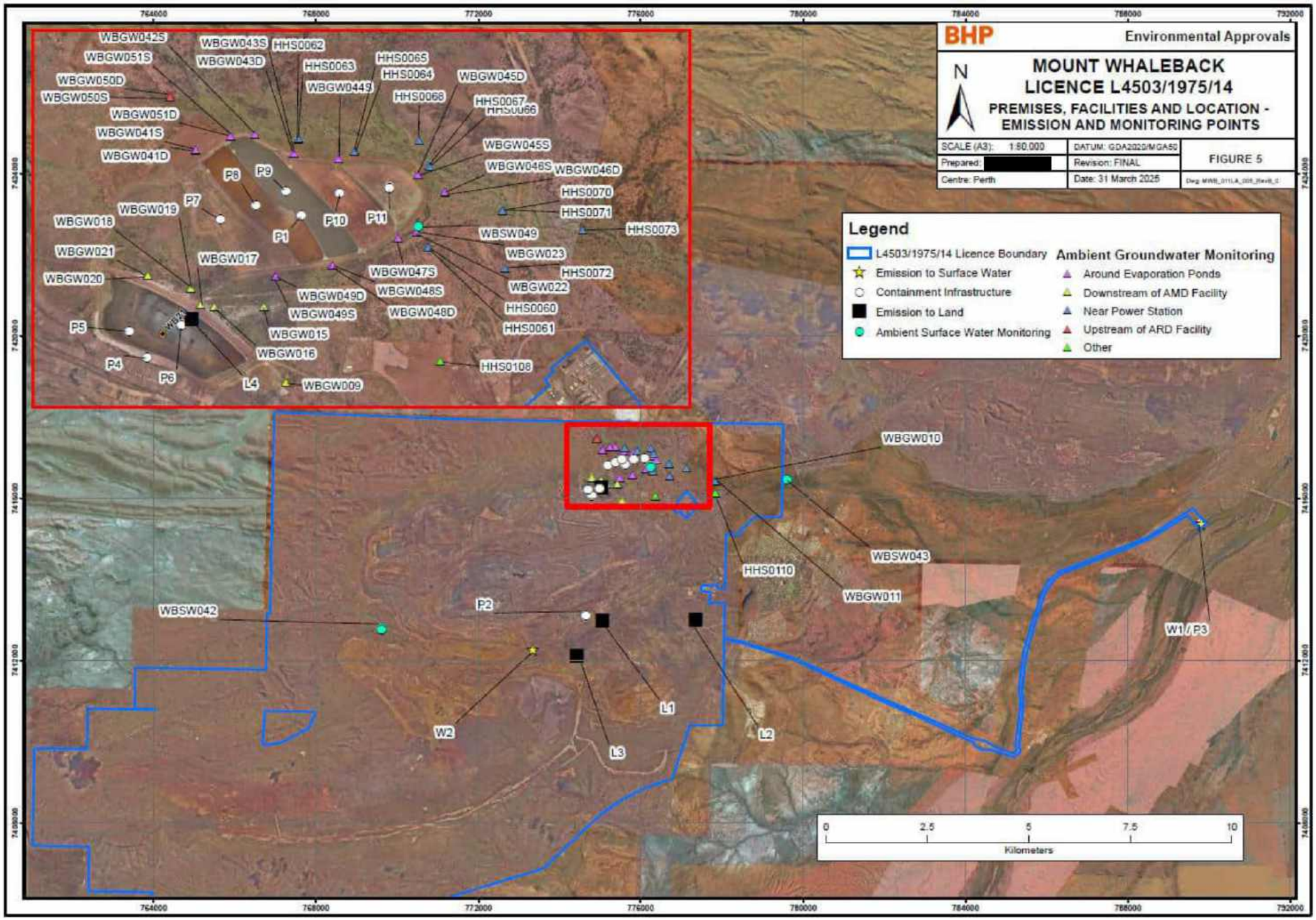


Figure 5: Map of containment infrastructure, emission and monitoring points

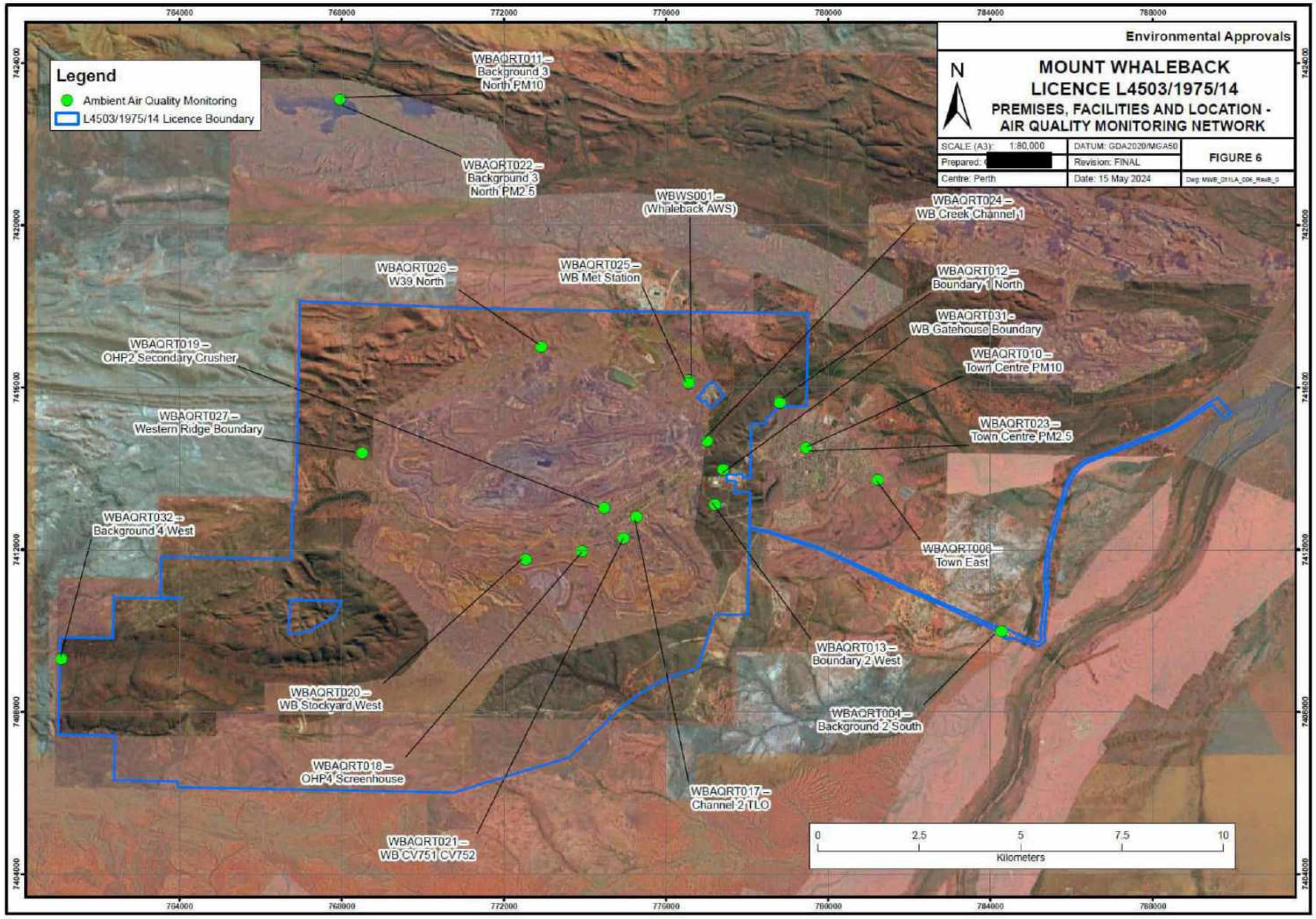


Figure 6: Air quality monitoring network

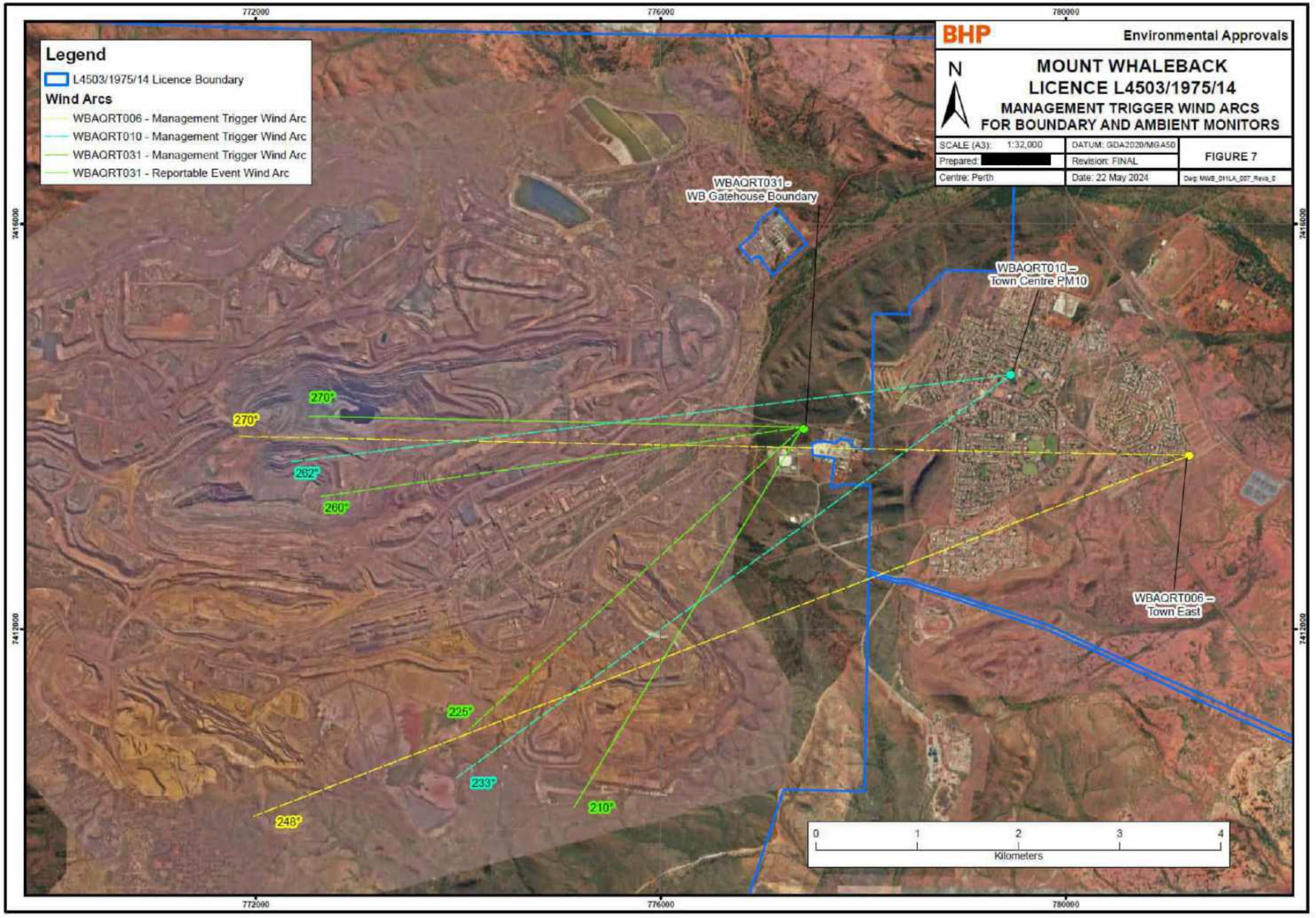


Figure 7: Management trigger wind arcs for boundary and ambient monitors

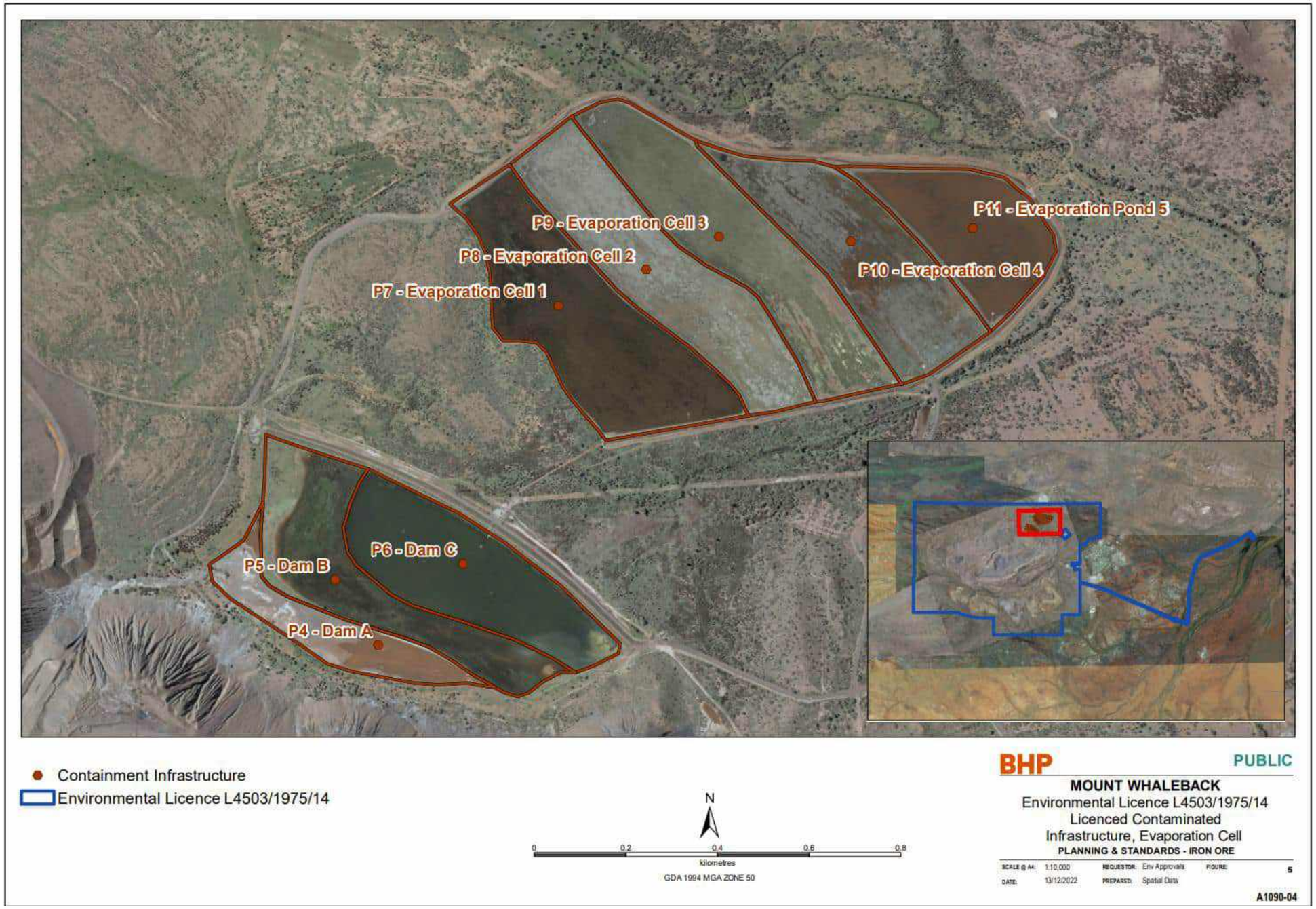


Figure 8: ARD Facility

Schedule 2: Premises coordinates

The premises boundary is defined by the coordinates in Table 13.

Table 13: Premises boundary coordinates (GDA 2020 MGA Z50)

Easting	Northing
779514.73	7417829.07
779471.31	7415532.69
778815.49	7415544.97
778459.13	7415201.27
778457.45	7415111.54
778103.79	7415118.21
778078.32	7413766.97
778074.64	7413766.81
777905.84	7413792.01
777888.25	7413794.64
777895.71	7413862.86
777881.66	7413864.68
777776.51	7413878.31
777746.7	7413861.76
777735.67	7413837.47
777602.66	7413860.25
777574.51	7413865.07
777488.42	7413831.96
777488.43	7413831.91
777503.87	7413721.58
777718.54	7413687.38
777691.41	7413495.59
777680.33	7413408.25
777704.76	7413405.23
777831.69	7413433.93
778040.53	7413419.79
778067.12	7413417.99
778071.71	7413416.58
778055.9	7412578.02
778067.83	7412574.21
778077.26	7412571.19
778172.2	7412540.86
778245.54	7412517.43
778276.71	7412507.47
778323.96	7412498.73
778363.62	7412493.3
778408.12	7412495.45
778416.18	7412495.84
778422.19	7412496.13
778436.14	7412491.57
778563.65	7412449.85
778615.18	7412433
778647.93	7412422.28
778757.43	7412386.46
778765.69	7412383.76
778829.35	7412362.93
778915.8	7412335.51
779041.6	7412295.6
779310.03	7412210.44
779411.16	7412178.35
779689.47	7412090.06
779800.11	7412054.96
779823.81	7412044.08
780019.11	7411954.41
780148.91	7411894.81
780490.6	7411737.93
780540.69	7411714.93
780623.11	7411677.09
780949.39	7411531.63
781011.17	7411504.09
781395.5	7411332.74
781492.61	7411289.44
781500.35	7411285.99
781625.82	7411227.52
781780.49	7411155.44
781989.2	7411058.17
782031.45	7411038.49
782114.26	7411002.35
782424.18	7410867.14
782532.81	7410819.74
782629.05	7410777.75
782840.1	7410684.69
782934.83	7410642.93
783348.42	7410460.56
783369.52	7410451.26
783423.91	7410427.28
783811.79	7410250.94
783928.07	7410198.08
784033.79	7410150.01
784037.57	7410148.56
784073.06	7410134.87
784222.59	7410077.22
784241.42	7410069.95
784256.74	7410064.05
784266.95	7410062.31
784274.31	7410061.06
784479.31	7410026.26
784500.12	7410014.67
784549.19	7409987.34
784634.51	7409939.82
784786.33	7409855.27
784850.94	7409833.07
784878.49	7409823.6
784966.3	7409793.43
785184.98	7409718.29
785258.17	7409787.08
785260.37	7409789.14
785251.99	7409827.25
785246.85	7409850.63
785244.7	7409860.39
785231.08	7409922.34
785240.87	7409995.32
785263.62	7410164.95
785272.95	7410234.51
785278.15	7410273.3
785285.87	7410330.92
785321.77	7410601.57
785364.28	7410947.32
785324.61	7411322.36
785339.72	7411495.24
785387.67	7411901.94
785393.57	7411951.99
785433.25	7412212.25
785457.9	7412298.3
785608.96	7412825.35
785833.41	7413523
785910.88	7413728
786069.77	7413984.48
786140.13	7414047.94
786301.22	7414193.25
786580.96	7414300.05
786681.8	7414338.55
786737.3	7414359.74
786906.59	7414424.37
787120.26	7414505.94
787218.15	7414544.22

Easting	Northing
787790.47	7414768.02
787906.61	7414813.43
788467.37	7415033.55
788779.35	7415230.71
789144.52	7415461.49
789504.02	7415692.4
789533.62	7415711.42
789607.79	7415759.06
789639.04	7415723.12
789693.51	7415660.44
789854.84	7415474.82
789940.32	7415376.46
789920.11	7415360.97
789892.73	7415339.98
789772.74	7415247.99
789702.53	7415325.19
789506.16	7415541.13
789469.49	7415581.46
789072.73	7415334.9
788779.35	7415158.91
788490.05	7414985.37
788411.9	7414952.81
787830.09	7414710.46
787081.66	7414420.98
786339.01	7414133.74
786240.45	7414036.53
786131.18	7413928.74
786126.25	7413921.08
785980.78	7413694.93
785909.93	7413506
785897.31	7413466.04
785861.72	7413353.34
785690.2	7412810.24
785517.31	7412194.54
785474.81	7411974.67
785455.34	7411802.72
785401.32	7411325.68
785399.24	7411307.25
785436.58	7410948.32
785319.88	7409914.79
785365.23	7409759.86
785364.17	7409758.98
785337.97	7409737.25
785198.96	7409621.94
785104.94	7409651.67
784605.67	7409809.59
784592.67	7409813.71

Easting	Northing
784496.01	7409809.01
784398.06	7409804.26
784239.36	7409890.23
784192.5	7409990.36
784091.84	7410035.69
783595.56	7410266.15
783257.64	7410423.5
782607.32	7410724.85
782090.67	7410942.31
781704.77	7411119.75
781606.99	7411164.72
781343.31	7411285.96
781335.03	7411289.77
780590.88	7411641.4
780585.33	7411644.03
780257.1	7411796.91
779836.95	7411992.61
779509.13	7412101.21
779324.16	7412162.48
779186.86	7412207.97
779175.74	7412211.65
779018.85	7412263.62
778984.28	7412275.07
778949.79	7412286.27
778922.5	7412295.12
778737.28	7412355.22
778587.13	7412403.93
778416.53	7412459.29
778407.55	7412458.67
778407.43	7412458.66
778391.1	7412457.53
778353.72	7412454.94
778349.48	7412454.65
778312.66	7412466.33
778055.34	7412548.02
778017.79	7410556.25
778015.12	7410400.35
777214.23	7410416.22
776775.59	7409079.12
776775.58	7409078.92
776775.16	7409078.92
776735.87	7409068.88
776696.27	7409058.37
776638.76	7409042.43
776581.46	7409025.75
776524.38	7409008.31
776467.53	7408990.13

Easting	Northing
776410.92	7408971.21
776354.57	7408951.56
776298.48	7408931.17
776242.66	7408910.05
776187.12	7408888.2
776131.86	7408865.63
776076.91	7408842.33
776022.27	7408818.33
775967.95	7408793.61
775913.95	7408768.18
775860.29	7408742.06
775806.97	7408715.23
775754.01	7408687.71
775701.42	7408659.5
775649.2	7408630.61
775597.35	7408601.04
775545.9	7408570.79
775494.85	7408539.87
775444.21	7408508.29
775393.98	7408476.05
775344.18	7408443.16
775294.81	7408409.62
775245.88	7408375.44
775197.41	7408340.62
775149.39	7408305.18
775101.84	7408269.11
775055.29	7408232.83
775009.21	7408195.96
774963.61	7408158.49
774918.49	7408120.44
774873.87	7408081.81
774829.76	7408042.61
774786.15	7408002.84
774743.06	7407962.51
774700.5	7407921.62
774658.47	7407880.19
774616.97	7407838.23
774576.02	7407795.73
773612.01	7406880.54
770768.89	7406019.17
770768.88	7406019.17
770525.49	7406023.64
770282.1	7406028.11
770160.4	7406030.34
770038.7	7406032.57
769795.3	7406037.04
769551.91	7406041.5

Easting	Northing
769308.51	7406045.97
769065.12	7406050.44
768821.72	7406054.87
768578.33	7406059.31
768334.94	7406063.75
768091.54	7406068.19
767848.15	7406072.62
767604.75	7406077.06
767361.36	7406081.5
767117.97	7406085.91
766874.58	7406090.32
766631.19	7406094.73
766387.8	7406099.14
766144.4	7406103.55
765901.01	7406107.96
765657.62	7406112.37
765414.23	7406116.75
765170.84	7406121.13
764927.45	7406125.51
764684.07	7406129.89
764440.68	7406134.27
764197.29	7406138.65
763953.9	7406143.03
763956.55	7406290.99
763732.97	7406295
763509.39	7406299
763285.8	7406303.01
763062.22	7406307.02
762838.64	7406311.03
762615.05	7406315.03
762391.47	7406319.04
762395.39	7406539.11
762399.31	7406759.18
762403.22	7406979.25
762407.14	7407199.32
762411.06	7407419.38
762411.04	7407419.38
762191.19	7407423.3
761971.35	7407427.22
761751.5	7407431.14
761531.66	7407435.07
761311.81	7407438.99
761091.97	7407442.91
761047.94	7407443.77
761014.95	7407444.41
761057.52	7409844.77
761134.41	7409843.4

Easting	Northing
761370.56	7409839.23
761606.72	7409835.06
761842.88	7409830.89
762079.03	7409826.72
762315.19	7409822.55
762357.88	7409821.78
762361.45	7410022.15
762365.01	7410222.51
762368.58	7410422.87
762372.15	7410623.23
762375.71	7410823.6
762452.6	7410822.22
762667.78	7410818.43
762837.73	7410815.44
762882.97	7410814.64
763098.16	7410810.85
763205.75	7410808.95
763528.53	7410803.27
763901.15	7410796.68
764037.3	7410794.27
764037.63	7410811.98
763901.63	7410814.39
763548.05	7410820.68
763528.83	7410821.02
763528.9	7410824.64
763528.99	7410829.75
763546.79	7411831.07
766766.63	7411773.21
766792.02	7413172.98
766875.23	7413172.19
766878.66	7413355.89
766883.34	7413606
766888.02	7413855.98
766892.69	7414105.96
766897.37	7414355.95
766902.05	7414605.93
766906.72	7414855.91
766911.4	7415105.9
766916.07	7415355.88
766920.74	7415605.88
766925.42	7415855.88
766930.09	7416105.88
766934.77	7416355.89
766939.44	7416605.89
766948.78	7417105.9
766958.12	7417605.91
766967.99	7418133.92

Easting	Northing
767163.44	7418126.04
767541.43	7418110.79
767941.44	7418094.66
768341.44	7418078.52
768741.44	7418062.39
769141.45	7418046.26
769541.45	7418030.12
769941.46	7418013.99
770341.46	7417997.86
771041.47	7417969.62
771941.46	7417938.53
772741.48	7417924.93
773941.5	7417904.53
775141.54	7417884.13
775288.58	7417881.63
779514.73	7417829.07
776779.57	7415780.05
776892.21	7415641.72
776944.63	7415684.25
776957.64	7415670.48
776977.49	7415684.87
777007.02	7415648.79
777007.03	7415648.79
776995.48	7415639.39
777025.42	7415603.2
777115.32	7415494.51
777137.48	7415525.6
777156.99	7415549.75
777175.84	7415570.58
777206.6	7415602.33
777230.08	7415624.49
777244.74	7415638.18
777342.2	7415730.18
777350.47	7415736.28
777357.75	7415742.23
777371.3	7415751.49
777392.47	7415764.06
777411.32	7415776.63
777432.16	7415792.17
777447.37	7415806.06
777399.5	7415861.69
777201.16	7416092.15
777140.95	7416162.11
777051.89	7416092.15
776965.48	7416024.25
776954.9	7416015.94
776969.96	7415997.38

Easting	Northing
776969.02	7415996.69
776922.33	7415957.07
776945.67	7415922.32
776779.57	7415780.05
766748.28	7410764.14
766748.14	7410764.14
766748.14	7410764.12
766746.3	7410764.07
766748.2	7410764.03
766683.9	7410030.84
766683.49	7410021.88
766683.9	7410012.91
766685.1	7410004.02
766687.1	7409995.27
766689.87	7409986.74
766693.4	7409978.49
766697.65	7409970.59
766702.59	7409963.1
766708.19	7409956.08
766714.39	7409949.6
766721.14	7409943.7
766728.4	7409938.42
766736.11	7409933.82
766744.19	7409929.93
766752.59	7409926.77
766761.24	7409924.39
766770.07	7409922.78
766779.01	7409921.98
766787.98	7409921.98
766796.92	7409922.78
767174.81	7409990.39
767183.64	7409991.99
767192.29	7409994.38
767200.69	7409997.53
767208.78	7410001.42
767211.18	7410002.76
767696.64	7410281.5
767770.56	7410305.2
767779.14	7410308.41
767787.23	7410312.31
767794.93	7410316.91
767802.19	7410322.18
767808.95	7410328.09
767815.15	7410334.57
767820.74	7410341.59
767825.69	7410349.08
767829.94	7410356.98

Easting	Northing
767833.46	7410365.23
768004.41	7410741.49
766748.32	7410764.14
766748.28	7410764.14

Schedule 3: Primary activities

At the time of assessment, emissions and discharges from the primary activities associated with the prescribed premises categories described on the cover page to this licence, were considered in the determination of the risk and related conditions for the premises.

The iron ore's considered in the determination of risk and related conditions for the premises includes the iron ore produced from the premises from the Mt Whaleback Pit and Orebodies 29, 30, 35, Eastern Syncline, Silver Knight and Bill's Hill; in addition to ore received at the premises via rail and car dumper from Eastern Ridge Operations (Orebodies 24, 25, 32 and 33) and Orebody 17/18/31 and Jimblebar (Wheelarra Hill).

The primary activity infrastructure and equipment situated on, or authorised for construction on, the premises is listed in Table 14 with infrastructure and equipment depicted in Figure 1, Figure 4 and Figure 5.

Table 14: Infrastructure and equipment

No.	Infrastructure/Equipment	Site plan reference
Category 5: Processing or beneficiation of metallic or non-metallic ore		
1.	3 x Primary crushers (or similar)	Figure 4: • OHP2; OHP3; OHP5
2.	4 x Secondary crushers	Figure 4: • OHP2 (3 in total); OHP3 (1 in total);
3.	3 x Tertiary crushers	Figure 2: • OHP4 (3 in total)
4.	22 x Screens	Figure 2: • OHP3 (3 x wet screens; 3 x dry screens); • OHP4 (13 dry screens); • OHP5 (3x dry screens)
5.	1 x 2mtpa mobile screening plant	Figure 2: Located withing the Fixed Plant West area, no less than 3.5 km from the Town of Newman.
6.	Beneficiation Plant – ore concentrator to beneficiate lower grade ore.	Figure 4: OHP3 (Bene Concentrator Plant; Thickener; Bene Waste)
7.	Conveyor Belts	Figure 4: <u>OHP2:</u> • M101, M103, M112, M120, M121, M122, CV301, CV302 <u>OHP3:</u>

No.	Infrastructure/Equipment	Site plan reference
		M13, M201, M206, M210, M214, M215, M216, M217, M218, M219, M220, M221, M222, M223, M224, M225, M227, M231, M232, M116, M233, M234, M240, M242, M250, M251, CV228, CV230, CV234, CV235, CV252, CV253, CV301, CV302 OHP4: CV401, CV402, CV404, CV405, CV406, CV451, CV452, CV453, CV454, CV501, CV502, CV503, CV504, CV601, CV602, CV603, CV604, CV701, CV702, CV751, CV752 OHP5: CV02A/B, CV03A/B, CV04A/B/C, CV05A/B/C, CV06, CV107, CV108, CV109, CV10, CV11, ST101.
8.	Stockpiles	Figure 4: Lump; Fines; Dead Lump Stockpile(s); Dead Fines Stockpile(s)
9.	3x Stackers	Figure 4: OHP3: ST253 – Waste OHP4: ST601 – Fines; ST602 – Lump
10.	1x Reclaimer	Figure 4: OHP4: RC701
11.	Car Dumper (CD501) to receive primary crushed ore from orebodies OB24 (Eastern Ridge) and OB18	Figure 4: OHP4: Car Dumper
12.	Train Loadout	Figure 4: OHP4: Train Loadout; Fines; Lump
13.	Tailings Storage Facility	Figure 1: Tailings Storage Facility
14.	Water cart: One water cart for light vehicle roads in the Fixed Plant West area. One watercart dedicated to the 2mtpa mobile screening plant (when the plant is in use) to water the running track of the plant loaders between the stockpile and screening plant and suppressing dust lift off from the stockpile.	N/A – mobile

No.	Infrastructure/Equipment	Site plan reference
Category 6: Mine dewatering		
15.	Dewatering discharge points	Figure 5: • W1; W2; P3 Figure 1: • Tank XD57 Discharge Point
16.	Dewatering pipeline	N/A
Category 54: Sewage facility		
17.	7 x WWTP	Figure 2: • EPCO STP, • Beneficiation Plant STP; • ANFO Yard STP; • Hub STP; • Lab STP; • Security Gate STP; • Warehouse STP
18.	4 x WWTP irrigation areas	Figure 2: • ANFO Yard STP Irrigation Area; • Lab STP Irrigation Area; • Security Gate STP Irrigation Area; • Warehouse STP Irrigation Area
19.	2 x WWTP discharge ponds	Figure 2: • EPCO Sewage Discharge Ponds; • Hub Discharge Pond
Category 61: Liquid waste facility		
20.	Waste oil storage	Figure 1: • Waste Oil Storage Area Main Fuel Farm; • Waste Oil Storage Area MEW
Category 64: Class II or III putrescible landfill site		
21.	4 x Inert Landfills	Figure 3: • Inert Landfill (4 in total)
22.	2 x Putrescible Landfills	Figure 3: • Putrescible Landfill (2 in total)

No.	Infrastructure/Equipment	Site plan reference
23.	5 x Asbestos Disposal Areas: These accept Type 1 special wastes (asbestos) contained within demolition debris waste from onsite and from other BHP premises in the vicinity of Newman. Fibrous material from drill holes during exploration and production drilling are also disposed of at these asbestos disposal sites	Figure 3: • Asbestos Disposal Area (5 in total)
24.	1 x tyre dump Tyres are buried in piles of up to 100 units with 6 m separation distance between each pile. Tyre burial areas are located within the overburden (waste rock dumps) within the Premises boundary depicted in Schedule 1 of the Amended Licence.	N/A – not shown
Category 73: Bulk storage of chemicals etc.		
25.	Fuel storage area	Figure 1: • Main Fuel Farm
Ancillary infrastructure to primary activities		
26.	ARD management areas	Figure 8: • ARD Dams A, B and C; • ARD Evaporation Cells 1-5 Figure 5: • P4; P5; P6; P7; P8; P9; P10; P11
27.	Bioremediation facilities – hydrocarbon contaminated soils	New landfarms, constructed to the specifications outlined in row 9 of Table 16, not shown.
28.	Water carts	N/A – mobile

Schedule 4: Infrastructure and equipment

Table 15: Operational requirements of premises infrastructure and equipment – dust

No.	Infrastructure and equipment	Dust control equipment	Operational requirement	Infrastructure location
	Dust control equipment and infrastructure			
1.	Primary Crushers	Partial enclosure	The ore is primary crushed underground and is fed onto a conveyor inside partially enclosed in a tunnel.	Figure 4: • OHP2 Primary Crusher • OHP3 Primary Crusher
2.	OHP5 Relocatable Crusher	Water sprays; Dust covers and curtains; Belt scrapers and sprays; Transfer station sprays; Secondary cone crusher hoods.	OHP5 Primary Crusher ROM bin hopper spray operating when transporting iron ore, unless during Exclusion Periods. Dust covers on sizing screens in place at all times when screening ore to minimise dust escape. Micro droplet water spray system at transfer chute entry and outlet to contain dust within transfer chutes, unless during Exclusion Periods. Crusher transfer points are enclosed and fitted with water sprays operational when handling ore, unless during Exclusion Periods. Dust sealing rubber curtain at head chute and skirt discharge to contain dust within transfer system. Water sprays must operate on the following equipment, unless during Exclusion Periods: SB01, AF01, CV02A/B, CV03A/B, CV04A/B/C, CV05A/B/C, CV06, CV107, CV108, CV109, CV10, ST101. Secondary Cone Crushers are fed from screens which are fitted with hoods for containment of dust.	Figure 4: • OHP5 CSI Plant
3.	Secondary Crushers	Partial enclosure	The ore is secondary crushed and is fed onto a conveyor underground inside a partially enclosed tunnel.	Figure 4: Secondary Crushing Plant OHP2
4.	Tertiary Crushers and screening	Dry bag dust collectors	Tertiary Crushers have dust hoods and negative pressure extraction to a dry bag dust collector DC455.	Figure 4: Tertiary Crushing Plant OHP4 (Hub)

No.	Infrastructure and equipment	Dust control equipment	Operational requirement	Infrastructure location
			Dust laden air within the screens is extracted with air released via the following dry bag dust collectors that operate to remove particulates: DC415, DC416	Dry Screens OHP4
5.	Truck unloading hoppers	Sprays	Sprays are operated at OHP2 and OHP3 hoppers whenever trucks are unloading ore, once installed in accordance with condition 8, and unless during Exclusion Periods.	Figure 4: OHP2; OHP3
6.	Car Dumper	Wet scrubbers Tunnel and building enclosure	Car dumpers receive ore within the car dumper building. Dust laden air within the car dumper building is extracted with air released via the following wet scrubbers that operate to remove particulates: DC507, DC508 Maintaining newly installed low flow alarm and control system for wet scrubbers DC507 & DC508.	Figure 4: Car Dumper OHP4
7.	All Conveyors (with bulk ore conditioning)	BOC sprays	The following BOC sprays on conveyors must be operated: • BOC503A, BOC603 and BOC752A – whenever transporting ore; • BOC302A – operational except when fines ore from the Beneficiation Concentrator Plant is running along this route; and • BOC702D and BOC702E – operational whenever transporting lump ores, unless during Exclusion Periods.	Figure 4: CV503; CV302; CV603; CV702; CV752
8.	Shuttle Conveyor CV454	Secondary scraper; 2 x spray bars on the bend pulley	Scraper to remove material from underside of the belt.	Figure 4: CV454
9.	Coarse Ore Stockpile Boom Conveyors	Boom sprays	The following boom sprays located on the boom tip of stackers must be operated: • BS302B and BS302C – operational except when fines ore from the Beneficiation Concentrator Plant is running	Figure 4: CV302 CV503

No.	Infrastructure and equipment	Dust control equipment	Operational requirement	Infrastructure location
			along this route. • BS503B and BS503C – whenever transporting ore, unless during Exclusion Periods.	
10.	Stackers (Yard)	Luffing	Stackers are lowered to as low as reasonably practicable to minimise the drop height of ore to the stockpile.	Figure 4: ST601; ST602
11.	Stockyard	Stockyard water cannons	128 stockyard water cannons are routinely operated over the stockpile area except when: • the Stacker or Reclaimer has custody of the pile; • during Exclusion Periods.	Figure 4: Dead Fines Stockpile; Fines; Lump; Dead Lump Stockpile
12.	Reclaimer	Boom sprays	Boom sprays must operate on BS702A and BS702B, except during Exclusion Periods.	Figure 4: RC701
13.	Boom conveyors at TLO stockpiles	Boom sprays	Unless during Exclusion Periods, the following boom sprays on boom tip and underneath the belt must operate when handling ore: BS752B; BS752C; BS752D.	Figure 4: CV751 CV752
14.	Train Loadout	Sprays; Partial enclosure.	Partially enclosed in a tunnel. Sprays operated to condition ore in the train load out, once installed in accordance with condition 8, unless when loading ore with a Moisture Content above the DEM Level for that ore, or during Exclusion Periods.	Figure 4: Train Loadout OHP4
15.	Unsealed roads and open areas	Water carts; Speed limits; Chemical dust suppressants	In the Fixed Plant West area as depicted in Figure 2: • 20km/h speed limit on all unsealed road corners for all light vehicles and total area speed reduction during high dust risk periods. • Water truck/s available during day shift to wet down light vehicle roads. • Water truck operated in accordance with condition 16 (c). Chemical dust suppressants	N/A

No.	Infrastructure and equipment	Dust control equipment	Operational requirement	Infrastructure location
			applied to and maintained on unsealed light vehicle roads that are not regularly serviced by a watercart. Chemical suppressants applied to and maintained on unsealed and un-trafficked, non-operational areas.	
16.	2 mtpa Mobile Screening Plant	Dedicated watercart. Water sprays at the: • Transfer point between the screen and stacker; and • Transfer point between the stacker and relevant conveyor.	Maximum throughput of 300 ktpa and maximum operational period of 8-weeks or 56 days (non-consecutively) per annum. To be operated no closer than 3.5 km from the Town of Newman. Operated in a manner that avoids accumulation of waste materials. Dedicated watercart will water running track of loaders between stockpile and plant, and the stockpile. Water sprays at the transfer point between screen & stacker, and stacker to relevant conveyor as to be operated whenever materials are being processed by the crushing and screening plant. Stacker to be positioned immediately prior to an existing water spray (on the relevant conveyor to be loaded). Maintain record of operational dates and times of the mobile screening plant so these can be reviewed against monitoring data.	Figure 1

Table 16: Other infrastructure / equipment controls and operational requirements

No.	Infrastructure/ Equipment	Operational requirement	Infrastructure location
1.	Wastewater treatment vessels and EPCO ponds	The licence holder must manage the wastewater treatment vessels and EPCO ponds such that: (a) overtopping of the wastewater treatment vessels does not occur; (b) stormwater runoff is prevented from entering the wastewater treatment vessels; and (c) vegetation and floating debris (emergent or otherwise) is prevented from growing or accumulating in the wastewater treatment vessels.	Figure 2: Beneficiation Plant STP ANFO Yard STP EPCO STP Hub STP Lab STP Security Gate STP Warehouse STP
2.	OWWTP Evaporation Pond (P2)	(a) Accepts only treated water from the Mobile Equipment Workshop oily water separator. (b) 1.5 mm HDPE lined evaporation pond to achieve a permeability of equal to, or less than 10^{-9} m/s. (c) Minimum vertical freeboard of 300 mm, unless in a 1 in 100 year, 72 hour duration average recurrence interval rainfall event. (d) Discharges to the OWWTP Discharge Point. (e) Discharge monitored for the parameters specified in condition 31. (f) Discharge quality satisfies limits specified in condition 31.	Figure 2: OWWTP Discharge Point OWWTP Evaporation Pond
3.	EPCO STP unlined pond	(a) Receives only treated wastewater from EPCO STP. (b) Minimum vertical freeboard of 500 mm, unless in a 1 in 100 year, 72 hour duration average recurrence interval rainfall event.	Figure 2: EPCO Sewage Discharge Ponds
4.	Tank XD57	(a) Authorised to receive RO reject water from the Newman WTP for blending with dewater that is used for dust suppression. (b) Brine reject water from the WTP will only be discharged to the Tank XD57 discharge point in the event that the ARD Facility is temporarily unavailable e.g. undergoing maintenance or is at capacity. (c) Discharges to the Tank XD57 Discharge Point only in the event that temporary storage and reuse, and tank storage has been exhausted, and in accordance with volume and quality limits specified in condition 32.	Figure 5: L2
5.	Hub Turkeys Nest	Discharge from Hub Turkeys Nest in the event that temporary storage and reuse, and Turkeys Nest storage has been exhausted.	Figure 5: L3
6.	Ophthalmia Dam discharge point	(a) Discharge of dewater abstracted from Orebody 29/30/35, Western Ridge and reject water from Newman Water Treatment Plant and in accordance with volume and quality limits specified in condition 31. (b) Contingency discharge of RO reject water from P3 for a period of up to eight (8) weeks per	Figure 5: W1, P3

		annual period.	
7.	Whaleback Creek discharge point	(a) Only to accept stormwater from the west end of Whaleback Pit. (b) Emergency discharge to Whaleback Creek in the event that reuse and storage of water have been exhausted.	Figure 5: W2
8.	ARD dams and evaporation cells	Only to accept water from the following sources: (a) Potentially acidic groundwater from Whaleback pit; (b) Potentially acidic stormwater from Whaleback pit; (c) RO waste from Yarnima Power Station; (d) RO waste from the Newman Water Treatment Plant; and (e) Run off from the adjacent overburden storage areas. Licence holder must manage the wastewater treatment dams and evaporation cells such that: (f) overtopping of the ponds does not occur; (g) a freeboard at or below 500 mm, unless in a 1 in 100 year, 72 hour duration average recurrence interval rainfall event; (h) the integrity of the containment infrastructure is maintained; (i) vegetation and floating debris (emergent or otherwise) is prevented from encroaching onto pond surfaces or inner pond embankments; and (j) Evaporation cells 2 and 3 are prioritised as storage locations and wastewater should be stored in these cells where capacity allows it.	Figure 5 and Figure 8: P4, P5, P6, P7, P8, P9, P10, P11
9.	Bioremediation facilities	The licence holder must store all recovered hydrocarbon-contaminated soils within a storage area that achieves a permeability of equal to, or less than 10^{-9} m/s and designed to contain all potentially contaminated stormwater.	N/A

Schedule 5: Quarterly Reporting

The following schedule outlines the investigation and reporting requirements triggered as a result of condition 13, Reportable Events as a result of dust monitoring boundary or ambient Reportable Event Criteria (as specified in Table 4) being exceeded.

Reporting Frequency

Reports must be submitted to the CEO on a quarterly basis, within 45 calendar days of the end of each quarter defined below:

- 1 January to 31 March,
- 1 April to 30 June,
- 1 July to 30 September; and
- 1 October to 31 December.

Contents of Report

The Quarterly report must contain the following details:

1. All validated boundary air quality and meteorological monitoring data for the quarterly period as recorded at those Monitoring Stations specified in Table 3 of condition 12, and provided in the format specified in Schedule 6. Monitoring Stations must refer to the same Station Name and Station ID as specified in Table 3 of condition 12.
2. The following information to support the investigation of Reportable Event criteria exceedances listed in condition 13:
    - date(s), time and duration of event;
    - a comparison of boundary air quality monitoring data and meteorological data with the data recorded at ambient monitoring stations specified in Table 3, and as depicted in Figure 6;
    - time series graphical plots of PM_{10}, including but not necessarily limited to dust scatter plots (dust roses), for the Monitoring Stations referred in Table 3 on the day/s on which the event occurred;
    - a comparison of moisture content against DEM levels for each ore outloaded during the 24-hour period; and
    - root cause analysis for the exceedances:
        - o review of PM_{10} concentrations at the WBAQRT010, WBAQRT011, WBAQRT004 and WBAQRT006 monitors to determine background influence;
        - o review of all meteorological data, including temperature (meteorological stations only), wind speed and direction, as measured at each monitoring station specified in column 1 of Table 3 and depicted in Figure 6 of Schedule 1;
        - o review of boundary and on-site dust data from monitoring stations specified in column 1 of Table 3 and depicted in Figure 6 of Schedule 1, to identify potential premises dust sources that may have contributed to the exceedance;
    - investigation by the licence holder into the cause(s) of the Reportable Event, including the extent to which the licence holder's activities contributed to the Reportable Event through the provision of the following information:

- in the 24-hour period of the Reportable Event, a breakdown of total amount (in wet tonnes) and source of iron ore:
  - in-loaded at the Premises;
  - outloaded to rail from the Premises; and
  - crushed and screened at each ore handling plant;
- the availability of dust control infrastructure as per Condition 3, for the 24-hour period of the Reportable Event;
- all corrective and management actions undertaken including but not limited to those specified in, Conditions 14 and 16; and
- all corrective and mitigation measures proposed for the avoidance of similar Reportable Events where it is determined that Premises activities are a significant contributor to the Reportable Event.

- complaints received that may have been caused by this exceedance.

Schedule 6: File format for monitoring data

The licence holder must ensure that validated (particle, gas and meteorological instrument data) results of air quality monitoring are provided as a comma delimited time series listing on a suitable computer readable medium. An example is given below. Variations on this format may be acceptable to DWER following discussions and approval from the DWER Air Quality Branch.

SITE NAME:XXXXXXXXXX

column description

ddmmyyyy HHMM,x,x,x,…

ddmmyyyy HHMM,x,x,x,…

↓

↓

↓

ddmmyyyy HHMM,x,x,x,…

where:	**dd** is the two digit day of the month i.e. 01, 02,…,31
	mm is the two digit month of the year i.e. 01, 02,…,12
	yyyy is the four digit year i.e. 2009, 2010, …
	HH is the two digit hour code i.e. 00, 01,…,23
	MM is the two digit minute code i.e. 00, 10, 15,…,55
	x,x,x is the comma delimited decimal data.

The time period for comma delimited time series listing must represent the end of the data period. Hence the first timestamp for any day must be 0005 hours and the data associated with this time stamp must be the averaged data for the period up to this time i.e. from midnight to 0005 hours. The last time for any day must be 2400 and the data associated with this time stamp must be the averaged data for the period up to this time i.e. from 2355 hours to midnight.

If the above method of timestamping is not achievable by your system, then the time series listing can be timestamped at the **start** of the period with the first timestamp of each day being 0000 hours which represents data from midnight to 00:05 and ends at 2355 hours which represents data from 23:55 to midnight on the same day. Erroneous or invalid data must be denoted as a blank (**not** a space) or a numeric error code such as -99.0 within the data set. There should be no spaces in the data lines other than that between the date and time.

The covering documentation will indicate if the data timestamp is at the start of the data averaging period or the end of the data averaging period.

The following additional data is also required for each transect:

- Upwind concentration
- Windspeed during traverse
- Ambient temperature
- Sigma theta (maybe not)

An example five-minute averaged data set comprising eight parameters is provided below.

SITE NAME:- GENERIC AQMS

Date_Time,CO_ppm,NO_ppb,NO2_ppb,NOx_ppb,SO2_ppb,O3_ppb,PM10_ ug_m3,PM2.5_ug_m3

26/04/2013 2325,0.2,31.4,11.4,42.8,,0.2,10.0,5.3

26/04/2013 2330,0.2,26.6,12.6,39.3,,0.1,8.6,4.7

26/04/2013 2335,0.1,14.8,14.6,29.4,,0.1,8.2,5.1

26/04/2013 2340,,,,,,,,

26/04/2013 2345,,,,,,,,

26/04/2013 2350,0.2,25.7,16.2,42,,0.5,14.6,13.4

26/04/2013 2355,0.2,,15.8,36,,0.6,14.2,11.3

26/04/2013 2400,0.2,,15.1,35,,0.5,14.3,9.7

27/04/2013 0005,0.2,24.8,15.3,40.1,,0.5,12.8,9

27/04/2013 0010,0.3,27.1,14.6,41.8,,0.4,12.7,9.2

27/04/2013 0015,0.4,33.2,14.5,47.7,,0.4,13.0,8.9

27/04/2013 0020,0.5,26.5,12.6,39.1,,0.2,12.0,7.9

The following units must be used for data submitted as a comma delimited time series listing:

Pollutant	Units	Minimum precision
Carbon monoxide	parts per million	X.X (tenth of a ppm)
all other gases	parts per billion	X (tenth of a ppb)
particles	micrograms per cubic metre	X.X (tenth of a µg/m^3)
wind speed	metres per second	X.X (tenth of a m/s)
wind direction	degrees from north	X.X (tenth of a degree)
sigma	degrees	X.X (tenth of a degree)
air temperature	degrees Celsius	X.X (tenth of a degree)
relative humidity	%	X.X (tenth of a %)
pressure	hectopascals	X.X (tenth of a hPa)
solar radiation	watts per square metre	X.X (tenth of a watt/m^2)

These units must be used unless approval has been obtained Air Quality Branch to use alternative units.

The proponent must provide:

- Data as five or 10 minute averages. If these are not available, then at shortest available averaging period;
- Site name, instrument manufacturer and model number;
- Site location (Latitude/Longitude GPS coordinates);
- Data validation procedure used to validate data; and
- all reported data must be time-stamped with the actual time to which the measurement refers.

Schedule 7: Ambient air quality monitor coordinates

Table 17: Coordinates for all dust monitors (GDA 2020, MGA Z50)

Monitoring Station ID and Name	Easting	Northing
WBAQRT010 - Town Centre PM10	779458.54	7414513.79
WBAQRT006 - Town East	781221.84	781221.84
WBAQRT011 - Background 3 North PM10	767963.68	7423125.81
WBAQRT004 - Background 2 South	784278.52	7409987.72
WBWS001 - Whaleback AWS	776569.41	7416176.93
WBAQRT022 - Background 3 North PM2.5	767958.27	7423116.41
WBAQRT026 - W39 North	772926.37	7417006.04
WBAQRT027 - Western Ridge Boundary	768505.15	7414383.30
WBAQRT020 - WB Stockyard West	772538.99	7411758.77
WBAQRT018 - OHP4 Screenhouse	773930.04	7411970.07
WBAQRT021 - WB CV751 CV752	774951.32	7412287.02
WBAQRT017 - Channel 2 TLO	775269.44	7412808.41
WBAQRT019 - OHP2 Secondary Crusher	774475.90	7413044.18
WBAQRT013 - Boundary 2 West	777205.18	7413114.61
WBAQRT012 - Boundary 1 North	778814.41	7415640.31
WBAQRT024 - WB Creek Channel 1	777010.54	7414680.66
WBAQRT032 - Background 4 West	761082.45	7409302.24
WBAQRT031 - WB Gatehouse Boundary	777412.58	7413980.27
WBAQRT023 - Town Centre PM2.5	779458.54	7414513.79
AT796-AT796 Stockyard	772650.92	7411835.89

END OF CONDITIONS

Attachment 5D: Western Ridge Derived Proposal

Hon Reece Whitby MLA
Minister for Environment; Climate Action; Racing & Gaming

[redacted]

[redacted]
BHP Iron Ore Pty Ltd
[redacted]

Dear [redacted]

PROPOSAL: WESTERN RIDGE (NEWMAN HUB) DERIVED PROPOSAL
PROPONENT: BHP IRON ORE PTY LTD

The Environmental Protection Authority (EPA) assessed the Pilbara Expansion strategic proposal and reported to the Minister for Environment in June 2018 (EPA Report 1619).

Following the then Minister for Environment's consultation with relevant decision-making authorities, he published a statement on 11 July 2019 (Ministerial Statement 1105) which set out the agreement decision that proposals identified in the Pilbara Expansion Strategic Proposal could be implemented if those proposals were declared to be derived proposals.

On 27 January 2023, BHP Iron Ore Pty Ltd referred a proposal to the EPA, which was described in the referral as the Western Ridge (Newman Hub) Derived Proposal. Included in the referral was a request that the EPA declare the proposal to be a derived proposal under section 38E of the *Environmental Protection Act 1986* (EP Act) (section 38E Declaration). The referral and request were subject to a seven day public comment period.

The EPA considered the proposal and the request and on 7 September 2023 notified me of a section 39B Declaration. Accordingly, pursuant to section 45B(2) of the EP Act, please find enclosed by way of service written notice that the implementation agreement made in relation to the derived proposal has taken effect on 27 September 2023.

Yours sincerely

[redacted]

17 OCT 2023

MINISTER FOR ENVIRONMENT; CLIMATE ACTION

Att.

Dumas House, 2 Havelock Street, West Perth, Western Australia, 6005
Telephone +61 8 6552 6300 Email: Minister.Whitby@dpc.wa.gov.au
https://www.premier.wa.gov.au/Ministers/Reece-Whitby

NOTICE OF TAKING EFFECT OF STRATEGIC PROPOSAL STATEMENT IN RELATION TO DERIVED PROPOSAL
(Section 45B of the *Environmental Protection Act 1986*)

Strategic proposal:	Pilbara Expansion Strategic Proposal
Strategic proposal Statement No:	Ministerial Statement 1105 published on 11 July 2019
Derived proposal:	Western Ridge (Newman Hub), described in Schedule 1
Proponent:	BHP Iron Ore Pty Ltd

Having received written notice on 7 September 2023 under section 38E(6)(b) of the *Environmental Protection Act 1986* that the Environmental Protection Authority has declared the above proposal a derived proposal, I hereby give notice pursuant to section 45B(2) of the Act, that:

1. The implementation agreement previously made in relation to the derived proposal has taken effect on 27 September 2023.

2. Conditions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, and 16 of in Statement No. 1105 dated 11 July 2019 apply to this derived proposal.

[redacted]

MINISTER FOR ENVIRONMENT

27 SEP 2023

Schedule 1 – Description of derived proposal

Derived proposal: Western Ridge (Newman Hub) Derived Proposal

Proponent: BHP Iron Ore Pty Ltd
ABN: 46 008 700 981

Proponent address: 125 St Georges Terrace, Perth WA 6000

Description of the derived proposal: As detailed in the Table below and Figures attached to this Notice

Table 1: Location and authorised extent of physical and operational elements.

Element	Location	Extent
Physical Elements		
Expansion of existing mining at Newman Hub to develop four iron ore pits (Western Ridge), mine and associated infrastructure and activities	Figure 1 and 2	Clearing up to 4,281 hectares (ha) of native vegetation within a development envelope of 7,235 ha (to be undertaken within the 98,500 ha of Ministerial Statement 1105)
Operational Elements		
Dewatering and water supply	-	Dewatering and abstraction of up to 13 gigalitres per annum
Management of surplus water	Figure 1	Controlled discharge of up to 13 gigalitres per annum to Ophthalmia Dam
Primary Crushing	Figure 1	Up to 30 million tonnes per annum
Pit lakes	Figure 1	Open void and formation of pit lake within mine pits
Carbon dioxide equivalent (CO_2-e) emissions	-	5.06 million tonnes CO_2-e over the life of proposal
Timing elements		
Operational life of proposal	-	31 years


LEGEND
BHP Operations
Newman Drinking Water Reserve (P1)
Western Ridge Derived Proposal
Development Envelope
Disturbance Footprint
SOURCE DATA
Proponent: BHP Iron Ore Pty Ltd
Basemap: Esri World Imagery
DWER GIS Section
Date: 7/06/2023, Map Version: 1
File No: APP-0000227
N
0 1.5 3 6
Kilometres
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:170,000 at A4
LOCALITY MAP
PORT HEDLAND
PERTH
Great Northern Hwy
Mt Whaleback
NEWMAN
Marble Bar Rd
Opthalmia Dam

Figure 2: Western Ridge Proposal in relation to the Pilbara Expansion Strategic Proposal approval boundary.

Attachment 5E: Eastern Pilbara Water Resources Management Plan Rev 8.1

BHP

Eastern Pilbara Water Resource Management Plan

November 2024
Version 8.1

Document Amendment Record

Version	Version description	Key changes	Date
7.0	Revised draft for Traditional Owner review	Update for the Jimblebar Hub Iron Ore Mining Operations Significant Amendment proposal Addresses DWER's comments on Versions 6.1, 6.2 and 6.3	16 September 2023
8.0	Final version as part of the EPA referral of the Jimblebar Hub Significant Amendment	Update of content to reflect current management and revision of groundwater level criteria	12 December 2023
8.1	Final version as part of the EPA referral of the Orebody 29/30/35 Significant Amendment	Addition of Orebody 29/30/35 Proposal. Minor clarifications	18 November 2024

Abbreviations

Term	Meaning
BC Act	*Biodiversity Conservation Act 2016* (WA)
BHP	BHP Iron Ore Pty Ltd
CEO	Chief Executive Officer
DWER	Department of Water and Environmental Regulation
Ethel Gorge TEC	Ethel Gorge aquifer stygobiont Threatened Ecological Community
EMP	Environmental Management Plan
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
EPWRMP	Eastern Pilbara Water Resource Management Plan
km	kilometre
MAR	Managed Aquifer Recharge
mbgl	metres below ground level
mg/L	milligram per litre
ML/d	megalitres per day
MS	Ministerial Statement
TDS	Total Dissolved Solids
RiWI Act	*Rights in Water and Irrigation Act 1914*

Contents

Tables

Figures

Executive summary

Eastern Pilbara Water Resource Management Plan	
Proposal names	Eastern Ridge Revised Proposal (MS1037) Newman Hub (Orebody 32 Below Water Table) (Pilbara Expansion Strategic Proposal MS1105) Newman Hub (Western Ridge) (Pilbara Expansion Strategic Proposal MS1105) Jimblebar Hub Iron Ore Mining Operations (MSXXXX) Orebody 29/30/35 (MSXXXX)
Proponent name	BHP Iron Ore Pty Ltd
Ministerial Statements	1037, 1105, XXXX, XXXX
Purpose of the EMP	To meet the requirements of MS1037 Condition 8, MS1105 Conditions 6, 9 and 10, MSXXXX Conditions B1-2 and B4-2 and MSXXXX Conditions B1-2 and B2-2.
Key environmental factors and EMP outcomes	**Inland Waters** (1) Maintain groundwater levels and salinity within the Ethel Gorge aquifer to support the stygofauna habitat of the Ethel Gorge TEC (2) Maintain the (altered) ephemeral surface water regime to the Fortescue River downstream of Ophthalmia Dam due to releases of water from Ophthalmia Dam **Subterranean Fauna** Maintain the habitat of, and minimise impacts to, the Ethel Gorge Aquifer Stygobiont Community
Condition clauses	MS1037: Condition 8 Subterranean Fauna – Ethel Gorge Aquifer Stygobiont Community MS1105: Condition 9 Subterranean Fauna Environmental Management Plan and Condition 10 Water Environmental Management Plan MSXXXX: Condition B1-2 Inland Waters environmental management plan Condition B4-2 Subterranean Fauna environmental management plan MSXXXX: Condition B1-2 Inland Waters environmental management plan and Condition B2-2 Subterranean Fauna environmental management plan
Key components in the EMP	Outcomes-based components, including trigger and threshold criteria for: • groundwater levels and water quality (salinity) in the Ethel Gorge aquifer • releases from Ophthalmia Dam to the Fortescue River
Proposed construction date	Eastern Ridge Revised Proposal, Jimblebar Hub Iron Ore Mining Operations and Orebody 29/30/35: Not applicable - approved proposals are in operations Newman Hub (Orebody 32 Below Water Table): Q3, 2024 Newman Hub (Western Ridge): Q2, 2024
EMP required pre-construction?	Not applicable. Required for multiple approved proposals which are in operations.

1 Context, scope and rationale

BHP Iron Ore Pty Ltd (BHP) has prepared the Eastern Pilbara Water Resource Management Plan (EPWRMP) to meet the requirements under Part IV of the *Environmental Protection Act 1986* (EP Act). BHP has prepared the EPWRMP to be consistent with the *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (EMP Instructions) (EPA 2024).

1.1 Proposals

The scope of the EPWRMP is the management of water-related activities that have the potential to impact the Ethel Gorge aquifer stygobiont Threatened Ecological Community (Ethel Gorge TEC) and the Fortescue River associated with the following BHP proposals in the Eastern Pilbara water management area (Figure 1):

- Ministerial Statement (MS) MS1037: Eastern Ridge Revised Proposal (approved)
- MS1105: Newman Hub (Orebody 32 Below Water Table) (authorised by the Pilbara Expansion Strategic Proposal, Notice: Statement 1105 – No 1)
- MS1105: Newman Hub (Western Ridge) (authorised by the Pilbara Expansion Strategic Proposal, Notice: Statement 1105 – No 2)
- MSXXXX: Jimblebar Hub Iron Ore Mining Operations (proposed significant amendment to Jimblebar, Orebody 31 and Orebody 18 approved proposals)
- MSXXXX: Orebody 29/30/35 (proposed significant amendment to the Orebody 29/30/35 Mining Below Water Table approved proposal).

The purpose of the EPWRMP is to meet the requirements of MS1037 Condition 8, MS1105 Conditions 6, 9 and 10, MSXXXX Conditions B1-2 and B4-2 and MSXXXX Conditions B1-2 and B2-2.

All of the proposals are in operations except for the Orebody 32 Below Water Table and Western Ridge proposals. Below is a summary of the proposals.

Eastern Ridge Revised Proposal

The Eastern Ridge proposal is to undertake mining and associated activities at Eastern Ridge, located approximately 3 km north-east of Newman. The proposal involves open-pit mining above the water table at Orebody 32 and below the water table at Orebody 24, Orebody 25, and Orebody 25 West. The proposal includes pit dewatering, discharge of surplus dewater into Ophthalmia Dam and the construction and operation of associated mine infrastructure.

Newman Hub (Orebody 32 Below Water Table)

The Orebody 32 Below Water Table proposal is a derived proposal for the expansion of existing mining operations at Newman, authorised by the Pilbara Expansion Strategic Proposal, MS1105 and EP Act s45B Notice: Statement 1105 – No 1.

The proposal is to expand the existing Orebody 32 above water table iron ore mine (authorised by the Eastern Ridge Revised Proposal, MS1037) in BHP's Newman Hub to below the water table and to construct and operate a new surplus water pipeline from Orebody 32 to Ophthalmia Dam. The proposal is located approximately 3 kilometres (km) north-east of Newman (Figure 1) and includes pit dewatering and the discharge of surplus dewater into Ophthalmia Dam.

Newman Hub (Western Ridge)

The Western Ridge proposal is a derived proposal for the expansion of existing mining operations at Newman, authorised by the Pilbara Expansion Strategic Proposal, MS1105 and EP Act s45B Notice: Statement 1105 – No 2.

The proposal is for mining of iron ore deposits above and below the water table at Western Ridge, located approximately 2 kilometres (km) south-west of Newman (Figure 1). The proposal includes the construction and operation of mine infrastructure, including pit dewatering and the discharge of surplus dewater into Ophthalmia Dam.

Jimblebar Hub Iron Ore Mining Operations

The Jimblebar Hub is located approximately 40 km east of Newman. The Jimblebar Hub comprises existing operations at Jimblebar, Orebody 31 and Orebody 18, currently approved under Part IV of the EP Act by MS1126, 1021 and 439 (as amended by 1012). Mining of iron ore deposits is undertaken above and below the water table. Mining operations include open pits, overburden storage areas and the construction and operation of associated mine, processing and rail infrastructure. Groundwater is abstracted for water supply and to dewater the orebodies. Surplus water management includes transfer to Ophthalmia Dam, controlled discharge to watercourses and managed aquifer recharge (MAR).

The Jimblebar Hub Iron Ore Mining Operations Significant Amendment (BHP 2023a) includes an increase in surplus water at the Jimblebar mine. However, no increases are proposed to the limits and extents for the discharge of surplus water to Ophthalmia Dam previously assessed and approved under Part IV and Part V of the EP Act.

The Proposal also includes the amalgamation of the Approved Proposals for the Jimblebar, Orebody 31 and Orebody 18 (which includes the Orebody 17 deposit) mines. BHP has requested that one new MS is issued for the Amended Proposal (Approved Proposals as amended by the Significant Amendment) (BHP 2023a).

Orebody 29/30/35

The Orebody 29/30/35 mine is located approximately 7 km west south-west of Newman. The Orebody 29/30/35 below water table mine is currently approved under Part IV of the EP Act by MS963. Mining of iron ore deposits at Orebody 29/30/35 is undertaken above and below the water table. Mining operations include open pits, groundwater abstraction for below water table mining, discharge of surplus water to Ophthalmia Dam and operation of associated mine infrastructure.

The Orebody 29/30/35 Significant Amendment (BHP 2024a) proposes to increase groundwater abstraction and an associated increase in surplus water discharge to Ophthalmia Dam via a new surplus water pipeline. BHP has requested that one new MS is issued for the Amended Proposal (Approved Proposal as amended by the Significant Amendment) (BHP 2024a).

BHP

PUBLIC

EASTERN PILBARA
WATER RESOURCE MANAGEMENT PLAN
Eastern Pilbara water management area

PLANNING & STANDARDS - IRON ORE

SCALE @ A4:	1:300,000	PREPARED:	SPATIAL DATA	FIGURE:	1
DATE:	21/08/2024	REQUESTOR:	ENV. APPROVALS	NO:	1021/124C

1.2 Key environmental factors

The key environmental factors relevant to this EPWRMP are Inland Waters and Subterranean Fauna. Table 1 summarises the environmental values, proposal activities and actual or potential impacts on the key environmental factors addressed by this EPWRMP.

Table 1: Key environmental factors, values and activities

Key environmental factor	Environmental values	Proposal activities	Actual/Potential impacts
Inland Waters and Subterranean Fauna	*Ethel Gorge aquifer* *Stygobiont community* *Threatened Ecological Community* (Ethel Gorge TEC)	Dewatering of mine pits (Eastern Ridge Revised Proposal[1]) Discharge of surplus mine dewater to Ophthalmia Dam (Eastern Ridge Revised Proposal, Orebody 31 Iron Ore Project, Jimblebar Hub Iron Ore Mining Operations, Orebody 32 Below Water Table, Western Ridge and Orebody 29/30/35)	**Direct impacts** Changes to groundwater levels and groundwater quality (salinity) in the Ethel Gorge aquifer **Indirect impacts** Potential changes to stygofauna habitat and reduction in stygofauna species abundance and diversity
Inland Waters	Fortescue River	Releases of water from Ophthalmia Dam to Fortescue River tributaries	**Direct impacts** Changes to existing (altered) surface water regime

1. The EPWRMP addresses the potential impacts of dewatering from Eastern Ridge due to the proximity of OB23 and OB25 which are adjacent to the Ethel Gorge TEC.

BHP manages other water-related environmental values through other Part IV EMPs and other legislation. The relationship between this EPWRMP and other water management and regulation for the proposals addressed in the EPWRMP is outlined in Section 1.4.1.

1.3 Condition requirements

BHP has provided the condition requirements of Eastern Ridge MS1037 Condition 8, Pilbara Expansion Strategic Proposal MS1105 Conditions 6, 9 and 10, Jimblebar Hub MSXXXX Conditions B1-1, B1-2, B4-1, B4-2 and C3 and Orebody 29/30/35 MSXXXX Conditions B1-1, B1-2, B2-1, B2-2 and C3, in Schedules (see Section 2), which the EMP Instructions allow for, where there are multiple conditions and/or condition clauses.

Condition 4-1 of MS1037 and Condition 5-1 of MS1105 require BHP to make environmental data (including environmental plans) publicly available and Condition C1-6 of MSXXXX and MSXXXX requires publication of EMPs. BHP will publish the endorsed EPWRMP on the BHP website and provide to Department of Environmental and Water Regulation (DWER) in a suitable electronic form for online publication, to meet the condition requirements.

1.4 Rationale and approach

As required by the EMP Instructions, this section provides a concise description of the rationale and approach for the components in this EPWRMP.

BHP applied a risk-based approach to identify and prioritise components in this EPWRMP. The purpose of the components is to protect the environmental values in Table 1. In updating the components, BHP has used available scientific information from recent ecohydrological investigations, studies and monitoring.

1.4.1 Management approach

1.4.1.1 Sub-regional and site level management

BHP uses a regional and site-specific approach to manage the impacts of its operations on water-related environmental values, which includes statutory and non-statutory (BHP internal) management. At the Pilbara scale, BHP applies a regional approach to water management, as outlined in the *Pilbara Water Resource Management Strategy* (BHP 2020), which feeds into sub-regional and site level management.

BHP applies the following approach to EP Act Part IV EMPs for water management:

- Sub-regional level EMPs are developed to manage potential impacts to regional environmental values (e.g. Ethel Gorge TEC) from multiple BHP mines/hubs.
- Site level EMPs are developed to manage potential impacts to local environmental values from one BHP mine/hub.

Both levels of EMPs are complemented by monitoring and/or controls in other statutory decision-making processes for water-related activities. This includes regulation administered by the Department of Water and Environmental Regulation (DWER), through the EP Act Part V and the *Rights in Water and Irrigation Act 1914* (RiWI Act).

The water management framework for the proposals and the environmental values addressed in the EPWRMP is shown in Figure 2.

Other Part IV water EMPs relevant to the EPWRMP

BHP has developed water management plans to address potential impacts from per- and polyfluoroalkyl substances (PFAS) for OB32 BWT, Western Ridge and Orebody 29/30/35 (Figure 2). BHP has developed site level water (PFAS) management plans because the risk posed by PFAS is different for different mines, and hence the criteria, monitoring and mitigation are different for different mines. Therefore, BHP has developed a staged approach to PFAS monitoring and management, where PFAS monitoring and mitigation is targeted at the site scale (i.e. at the mine site) and monitoring and management at the sub-regional scale (i.e. in Ophthalmia Dam) will only be required if certain PFAS levels are reached in the surplus dewater from a particular mine, prior to discharge to Ophthalmia Dam. BHP notes that Part V regulates emissions and discharges, including substances that have the potential to contaminate surface and groundwater.

Other Part IV water EMPs for the proposals addressed in the EPWRMP

Of the proposals addressed in the EPWRMP, only approved proposals in the Jimblebar Hub have authorisation for surplus water management other than discharge to the Ophthalmia Dam MAR system. The management of surplus water from the Jimblebar Hub to watercourses and aquifers is addressed in the site level *Jimblebar Hub Water Management Plan* (BHP 2023b).

Region

Pilbara Water Resource Management Strategy *(BHP internal)*

This EMP

Part IV EP Act: Eastern Pilbara Water Resource Management Plan

Management for Ethel Gorge TEC, and Fortescue River: Eastern Ridge MS1037 Condition 8, Pilbara Expansion Strategic Proposal MS1105 Conditions 9 and 10 (Orebody 32 Below Water Table and Western Ridge), Jimblebar Hub MSXXXX Conditions B1-2 and B4-2 (*if approved*), Orebody 29/30/35 MSXXXX Conditions B1-2 and B4-2 (*if approved*)

Sub-region

Surplus Water Management Plan: Ophthalmia Dam Surplus Water Scheme *(BHP internal)*

Describes the operation of Ophthalmia Dam surplus scheme, and associated legal obligations and monitoring

Jimblebar Hub	Newman Hub
PFAS management: *N/A - PFAS risk from Jimblebar is low*	PFAS management: Monitoring of water in Ophthalmia Dam and mitigation, if required: • Western Ridge and Orebody 32 Below Water Table: EP Act Part IV MS1105 Condition 9 Water Environmental Management Plan and/or amendment to EP Act Part V Licences L6942/1997/13 and L4503/1975/14 • Orebody 29/30/35: EP Act Part IV MSXXXX Condition B1 Inland Waters and/or amendment to EP Act Part V Licence L4503/1975/14

Site

Jimblebar Hub	Newman Hub
EP Act Part IV Jimblebar Hub MSXXXX • Condition A1 Limitations and extents: Surplus discharge rate from Jimblebar Hub to Ophthalmia Dam	EP Act Part IV Eastern Ridge MS1037 • Schedule 1: Authorised extents (Eastern Ridge dewatering abstraction rate, Surplus discharge rate from Eastern Ridge to Ophthalmia Dam) EP Act Part IV MS1105 and Orebody 32 Derived Proposal Notice No 1 • Authorised extents and Condition 9 Water Environmental Management Plan (Water (PFAS) Management Plan) EP Act Part IV MS1105 and Western Ridge Derived Proposal Notice No 2 • Authorised extents and Condition 9 Water Environmental Management Plan (Water (PFAS) Management Plan) EP Act Part IV Orebody 29/30/35 MSXXXX • Condition A1 Limitations and extents: Surplus discharge rate from Orebody 29/30/35 to Ophthalmia Dam • Condition B1 Inland Waters (Water (PFAS) Management Plan)
EP Act Part V Licence Jimblebar Hub L5415/1988/9 (*amend*) • Limit on the rate of emissions (discharge from Jimblebar Hub to Ophthalmia Dam) • Specifies the location of emissions • Specifies monitoring: flow rate, volume, water quality	EP Act Part V Licence (Eastern Ridge L6942/1997/13, Western Ridge and Orebody 29/30/35 L4503/1975/14 (*amend*) • Limit on the rate of emissions (discharge from Eastern Ridge, Western Ridge and Orebody 29/30/35 to Ophthalmia Dam) • Specifies the location of emissions • Specifies monitoring: flow rate, volume, water quality (including PFAS, if required)
RiWI 5C Licence to take water (and Operating Strategy) *N/A: Dewatering from Jimblebar Hub not a risk to EPWRMP environmental values*	RiWI 5C Licence to take water (and Operating Strategy) Eastern Ridge GWL182237(4) • Limit on rate of groundwater abstraction • Monitoring at the source (dewatering bores) – abstraction rate, volume, groundwater levels and quality • Monitoring along pathway – groundwater levels *N/A: Dewatering from OB32 BWT, Western Ridge and Orebody 29/30/35 not a risk to EPWRMP environmental values*

Figure 2: Water management framework

1.4.1.2 Other regulation related to the EPWRMP

This EPWRMP does not duplicate monitoring and/or controls in other statutory decision-making processes for water-related activities related to managing the potential impacts to the environmental values addressed in this EPWRMP (Table 2). This includes regulation administered by the DWER through the EP Act Part V and the RiWI Act.

Table 2: Other approvals relating to the EPWRMP

Activity	Site/location	Legislation and Approval	Control
Groundwater abstraction (Dewatering)	Dewatering at Eastern Ridge operations authorised under MS1037[1]	RiWI 5C licence to take water (and associated Operating Strategy): • Eastern Ridge: GWL182237(4) • Orebody 23: GWL74556(11)	RiWI licences • Limit on rate of groundwater abstraction • Groundwater monitoring (Operating Strategy) – abstraction rate, volume, groundwater levels and quality
Groundwater abstraction (Water Supply)	Ophthalmia Borefield in the Newman Public Drinking Water Supply Area	RiWI 5C licence to take water (and associated Operating Strategy): • Ophthalmia Borefield: GWL65219(12)	RiWI licence GWL65219(12): • Limit on rate of groundwater abstraction • Groundwater monitoring (Operating Strategy) – abstraction rate, volume, groundwater levels and quality • Monitoring of aquifer water quality adjacent to Ophthalmia Dam
Surplus water management	Discharge to Ophthalmia Dam from Jimblebar Hub (Jimblebar and Orebody 31) authorised under MSXXXX; Eastern Ridge operations (including Orebody 32 Below Water Table) authorised under MS1037 and MS1105; Orebody 29/30/35 authorised under MSXXXX; and Western Ridge authorised under MS1105	EP Act Part V licence: • Jimblebar Hub (includes Jimblebar and Orebody 31): L5415/1988/92[2] • Eastern Ridge operations: L6942/1997/13[3] • Mt Whaleback (includes Orebody 29/30/35): L4503/1975/14 • Western Ridge: amendment to Mt Whaleback licence (L4503/1975/14) or new licence	EP Act Part V licences: • Limit on the rate of emissions (discharge to Ophthalmia Dam) • Specifies the location of point source emissions • Specifies monitoring (flow rate and volume) at the discharge point

1. The EPWRMP addresses the potential impacts of dewatering from Eastern Ridge due to the proximity of OB23 and OB25 which are adjacent to the Ethel Gorge TEC.
2. No amendment to the discharge rate to Ophthalmia Dam from the Jimblebar Hub (currently 32.625 GL/a) is required.
3. Surplus water discharge from OB32 to Ophthalmia Dam will be regulated through an amendment to the existing Part V Eastern Ridge Iron Ore Mine licence.

1.4.2 Rationale

This section provides a concise description (in tabular format) of the rationale for the EMP components in Section 2, including:

- environmental outcome
- survey and study findings
- key assumptions and uncertainties
- rationale for choice of indicators.

Table 3 provides the rationale for the components. Detail on the Ethel Gorge system monitoring program and management controls is provided in Sections 1.4.2.1 and 1.4.2.2.

Table 3: Rationale for EPWRMP components

Surveys and studies	Survey and study findings	Key assumptions and uncertainties	Rationale for choice of indicators
Value: Ethel Gorge TEC **Outcome:** Maintain groundwater levels and salinity within the Ethel Gorge aquifer to support the stygofauna habitat of the Ethel Gorge TEC			
Eastern Pilbara Hub Water Balance - 2024 Forecast Surplus Discharge Assessment (EMM 2024) *BHP Iron Ore Annual Aquifer Review 2024* (BHP 2024b) *Ethel Gorge TEC Stygofauna Monitoring 2022/2023* (Stantec 2024) *Review of Long-Term Trends in the Ethel Gorge Stygobiont TEC* (Stantec 2023) *Orebody 32 below water table: Ophthalmia Dam surplus water impact assessment* (BHP 2022a) *Orebody 32 below water table: groundwater impact assessment* (BHP 2022b) *Eastern Ridge and Jimblebar Stygofauna Monitoring 2021/2022* (Stantec 2022) *Technical review: Salinity Tolerance of Ethel Gorge Stygofauna TEC* (MWH 2016) *Pilbara stygofauna: deep groundwater of an arid landscape contains globally significant radiation of biodiversity. Records of the Western Australian Museum, Supplement 78: 443-483* (Halse et. al. 2014) *Characterisation and Mapping of Ethel Gorge Aquifer Stygobiont Threatened Ecological Community* (Bennelongia 2013)	**Ophthalmia Dam Managed Aquifer Recharge (MAR) system** • Ophthalmia Dam located 5 km upstream of Ethel Gorge, was commissioned in 1981 as a MAR scheme, to maintain groundwater levels within the Ethel Gorge aquifer, to support the Ophthalmia Borefield for the Newman town water supply. The Ophthalmia Dam system comprises the dam, two infiltration basins, three recharge ponds and connecting drainage system (Figure 3). • Ophthalmia Dam has an important influence on the hydrological condition downstream in Ethel Gorge. Recharge to the shallow groundwater system occurs as seepage from Ophthalmia Dam and associated infiltration structures as well as direct infiltration from channel flow events. • Discharge of surplus mine dewater to Ophthalmia Dam from BHP's eastern mines first commenced in 2006 from Eastern Ridge, followed by Orebody 31 and Orebody 29/30/35 in 2016 and Jimblebar in 2019. Discharge to Ophthalmia Dam from Orebody 32 and Western Ridge was authorised under Part IV of the EP Act in September 2023, but has not yet commenced. **Ethel Gorge aquifer** • The Ethel Gorge shallow alluvial and calcrete aquifer supports the Ethel Gorge TEC (Figure 3). Ethel Gorge is an important feature of the Eastern Pilbara hydrological system, as the surface and groundwater flows from the upstream catchment area, converge here. The area is characterised as a receiving environment, comprising channels, flood plains and calcretes of the river and calcrete land systems dissected by ridges of bedrock. Groundwater levels of less than 10 metres below ground level (mbgl). • The hydraulic behaviour of the gorge groundwater system has been dominated by Ophthalmia Dam since its commissioning in 1981. The dam impounds the Fortescue River near Newman to enable infiltration to recharge the Ophthalmia paleochannels. Therefore, the dam has maintained groundwater levels nearer natural conditions, as groundwater levels would have declined without the dam due to the operation of the Ophthalmia Borefield. <u>Groundwater levels</u> • Mining below the water table (and dewatering) occurs close to the Ethel Gorge TEC at BHP's Eastern Ridge mining operations. Localised drawdown reached a maximum of approximately 130 m at OB25 Pit 3 and 100 m at OB23. However, while there was some response to the dewatering in the Ethel Gorge aquifer, the groundwater level data shows that the observed drawdown in the Ethel Gorge aquifer between 2006 and 2012 (peak dewatering years) was limited to a maximum of 5 m (BHP 2022b). Backfilling has now started at OB25 Pit 3 and OB23. Abstraction has decreased at OB25 Pit 3 and has ceased at OB23. Groundwater levels at OB25 Pit 3 have recovered within 30-40 m of pre-mining (dewatering) levels. Groundwater levels at OB23 have recovered close to pre-mining levels (BHP 2024b). <u>Groundwater quality (salinity)</u> • The current hydrogeological conceptualisation divides the Ethel Gorge TEC into a more permeable western portion of the Ethel Gorge aquifer and lower permeability (clayey) eastern portion of the Eastern Ophthalmia aquifer (boundary roughly along the Warrawanda Creek) (Figure 4). Groundwater salinity in the Primary Habitat Monitoring Zone of the Ethel Gorge aquifer is mostly less than 1,100 mg/L, but is naturally elevated in the East Ophthalmia aquifer south of OB42 where up to 4,000 mg/L has been recorded. Groundwater in the Shovelanna Creek Monitoring Zone is also elevated, while it is mostly less than 1,000 mg/L in the Homestead Creek Monitoring Zone. • BHP commissioned an update of the Eastern Pilbara Hub water balance modelling to predict changes to groundwater salinity, including in the Ethel Gorge aquifer, from the 2024 combined forecast surplus discharge from all BHP's eastern approved mines (Eastern Ridge (including OB32 BWT), Jimblebar Hub, Western Ridge) and the forecast discharge from Orebody 29/30/35 including the predicted increase (EMM 2024). • The modelling predicted that the salinity of water in Ophthalmia Dam will range between approximately 50 and 1,500 mg/L (within historical variation). This indicates that the predicted groundwater salinity in the Ethel Gorge aquifer will remain below 2,000 mg/L for the high hydraulic conductivity scenario, which is within the range of observed groundwater salinity and below the Early response indicator of 2,500 mg/L TDS. The extended modelling (to 2065 compared to 2053 for the 2023 assessment) shows that the predicted groundwater salinity stabilises and declines after approximately 2050, coinciding with declining surplus water discharge.	**Assumptions** • The Ethel Gorge TEC has a strong groundwater hydrological dependency provided by shallow saturated pore spaces in which stygofauna live. The community is hosted in shallow alluvial aquifers (notably calcrete) and their habitat is maintained by saturation of these aquifers. Changes to groundwater levels or quality, therefore, may have an impact on the TEC. • Groundwater levels are reflective of the significant recharge events following relatively wet periods during the summer months. The range in water levels maintains a substantial saturated thickness in the upper alluvial aquifer (including the calcretes) and provides a consistent habitat for stygofauna. The area of the Ethel Gorge TEC coincides with both areas of shallow groundwater and the deposit of subsurface calcretes. **Scientific uncertainty** • Inherent limitations of methods used to sample stygofauna (e.g. false absences). • Limited understanding (and ability to understand) of the trophic structure of the stygofauna community and how natural processes contribute to variability in species abundance and richness spatially and temporally. • Understanding of the tolerances of the stygofauna community, specifically the 'core endemic' species, to changes in salinity and other hydrochemistry changes.	**Type of components** BHP has chosen outcomes-based components for the Ethel Gorge aquifer as BHP can control the rate of discharge to Ophthalmia Dam and measure groundwater levels groundwater quality. **Choice of indicators** <u>Groundwater levels and water quality</u> Indicators have been selected in the context of natural variance. The hydrological indicators used in this EPWRMP are based on historical ranges of groundwater levels and water quality (as Total Dissolved Solids (TDS)) observed in the Ethel Gorge aquifer and TEC. The early response indicator, trigger and threshold criteria have been established to manage the potential impacts to the stygofauna community habitat and are set to maintain hydrological conditions (groundwater levels and salinity) in the Ethel Gorge aquifer and TEC within acceptable historical ranges. These hydrological conditions are the basis of maintaining the Ethel Gorge TEC habitat) and are therefore the key indicators that are monitored. Consistent with the EPA's *Environmental outcomes and outcomes-based conditions: Interim Guidance* (EPA 2021b), the groundwater level and groundwater salinity indicators are used by BHP as a surrogate indicator for stygofauna, in particular for the condition of the stygofauna habitat in the Ethel Gorge TEC. The groundwater criteria are lead indicators, as they provide an early measure of potential changes to the stygofauna habitat suitability. If the groundwater criteria are triggered, there are actions that BHP can take to improve the habitat quality, whereas there are no suitable actions to address changes in stygofauna species richness and abundance. The groundwater level criteria have been reviewed and simplified, based on historical groundwater levels (including since discharge to Ophthalmia Dam commenced in 2006) and taking into account the current aquifer conditions and planned surplus operations. With the backfill of Orebody 23 and Orebody 25 Pit 3 and recovery of groundwater levels, and higher water levels in Ophthalmia Dam groundwater levels in the Ethel Gorge aquifer and TEC are expected to remain at higher levels. BHP has revised the groundwater level criteria to relate to groundwater level decline, rather than a range as the risk from groundwater level increase is increased salinity which is captured in the groundwater quality (salinity) criteria. The revised criteria are based on monitoring of groundwater levels in the Ethel Gorge Primary Habitat Monitoring Zone, which shows that groundwater levels have historically usually been above 494 mRL. BHP has based the

Surveys and studies	Survey and study findings	Key assumptions and uncertainties	Rationale for choice of indicators
	Ethel Gorge TEC • The Ethel Gorge TEC is characterised by the co-occurrence of a diverse assemblage of stygofauna species inhabiting the shallow alluvial and calcrete aquifers within Ethel Gorge and downstream of the gorge for approximately five kilometres (Bennelongia 2013). • There are two main threatening processes that may affect stygofauna in the Ethel Gorge TEC: 1. The stygofauna community may be impacted by a decline in groundwater levels associated with groundwater abstraction in the Ethel Gorge aquifer and in aquifers that are hydraulically connected to the Ethel Gorge aquifer. 2. The stygofauna community may be impacted by changes to groundwater quality associated with groundwater abstraction and/or discharge of surplus water into Ophthalmia Dam. • The Ethel Gorge TEC is listed as a Critically Endangered TEC under the *Biodiversity Conservation Act 2016*, due to the diverse assemblage of stygofaunal species present (Government of Western Australia 2023). DBCA reduced the Ethel Gorge TEC buffer from 5 km to 2 km in 2023 (Figure 5). • BHP commissioned a study in 2022 to review the existing long-term data set for the Ethel Gorge TEC to further understand the temporal and spatial trends of stygofauna in response to environmental factors. – Stygofauna species richness and total abundance were investigated in relation to key abiotic parameters (pH, salinity as EC, calcium, nitrogen, phosphorus and sulphate) to further examine the relationships between abiotic parameters and stygofauna. This line of investigation was also extended to the four taxa identified as a potential indicator suite for TEC health, *Diacyclops humphreysi, Archinitocrella newmanensis, Pygolabis humphreysi* and *Chydaekata acuminata* (Stantec 2023). – The results indicated that higher stygofauna abundances and richness were commonly associated with a pH range between 7.2 and 8.2, reflecting broader trends in calcareous groundwater systems. The minimum pH for stygofauna records was 5.5, with *Diacyclops humphreysi, Archinitocrella newmanensis, Pygolabis humphreysi* and *Chydaekata acuminata* mostly collected within the pH range 7 to 8.5. Stygofauna were generally most abundant at salinities (as electrical conductivity, EC) ranging between 1,000 and 2,000 µs/cm (approximately 670 and 1,340 mg/L TDS). However, stygal specimens, including representatives of *Diacyclops humphreysi, Archinitocrella newmanensis, Pygolabis humphreysi* and *Chydaekata acuminata*, were recorded at values above 5,000 µs/cm (approximately 3,350 mg/L TDS). Species richness was largely consistent up to at least 5,000 µs/cm (approximately 3,350 mg/L TDS) (Stantec 2023). – In general, there were no clear trends in stygofauna species richness or abundance relative to nitrogen and phosphorus concentrations. However, moderate to elevated stygofauna abundances, primarily comprising copepods, were noted for several of the samples with higher nitrogen values (~20 mg/L). In relation to calcium, stygofauna abundance and species richness was generally highest at moderate calcium levels. Sulphate concentrations were elevated in some instances however were considered to reflect local geology and did not preclude stygofauna (Stantec 2023). • BHP commissioned a technical review of the salinity tolerance of stygofauna in the Ethel Gorge TEC (MWH 2016) in response to water balance modelling which predicted that groundwater salinity in the Ethel Gorge aquifer may increase as a result evapo-concentration of surplus water discharged into Ophthalmia Dam. From an analysis of groundwater salinity data and stygofauna assemblage data at varying salinity levels, MWH concluded that the Ethel Gorge stygofauna assemblage has been observed to exist in groundwater environments that are predominantly less than 4,000 mg/L TDS. The maximum recorded salinities of most of Ethel Gorge stygofauna groups was below 4,000 mg/L (with many below 2,500 mg/L) (MWH 2016). • An increase in groundwater salinity is likely to be within the tolerance thresholds of the stygofauna community. Available scientific knowledge suggests that many stygofauna species can tolerate a variable salinity regime (Halse et. al. 2014). However, less resilient species may be vulnerable to salinity increases beyond the range of natural variability. Progressive technical studies are required to address these uncertainties within the framework of BHP's adaptive management approach. **Stygofauna monitoring results** • BHP has undertaken annual stygofauna monitoring in the Ethel Gorge TEC since 2009 which includes monitoring of stygofauna species richness. BHP will continue to undertake this monitoring. • The area has experienced substantial changes in groundwater levels, due to groundwater abstraction, dewatering activities, recharge through Ophthalmia Dam, and climatic variation. However, to date, no measurable impacts on the stygofauna community have been observed (Stantec 2022). • Thirty-nine 'core endemic' species have been recognised from the Ethel Gorge area from monitoring programs conducted annually since 2009. Species accumulation modelling estimates that between 75.5 to 94.6 percent of the assemblage predicted to exist within the Ethel Gorge area has been recorded (Stantec 2024).		criteria (early warning, trigger and threshold) if the groundwater declines below this level. While groundwater level decline criteria have been proposed, groundwater decline is unlikely to occur with the operation of the dam, including receiving surplus water. Although groundwater decline in the Ethel Gorge aquifer has only been identified as a risk from dewatering at Eastern Ridge (due to the proximity of OB23 and OB25 which are adjacent to the Ethel Gorge TEC), as a precautionary measure, BHP has applied the criteria to all proposals addressed in the EPWRMP. <u>Stygofauna monitoring</u> To ensure that the groundwater indicators represent the condition of the Ethel Gorge TEC habitat and the community, BHP also undertakes groundwater quality and stygofauna species sampling as part of its regular stygofauna monitoring program. Recent sampling has detected very low levels of PFAS (below the revised 'draft' 99% Species Protection Level of 0.0091 µg/L (ANZG, 2023)) in Ophthalmia Dam and the Ethel Gorge aquifer. As a precautionary measure, BHP has added the sampling of PFAS to the groundwater quality sampling as part of the stygofauna monitoring program. • As the Ethel Gorge is a regional water asset, the water-related components (indicators - triggers and thresholds, monitoring and reporting are the same for each project addressed in the EPWRMP that discharges surplus water to Ophthalmia Dam. This approach enables BHP to pro-actively manage its activities and impacts at the regional level. • BHP has established monitoring and management zones to enable adaptive management of the Ethel Gorge system. Detail and rationale for the monitoring program is in Section 1.4.2.2. • In addition to the groundwater monitoring (Table 5) that relates to the groundwater criteria (triggers and thresholds), BHP will also continue to undertake stygofauna monitoring, including species richness and abundance (Table 5). BHP will use this information to support the groundwater management and refine the management in the EPWRMP, if required. • Based on the updated 2023 groundwater level and salinity predictions, 2016 technical review of salinity tolerance of stygofauna in the Ethel Gorge TEC and 2022 study to investigate Stygofauna species richness and total abundance in relation to key abiotic parameters, BHP considers that the existing criteria (groundwater triggers and thresholds) are appropriate to manage the potential impacts to the habitat of the Ethel Gorge TEC. BHP does not consider that it is appropriate to develop triggers relating to stygofauna species richness and abundance.

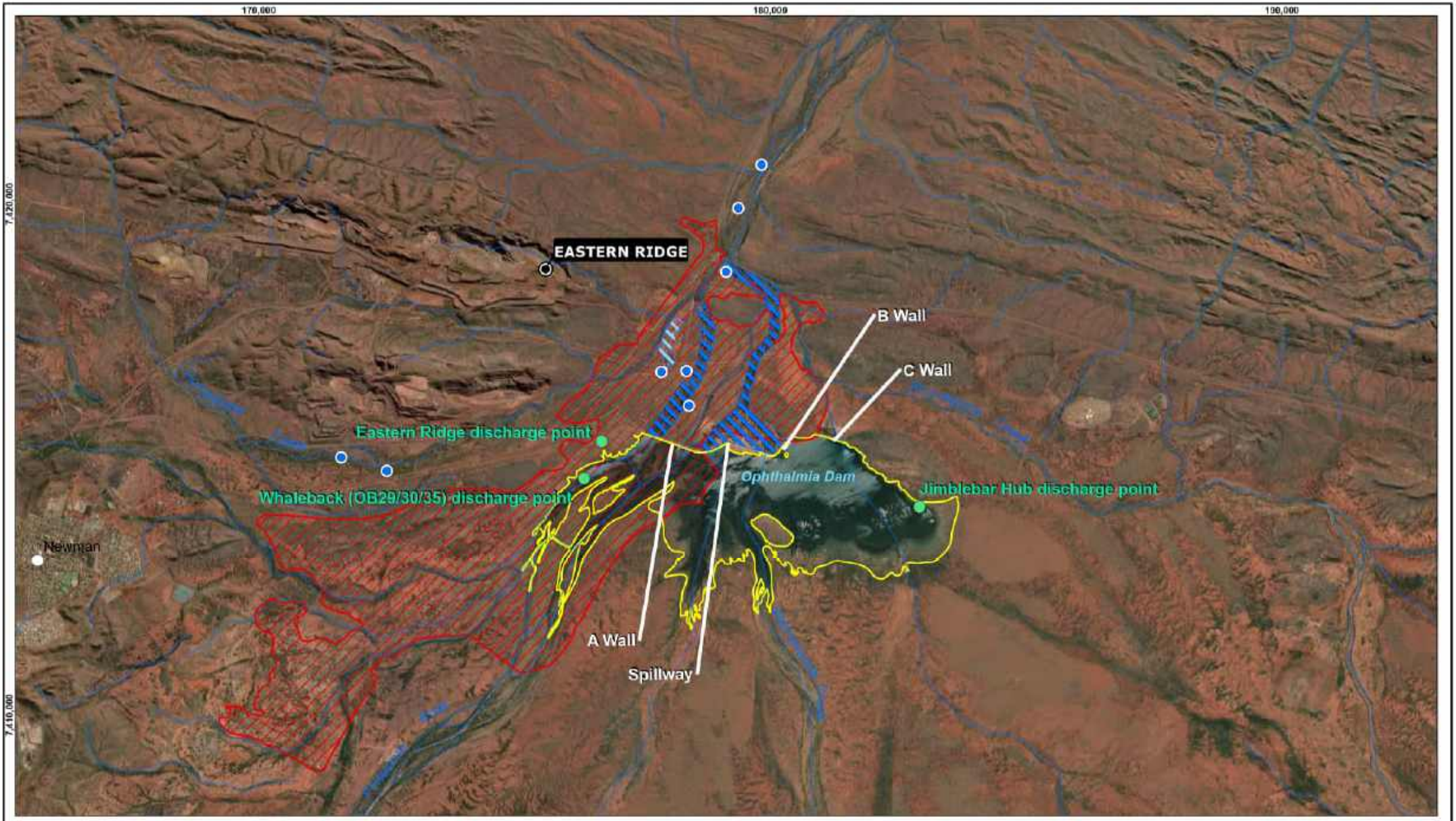
Surveys and studies	Survey and study findings	Key assumptions and uncertainties	Rationale for choice of indicators
	• Recorded concentrations of metals in the Ethel Gorge area were typically less than ten times lower than the published thresholds. There is no perceived metal toxicity risk to the Ethel Gorge Aquifer Stygobiont TEC (Stantec 2024). • Average abundance during the 2022 Dry Season was relatively low compared to historical records, however abundance had increased considerably by the 2023 Wet Season which had the highest average abundance per bore since 2015. All interannual changes observed in the number of species and abundance are within the variability documented for the TEC (Stantec 2024). • The findings of the [2022/2023] Program along with previous surveys indicate that current groundwater management practices have been appropriate to prevent potential impacts to the Ethel Gorge stygofauna TEC from BHP operations. It is also considered that adequate saturation of the core habitat has been maintained, enabling the persistence of stygofauna (Stantec 2024).		
Value: Fortescue River **Outcome:** Maintain the current (altered) ephemeral surface water regime to the Fortescue River downstream of Ophthalmia Dam as a result of releases of water from Ophthalmia Dam			
Orebody 32 below water table: Ophthalmia Dam surplus water impact assessment (BHP 2022a) *Surplus Water Management Plan: Ophthalmia Dam Surplus Water Scheme* (BHP 2022c) *Eastern Pilbara Hub Water Balance: Integrated water balance model review and Ophthalmia Dam water management capacity scenarios* (EMM 2020) *Ophthalmia Dam Discharge Hydrology Study (BHP 2019a)* *Ophthalmia Dam - update on water release trial* (BHP 2019b)	• The Fortescue River is the major river system in the Eastern Pilbara sub-region (Figure 1). The Upper Fortescue River (upstream of Fortescue Marsh) is ephemeral in nature, flowing in direct response to significant rainfall events. Streamflow mainly occurs during the summer (wet season) months of December through April and is associated with the large and more intense rainfall events. Along portions of the river that drain larger catchments (e.g., major tributaries), runoff can persist for several weeks (and possibly months) following major rainfall events such as those resulting from tropical cyclones. • The construction of Ophthalmia Dam has altered the natural flow regime of the Upper Fortescue River and appears to have prevented or reduced medium-sized flows (recurrence interval of one to three years) from reaching the downstream floodplain and natural flows emanating from the upper catchment have been partially attenuated. • Uncontrolled releases of water to the Upper Fortescue River tributaries occur when the dam fills from rainfall events and overtops the spillway. BHP also undertakes controlled releases of water from Ophthalmia Dam from the C wall valve to the Upper Fortescue River tributaries for environmental management or for dam safety, maintenance and water level management purposes. Regular releases from the dam have occurred following filling events that are likely to emulate low-level flow events downstream of the dam. • A 2019 discharge (release) trial investigated the effects of releasing water from Ophthalmia Dam on the Fortescue River system, to understand the extent of the wetting front along the Fortescue River and associated potential impacts to riparian vegetation and aquatic fauna. • A three-month discharge (release) trial was conducted during the 2017 dry season, which released approximately 9.4 GL of water from the dam into the Fortescue River. Seasonal water levels in the dam were not sufficient to warrant a second release as was originally proposed for a pre- and post-wet season trial. • Following three months of discharge (release), the wetting front reached as far as the Jigalong Road crossing, a distance of approximately 68 km along the Fortescue River. Significant infiltration losses occurred across the wetting front, much of this in the first 10 km. Local pools and road crossings also limited the extent of the wetting front. The trial showed water would not reach the Fortescue Marsh during periodic discharges (releases) from the dam with the valve fully open, with dry catchment conditions. • The biological studies undertaken as part of the release trial indicated that discharges (releases) from the dam of up to three months are unlikely to negatively impact on riparian vegetation health and the potential changes in salinity from the dam water are unlikely to have detrimental effects on aquatic fauna.	**Assumptions** • Water from Ophthalmia Dam will not overtop the spillway during natural no-flow conditions. • There is no limit of releases from the dam during and immediately following natural flow conditions in the wet season. • Controlled release of up to 3 months total from Ophthalmia Dam in the dry season (during natural no-flow conditions) is unlikely to negatively impact the ephemeral Fortescue River system.	**Type of components** BHP has chosen outcomes-based components as BHP can control the duration of releases of water from Ophthalmia Dam into the upper Fortescue River tributaries. **Choice of indicators** The criterion (threshold) for releases to the Fortescue River is based on release durations during natural, no-flow conditions. The criteria will only apply during no-flow conditions. There is no restriction when BHP discharges surplus water during natural flow events. Discharge will be managed to allow for periods of no flow to allow the river bed to dry out and maintain the (altered) ephemeral hydrological cycle. Management options to limit releases to the Fortescue River in the dry season include releasing water from the dam during or following wet season (i.e. during natural flow events) or altering the surplus water discharge regime (amount of water discharged) from BHP mines to the Ophthalmia Dam system. BHP will monitor the dates when Ophthalmia Dam valve is opened and closed to track the total release duration. As the Fortescue River is a regional water asset, the water-related components (indicator – threshold) and monitoring are the same for each project addressed in the EPWRMP that discharges surplus water to Ophthalmia Dam. This approach enables BHP to pro-actively manage its activities and impacts at the sub-regional level.

1.4.2.1 Ethel Gorge system monitoring program detail

BHP has considered over 40 years of surveys, data collection and understanding of water in the Eastern Pilbara management area (dating back to 1981 when the Ophthalmia Dam was constructed) to develop this EPWRMP.

The Ethel Gorge monitoring program includes the following detail:

- monitoring and management zones (Table 4 and Figure 4) to enable adaptive management of the Ethel Gorge system
- monitoring program summary (Table 5) with representative groundwater monitoring bore locations in Figure 4 and stygofauna sample locations in Figure 5
- monitoring zone criteria (Table 6):
  - EPWRMP criteria: groundwater level and groundwater salinity criteria for the Ethel Gorge Primary Habitat Monitoring Zone, which represents the core habitat for the Ethel Gorge TEC. In addition to the formal criteria (triggers and thresholds) in the components tables in Table 8, Table 9 and Table 10, BHP has identified early response indicators for groundwater levels and groundwater quality (salinity).
  - Operational criteria: salinity criteria for the other Ethel Gorge monitoring zones to support meeting the environmental outcomes for the Ethel Gorge TEC.



BHP

PUBLIC

EASTERN PILBARA WATER RESOURCE MANAGEMENT PLAN

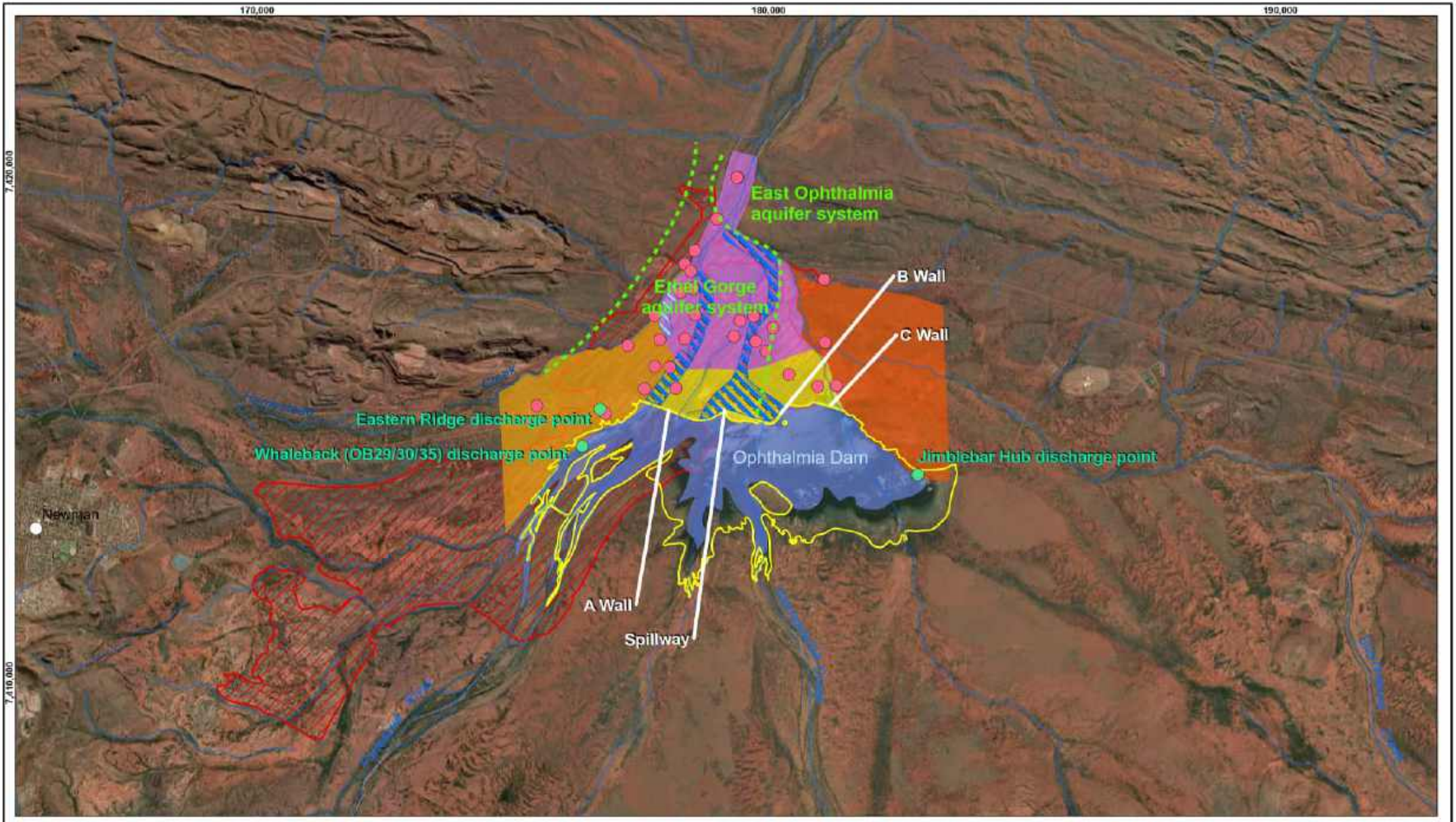
Ophthalmia Dam system

PLANNING & STANDARDS - IRON ORE

SCALE @ A4:	1:100,000	PREPARED:	GEOMATICS	FIGURE:	3
DATE:	22/08/2024	REQUESTOR:	ENV. APPROVALS	NO:	1021/125C

Table 4: Ethel Gorge monitoring and management zones

Monitoring and management zone	Location	Monitoring rationale
Early Warning Monitoring Zone	Immediately downstream of Ophthalmia Dam (Figure 4)	Monitor groundwater levels and quality (salinity) immediately downstream of dam to identify changes the groundwater system resulting from infiltration through Ophthalmia Dam
Ethel Gorge Primary Habitat Monitoring Zone (Monitoring Zone 1)	Downstream of Early Warning Monitoring Zone (Figure 4)	Monitor changes to groundwater levels and quality (salinity) in the area that represents primary Ethel Gorge TEC habitat and supporting aquifer
Shovelanna Creek Monitoring Zone (Monitoring Zone 2)	Shovelanna Creek aquifer, upstream of Ethel Gorge system (Figure 4)	Monitor groundwater water quality (salinity) in the Shovelanna Creek area to identify and characterise natural variance originating to the east
Homestead Creek Monitoring Zone (Monitoring Zone 3)	Homestead Creek aquifer, upstream of Ethel Gorge system (Figure 4)	Monitor potential changes to groundwater levels and quality (salinity as TDS) from Eastern Ridge (OB25) dewatering and changes to natural recharge
Ophthalmia Dam Monitoring Zone (Monitoring Zone 4)	Ophthalmia Dam (Figure 4)	Measurement of dam water levels, water quality (salinity) and outflow
Ophthalmia Dam Management Zone *Same area as Ophthalmia Dam Monitoring Zone (Monitoring Zone 4)*	Ophthalmia Dam MAR system and Ophthalmia Borefield (Figure 4 and Figure 3)	BHP uses the Ophthalmia Dam MAR system (Ophthalmia Dam, infiltration basins and recharge ponds) to infiltrate water (including surplus water from mine dewatering) into the Ethel Gorge aquifer to manage groundwater levels



- Existing discharge points
- Groundwater monitoring bores
- Ethel Gorge TEC
- Ophthalmia Dam full supply level
- Infiltration basins
- Recharge ponds
- Watercourse
- Indicative aquifer system boundary

Management and Monitoring Zones

- Monitoring Zone 1 - Ethel Gorge primary habitat monitoring zone
- Monitoring Zone 2 - Shovelanna Creek monitoring zone
- Monitoring Zone 3 - Homestead Creek monitoring zone
- Early Warning monitoring zone
- Ophthalmia Dam management zone and monitoring zone 4

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KILOMETRES

GDA 1994 MGA ZONE 51

BHP

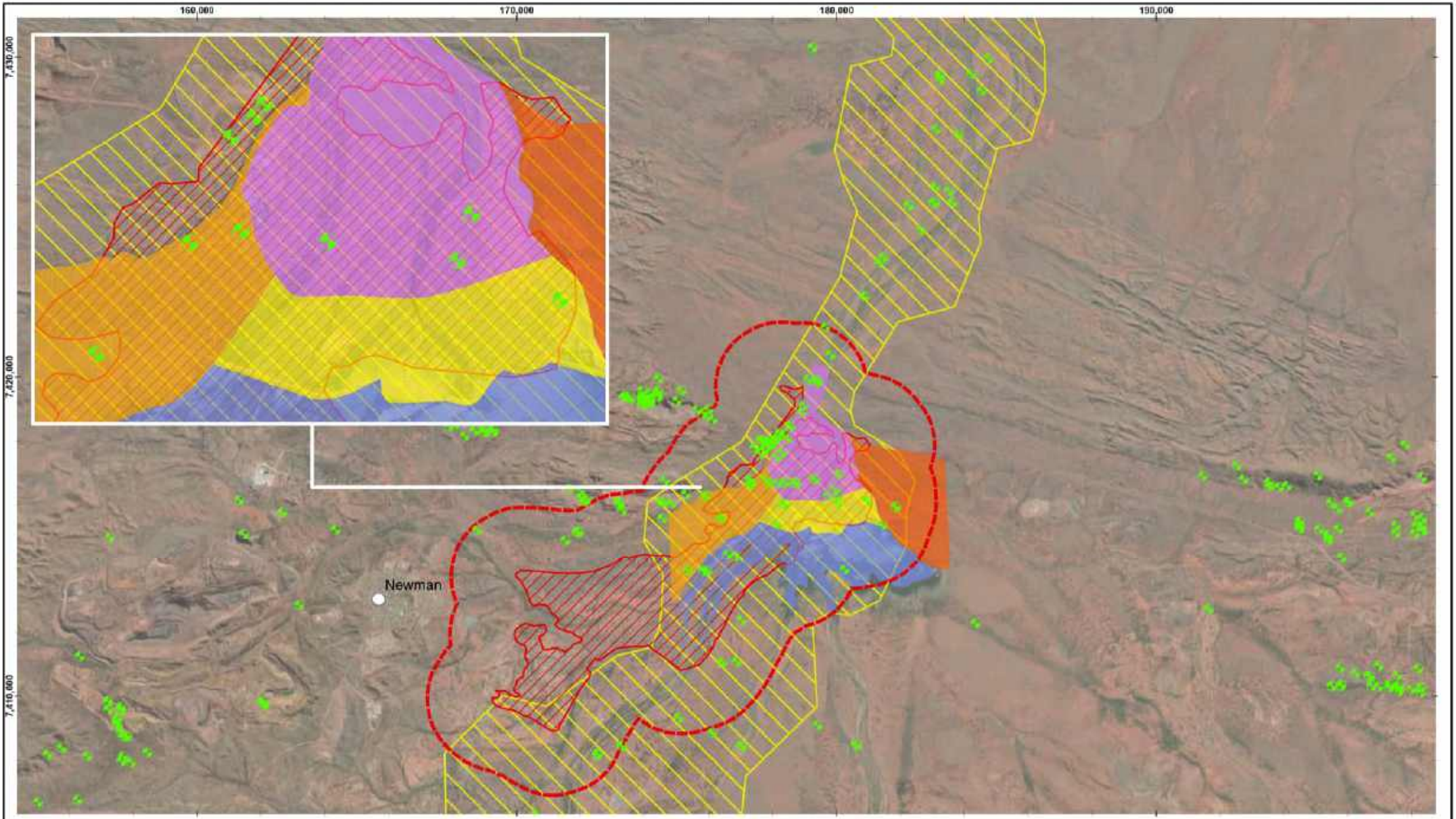
PUBLIC

EASTERN PILBARA WATER RESOURCE MANAGEMENT PLAN

Ethel Gorge monitoring and management zones

PLANNING & STANDARDS - IRON ORE

SCALE @ A4:	1:100,000	PREPARED:	SPATIAL DATA	FIGURE:	4
DATE:	21/08/2024	REQUESTOR:	ENV. APPROVALS	NO:	1021/126C



Ethel Gorge TEC
Threatened Ecological Community - buffer
Stygofauna Sample Site
Extent of Saturated Calcrete

Management and Monitoring Zones

Monitoring Zone 1 - Ethel Gorge primary habitat monitoring zone
Monitoring Zone 2 - Shovelanna Creek monitoring zone
Monitoring Zone 3 - Homestead Creek monitoring zone
Early Warning monitoring zone
Ophthalmia Dam management zone and monitoring zone 4

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KILOMETRES
GDA 1994 MGA ZONE 51

BHP

PUBLIC

EASTERN PILBARA WATER RESOURCE MANAGEMENT PLAN

Ethel Gorge stygofauna monitoring

PLANNING & STANDARDS - IRON ORE

SCALE @ A4:	1:160,000	PREPARED:	SPATIAL DATA	FIGURE:	5
DATE:	27/08/2024	REQUESTOR:	ENV. APPROVALS	NO:	1021/127D

Table 5: Ethel Gorge monitoring summary

Location	Monitoring Bores	Parameters	Minimum frequency	Measurement method
Ophthalmia Dam monitoring program				
As per monitoring outlined in *Surplus Water Management Plan: Ophthalmia Dam Surplus Water Scheme* Includes the following monitoring: • dam water hydrochemistry • relief well (at dam walls) hydrochemistry • dam discharge point (Figure 3) cumulative volume, flow rate and hydrochemistry				
Groundwater monitoring program				
As per EPWRMP monitoring outlined in *GWL Operating Strategy for Ophthalmia Borefield* Includes the following monitoring (see Figure 4 for indicative locations): • groundwater levels • groundwater quality (field and laboratory)				
Stygofauna monitoring program				
Ethel Gorge monitoring and management zones (Figure 4) Within and outside extent of saturated calcrete and Ethel Gorge TEC buffer (Figure 5)	Selection of available bores, including from Groundwater Monitoring Program	**Groundwater** Groundwater levels Groundwater quality: Field EC, TDS, pH, dissolve oxygen (DO), reduction oxidation potential (Redox) and temperature Groundwater quality: Laboratory Standard hydrochemistry suite and PFAS	Biannually – wet season and dry season	Manual dip
		Stygofauna Species records and distributions Stygofauna abundance and species richness analysis	Biannually – wet season and dry season	Haul net sampling

Table 6: Ethel Gorge monitoring zone criteria

Monitoring zone	Criteria (and management stage)			Method to assess monitoring[1] results against criteria
	Early response indicator (Investigate)	Trigger (Act)	Threshold (Mitigate)	
Ethel Gorge Primary Habitat Monitoring Zone	**Groundwater quality (salinity)** Groundwater salinity reaches 2,500 mg/L TDS **Investigate:** Verify that the observed change is not due to measurement error. Investigate the cause of the change, likelihood that it will lead to exceedance of the trigger and/or impact to the Ethel Gorge TEC and undertake suitable management measures and controls (see Table 7)	**Groundwater quality (salinity)** Groundwater salinity reaches 3,000 mg/L TDS **Act:** See response actions in Table 8, Table 9 and Table 10	**Groundwater quality (salinity)** Groundwater salinity reaches 4,000 mg/L TDS **Mitigate:** See response actions in Table 8, Table 9 and Table 10	Exceedance of criteria in any bore in the Ethel Gorge Primary Habitat Monitoring Zone
	Groundwater level Aquifer groundwater level declines below 494 mRL[1] **Investigate:** Verify that the observed change is not due to measurement error. Investigate the cause of the change, likelihood that it will lead to exceedance of the trigger and/or impact to the Ethel Gorge TEC and undertake suitable management measures and controls (see Table 7)	**Groundwater levels** Aquifer groundwater level declines below 492 mRL[1] **Act:** See response actions in Table 8, Table 9 and Table 10	**Groundwater levels** Aquifer groundwater level declines below 490 mRL[1] **Mitigate:** See response actions in Table 8, Table 9 and Table 10	Groundwater level measured across the Ethel Gorge Primary Habitat Zone (excluding bores HEOP0504M and HEOP0574M which are down-gradient to the north)
All other Groundwater Monitoring Zones (Early Warning Monitoring Zone, Shovelanna Creek Monitoring Zone, Homestead Creek Monitoring Zone)	**Groundwater quality (salinity)** Statistically significant annual increase in TDS of 20% from long term average **Investigate:** Investigate possible cause of change to groundwater quality and identify further actions	-	-	Groundwater salinity measurements in any bore is compared to the long term seasonal average at that location, calculated as change in TDS over 12 month period
Ophthalmia Dam Monitoring Zone	**Dam water quality (salinity)** Dam water TDS > 2,500 mg/L **Investigate:** Review dam water quality, dam inputs and update forecasts	**Dam water quality (salinity)** Dam water TDS > 3,500 mg/L **Act:** Action as determined at Investigate Stage	-	Review of dam water salinity measurements

1. Groundwater monitoring is summarised in Table 5.

1.4.2.2 Ethel Gorge system - Management measures and controls

The specific water management options which are used for both operational water management purposes and as the primary controls for mitigating water-related impacts to the Ethel Gorge TEC are summarised below, with the locations presented in Figure 3. The application of the management measures and controls at these locations (to manage particular risks), including the process and limitations, is summarised in Table 7.

Ophthalmia Dam storage and infiltration: Surplus mine dewater is discharged to and stored in Ophthalmia Dam. Ophthalmia Dam is designed to retard the flow of some surface water from the Fortescue River and enable passive infiltration into the Ethel Gorge aquifer. The controlled release of the dam water via three outlets directs water into the Fortescue River and the down gradient infiltration basins, returning water back into the environment when required and as a preventative control to manage the effects of increased salinity, inundation of the rail line and water levels in Ophthalmia Dam.

Recharge Ponds: The ponds are located within Ethel Gorge and receive surplus water directly from the Eastern Ridge mining operations mine dewatering and enable passive but relatively quick infiltration into the underlying alluvial aquifer through the shallow and permeable calcrete formations. The facility manages impacts from changes to groundwater levels in the Ethel Gorge aquifer from mining below the water table at the Eastern Ridge mining operations.

Infiltration Basins: Controlled release of Ophthalmia Dam water into the infiltration basins located immediately down-gradient of the dam. The basins induce vertical leakage and support water levels and water quality (low salinity) in the Ethel Gorge aquifer. The basins have historically been effective as a “fast response” tool to increase groundwater levels and lower salinity.

Ophthalmia Borefield: Ophthalmia Borefield is located within the Ethel Gorge aquifer and provides part of the Newman drinking water supply.

Fortescue River seasonal release: Ophthalmia Dam has been designed to allow for the controlled release of water into the upper Fortescue River tributaries, including Shovelanna Creek via the eastern dam wall valve (C wall). The temporary release of dam water following a wet season allows for additional storage capacity during the dry period. Three months of controlled release into the Upper Fortescue River following the wet season is considered appropriate and unlikely to develop permanent or ponding water downstream in the Fortescue River. The seasonal release is considered unlikely to have an impact on riparian vegetation (BHP 2019b).

Table 7: Ethel Gorge Management measures and controls

Risk	Management measure or control	Process	Limitations
Low groundwater levels in the Ethel Gorge aquifer due to abstraction for water supply from the Ophthalmia Borefield and dewatering at Eastern Ridge mining operations	Capture of rainfall-runoff and surplus dewatering discharge in the Ophthalmia Dam and infiltrate into the Ethel Gorge aquifer	Water captured in the dam passively infiltrates through the floor of the Ophthalmia Dam which effectively recharges the Ethel Gorge aquifer	• Requires sufficient seasonal runoff and/or dewatering discharge to maintain standing water in the Ophthalmia Dam
High salinity water infiltrating into the Ethel Gorge aquifer	Capture of higher salinity water (surplus water that is higher salinity than natural rainfall inflows to the dam, and seasonal higher salinity in the dam due to evaporation) in Ophthalmia Dam and release during rain events	Store surplus water in Ophthalmia Dam outside of natural dam overtopping events and undertake the controlled release of water into Fortescue River, in conjunction with natural flow events	• Requires a rain event which overtops the dam
Low groundwater levels in the Ethel Gorge aquifer	Discharge low salinity water into the Infiltration Basins to increase recharge rates to the Ethel Gorge aquifer	Controlled release of rainfall-runoff and surplus dewatering discharge captured in the dam into the Infiltration Basins	• Requires sufficient water in the Ophthalmia Dam • Requires Ophthalmia Dam water salinity to be below Ethel Gorge aquifer threshold salinity at time of release
Increasing salinity in the Ethel Gorge aquifer	Infiltrate low-salinity dewatering water from Eastern Ridge directly into the Ethel Gorge aquifer	Discharge low-salinity surplus dewater directly into the three Recharge Ponds	• Requires surplus dewater salinity to be below Ethel Gorge aquifer threshold salinity • Limited by capacity of the Recharge Ponds and volume of surplus water available that can be directly discharged to the Recharge Ponds

2 EMP Components

BHP has provided detail on the EMP components in tables, as outlined in the EMP Instructions. BHP has used the 'Schedule' approach (which the EMP Instructions state may be used), as this EMP (EPWRMP) covers multiple operations and Ministerial Statements.

As discussed in Table 3, as the Ethel Gorge TEC and the Fortescue River are a regional water values, the water-related components (indicators - triggers and thresholds and monitoring) are the same for each operation addressed in the EPWRMP that contains Ministerial Statement condition/s relating to the discharge of surplus water to Ophthalmia Dam. Separate schedules (1a, b, c and d) in Table 8 to Table 11 have been developed for compliance purposes against each MS, because the conditions are different for each MS.

Table 8: Schedule 1a - Outcome-based components: Eastern Ridge Revised Proposal (MS1037)

Purpose: To meet the requirements of Conditions 8-1, 8-2 and 8-3 of Ministerial Statement 1037 (Eastern Ridge Revised Proposal)

Rationale: Hydrological conditions (groundwater levels and salinity) are the basis of maintaining the habitat of the Ethel Gorge TEC

EPA Factor and objective:	**Inland Waters** – To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected **Subterranean Fauna** - To protect subterranean fauna so that biological diversity and ecological integrity are maintained
Environmental outcome	Condition 8-1: Maintain the habitat of the Ethel Gorge Aquifer Stygobiont Community
Key environmental values:	Ethel Gorge TEC
Key impacts and risks:	Ethel Gorge TEC has the potential to be impacted from receiving surplus water discharge, resulting in changes to the extent and/or quality of the stygobiont habitat

MS1037 Condition clauses - Outcome-based components			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Condition 8-2 (2) specify trigger criteria that must provide an early warning that the threshold criteria identified in condition 8-2(3) may not be met; (3) specify threshold criteria to demonstrate compliance with the environmental outcome specified in condition 8-1; Exceedance of the threshold criteria represents non-compliance with these conditions;	**Condition 8-2** (5) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded; (6) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; **Condition 8-5** In the event that monitoring indicates exceedance of threshold criteria specified in the Condition Environmental Management Plan/s, the proponent shall: (2) implement the threshold contingency actions specified in the Condition Environmental Management Plan/s within 24 hours and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required; (3) investigate to determine the cause of the threshold criteria being exceeded; (4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded;	**Condition 8-2** (4) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;	**Condition 3-5** The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that potential non-compliance being known. **Condition 3-6** The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The Compliance Assessment Report shall: (1) be endorsed by the proponent's CEO or a person delegated to sign on the CEO's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 3-1. **Condition 8-2** (7) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 8-1 has been met over the reporting period in the Compliance Assessment Report required by condition 3. **Condition 8-5** In the event that monitoring indicates exceedance of threshold criteria specified in the Condition Environmental Management Plan/s, the proponent shall: (1) report the exceedance in writing to the CEO within 7 days of the exceedance being identified; (5) provide a report to the CEO within 21 days of the exceedance being reported as required by condition 8-5(1). The report shall include: (a) details of threshold contingency actions implemented; (b) the effectiveness of the threshold contingency actions implemented, against the threshold criteria; (c) the findings of the investigations required by MS 1037 condition 8-5(3) and 8-5(4); (d) measures to prevent the threshold criteria being exceeded in the future; (e) measures to prevent, control or abate the environmental harm which may have occurred; and (f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that outcomes will continue to be met.

Outcome-based components			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Groundwater quality (salinity) • **Trigger criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone reaches3,000 mg/L TDS • **Threshold criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone 4,000 mg/L TDS	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Seasonal controlled release from Ophthalmia Dam to upper Fortescue tributaries (following a wet season - typically December through to April) • Modify surplus discharge regime to Ophthalmia Dam system (Figure 3)	Quarterly monitoring of Total Dissolved Solids (mg/L) within the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	**Annual reporting** • Report against the requirements of Condition 3-6, in the annual Compliance Assessment Report required by Condition 3–6 (included as part of the Annual Environment Report). **Exception reporting** • Notify Superintendent within 72 hours of BHP identifying an exceedance of a trigger criterion. • Notify Superintendent and General Manager within 24 hours of BHP identifying an exceedance of a threshold criterion (potential non-compliance). • As required by condition 3-5, notify CEO of DWER of potential non-compliance within 7 days of that potential non-compliance being known. • As required by condition 8-5: – report the exceedance of the threshold criteria to the CEO of DWER in writing within 7 days of identifying the exceedance – provide a report to the CEO within 21 days of the threshold exceedance being reported as required by Condition 8-5(1).
Groundwater level • **Trigger criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 492 mRL • **Threshold criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 490 mRL	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Increase discharge to Ophthalmia Dam system (Figure 3) • Reduce releases of water from Ophthalmia Dam to increase infiltration rates	Monthly monitoring of groundwater levels (mbgl) of bores (excluding HEOP504M and HEOP0574M) in the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	
Controlled releases of water from Ophthalmia Dam to Fortescue River tributaries • **Threshold criteria 3:** 3 months total controlled release per year during natural no-flow conditions	Response actions to threshold criteria exceedance may include, but are not limited to: • Cease releases to upper Fortescue River tributaries	Continuous telemetered monitoring of Ophthalmia Dam water levels Monitor dates when Ophthalmia Dam valve is opened and closed to track total release duration	

Table 9: Schedule 1b - Outcome-based components: OB32 BWT and Western Ridge (MS1105)

Purpose: To meet the requirements of Conditions 9-1(d)(i) and 10-1(1)(i) of Ministerial Statement 1105 (Pilbara Expansion Strategic Proposal)

Rationale: Hydrological conditions (groundwater levels and salinity) are the basis of maintaining the habitat of the Ethel Gorge TEC

EPA Factor and objective:	**Inland Waters –** To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected **Subterranean Fauna** - To protect subterranean fauna so that biological diversity and ecological integrity are maintained
Environmental outcome:	Maintain groundwater levels and quality in the Ethel Gorge aquifer within historical variation Maintain the habitat of the Ethel Gorge TEC
Key environmental values:	Ethel Gorge TEC
Key impacts and risks:	Ethel Gorge TEC has the potential to be impacted from receiving surplus water discharge, resulting in changes to the extent and/or quality of the stygobiont habitat

MS1105 Condition clauses - Outcome-based components			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Condition 6-2 (2) specify trigger criteria that will provide early warning for the implementation of trigger level actions if exceeded; (3) specify threshold criteria that provides a limit beyond which the environmental outcome is not achieved;	**Condition 6-2** (5) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded; (6) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; **Condition 6-7** In the event that monitoring, tests, surveys or investigations indicates exceedance of trigger criteria and/or threshold criteria specified in a Condition Environmental Management Plan(s), the proponent shall: (2) immediately implement the trigger level actions and/or threshold contingency actions specified in the Condition Environmental Management Plan(s) and continue implementation of those actions until the trigger criteria and/or threshold criteria are being met and implementation of the trigger level actions and/or threshold contingency actions are no longer required; (3) investigate to determine the cause of the trigger criteria and/or threshold criteria being exceeded; (4) identify additional measures required to prevent the trigger criteria and/or threshold criteria being exceeded in the future; (5) investigate to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded;	**Condition 6-2** (4) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;	**Condition 4-6** The proponent shall submit to the CEO a Compliance Assessment Report annually by 1 October each year addressing compliance in the previous financial year, or as otherwise agreed in writing by the CEO. **Condition 4-7** The Compliance Assessment Report shall: (1) be endorsed by the proponent's CEO or a person delegated to sign on the CEO's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1. **Condition 6-2** (6) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that the relevant conditions referred to in the Section 45A[1] Notice for the proposal have been met over the reporting period in the Compliance Assessment Report required by condition 4-6; and (7) provide for reporting of exceedances of the trigger and threshold criteria. **Condition 6-7** In the event that monitoring, tests, surveys or investigations indicates exceedance of trigger criteria and/or threshold criteria specified in a Condition Environmental Management Plan(s), the proponent shall: (1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified; (6) provide a report to the CEO within ninety (90) days of the exceedance being reported. The report shall include: (a) details of any trigger level actions or threshold contingency actions implemented; (b) the effectiveness of the trigger level actions or threshold contingency actions implemented, monitored and measured against trigger criteria and threshold criteria; (c) the findings of the investigations required by conditions 6-7(3) and 6-7(5); (d) additional measures to prevent the trigger or threshold criteria being exceeded in the future; and (e) measures to prevent, control or abate the environmental harm or alteration of the environment which may have occurred.

1. Now section 45B in current version of EP Act

Outcome-based components			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Groundwater quality (salinity) • **Trigger criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone reaches3,000 mg/L TDS • **Threshold criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone 4,000 mg/L TDS	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Seasonal controlled release from Ophthalmia Dam to upper Fortescue tributaries (following a wet season - typically December through to April) • Modify surplus discharge regime to Ophthalmia Dam system (Figure 3)	Quarterly monitoring of Total Dissolved Solids (mg/L) within the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	**Annual reporting** • Report against the requirements of Condition 4-7, in the annual Compliance Assessment Report required by Condition 4-6 (included as part of the Annual Environment Report). **Exception reporting** • Notify Superintendent within 72 hours of BHP identifying an exceedance of a trigger criterion. • Notify Superintendent and General Manager within 24 hours of BHP identifying an exceedance of a threshold criterion (potential non-compliance). • As required by condition 6-7: – report the exceedance of trigger and/or threshold criteria to the CEO of DWER in writing within 7 days of identifying the exceedance – provide a report to the CEO within 90 days of the trigger and/or threshold exceedance being reported as required by Condition 6-7(1).
Groundwater level • **Trigger criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 492 mRL • **Threshold criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 490 mRL	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Increase discharge to Ophthalmia Dam system (Figure 3) • Reduce releases of water from Ophthalmia Dam to increase infiltration rates	Monthly monitoring of groundwater levels (mbgl) of bores (excluding HEOP504M and HEOP0574M) in the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	
Controlled releases of water from Ophthalmia Dam to Fortescue River tributaries • **Threshold criteria 3:** 3 months total controlled release per year during natural no-flow conditions	Response actions to threshold criteria exceedance may include, but are not limited to: • Cease releases to upper Fortescue River tributaries	Continuous telemetered monitoring of Ophthalmia Dam water levels Monitor dates when Ophthalmia Dam valve is opened and closed to track total release duration	

Table 10: Schedule 1c - Outcome-based components: Jimblebar Hub (MSXXXX)

Purpose: To meet the requirements of proposed Condition B1-1, Condition B1-2, Condition B4-1 and Condition B4-2 of MSXXXX

Rationale: Limit changes to groundwater levels and salinity in the Ethel Gorge aquifer to maintain the habitat of the Ethel Gorge TEC; Limit releases of water from Ophthalmia Dam to maintain the altered surface water regime of the Fortescue River

EPA Factor and objective:	**Inland Waters** – To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected **Subterranean Fauna** – To protect subterranean fauna so that biological diversity and ecological integrity are maintained
Key environmental values:	Ethel Gorge TEC and Fortescue River
EMP outcomes	**Condition B1-1** (1) Maintain groundwater levels and salinity within the Ethel Gorge aquifer to support the stygofauna habitat of the Ethel Gorge TEC (2) Maintain the current (altered) ephemeral surface water regime to the Fortescue River downstream of Ophthalmia Dam as a result of releases of water from Ophthalmia Dam. **Condition B4-1** (1) Maintain the stygofauna habitat of the Ethel Gorge TEC
Key impacts and risks:	Significant changes to the extent and/or quality of the stygobiont habitat in the Ethel Gorge TEC Significant changes to the surface water regime in the Fortescue River

MSXXXX Condition clauses - Outcome-based components[1]			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Condition B1-2 The proponent must implement the Eastern Pilbara Water Resource Management Plan, with the purpose of ensuring the environmental outcomes in condition B1-1 are achieved, monitored and substantiated. **Condition B4-2** The proponent must implement the Eastern Pilbara Water Resource Management Plan, with the purpose of ensuring the environmental outcomes in condition B4-1 are achieved, monitored and substantiated.			
Condition C3-1 The environmental management plan required under condition B1-2 and condition B4-2, must contain provisions[1] which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (1) **threshold criteria** that provide a limit beyond which the environmental outcomes are not achieved; (2) **trigger criteria** that will provide an early warning that the environmental outcomes are not likely to be met;	**Condition C3-1** The environmental management plan required under condition B1-2 and condition B4-2, must contain provisions[1] which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (7) contingency measures which will be implemented if threshold criteria or trigger criteria are met; and **Condition C3-2** Without limiting condition C1-1, failure to achieve an environmental outcome, or the exceedance of a **threshold criteria**, regardless of whether threshold contingency measures have been or are being implemented, represents a non-compliance with these conditions. **Condition D1-1** If the proponent becomes aware of a potential non-compliance, the proponent must: (2) implement contingency measures; (3) investigate the cause; (4) investigate environmental impacts; (5) advise rectification measures to be implemented; (6) advise any other measures to be implemented to ensure no further impact; (7) advise timeframe in which contingency, rectification and other measures have and/or will be implemented; and	**Condition C3-1** The environmental management plan required under condition B1-2 and condition B4-2, must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (3) monitoring parameters, sites, control/reference sites, methodology, timing and frequencies which will be used to measure threshold criteria and trigger criteria. Include methodology for determining alternative monitoring sites as a contingency if proposed sites are not suitable in the future;	**Condition C3-1** The environmental management plan required under condition B1-2 and condition B4-2, must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (8) reporting requirements. **Condition D1-1** If the proponent becomes aware of a potential non-compliance, the proponent must: (1) report this to the CEO within seven (7) days; (8) provide a report to the CEO within twenty-one (21) days of being aware of the potential non-compliance, detailing the measures required in conditions D1-1(2) to D1-1(7). **Condition D2-1** The proponent must provide an annual Compliance Assessment Report to the CEO for the purpose of determining whether the implementation conditions are being complied with. **Condition D2-4** Each annual Compliance Assessment Report must: (1) state whether each condition of this Statement has been complied with, including: (b) achievement of environmental outcomes; (d) requirements to implement environmental management plans; (e) monitoring requirements; (f) implement contingency measures; (g) requirements to implement adaptive management; and (h) reporting requirements. (2) include the results of any monitoring (inclusive of any raw data) that has been required under Part C in order to demonstrate that the limits in Part A, and any outcomes or any objectives are being met; (3) provide evidence to substantiate statements of compliance, or details of where there has been a non-compliance; (4) include the corrective, remedial and preventative actions taken in response to any potential non-compliance;

1. EMP 'provisions' were renamed 'components' by the EPA in September 2020 (EPA 2021a), however MS issued since 2021 still refer to 'provisions' in relation to EMPs.

Outcome-based components			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Groundwater quality (salinity) • **Trigger criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone reaches 3,000 mg/L TDS • **Threshold criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone 4,000 mg/L TDS	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Seasonal controlled release from Ophthalmia Dam to upper Fortescue tributaries (following a wet season - typically December through to April) • Modify surplus discharge regime to Ophthalmia Dam system (Figure 3)	Quarterly monitoring of Total Dissolved Solids (mg/L) within the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	**Annual reporting** Report against the requirements in Condition D2-4, in the annual Compliance Assessment Report required by Condition D2-1 (included as part of the Annual Environment Report), including: • achievement of environmental outcomes against the trigger and threshold criteria and implementation of contingency measures (response actions), if trigger and/or threshold criteria were exceeded • monitoring results to demonstrate environmental outcomes have been met • if the threshold criterion was exceeded during the reporting period (representing a potential non-compliance), include the corrective, remedial and preventative actions taken (including the threshold contingency actions). **Exception reporting** • Notify Superintendent within 72 hours of BHP identifying an exceedance of a trigger criterion. • Notify Superintendent and General Manager within 24 hours of BHP identifying an exceedance of a threshold criterion (potential non-compliance). • As required by Condition D1-1: – notify the CEO of DWER in writing within 7 days of being aware of the potential non-compliance (exceedance of a threshold criterion) – provide a report to the CEO within 21 days of being aware of the potential non-compliance, detailing the measures required in conditions D1-1(2) to D1-1(7).
Groundwater level • **Trigger criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 492 mRL • **Threshold criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 490 mRL	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Increase discharge to Ophthalmia Dam system (Figure 3) • Reduce releases of water from Ophthalmia Dam to increase infiltration rates	Monthly monitoring of groundwater levels (mbgl) of bores (excluding HEOP504M and HEOP0574M) in the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	
Controlled releases of water from Ophthalmia Dam to Fortescue River tributaries • **Threshold criteria 3:** 3 months total controlled release per year during natural no-flow conditions	Response actions to threshold criteria exceedance may include, but are not limited to: • Cease releases to upper Fortescue River tributaries	Continuous telemetered monitoring of Ophthalmia Dam water levels Monitor dates when Ophthalmia Dam valve is opened and closed to track total release duration	

Table 11: Schedule 1d - Outcome-based components: Orebody 29/30/35 (MSXXXX)

Purpose: To meet the requirements of proposed Condition B1-1, Condition B1-2, Condition B2-1 and Condition B2-2 of MSXXXX

Rationale: Limit changes to groundwater levels and salinity in the Ethel Gorge aquifer to maintain the habitat of the Ethel Gorge TEC; Limit releases of water from Ophthalmia Dam to maintain the altered surface water regime of the Fortescue River

EPA Factor and objective:	**Inland Waters** – To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected **Subterranean Fauna** – To protect subterranean fauna so that biological diversity and ecological integrity are maintained
Key environmental values:	Ethel Gorge TEC and Fortescue River
EMP outcomes	**Condition B1-1** (1) Maintain groundwater levels and salinity within the Ethel Gorge aquifer to support the stygofauna habitat of the Ethel Gorge TEC (2) Maintain the current (altered) ephemeral surface water regime to the Fortescue River downstream of Ophthalmia Dam as a result of the release of water from Ophthalmia Dam **Condition B2-1** (1) Maintain the stygofauna habitat of the Ethel Gorge TEC
Key impacts and risks:	Significant changes to the extent and/or quality of the stygobiont habitat in the Ethel Gorge TEC Significant changes to the surface water regime in the Fortescue River

MSXXXX Condition clauses - Outcome-based components[1]			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Condition B1-2 The proponent must implement the Eastern Pilbara Water Resource Management Plan, with the purpose of ensuring the environmental outcomes in condition B1-1 are achieved, monitored and substantiated. **Condition B2-2** The proponent must implement the Eastern Pilbara Water Resource Management Plan, with the purpose of ensuring the environmental outcomes in condition B2-1 are achieved, monitored and substantiated.			
Condition C3-1 The environmental management plan required under condition B1-2 and condition B2-2, must contain provisions[1] which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (1) **threshold** criteria that provide a limit beyond which the environmental outcomes are not achieved; (2) **trigger criteria** that will provide an early warning that the environmental outcomes are not likely to be met;	**Condition C3-1** The environmental management plan required under condition B1-2 and condition B2-2, must contain provisions[1] which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (7) contingency measures which will be implemented if threshold criteria or trigger criteria are met; and **Condition C3-2** Without limiting condition C1-1, failure to achieve an environmental outcome, or the exceedance of a threshold criteria regardless of whether threshold contingency measures have been or are being implemented, represents a non-compliance with these conditions. **Condition D1-1** If the proponent becomes aware of a potential non-compliance, the proponent must: (2) implement contingency measures; (3) investigate the cause; (4) investigate environmental impacts; (5) advise rectification measures to be implemented; (6) advise any other measures to be implemented to ensure no further impact; (7) advise timeframe in which contingency, rectification and other measures have and/or will be implemented; and	**Condition C3-1** The environmental management plan required under condition B1-2 and condition B2-2, must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (3) monitoring parameters, sites, control/reference sites, methodology, timing and frequencies which will be used to measure threshold criteria and trigger criteria. Include methodology for determining alternative monitoring sites as a contingency if proposed sites are not suitable in the future;	**Condition C3-1** The environmental management plan required under condition B1-2 and condition B2-2, must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include: (8) reporting requirements. **Condition D1-1** If the proponent becomes aware of a potential non-compliance, the proponent must: (1) report this to the CEO within seven (7) days; (8) provide a report to the CEO within twenty-one (21) days of being aware of the potential non-compliance, detailing the measures required in conditions D1-1(2) to D1-1(7). **Condition D2-1** The proponent must provide an annual Compliance Assessment Report to the CEO for the purpose of determining whether the implementation conditions are being complied with. **Condition D2-4** Each annual Compliance Assessment Report must: (1) state whether each condition of this Statement has been complied with, including: (b) achievement of environmental outcomes; (d) requirements to implement environmental management plans; (e) monitoring requirements; (f) implement contingency measures; (g) requirements to implement adaptive management; and (h) reporting requirements. (2) include the results of any monitoring (inclusive of any raw data) that has been required under Part C in order to demonstrate that the limits in Part A, and any outcomes or any objectives are being met; (3) provide evidence to substantiate statements of compliance, or details of where there has been a non-compliance; (4) include the corrective, remedial and preventative actions taken in response to any potential non-compliance;

1. EMP 'provisions' were renamed 'components' by the EPA in September 2020 (EPA 2021a), however MS issued since 2021 still refer to 'provisions' in relation to EMPs.

Outcome-based components			
Indicators: • **Trigger criteria** • **Threshold criteria**	**Response actions:** • **Trigger level actions** • **Threshold contingency actions**	**Monitoring** **(including timing / frequency of monitoring)**	**Reporting**
Groundwater quality (salinity) • **Trigger criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone reaches 3,000 mg/L TDS • **Threshold criteria 1:** Groundwater salinity in the Ethel Gorge Primary Habitat Monitoring Zone 4,000 mg/L TDS	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Seasonal controlled release from Ophthalmia Dam to upper Fortescue tributaries (following a wet season - typically December through to April) • Modify surplus discharge regime to Ophthalmia Dam system (Figure 3)	Quarterly monitoring of Total Dissolved Solids (mg/L) within the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	**Annual reporting** Report against the requirements in Condition D2-4, in the annual Compliance Assessment Report required by Condition D2-1 (included as part of the Annual Environment Report), including: • achievement of environmental outcomes against the trigger and threshold criteria and implementation of contingency measures (response actions), if trigger and/or threshold criteria were exceeded • monitoring results to demonstrate environmental outcomes have been met • if the threshold criterion was exceeded during the reporting period (representing a potential non-compliance), include the corrective, remedial and preventative actions taken (including the threshold contingency actions). **Exception reporting** • Notify Superintendent within 72 hours of BHP identifying an exceedance of a trigger criterion. • Notify Superintendent and General Manager within 24 hours of BHP identifying an exceedance of a threshold criterion (potential non-compliance). • As required by Condition D1-1: – notify the CEO of DWER in writing within 7 days of being aware of the potential non-compliance (exceedance of a threshold criterion) – provide a report to the CEO within 21 days of being aware of the potential non-compliance, detailing the measures required in conditions D1-1(2) to D1-1(7).
Groundwater level • **Trigger criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 492 mRL • **Threshold criteria 2:** Aquifer groundwater level in the Ethel Gorge Primary Habitat Monitoring Zone declines below 490 mRL	Response actions to trigger/threshold criteria exceedance may include, but are not limited to: • Increase discharge to Ophthalmia Dam system (Figure 3) • Reduce releases of water from Ophthalmia Dam to increase infiltration rates	Monthly monitoring of groundwater levels (mbgl) of bores (excluding HEOP504M and HEOP0574M) in the Ethel Gorge Primary Habitat Monitoring Zone (Figure 4) during operations (i.e. active dewatering / surplus water discharge) (Table 5)	
Controlled releases of water from Ophthalmia Dam to Fortescue River tributaries • **Threshold criteria 3:** 3 months total controlled release per year during natural no-flow conditions	Response actions to threshold criteria exceedance may include, but are not limited to: • Cease releases to upper Fortescue River tributaries	Continuous telemetered monitoring of Ophthalmia Dam water levels Monitor dates when Ophthalmia Dam valve is opened and closed to track total release duration	

3 Adaptive management and review of the EMP

3.1 Adaptive management approach

BHP applies an adaptive management framework for implementing management measures identified in this EMP (WMP), which is consistent with the Instructions. Adaptive management is a structured, iterative process to decision making. The framework embeds a cycle of monitoring, reporting and implementing change where required. It allows an evaluation of the management and mitigation measures so that they are progressively improved and refined, or alternative solutions adopted, to ensure that environmental objectives and outcomes in the plan are achieved. The key steps of the adaptive management approach are outlined in Figure 6.

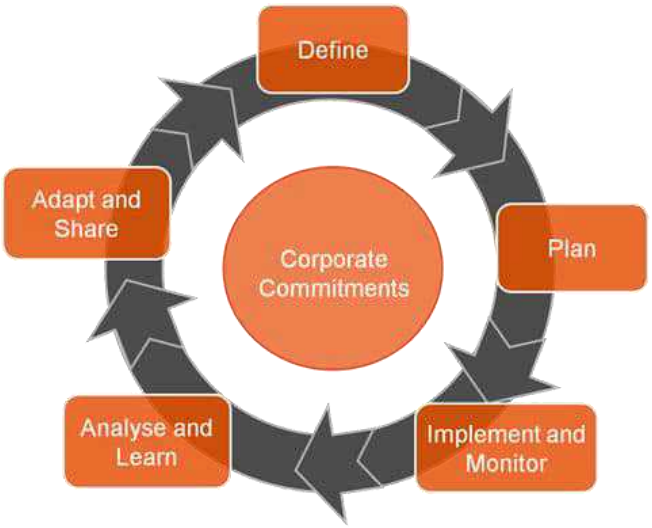

Figure 6: BHP's adaptive management approach

As the EPWRMP is a requirement of MS conditions, BHP will seek formal approval from the DWER to make major revisions to the EPWRMP based on information gained through adaptive management.

3.2 Review and revision of this EMP

BHP will review this EMP (EPWRMP) and revise it if required, to ensure that it achieves the identified environmental outcomes and meets MS conditions. A review may arise from any or all of the following:

- where required by a MS condition
- if initiated by BHP as part of the adaptive management process
- if triggered by a MS condition (e.g. for exceedance of a threshold criteria).

Changes to the endorsed version of the EMP may arise from, but are not limited to the any or all of the following:

- BHP reviews the EMP if the EPA or relevant government agencies develop new or amend existing guidance or policy
- BHP adds components when a new operation (or amendment to an existing operation) is proposed
- BHP adds or amends components when new proposals are approved and conditioned through Part IV of the EP Act or due to a change to MS conditions
- The CEO of DWER directs BHP to revise the EMP

- The CEO of DWER confirms by notice in writing that it has been demonstrated that the relevant requirements for the EMP have been met, or are able to be met under another statutory decision-making process, in which case the implementation of the EMP is no longer required.

As provided for in proposed Condition C1-3 of MSXXXX for the Jimblebar Hub Iron Ore Mining Operations (BHP 2023a) and proposed Condition C1-3 of MSXXXX for Orebody 29/30/35 (BHP 2024a), BHP may make minor revisions to this EMP (i.e. excluding changes to components in Table 8 to Table 11) without seeking endorsement from DWER. If BHP makes minor revisions to this EMP, BHP will provide the revised EMP with an explanation and justification of the minor revisions, according to the requirements in proposed Condition C1-4.

In accordance with Condition 5-7 of MS1037, and Conditions 9-4 and 10-4 of MS1105 BHP shall implement the latest revision of the EMP, which the CEO has confirmed by notice in writing, satisfies the requirements of Condition 5-2 of MS1037, and Conditions 9-2 and 10-2 of MS1105. In accordance with proposed Condition C1-1(1) of MSXXXX and MSXXXX, BHP must implement the implement the most recent version of the confirmed EMP.

4 Stakeholder consultation

BHP provided a draft version (8.1) of this EPWRMP to Karlka Nyiyaparli Aboriginal Corporation (KNAC) with the draft Environmental Review Document for the Orebody 29/30/35 Significant Amendment (BHP 2024a). There were no changes to the EPWRMP following KNAC's review.

BHP will consult with government agencies (including decision-making authorities), local authorities, groups and individuals, where relevant, in relation to the revision of this EPWRMP.

The specific recent consultation (since 2023) relevant to this EPWRMP is summarised in Table 12.

Table 12: Stakeholder consultation

Stakeholder	Date	Topics/issues raised	BHP response and outcome
KNAC	24 October 2024	**Version 8.1 submission for Orebody 29/30/35 Significant Amendment** KNAC raised the following points from its review of the draft referral information: • KNAC considers flora to be a potential factor given that changes in surface water availability can substantially change vegetation types and health • Nyiyaparli has concerns regarding the potential impacts on vegetation in response to changes in natural water flows and reiterated its request that BHP monitor vegetation in the vicinity of the dam and Fortescue River.	BHP clarified in its response to KNAC (November 2024) that the EPWRMP is for regional assets (e.g Ethel Gorge TEC and Fortescue River), not vegetation at the mine scale and that as discussed in the referral documentation, changes to surface water availability from the reduction in catchment will be within the natural variation of seasonal runoff and will not be significant. BHP clarified in its response to KNAC (November 2024) that it acknowledges Nyiyaparli's concerns regarding changes to natural flows from BHP's discharge to Ophthalmia Dam, noting that Ophthalmia Dam has created a modified system. BHP advised that the threshold relating to releases of water from Ophthalmia Dam to the Fortescue River has not changed. BHP also clarified that BHP undertakes biannual (wet and dry season) monitoring of riparian vegetation along the Fortescue River.
KNAC	21 November 2023	**Version 7.0 submission for Jimblebar Hub Iron Ore Mining Operations Significant Amendment** KNAC noted that updates to the EPWRMP are suitable in including new direct impacts to the Fortescue River from changes to surface water regimes.	BHP clarified it its response to KNAC (December 2023), that there are no new direct impacts to the Fortescue River – in Version 7.0 BHP formalised the existing commitment relating to releases of water from Ophthalmia Dam in the endorsed Version 6.0.
EPA / DWER	10 July 2023	**Version 6.3 submission for Western Ridge administrative update (with referral)** Notice requiring further information from EPA. Part 2 comments from DWER included comments relating to the EPWRMP	BHP has considered the comments from DWER to revise the EPWRMP and: • has made changes to the EPWRMP (Version 8.0) where appropriate (see Section 5, Table 13) • has undertaken additional studies and analyses, and discussion in the EPWRMP as recommended • will include a response to DWER following the Jimblebar Hub referral to justify why any of the recommended changes to the EPWRMP and/or studies and analyses are not required.
EPA / DWER	15 May 2023	**Version 6.2 submission for Orebody 32 BWT administrative update (with referral)** Notice requiring further information from EPA. Part 2 comments from DWER included comments relating to the EPWRMP.	
DWER	22 March 2023	**Version 6.1 submission for MS1126 Jimblebar administrative update**	BHP responded on 24 July 2023, that BHP was reviewing relevant data and intended to provide an updated version of the EPWRMP and responses to comments with the referral of the Jimblebar Hub Significant Amendment.

Stakeholder	Date	Topics/issues raised	BHP response and outcome
		Letter from DWER requiring amendments for Version 6.1 for MS1126, MS1037 and 1021. Comments from DWER included technical advice from Department of Biodiversity, Conservation and Attractions (DBCA).	BHP has considered the comments from DWER to revise the EPWRMP and: • has made changes to the EPWRMP (Version 8.0) where appropriate (see Section 5, Table 13) • has undertaken additional studies and analyses, and discussion in the EPWRMP as recommended • will include a response to DWER following the Jimblebar Hub referral to justify why any of the recommended changes to the EPWRMP and/or studies and analyses are not required.

5 Changes to the EMP

Table 13 summarises the key changes in this version of the EMP (EPWRMP) (Version 8.1) compared to Version 8.0 that BHP submitted to the EPA in December 2023 as part of the referral documentation for the Jimblebar Hub Iron Ore Mining Operations Significant Amendment.

Table 13: Changes to the EMP

Complexity of changes		**Minor revisions** ☑	**Moderate revisions**	**Major revisions**
Number of key environmental factors		**One**	**2-3** ☑	**>3**
Date revision submitted to EPA	December 2024			
Proponent's operational requirement timeframe for approval of revision	**< One month** ☑	**< Six months**	**>Six months**	**None**
Reason for timeframe	The EPWRMP is currently being implemented for approved proposals that are in operations.			

Item no.	EMP Section no.	EMP page no.	Summary of change	Reason for change
Version 8.1 August 2024				
1.	All	All	Add Orebody 20/30/35 Proposal	Administrative update to add the Orebody 29/30/35 Significant Amendment proposal
Version 8.0 December 2023				
1.	All	All	Amalgamate Jimblebar (MS1126) and Orebody 31 (MS1021) requirements into requirements for the Jimblebar Hub	Administrative update for the Jimblebar Hub Iron Ore Mining Operations Significant Amendment proposal
2.	All	All	Administrative update to change status of Orebody 32 and Western Ridge Proposals from proposed to approved	The Orebody 32 Below Water Table and Western Ridge proposals were declared to be derived proposals on 27 September 2023 and are authorised for implementation under EP Act s45B Notice: Statement 1105 – No 1 and EP Act s45B Notice: Statement 1105 – No 2 respectively
3.	Section 1.4.2 (Table 3) Section 2 (Table 8, Table 9, Table 10)	11 23, 25, 27	Add Fortescue River as a value and include criteria (and rationale for criteria) relating to releases of water from Ophthalmia Dam	Formalise existing commitment in EPWRMP to limit releases of water from Ophthalmia Dam in the dry season (during natural no-flow conditions) to three months total

Item no.	EMP Section no.	EMP page no.	Summary of change	Reason for change
4.	Section 1.4.2 (Table 3) Section 1.4.2.1 (Table 5)	10 17	Add text that BHP will continue to undertake monitoring of stygofauna species richness monitoring Add text summarising results of investigations into stygofauna species richness and abundance	Address DWER comments (1, 2 and 3) on Version 6.1, provided to BHP on 22 March 2023 (see Table 12), relating to stygofauna species richness: • clarify that BHP will continue to monitor for stygofauna species richness • summarise outcomes of investigations into stygofauna species richness and total abundance in relation to key abiotic parameters • summarise stygofauna monitoring program (including species richness)
5.	Section 1.4.2 (Table 3)	9	Add text justifying retention of existing groundwater salinity trigger and threshold	Address DWER comment (4) on Version 6.1 and DWER Part 2 comment (4) on Version 6.3, provided to BHP on 10 July 2023 (see Table 12), relating to the groundwater salinity trigger and threshold: • clarify that the EPWRMP also includes a groundwater salinity Early Warning Indicator of 2,500 mg/L TDS • summarise the range of recorded groundwater salinity in the Ethel Gorge area • summarise results of recent water balance modelling which predicts potential changes in groundwater levels and groundwater salinity • summarise outcomes of 2016 technical review of the salinity tolerance of stygofauna in the Ethel Gorge TEC • summarise outcomes of investigations into stygofauna species richness and total abundance in relation to key abiotic parameters
6.	Section 1.4.2.1 (Table 5 and Table 6)	17, 18	Add Table 5 summarising Ethel Gorge monitoring Add column to Table 6 to specify monitoring methodology	Address DWER comment (6) on Version 6.1 relating to monitoring methods against trigger and threshold criteria: • summarise groundwater monitoring program • describe the monitoring methods and how they are used to assess whether criteria have been exceeded Address DWER comment (6) on Version 6.3 relating to PFAS impacts on stygofauna: • add monitoring of PFAS in groundwater to the stygofauna monitoring program
7.	Section 1.3	4	Add reference to condition requirements to make the EPWRMP publicly available	Address DWER comment (7) on Version 6.1 relating to public availability of the EPWRMP
8.	Section 1.4.1 (including Figure 2)	5, 6	Add text to explain the rationale for separate plan water EMPs Update EPWRMP water management framework figure	Address DWER Part 2 comment (8) on Version 6.2, provided to BHP on 15 May 2023 (see Table 12) and Part 2 comment (8) on Version 6.3, relating to linkages between the EPWRMP and the PFAS WMP: • clarify the rationale for developing separate WMPs and clarify what each plan addresses

Item no.	EMP Section no.	EMP page no.	Summary of change	Reason for change
9.	Section 1.4.2 (Table 3) Section 1.4.2.1 (Table 5, Table 6) Section 2 (Table 8, Table 9, Table 10)	9 17, 18 23, 25, 27	Revise groundwater level criteria to remove groundwater level increase and simplify	Groundwater level increase is not considered to be a risk to stygofauna habitat and there is certainty about historical groundwater levels, from groundwater monitoring
Version 6.3 October 2022				
	1.1 (Figure 1), 1.2 (Table 1), 1.4.1 (Table 2 and Figure 2)		Administrative update to include the Western Ridge derived proposal	The Western Ridge proposal was referred to the EPA on 17 January 2023 to be declared a derived proposal. As discussed in the *Newman Hub (Western Ridge) Derived Proposal Request Ministerial Statement 1105* (BHP 2023c), BHP has proposed to manage the potential impacts to the Ethel Gorge aquifer / TEC according to the EPWRMP.
Version 6.2 April 2022				
	All		Administrative update to include the Orebody 32 Below Water Table derived proposal	The Orebody 32 Below Water Table proposal was referred to the EPA on 28 October 2022 to be declared a derived proposal. As discussed in the *Newman Hub (Orebody 32 Below Water Table) Derived Proposal Request Ministerial Statement 1105* (BHP 2022d), BHP has proposed to manage the potential impacts to the Ethel Gorge TEC according to the EPWRMP.
	1.4.2 (Table 3) 2 (Table 9-Table 12)		Add in reference to existing stygofauna monitoring program	Clarify that in addition to monitoring groundwater levels and groundwater quality (salinity) in the Ethel Gorge aquifer, BHP also undertakes a stygofauna monitoring program which currently includes annual seasonal monitoring of groundwater quality (full hydrochemistry suite) and sampling of stygofauna species.
Version 6.1 December 2021				
	All		Administrative update to align with Ministerial Statement 1126 and the EMP Instructions	Restructured/updated to align with EPA's revised October 2021 EMP Instructions and requirements of the current Ministerial Statements. Amended content to reflect current Ministerial Statement 1126 issued March 2020 and remove references and content related to superseded Ministerial Statements 857 (as amended by 1029), 809 and 683.

6 References

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Attachment 5F: Whaleback TSF Lift Works Approval W6714/2022/1

Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6714/2022/1
Works approval holder	BHP Iron Ore Pty Ltd
ACN	008 700 981
Registered business address	125 St Georges Tce PERTH WA 6000
DWER file number	DER2022/000290
Duration	03/02/2023 to 02/02/2026
Date of issue	02/02/2023
Premises details	Mt Whaleback/Orebody 29/30/35 Tenements E52/2009-1, ML244SA, G52/19-G52/27, G52/276, G52/277, G52/279; and Special Leases K858923 and N088235 NEWMAN WA 6753 As defined by the coordinates in Schedule 2: Premises boundary

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	Assessed production / design capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	80,000,000 tonnes per annum

This works approval is granted to the works approval holder, subject to the attached conditions, on 2 February 2023, by:

Alana Kidd
Manager, Resource Industries
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
02/02/2023	W6714/2022/1	Works approval granted.

Interpretation

In this works approval:

(a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:

  (i) if dated, refers to that particular version; and

  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct and/or install the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location; and

(d) within the corresponding timeframe,

as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
1.	TSF1 and TSF3	Dust controls to be implemented during construction phase: • Occupational and ambient dust levels are controlled by the implementation of the following measures: ➢ Water tankers are used to apply water to sites within areas of operation which have the potential to generate dust, including unsealed roads, haul roads and construction areas; ➢ Areas of exposed soil (land disturbance) are minimised; and ➢ Disturbed areas are rehabilitated as they become available; • Routine maintenance and housekeeping practices are employed to ensure that waste materials in or around the premises do not accumulate and lead to the generation of unacceptable airborne dust; • Chemical suppressants will be used for general site dust suppression where required; • Major traffic thoroughfares will be sealed and kerbing or bunding will be installed to discourage off-road passage. Vehicle traffic will	Schedule 1: Maps, Premises map, Figure 1	Prior to the submittal of the Environmental Compliance Report required by condition 3

	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
		preferably be directed along routes that are regularly maintained and sprayed with dust suppressants; • Speed limits will be enforced to minimise dust emissions; and • Site personnel will be required to undergo training and be made aware of their responsibility to reduce and report excessive dust emissions. Design and construction / installation requirements: • Raising facilities by a total of 9 m in 3 x 3 m raises; • Increase TSF1 from crest level of RL 594 m up to RL 603 m; • Increase TSF2 from crest level of RL 593 m up to RL 602 m; • Perimeter embankment raises will be progressively constructed from Beneficiation rejects or suitable sitewon materials (imported fill), typically in 3 m upstream raises; • The height of the raises may vary but are expected to be between 2 and 3 m, depending on the availability of construction materials; • The raises will be constructed with downstream and upstream side slopes of 3.3H:1V and 2H:1V, respectively, consistent with the existing slope batters on the TSFs; • The first proposed raise will include a bench at the existing crest level to accommodate existing infrastructure at the crest; • Surface water management measures will be put in place to manage stormwater runoff from the future embankment raises; • Stormwater will be diverted away from the TSFs consistent with existing practice; and • The TSFs are designed and operated to maintain a minimum of a 300mm freeboard. Pipeline requirements: • Pipeline has leak detection alarms		

	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
		provided by flow meters installed at the processing plant and on the TSF embankment; • Pipeline has pressure alarms provided by pressure transmitters at the discharge of the transfer pumps; • Pipeline is installed through brownfields areas of the site, typically the pipeline runs in a pipeline trace bordered by earthen windrows to contain any potential spillage, or adjacent to existing roads which are bounded by edge protection windrows that will perform the same function in containing spills; and • Where the pipeline is buried it is fully enclosed in a HDPE pipe sleeve, including where it crosses a local watercourse.		

Compliance reporting

2. The works approval holder must within 7 calendar days of an item of infrastructure or equipment required by condition 1 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition 1; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.

3. The Environmental Compliance Report required by condition 2, must include as a minimum the following:

(a) certification by a suitably qualified professional engineer or builder that the items of infrastructure or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1; and

(c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Environmental commissioning phase

Environmental commissioning requirements and emission limits

4. The works approval holder may only commence environmental commissioning of an item of infrastructure identified in condition 5 once the Environmental Compliance report has been submitted for that item of infrastructure in accordance with condition 2 of this works approval.

5. Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 2 may only be carried out:

   (a) in accordance with the corresponding commissioning requirements; and

   (b) for the corresponding authorised commissioning duration.

Table 2: Environmental commissioning requirements

	Infrastructure	Commissioning requirements	Authorised commissioning duration
1.	TSF1 and TSF3 wall lifts	• Testing and verification of tailings transfer pumps and gland water system; • Testing and verification of TSF decant return pumps, including instrumentation; • Testing and verification of the tailings transfer pipeline and spigot assembly components; • Verification of dam monitoring instrumentation; • Tailings deposited to the TSF are wet. As the tailings dry they set in a hard crust preventing the lift off of dust from the facility; • Tailings will be actively discharged into the TSFs at a rate of up to ~1 Mtpa through multiple spigots around most of the perimeter and from the dividing wall, with deposition adjusted as required to maintain the supernatant ponds around the water recovery systems of TSF 1 and TSF 3, located near the ridgeline bounding the TSFs to the southwest. consistent with the existing operation of the TSF; • Tailings deposition will periodically be rotated between TSF 1 and TSF 3 to allow the tailings to dry and consolidate prior to each embankment raise; • Supernatant water from the TSFs will be removed via pump-out decant systems that are consistent with existing operations; • An annualised average of ~30% to 40% of the process water transported with the tailings should be available for recycling to the process plant under normal operating conditions, depending on Beneficiation Plant through-put; and	Six months per wall lift

	Infrastructure	Commissioning requirements	Authorised commissioning duration
		• The TSFs are designed and operated to maintain a minimum of a 300mm freeboard.	

Monitoring during environmental commissioning

6. The works approval holder must submit to the CEO an Environmental Commissioning Report within 60 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 1.

7. The works approval holder must ensure the Environmental Commissioning Report required by condition 6 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of tailings discharged to the TSFs;

(b) a summary of the environmental performance of each item of infrastructure or equipment as constructed or installed (as applicable), which at minimum includes records detailing the (for example):

(i) environmental commissioning of the infrastructure;

(ii) testing and verification of the:

- tailings transfer pumps and gland water system;
- TSF decant return pumps, including instrumentation;
- tailings transfer pipeline and spigot assembly components; and
- dam monitoring instrumentation;

(c) a review of the works approval holder's performance and compliance against the conditions of this works approval; and

(d) where they have not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

8. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 11:

(a) where the item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition 2 has been submitted by the works approval holder for that item of infrastructure; and

(b) where the item of infrastructure is authorised to undertake environmental commissioning under condition 5, the Environmental Commissioning Report for that item of infrastructure as required by condition 6 has been submitted by the works approval holder.

9. The works approval holder may conduct time limited operations for item of infrastructure specified in condition 11 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 8 (as applicable) for that item of infrastructure; or

(b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*, if one is granted before the end of the period specified in condition 9(a).

10. During time limited operations, the works approval holder must record the following data monthly for the site water balance:

(a) site rainfall from the on-site weather station;

(b) evaporation rate from the on-site weather station;

(c) tailings return water recovery volumes;

(d) seepage recovery volumes;

(e) estimate of seepage losses; and

(f) volumes of tailings deposited.

Time limited operations requirements and emission limits

11. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 3 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 3.

Table 3: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	TSF1 and TSF3 wall lifts	• Tailings deposited to the TSF are wet. As the tailings dry they set in a hard crust preventing the lift off of dust from the facility; • Tailings will be actively discharged into the TSFs at a rate of up to ~1 Mtpa through multiple spigots around most of the perimeter and from the dividing wall, with deposition adjusted as required to maintain the supernatant ponds around the water recovery systems of TSF 1 and TSF 3, located near the ridgeline bounding the TSFs to the southwest. consistent with the existing operation of the TSF; • Tailings deposition will periodically be rotated between TSF 1 and TSF 3 to allow the tailings to dry and consolidate prior to each embankment raise; • Supernatant water from the TSFs will be removed via pump-out	Schedule 1: Maps, Premises map, Figure 1

	Site infrastructure and equipment	Operational requirement	Infrastructure location
		decant systems that are consistent with existing operations; • An annualised average of ~30% to 40% of the process water transported with the tailings should be available for recycling to the process plant under normal operating conditions, depending on Beneficiation Plant through-put; and • The TSFs are designed and operated to maintain a minimum of a 300mm freeboard.	
2.	On-site weather station	• Record monthly site rainfall • Record monthly evaporation rate	Schedule 1: Maps, Premises map, Figure 1

Compliance reporting

12. The works approval holder must submit to the CEO a report on the time limited operations within 60 calendar days of the completion date of time limited operations of 60 calendar days before the expiration date of the works approval, whichever is the sooner.

13. The works approval holder must ensure the report required by condition 12 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of tailings discharged to the TSFs;

(b) a summary of the environmental performance of all infrastructure as constructed or installed (as applicable), which includes records detailing the:

(i) amount of tailings discharged to the TSFs; and

(ii) water balance as conducted in condition 10;

(c) a review of operational performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and

(d) where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

14. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.

15. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 1;

(c) complaints received under condition 14.

16. The books specified under condition 15 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the works approval holder for the duration of the works approval; and

(d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 4 have the meanings defined.

Table 4: Definitions

Term	Definition
Books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
Discharge	has the same meaning given to that term under the EP Act.
Emission	has the same meaning given to that term under the EP Act.
Environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other environmental factors.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
Premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.

Term	Definition
Time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorized for that purpose, subject to the relevant conditions.
TSF	Tailings Storage Facility
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1).

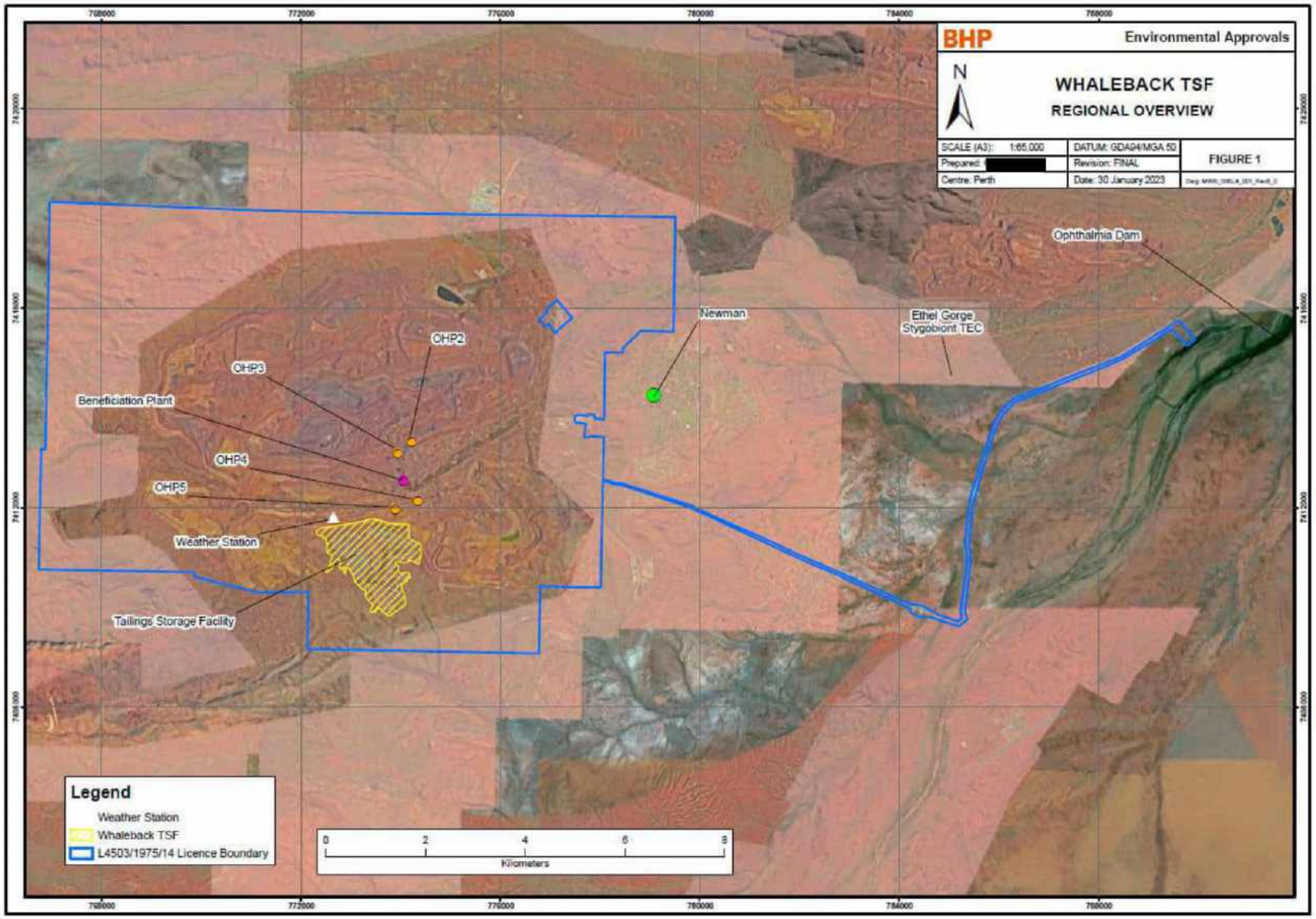

Figure 1: Map of the boundary of the prescribed premises

Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in Table 5.

Table 5: Premises boundary coordinates

Easting	Northing
779513.71	7417827.58
779470.28	7415531.20
778814.47	7415543.48
778458.11	7415199.77
778456.43	7415110.05
778102.77	7415116.72
778077.29	7413765.48
778073.62	7413765.32
777904.82	7413790.52
777887.23	7413793.15
777894.69	7413861.37
777880.64	7413863.19
777775.48	7413876.82
777745.68	7413860.27
777734.64	7413835.98
777601.63	7413858.76
777573.49	7413863.58
777487.40	7413830.46
777487.40	7413830.42
777502.85	7413720.09
777717.52	7413685.89
777690.39	7413494.10
777679.31	7413406.76
777703.74	7413403.74
777830.67	7413432.44
778039.51	7413418.30
778066.09	7413416.50
778070.69	7413415.09
778054.88	7412576.53
778066.81	7412572.72
778076.24	7412569.70
778171.18	7412539.37
778244.52	7412515.94
778275.69	7412505.98
778322.93	7412497.24
778362.60	7412491.81
778407.10	7412493.96
778415.15	7412494.35
778421.17	7412494.64
778435.11	7412490.08

Easting	Northing
778562.63	7412448.36
778614.16	7412431.51
778646.91	7412420.79
778756.40	7412384.97
778764.66	7412382.27
778828.33	7412361.44
778914.77	7412334.02
779040.58	7412294.10
779309.00	7412208.95
779410.14	7412176.86
779688.45	7412088.57
779799.08	7412053.47
779822.79	7412042.59
780018.09	7411952.92
780147.89	7411893.32
780489.58	7411736.44
780539.67	7411713.44
780622.09	7411675.60
780948.36	7411530.14
781010.14	7411502.60
781394.47	7411331.25
781491.59	7411287.95
781499.32	7411284.50
781624.79	7411226.03
781779.47	7411153.95
781988.18	7411056.68
782030.42	7411037.00
782113.24	7411000.86
782423.16	7410865.65
782531.79	7410818.25
782628.03	7410776.26
782839.08	7410683.20
782933.81	7410641.44
783347.40	7410459.07
783368.49	7410449.77
783422.88	7410425.79
783810.77	7410249.45
783927.05	7410196.58
784032.77	7410148.52
784036.55	7410147.07

Easting	Northing
784072.04	7410133.38
784221.56	7410075.73
784240.40	7410068.46
784255.72	7410062.56
784265.93	7410060.82
784273.29	7410059.57
784478.28	7410024.77
784499.10	7410013.18
784548.17	7409985.85
784633.49	7409938.33
784785.30	7409853.78
784849.92	7409831.58
784877.47	7409822.11
784965.28	7409791.94
785183.96	7409716.80
785257.15	7409785.59
785259.35	7409787.65
785250.97	7409825.76
785245.83	7409849.13
785243.68	7409858.90
785230.06	7409920.85
785239.85	7409993.83
785262.59	7410163.46
785271.92	7410233.02
785277.12	7410271.81
785284.85	7410329.43
785320.75	7410600.08
785363.26	7410945.83
785323.58	7411320.87
785338.70	7411493.75
785386.65	7411900.45
785392.55	7411950.50
785432.22	7412210.76
785456.88	7412296.81
785607.93	7412823.86
785832.39	7413521.51
785909.85	7413726.50
786068.75	7413982.99
786139.10	7414046.45
786300.20	7414191.76

Easting	Northing
786579.94	7414298.56
786680.78	7414337.06
786736.28	7414358.25
786905.57	7414422.88
787119.23	7414504.45
787217.13	7414542.73
787789.45	7414766.53
787905.59	7414811.94
788466.35	7415032.06
788778.33	7415229.22
789143.50	7415460.00
789503.00	7415690.91
789532.60	7415709.93
789606.77	7415757.57
789638.01	7415721.63
789692.48	7415658.95
789853.81	7415473.33
789939.30	7415374.97
789919.09	7415359.48
789891.71	7415338.49
789771.71	7415246.50
789701.51	7415323.70
789505.14	7415539.64
789468.47	7415579.97
789071.70	7415333.41
788778.33	7415157.42
788489.02	7414983.88
788410.87	7414951.32
787829.07	7414708.97
787080.64	7414419.49
786337.98	7414132.25
786239.43	7414035.04
786130.15	7413927.25
786125.23	7413919.59
785979.76	7413693.44
785908.91	7413504.50
785896.29	7413464.55
785860.70	7413351.85
785689.18	7412808.75
785516.28	7412193.05
785473.79	7411973.18
785454.32	7411801.23
785400.30	7411324.19
785398.21	7411305.76
785435.56	7410946.83
785318.86	7409913.30

Easting	Northing
785364.21	7409758.37
785363.14	7409757.49
785336.95	7409735.76
785197.94	7409620.45
785103.92	7409650.18
784604.65	7409808.10
784591.64	7409812.22
784494.99	7409807.52
784397.04	7409802.77
784238.33	7409888.74
784191.48	7409988.87
784090.82	7410034.20
783594.53	7410264.66
783256.62	7410422.01
782606.30	7410723.36
782089.64	7410940.82
781703.75	7411118.26
781605.97	7411163.23
781342.29	7411284.47
781334.00	7411288.28
780589.85	7411639.91
780584.30	7411642.54
780256.08	7411795.42
779835.93	7411991.12
779508.10	7412099.72
779323.14	7412160.99
779185.84	7412206.48
779174.72	7412210.16
779017.83	7412262.13
778983.26	7412273.58
778948.76	7412284.78
778921.48	7412293.63
778736.26	7412353.73
778586.11	7412402.44
778415.50	7412457.80
778406.53	7412457.18
778406.41	7412457.17
778390.08	7412456.04
778352.70	7412453.45
778348.46	7412453.16
778311.64	7412464.84
778054.31	7412546.53
778016.77	7410554.76
778014.09	7410398.86
776799.83	7410422.92
776774.56	7409077.43

Easting	Northing
773273.49	7409142.97
772931.95	7409149.11
772532.04	7409156.58
772129.57	7409164.07
772134.17	7409413.36
772138.78	7409663.45
772143.40	7409913.55
772148.01	7410163.63
772150.72	7410310.49
772150.71	7410310.49
772129.67	7410310.22
772129.47	7410310.22
771957.95	7410308.08
771159.02	7410298.08
770529.12	7410450.11
770520.52	7410452.19
769872.04	7410608.70
769850.88	7410706.53
769534.05	7410712.41
766747.30	7410762.65
766791.00	7413171.49
766874.20	7413170.70
766877.64	7413354.40
766882.32	7413604.50
766887.00	7413854.49
766891.67	7414104.47
766896.35	7414354.46
766901.02	7414604.44
766905.70	7414854.42
766910.37	7415104.41
766915.05	7415354.39
766919.72	7415604.39
766924.40	7415854.39
766929.07	7416104.39
766933.74	7416354.39
766938.41	7416604.40
766947.76	7417104.41
766957.10	7417604.41
766966.97	7418132.43
767162.41	7418124.55
767540.41	7418109.30
767940.41	7418093.17
768340.42	7418077.03
768740.42	7418060.90
769140.42	7418044.77
769540.43	7418028.63

Easting	Northing
769940.44	7418012.50
770340.44	7417996.36
771040.44	7417968.13
771940.44	7417937.04
772740.45	7417923.44
773940.48	7417903.04
775140.52	7417882.64
775287.56	7417880.14
779513.71	7417827.58
776778.55	7415778.56
776891.19	7415640.23
776943.61	7415682.76
776956.62	7415668.99
776976.47	7415683.38
777006.00	7415647.30

Easting	Northing
776994.46	7415637.90
777024.40	7415601.71
777114.30	7415493.02
777136.46	7415524.11
777155.97	7415548.26
777174.82	7415569.09
777205.58	7415600.84
777229.06	7415623.00
777243.72	7415636.69
777341.18	7415728.69
777349.45	7415734.79
777356.72	7415740.74
777370.28	7415750.00
777391.45	7415762.57
777410.30	7415775.14

Easting	Northing
777431.14	7415790.68
777446.35	7415804.57
777398.48	7415860.20
777200.14	7416090.66
777139.92	7416160.62
777050.87	7416090.66
776964.46	7416022.76
776953.88	7416014.45
776968.94	7415995.89
776968.00	7415995.19
776921.31	7415955.57
776944.65	7415920.83
776778.55	7415778.56

Attachment 6A: Emissions and discharges

See Sections 2, 5, 6 and 7.

Attachment 6B: Waste acceptance

Not required

Attachment 7: Siting and location

Not Required.

Attachment 8: Supporting document

See Sections 1 to 12.

Attachment 9: Category Checklist(s)

Not required.

Attachment 10: Fees

A fee of $6,120.00 is applicable to this licence amendment application (**Table 6**).

Table 9: Calculation of Application Fee

Largest Category	Site Capacity	Fee Units	Unit Cost	Licence Fee
Category 5	More than 5 000 000 tonnes per year	[redacted]	[redacted]	[redacted]

Attachment 11: Request for exemption from publication

Not Required.