



Application for Licence

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

Licence Number L5415/1988/9

Applicant BHP Iron Ore Pty Ltd

ACN 008 700 981

File number DER2013/000900-1
Application number - APP-0028928

Premises Wheelarra Hill (Jimblebar) Iron Ore Mine

Tenements L52/108, L52/109, L52/163, I126948, M266SA and
ML244SA
NEWMAN WA 6753

Date of report 03 November 2025 (FINAL)

Proposed Decision Licence granted

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1. Decision summary

Licence L5415/1988/9 is held by BHP Iron Ore Pty Ltd (BHP / Licence Holder) for the Wheelarra Hill (Jimblebar) Iron Ore Mine (the premises hereafter).

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L5415/1988/9 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Overview of premises and application summary

2.2.1 Overview of premises

The premises is located within several mining tenements approximately 21 km east of Newman in the Pilbara region of WA.

The Jimblebar Mine is one of several iron ore mines operated by BHP within the Pilbara Region. Ore from the mine is transported to Port Hedland via the BHP Newman to Port Hedland Mainline. Ore is then shipped through Port Hedland at the BHP facilities at Nelson Point and Finucane Island.

The authorised prescribed premises activities include categories 5, 6, 12, 64 and 73 as detailed in the licence.

2.2.2 Application summary

On 1 May 2025 BHP Iron Ore Pty Ltd (BHP) submitted an application to amend licence L5415/1988/9 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The application comprises the following components:

2.2.2.1 Category 6 Caramulla managed aquifer recharge (MAR) scheme

Condition 11 of the licence authorises the construction of additional reinjection bores (or replacement) bores for the Caramulla MAR scheme. This is to meet the 10.95GL/a discharge rate.

BHP will be constructing an additional four bores (HCM0149P, HCM0150P, HCM0151P and HCM0159P) at the Caramulla MAR scheme in March/April 2026. BHP applied to add these bores as mine dewater discharge points on the licence.

In addition, in relation to the Caramulla MAR monitoring bore network, BHP applied to replace two monitoring bores (HCM0043M, HCM0044M) with adjacent bores (HCM0008M and HCM0029M). BHP notes the replacement bores will provide a better representation of the groundwater levels within the regional aquifer.

2.2.2.2 Category 6 - Jimblebar Creek discharge scheme - surface water monitoring

Condition 18 on the licence authorises discharge of mine dewater (from South Jimblebar) to a

creek line within the Copper Creek / Jimblebar creek system – emission points FJB0004 and FJB0008. Condition 26 requires the monitoring of this discharge for volume and physicochemical constituents (when flowing). Condition 29 requires monitoring of the Copper/Jimblebar creek water quality upstream and downstream of the discharge points.

BHP indicates that four of the upstream/downstream creek water quality sites are difficult to monitor due to the rising stage samplers (RSSs) being destroyed by creek flows, or unsafe conditions during creek flows. BHP proposes four monitoring sites (JBSW003, JBSW004, JBSW009 and JBSW0010) be removed from the licence on the grounds that there is a sufficient baseline dataset of conditions upstream and immediately downstream of the Jimblebar Creek discharge scheme.

A minor administrative change is also sought to amend discharge point reference number FBJ008 to FJB0008.

2.2.2.3 Category 6 – Caramulla creek discharge - surface water monitoring

Condition 18 on the licence authorises discharge of mine dewater to the Curramulla creek discharge point – emission points FJB0017, FJB0018. Condition 26 requires the monitoring of this discharge for volume and physicochemical constituents (when flowing).

BHP propose to install a new RSS (CCSW001) to enable water quality within the Caramulla Creek to be monitored upstream of the Caramulla Creek discharge points.

2.2.2.4 Soil bioremediation facilities

Condition 9 on the licence authorises hydrocarbon contaminated soil and wastewater from the Ammonium Nitrate Facility to be stored within the Orebody 18 and Jimblebar bioremediation treatment cells (existing cells).

BHP applied to allow hydrocarbon contaminated soil to be managed at new soil bioremediation facilities (SBFs) within the premises to maximise flexibility in managing this waste. *Note that wastewater from the Ammonium Nitrate Facility would only be stored at the existing Jimblebar bioremediation area (no change proposed in this regard).*

The source of hydrocarbon contaminated soil is expected to be from hydrocarbon spills/leaks (fuel, hydraulic fluid) within the premises and adjacent BHP rail/geoscience operations. Other sources may include vehicle washdown facilities, workshops and fixed plant sumps. BHP estimated approximately 2000 to 3000 tonnes per annum would require treatment, however this could vary significantly depending on site works and remediation projects.

The specific locations of the SBFs were not specified in the application as this is subject to future operational needs. BHP stated it is likely only one or two facilities would be required over the coming 5 years.

Soil bioremediation facility specifications

Each SBF will be constructed to the following specifications:

- Lined with a HDPE liner or compacted to achieve a permeability of less than 10^{-9} m/s;
- Stormwater pond to capture runoff from the SBF. Pond sized to enable containment of a 1 in 100 year event;
- 1m high perimeter bund/windrow to prevent stormwater entry and egress;
- Perimeter fence/gate for access control.

BHP proposed a 50m buffer between any constructed SBF and a watercourse and/or the premises boundary.

Soil bioremediation process (summary)

Material transport and stockpiling

Hydrocarbon contaminated soils transported to the SBF will be subject to a material records register, i.e. a record of the source and volume of material being deposited at the SBF will be maintained.

The volume of material to be stockpiled at the SBF will vary depending on site needs, therefore the dimensions of the stockpiles will also vary. Stockpile heights will be limited based on their stability, manageability and potential for dust generation. Stockpiling will involve separate stockpiles for material stored prior to testing/treatment and material undergoing treatment.

Stockpile sampling and material characterisation

Soils transported to the SBF will undergo initial sampling and testing to determine if treatment is required, or if the material can be redirected for reuse on site. Soils requiring treatment are tested over time to determine if further treatment at the SBF is required or if the material can be reused.

Soil samples will be submitted to a NATA accredited laboratory for analysis of the following potential contaminants:

- Hydrocarbons - Benzene, toluene, ethylbenzene, xylenes, and naphthalene (BTEXN), Phenols, Polycyclic aromatic hydrocarbons (PAH) and Total Recoverable Hydrocarbons (TRH); and,
- Per- and Polyfluoroalkyl Substances (PFAS).

BHP includes PFAS in the analytical suite as hydrocarbon-contaminated material may be derived from locations associated with historic PFAS use and/or storage.

Sample analysis results will be assessed against the following hydrocarbon assessment criteria to determine if material is fit for reuse or requires further treatment at the SBF:

- NEPM 2013 Health Screening Levels for vapour intrusion Commercial / Industrial;
- NEPM 2013 Health Investigation Levels (HILs) Commercial / Industrial;
- NEPM 2013 Ecological Screening levels (ESL) Commercial / Industrial;
- NEPM 2013 Ecological Investigation Levels (EIL) Commercial / Industrial.

Sampling and characterisation of material stockpiles will be undertaken in accordance with the *National Environmental Protection (Assessment of Site Contamination) Measure (as amended), 2013 (NEPM)*.

Sample analysis results will also be assessed against PFAS human health and ecological assessment criteria detailed in the PFAS National Environmental Management Plan 2.0, 2020 (PFAS NEMP). BHP proposed that identification of PFAS above the guideline values is a trigger for further investigations or consideration of management actions to mitigate human and ecological risks.

Material treatment

Material stockpiles will also be analysed for nutrient content. Nitrogen, phosphorus and/or a source of carbon may be required to be added to the stockpiled material to encourage the growth of microbial populations to effectively degrade contaminants.

Material stockpiles will be aerated through the process of 'turning' the material over and exposing the material at the centre of the stockpile to air. Stockpiles will also be irrigated, via the use of water trucks, to maintain a desired moisture concentration of 15-20%.

Material reuse or disposal

At any stage of the stockpiling and treatment process, if analytical results (and statistical test data) record concentrations below the adopted assessment criteria the material will be redirected for reuse on-site. Treated soil will be reused in windrows, bunds and as sheeting material. Reuse of the material will also consider proximity to sensitive receptors. In addition, the potential risk posed by PFAS will be assessed prior to reuse of the material on site.

Soil stockpiles unsuitable for reuse will require waste classification and disposal to a suitable landfill facility.

The stormwater cells/ponds at each of the SBFs will require removal of deposited sediment and vegetation periodically. This waste may be considered contaminated and will require assessment and potentially disposal to a suitable landfill facility.

2.2.2.5 New oily wastewater management facilities (OWMFs)

The existing licence authorises discharge of treated wastewater from the Wheellarra oily WWTP to evaporation pond L2.

In acknowledgement that additional oily wastewater will be generated from washdown bays and workshops within the premises, BHP proposed to manage this wastewater through construction/operation of additional facilities. BHP estimates four such facilities would be constructed over 5 years, however, sought approval for numerous facilities which may be required as operations progress.

The specific locations of the OWMFs were not specified in the application as this is subject to future operational review/needs.

Infrastructure/equipment

The OWMFs will consist of the following infrastructure and equipment.

1. Oily water treatment plant (OWTP);
2. Treated wastewater pond (TWP) with the following specifications
 - a) Constructed to achieve a permeability of less than 10^{-9} m/s; and
 - b) Minimum vertical freeboard of 300 mm (except during a 72-hour duration ten-year annual recurrence interval storm event).

Oily water management process

Based on the existing OWTP at the premises, each new OWTP may treat 146ML wastewater per annum, however, BHP have advised new facilities are unlikely to be of this magnitude.

Within the OWTP, water and oil are centrifuged to separate out the hydrocarbons. Waste oil/hydrocarbons are deposited in collection tanks for pump out and disposal. Treated water is expected to have a total recoverable hydrocarbons (TRH) concentration of 15mg/L and is discharged to a TWP. Treated water is expected to be contained within the TWP, except during a 72-hour duration ten-year annual recurrence interval storm event.

Treated water may be recycled for use in washdown bays or used for dust suppression.

2.2.2.6 Administrative changes

The application also included the proposed administrative changes:

- Correct an administrative error in Table 12 by replacing “Cumulative flow rate” with “Cumulative volume”;
- For Conditions 26, Table 12; Condition 27, Table 13; and Condition 29, Table 15 and Table 16, add the note - *Water quality monitoring parameters are for “dissolved ions”*.

2.3 Part IV of the EP Act

Under Part IV of the *Environmental Protection Act 1986*, the Ministerial Statements relevant to this licence amendment assessment are Statements 1105 and Statement 1126.

2.3.1 Ministerial Statement 1105

EPA Report number 1619 and Ministerial Statement 1105 (approval dated 11 July 2019) relate to BHPs Pilbara Expansion Strategic Proposal which identified all new iron ore mine developments and expansion of existing mines within the Strategic Proposal project boundary.

The EPA identified 8 key environmental factors during the course of its assessment, including (but not limited to):

- Hydrological Processes and Inland Waters Environmental Quality – changes to hydrological regimes and water quality as a result of water abstraction, use, and disposal of excess water.

Schedule 1 of MS 1105 details the various approved mine developments which includes operations at Jimblebar. MS 1105 contains various conditions in relation to water management, including the following excerpts from the condition list:

Condition 10-1 The proponent shall manage the implementation of the proposal to meet the following environmental objective: (1) maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected, including where relevant avoiding and minimising direct and indirect impacts of the proposal,....(full condition in detail is available in MS1105);

Condition 10-2 The proponent shall prepare a Water Management Plan required by condition 6-1 that satisfies the requirements of condition 6-2, to meet the objectives specified in condition 10-1,....(full condition in detail is available in MS1105);

Condition 10-4 The proponent shall continue to implement the version of the Water Management Plan most recently approved by the CEO until the CEO has confirmed by notice in writing that the plan required by condition 6-1 satisfies the requirements of condition 6-2 to meet the objectives specified in condition 10-1.

2.3.2 Ministerial Statement 1126

EPA Report number 1663 and Ministerial Statement 1126 (approval dated 17 March 2020) relate to proposed additional areas for mining infrastructure and new surplus water management options for the Jimblebar Project.

The assessed surplus water management options included - discharge of surplus mine dewater from Jimblebar operations to the Caramulla MAR area and additionally into Caramulla Creek.

The EPA identified 3 key environmental factors during the course of its assessment, including (but not limited to):

- Flora and Vegetation – clearing of 2,000 ha of native vegetation and indirect impacts on vegetation due to changes in hydrology caused by the proposal;
- Inland Waters – implementation of a managed aquifer recharge scheme and discharge of surplus water to Caramulla Creek, altering the hydrological regimes of the area.

MS 1126 details Condition 7 in relation to the Water Environmental Management Plan Conditions 7-1 and Conditions 7-2 state:

7-1 The proponent shall manage the implementation of the proposal to meet the following environmental outcomes: (1) maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected, including where relevant avoiding and minimising direct and indirect impacts of the proposal, ... (full condition in detail

is available in MS1126).

7-2 In order to meet the outcomes specified in condition 7-1, the proponent shall implement the **Jimblebar Water Management Plan** (Revision 0, November 2019).

Schedule 1 of MS 1126 states the surplus water management authorised extent is:

- Discharge of up to 16.425 GL/a to Ophthalmia Dam;
- Controlled discharge along Caramulla Creek to extend no further than 34 kilometres from the northern boundary of the development envelope under natural, no-flow conditions;
- Managed aquifer recharge in the Caramulla area to limit groundwater level rise to 25 metres below ground level.

Jimblebar Water Management Plan

The approved *Jimblebar Water Management Plan (JWMP)* (Revision 0, November 2019) details the water related environmental values and actual/potential impacts addressed through implementation of the plan. This includes:

- Changes to surface water regime of Innawally Pool (within Jimblebar creek);
- Changes to surface water regime of Caramulla Creek (timing and duration of flow); and
- Changes in groundwater levels in Caramulla regional aquifer (increase causing mounding).

The JWMP contains outcomes based provisions for Innawally Pool, Caramulla Creek and the Caramulla regional aquifer to:

- Limit surplus water discharge along Jimblebar Creek to avoid reaching Innawally Pool;
- Limit the extent of surplus water discharge along Caramulla Creek; and
- Limit groundwater rise (mounding) in the Caramulla regional aquifer.

The provisions relating to Jimblebar Creek and Caramulla Creek are to manage the mine dewater discharge wetting front during natural no-flow conditions. The provisions relating to the Caramulla regional aquifer are to limit groundwater rise in the Caramulla regional aquifer from mine dewater discharge.

The JWMP does not duplicate management of surplus water addressed by other Part IV Environmental Management Plans (EMPs) and licence L5415/1988/9, i.e.:

- Potential impacts on riparian vegetation from surplus water discharge are managed by the *Jimblebar Flora and Vegetation Management Plan, Rev 0, November 2019*.
- Licence L5415/1988/9 contains capacity limits for mine dewater discharge and requires discharge volume and associated water quality monitoring which is not specifically addressed in the JWMP.

2.3.3 Jimblebar Hub Significant Amendment – Assessment Number 2397

On 14 February 2024, the EPA determined to assess the Jimblebar Hub Significant Amendment proposed by BHP (Assessment Number 2397). On 6 October 2025 the EPA published its assessment report (EPA report number 1793) which details the assessment scope. A summary of the assessment scope is provided below:

- An additional 2,067 ha of clearing of native vegetation and an increase in the development envelope of 5,393 ha;
- New above and below water table mining at the proposed East Jimblebar deposit;

- New overburden storage areas (OSAs) north of East Jimblebar;
- New haul and access roads, pipelines, overland conveyor and associated infrastructure;
- New beneficiation plant at Jimblebar and associated short-term in-pit tailings storage facilities (TSFs) within Orebody 17 and 18 and long term in-pit TSFs at Orebody 31, Jimblebar South and Jimblebar (Wheelara);
- An increase in mine dewatering and surplus water at the Jimblebar mine (from the approved Wheelarra Hill, South Jimblebar and Hashimoto deposits) and the proposed East Jimblebar deposit;
- Amalgamation of existing proposals authorised under Jimblebar Optimisation Project (Ministerial Statement (MS) 1126), Orebody 18 Iron Ore Mine (MS 439, amended by MS 1012), and Orebody 31 Iron Ore Mine (MS 1021), and consolidation of these into the Jimblebar Hub Significant Amendment proposal.

As of 8 October 2025 a corresponding ministerial statement has not been published.

The scope of assessment number 2397 is deemed not relevant to the licence amendment application detailed in this report. BHP is required to apply for a works approval and/or additional licence amendment for any proposed changes to the licence associated with Assessment Number 2397.

3. Assessment of proposed amendments not requiring a risk assessment

3.1 Category 6 Caramulla MAR amendments

3.1.1 Background

The Department amended the licence on 19 July 2022 which included authorisation of the Caramulla MAR scheme. The Caramulla MAR scheme incorporates up to 10.95 GL/a discharge of mine dewater to a defined zone at the eastern end of the premises. A risk assessment was completed in the course of the 2022 licence amendment. The authorised reinjection bores included HCM0026P, HCM0027P and HCM0028P, with provision for additional bores. The licence requires monitoring of the discharge volumes and water quality, along with monitoring of ambient groundwater levels and groundwater quality.

3.1.2 Assessment

BHP has confirmed that the four additional reinjection bores (HCM0149P, HCM0150P, HCM0151P and HCM0159P) will be located within the Caramulla MAR zone that was previously assessed. Conditions on the licence require BHP to provide evidence to the Department, once constructed, that the bores are located within the approved MAR zone. The proposed additional reinjection bores have been added as authorised discharge points on the licence and monitoring conditions updated to incorporate these bores.

The replacement of two monitoring bores (HCM0043M, HCM0044M) with adjacent bores (HCM0008M, HCM0029M) is supported, noting BHP's advice that the replacement bores will provide a better representation of the groundwater levels within the regional aquifer.

In the course of processing the application, the Department identified an administrative error in Condition 29 Table 15 of the licence. I.e. ambient groundwater monitoring bores HCM0008M, HCM0017M and HCM0016M did not include pH, TDS and EC in the analytical suite. This has been corrected in the amended licence.

3.2 Category 6 - Jimblebar Creek discharge scheme - surface water monitoring

3.2.1 Background

Mine dewater discharge to the Jimblebar Creek system (which includes Copper creek as a tributary of Jimblebar Creek) is regulated through the Ministerial Statements as described in Section 2.3 of this report and, in turn, licence L5415/1988/9 contains conditions in relation to mine dewater discharge monitoring and overall mine dewater discharge limits for the premises. The conditions on the licence are intended to complement the Ministerial Statement conditions.

BHP note that the Jimblebar creek discharge scheme is not currently used but remains as an emergency discharge point option. While licence L5415/1988/9 details mine dewater discharge capacity limits for the premises, the JWMP provisions are in place to prevent mine dewater from reaching Innawally pool during natural no-flow conditions. To complement Ministerial Statement conditions, the quantity and quality of mine dewater discharged into the Jimblebar Creek system is required to be monitored.

3.2.2 Assessment (upstream water quality monitoring sites)

Assessment of BHPs proposal to omit continued upstream (background) water quality monitoring is outlined below.

BHP submitted data for upstream water quality monitoring sites (JBSW004 and JBSW010) for spot sampling completed across 2019 to 2024. For JBSW004, most of the parameters requiring analysis under the licence have been analysed 3 or 4 times across 2019 to 2024. Hardness and zinc was analysed once and twice respectively. For JBSW010, most of the parameters requiring analysis under the licence have been analysed 3 or 4 times across 2020 to 2024 (zinc and hardness included). The median pH readings for the two sites were 7 and 6.45 respectively and the median TDS was 57mg/L and 91 mg/L respectively. This data set is considered an estimate of background water quality upstream of the mine dewater discharge points (FJB0004 and FJB0008), along with any additional historical data.

Considering the background monitoring completed to date, no additional background water quality monitoring is required. However, this decision can be reviewed by the Department in the future if required. The upstream water quality monitoring sites JBSW004 and JBSW010 have been omitted from the licence conditions.

Condition 35 of the licence requires BHP to report discharge monitoring results annually including a comparison against established values and details of any investigations undertaken and any proposed remedial actions.

3.2.3 Assessment (downstream water quality monitoring sites)

BHP advised that downstream monitoring site JBSW009 on the existing licence is actually known as JBSW005 and conversely JBSW005 is known as JBSW009. This has been adopted in the description of monitoring sites below.

Mine dewater discharge from points FJB0004 and FJB0008 has historically been monitored at the point of discharge and at three downstream sites, namely JBSW003, JBSW005 and JBSW009.

BHP's proposed licence amendment is to omit two of the three downstream water quality sites, namely JBSW003 and JBSW005, as they are unsafe to access during high rainfall events and/or they are often washed away during creek flow events. Noting that BHP will continue to monitor discharge flow volume and water quality at FJB0004 and FJB0008 and water quality at downstream site JBSW009, this is considered adequate to monitor discharge water quality and will enable comparison of the discharge data with background and historical water quality data

for the Jimblebar Creek system. This decision can be reviewed by the Department in the future if required.

Note - in the course of this assessment, the Department has identified under Condition 26 that dewater discharge point FJB0008 is not included as a water quality monitoring location. This has been rectified on the licence as mine dewater discharge quantity and quality is expected to be monitored from all such discharge points.

3.3 Category 6 – Caramulla creek discharge - surface water monitoring

3.3.1 Background

Mine dewater discharge to Caramulla creek is regulated through the Ministerial Statements as described in Section 2.3 of this report. In turn, licence L5415/1988/9 contains conditions in relation to mine dewater discharge monitoring and overall mine dewater discharge limits for the premises. The conditions on the licence are intended to complement the Ministerial Statement conditions.

While licence L5415/1988/9 details mine dewater discharge capacity limits for the premises, the JWMP provisions are in place to limit the extent of surface water flow in Caramulla Creek under natural no-flow conditions. To complement Ministerial Statement conditions the quantity and quality of mine dewater discharged into the Caramulla Creek is required to be monitored at sites FJB0017 and FJB0018.

BHP's proposed licence amendment is to add a new surface water monitoring site (CCSW001) to enable water quality within the Caramulla Creek to be monitored **upstream** of the Caramulla Creek discharge points.

3.3.2 Assessment

Under the JWMP, BHP are required to establish a reference site upstream of the Caramulla Creek mine dewater discharge points to monitor *when flow starts and stops under natural conditions*. This enables assessment of factors contributing to creek flow (natural and anthropogenic).

The proposed upstream *water quality monitoring site* (CCSW001) will provide water quality parameter data to estimate natural conditions (background data). This background data can be compared with the discharge water quality (from the downstream discharge sites) to assist with identifying changes to water quality that may be attributable to the mine operations. The licence conditions require BHP to compare dewater discharge results against established trigger values and undertake investigation of trigger exceedances and report outcomes to the Department. The establishment of the new upstream water quality monitoring site within Caramulla Creek is therefore deemed necessary.

BHP outline that monitoring site CCSW001 will be representative of background water quality as it is located approximately 1.5km upstream of discharge point FJB0017 and there are no creek discharges from BHP operations upstream of the site. Site CCSW001 is also deemed safe to access and in a location of lower risk of destruction due to creek flows.

Note - in the course of this assessment, the Department has identified Figure 3 on the licence in relation to wetting front limits for Caramulla creek surplus water discharge is not required on the licence as wetting front limits are addressed under Ministerial Statement 1126 and the *Jimblebar Water Management Plan (JWMP) (Revision 0, November 2019)*. Figure 3 has been omitted from the licence.

3.4 Administrative amendments

3.4.1 Condition 26 monitoring of point source emissions to surface water

In relation to discharge point FNPI0002 (Ophthalmia Dam Discharge Point Sample Tap) the requirement to record “cumulative flow rate” on a quarterly basis has been amended to “cumulative volume”.

3.4.2 Monitoring of point source emissions to surface water and groundwater. Monitoring of ambient groundwater and surface water quality.

Conditions 26, 27 and 29 on the licence require water quality monitoring for discharges to creek lines and groundwater, along with ambient surface water and groundwater quality. BHP proposed to amend these conditions to clarify that dissolved ion analysis results are required (for applicable parameters), as site specific trigger values for water quality have been developed based on dissolved ions.

Surface water or groundwater sample analysis for dissolved ions, including dissolved metals, is deemed acceptable to detect changes in bioavailable concentrations compared to background levels.

4. Assessment of amendments requiring a risk assessment

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

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

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

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

Table 1: Potential emissions, pathways and licence holder controls

Source	Potential emissions	Potential pathways	Proposed controls
Oily wastewater management facilities (OWMFs)			
Construction			
Construction of OWMFs	Noise, dust	Air/windborne pathway	Nil
Operation			
Discharge of treated wastewater to TWP	Sediment, oil/grease, hydrocarbons.	Infiltration to underlying soils and groundwater;	Siting of facilities, i.e: - At least 10km away from Ophthalmia Dam; - At least 12km away from

Source	Potential emissions	Potential pathways	Proposed controls
		Overflow from TWP.	Threatened Ecological Community (Ethel Gorge aquifer stygobiont community); At least 50m away from watercourses. OWTPs to treat wastewater to a concentration of no more than 15mg/L total recoverable hydrocarbons (TRH). TWPs constructed to achieve a permeability of less than 10^{-9} m/s (considered impermeable). Minimum vertical freeboard of 300 mm (except during a 72-hour duration ten-year annual recurrence interval storm event).
Use of treated wastewater in dust suppression	Oil/grease, hydrocarbons	Direct discharge to land	OWTPs to treat wastewater to a concentration of no more than 15mg/L TRH.
Soil bioremediation facilities (SBFs)			
Construction			
Construction of SBFs	Noise, dust	Air/windborne pathway	Nil
Operation			
Material stockpiling, treatment and loading/unloading	Dust	Air/windborne pathway	Stockpiles undergoing treatment will be routinely irrigated to maintain desired moisture content.
	Hydrocarbon odours	Air/windborne pathway	Nil
	Sediment	Mobilisation following storm events - overland transport	Stormwater pond to capture runoff from the SBF. Pond sized to enable containment of a 1 in 100 year event. 1m high perimeter bund/windrow to prevent stormwater entry and egress. Proposed 50m buffer between any constructed SBF and a watercourse and/or the premises boundary.

Source	Potential emissions	Potential pathways	Proposed controls
	Hydrocarbons, PFAS	Mobilisation following storm events - overland transport, or infiltration into underlying soil/groundwater.	SBF constructed with a HDPE liner or compacted to achieve a permeability of less than 10^{-9} m/s. Stormwater pond to capture runoff from the SBF. Pond sized to enable containment of a 1 in 100 year event. 1m high perimeter bund/windrow to prevent stormwater entry and egress. Proposed 50m buffer between any constructed SBF and a watercourse and/or the premises boundary.
Material reuse within the premises	Hydrocarbons, PFAS	Mobilisation following storm events - overland transport, or infiltration into underlying soil/groundwater.	Material processing/treatment to reduce hydrocarbon levels. Material sampling and analysis to determine if contaminant concentrations are below adopted assessment levels. Material containing contaminant concentrations above assessment levels will be deemed unsuitable for reuse and disposed at a suitable landfill facility.

4.1.2 Receptors

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

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020)).

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

Human receptors	Distance from prescribed activity
None identified	Not applicable
Environmental receptors	Distance from prescribed activity
Soils	In the vicinity of the OWMFs and SBFs and within the premises in general
Ephemeral watercourses (are within Pilbara Surface Water Area)	May occur in vicinity of OWMFs or SBFs
Native vegetation and potentially threatened/priority flora	May be located in the vicinity of the OWMFs and SBFs

Native fauna and potentially threatened/priority fauna	May be located in the vicinity of the OWMFs and SBFs
Groundwater (is within Pilbara Groundwater Area)	Depth to groundwater across the premises ranges from 30 to 120 m
Newman Water Reserve - Public Drinking Water Source Area (Newman PDWSA)	The western end of the premises boundary overlaps with the Newman PDWSA. Note 1 – Ophthalmia Dam is located approximately 4.6km south-west of the premises development area Note 2 – a cluster of the PDWSA wellhead protection zones is approximately 7.8kms north-west of the premises development area.

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 0. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 0), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

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

The Revised Licence L5415/1988/9 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

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

Table 3: Risk assessment of potential emissions and discharges from the premises during construction and operation

Sources / activities	Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of licence	DWER comment OR justification for additional regulatory controls					
	Potential emission	Potential pathways	Receptors	Potential impact	Applicant controls									
Construction of OWMFs ³														
Construction of OWMFs	Dust	Air/windborne pathway	Threatened/priority flora Native vegetation	Potential impact on vegetation health	Nil	C = slight L = rare Low risk	Nil	Nil	Risk event is deemed acceptable and not subject to regulatory controls.					
Operation of OWMFs ³														
Discharge of treated wastewater to Treated wastewater ponds (TWP)	Oil/grease, hydrocarbons	Infiltration	Soils	Soil contamination	Refer to table 1	C = Minor L = Possible Medium risk	No	Condition 11 – siting of OWMFs Condition 11 – construction and installation requirements for OWMFs Condition 16 – infrastructure and equipment operational requirements Condition 21 – emissions to land limits Condition 28 – monitoring of emissions to land Condition 40 – annual reporting Condition 41 – notification requirements	The applicant proposed a 50m buffer between any constructed OWMF and a watercourse. The Delegated Officer has amended the proposed buffer to 500m to better manage the assessed risks. The Delegated Officer notes the consequence rating of “major”, attributed to potential impact on the public drinking water source. To better manage the risk to the PDWSA, the proposed OWMFs must be sited away from the PDWSA, i.e. at least 1km away from the PDWSA boundary. Premises operations are also subject to the requirements of the <i>Environmental Protection (Unauthorised Discharge) Regulations 2004</i> . Environmental Protection (Unauthorised Discharges) Regulations 2004					
			Groundwater	Groundwater contamination		C = Moderate L = Unlikely Medium risk								
	Sediment, oil/grease, hydrocarbons	Overflow from TWP	Ephemeral watercourses	Additional sediment loads; Sediment contamination; Water quality degradation		C = Minor L = Unlikely Medium risk								
			Native vegetation and fauna, which may include threatened/priority flora and fauna	Impact on vegetation/fauna health		C = Moderate L = Unlikely Medium risk								
	Oil/grease, hydrocarbons	Infiltration (due to breaches in liner integrity)	Groundwater in Newman PDWSA	Contamination of public drinking water source.		C = Major L = Rare Medium risk								
			Overflow from TWP (accidental or following storm event unable to be contained)			Newman PDWSA				C = Major L = Unlikely Medium risk				
	Use of treated wastewater in	Oil/grease, hydrocarbons	Direct discharge to	Soils		Soil contamination				Refer to table 1	C = Minor	Yes	Condition 11 – design requirements for OWTPs	Additional regulatory controls not required

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Sources / activities	Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of licence	DWER comment OR justification for additional regulatory controls
	Potential emission	Potential pathways	Receptors	Potential impact	Applicant controls				
dust suppression		land				L = Unlikely Medium risk		Condition 16 - OWTPs operational requirements Condition 21 – emissions to land limits Condition 28 – monitoring of emissions to land Condition 40 – annual reporting Condition 41 – notification requirements.	
Construction of SBFs ⁴									
Construction of SBFs	Dust	Air/windborne pathway	Threatened/priority flora Native vegetation	Potential impact on vegetation health	Nil	C = slight L = rare Low risk	Nil	Nil	Risk event is deemed acceptable and not subject to regulatory controls.
Operation of SBFs ⁴									
Material stockpiling, treatment and loading/unloading	Dust	Air/windborne pathway	Threatened/priority flora Native vegetation	Potential impact on vegetation health	Refer to table 1	C = slight L = rare Low risk	Yes	Nil	Risk event is deemed acceptable and not subject to regulatory controls.
	Sediment	Seasonal storm events resulting in sediment runoff from the SBF areas	Ephemeral watercourses in vicinity	Increased sediment load in nearby watercourses	Refer to table 1	C = slight L = unlikely Low risk	No	Condition 9 waste material acceptance specifications Condition 11 – siting of SBFs Condition 11 – construction and installation requirements for SBFs Condition 16 – infrastructure and equipment operational requirements Condition 41 – notification requirements.	The applicant proposed a 50m buffer between any constructed SBF and a watercourse and/or premises boundary. The Delegated Officer has amended the proposed buffer to 500m to better manage the assessed risks.
	Hydrocarbons, PFAS	Seasonal storm events resulting in – leaching of contaminants from source material and migration overland or through to groundwater (due to breaches in liner and/or bunding integrity)	Soils within the SBF and in the vicinity	Soil contamination.	Refer to table 1	C = moderate L = possible Medium risk			
			Ephemeral watercourses in the vicinity	Water and sediment contamination		C = moderate L = unlikely Medium risk			
			Native vegetation and fauna, which may include threatened/priority flora and fauna	Impact on vegetation/fauna health		C = minor L = unlikely Medium risk			
			Groundwater (not within PDWSA)	Groundwater contamination					

Sources / activities	Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of licence	DWER comment OR justification for additional regulatory controls
	Potential emission	Potential pathways	Receptors	Potential impact	Applicant controls				
			Newman PDWSA	Contamination of public drinking water source.		C = major L = unlikely Medium risk	No	<u>Condition 11 – siting of SBFs</u> Condition 11 – construction and installation requirements for SBFs Condition 16 – infrastructure and equipment operational requirements Condition 41 – notification requirements.	While the likelihood rating is “unlikely”, the Delegated Officer notes the consequence rating of “major”. To better manage the risk to the PDWSA, the proposed SBFs must be sited away from the PDWSA, i.e. at least 1km away from the PDWSA boundary.
Material reuse within the premises (reused in windrows, bunds and as sheeting material).	Hydrocarbons, PFAS	Seasonal storm events resulting in – leaching of contaminants from source material and migration overland or through to groundwater.	Soils in the vicinity Ephemeral watercourses in the vicinity Native vegetation and fauna, which may include threatened/priority flora and fauna Groundwater (not within PDWSA)	Soil contamination. Water and sediment contamination (in watercourses) Impact on vegetation/fauna health Groundwater contamination	Refer to table 1	C = moderate L = unlikely Medium risk	Yes	Condition 9 waste material acceptance specifications Condition 32 specified measures for reuse of material from the SBFs. Condition 31 – material inputs and outputs monitoring Condition 32 – material reuse restrictions Condition 34 – Records of material analysis (for contaminants) and offsite disposal.	Additional regulatory controls not required.
			Newman PDWSA	Contamination of public drinking water source.		C = major L = unlikely Medium risk	No	<u>Condition 33 specified measures for reuse of material from the SBFs.</u> <u>Condition 34 – records of material reuse location.</u>	While the likelihood rating is “unlikely”, the Delegated Officer notes the consequence rating of “major”. To better manage the risk to the PDWSA, material from the SBFs must not be reused within the PDWSA area.

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

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

Note 3: Risk assessment for OWMFs is based on the estimated 4 additional OWMFs only.

Note 4: Risk assessment for SBFs is based on the estimated 2 additional SBFs only.

5. Consultation

The Delegated Officer determined that considering the scope of the licence amendment application, advertising and consultation with direct interest stakeholders was not required for the application.

On 22 October 2025 the Department issued the draft amended report and amended licence to BHP. Comments were received from BHP on 30 October 2025 and the Department response is detailed in Table 4 below.

Table 4: Consultation with applicant

Applicant comments (summary)	Department response
Condition 9 Table 4 waste containment infrastructure Given the outcome is to achieve a permeability of $<10^{-9}$ m/s, BHP proposed all references to HDPE in the Table 4 be removed. While typically HDPE is used to achieve the required permeability, it can be achieved by other methods (e.g. clay liners).	The Delegated Officer supports the proposed change to Condition 9, Table 4 in relation to <u>existing</u> infrastructure Evaporation Pond 1, Evaporation Pond 2 and "Orebody 18 and Jimblebar bioremediation treatment cells". I.e. these vessels/compounds are required to achieve a permeability of $<10^{-9}$ m/s. The specification of a HDPE liner to achieve the required permeability is considered superfluous and has been omitted. The new soil bioremediation facilities (SBFs) construction requirements in condition 11 have been updated so that the required specification is to achieve a permeability of less than 10^{-9} m/s, with no reference to a HDPE liner.
Condition 20 Table 10 – authorised emission to land locations (Points L3 to L6): these should be classified as "lined ponds" based on the construction requirements.	Treated wastewater from new OWTPs is to be discharged into lined evaporation ponds in accordance with condition 11. Reference to "unlined" pods has been corrected to "lined ponds".
Condition 28 Table 14 - monitoring of emissions to land Replace "Flow rate" with "Cumulative Volume" for Point L2 and consolidate the table information.	The Delegated Officer supports the proposed change to Condition 28, Table 14 in relation to <u>existing</u> emission point L2 associated with the Wheelarra oily WWTP. I.e. the requirement to monitor flow rate in L/s quarterly has been amended to cumulative volume in kL. Table 14 information has been consolidated.

6. Conclusion

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

6.1 Summary of amendments

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

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Table 5: Summary of licence amendments

Licence section / condition number	Proposed amendments
Category 6 Caramulla MAR amendments	
Condition 19 – emission points to groundwater	Addition of Caramulla reinjection bores HCM0149P, HCM0150P, HCM0151P and HCM0159P.
Condition 27- Monitoring of point source emissions to groundwater	Addition of Caramulla reinjection bores HCM0149P, HCM0150P, HCM0151P and HCM0159P.
Condition 29 - Monitoring of ambient groundwater quality	Replacement of two monitoring bores (HCM0043M, HCM0044M) with adjacent bores (HCM0008M, HCM0029M)
Condition 29 - Monitoring of ambient groundwater quality	Correction of administrative error so that ambient groundwater monitoring bores (i.e. HCM0008M, HCM0017M and HCM0016M) include pH, TDS and EC in the analytical suite.
Condition 26 - Monitoring of point source emissions to surface water	In relation to discharge point FNPI0002 (Ophthalmia Dam Discharge Point Sample Tap) - requirement to record “cumulative flow rate” on a quarterly basis amended to “cumulative volume”.
Schedule 1, Figure 2 - emission points and monitoring locations	Replaced Figure 2 to account for additional MAR bore locations and updated monitoring locations described herein.
Category 6 - Jimblebar Creek discharge scheme - surface water monitoring	
Condition 18 - Authorised discharge points	Corrected discharge point reference number FBJ0008 to FJB0008.
Condition 26 - Monitoring of point source emissions to surface water	Addition of discharge point FJB0008 to require water quality monitoring at this discharge point.
Condition 29 - ambient environmental quality monitoring	Omission of sites JBSW003, JBSW004, JBSW005 (previously known as JBSW009) and JBSW010. Updated site name JBSW005 to JBSW009.
Schedule 1, Figure 2 - emission points and monitoring locations	Replaced Figure 2 to account for changes to surface water monitoring sites described herein.
Category 6 – Caramulla creek discharge - surface water monitoring	
Condition 29 - ambient environmental quality monitoring	Addition of Caramulla creek upstream (CCSW001) water quality monitoring site
Schedule 1, Figure 3 - Caramulla Creek Wetting Front Limits	Omitted Figure 3 as detailed in this report (existing Figure 4 and 5 renumbered to 3 and 4 as a result)
New oily wastewater management facilities (OWMFs)	
Condition 11	New OWMFs design and construction requirements
Condition 16	New OWMFs operational requirements

Licence section / condition number	Proposed amendments
Condition 20	New OWMF emission points
Condition 21	New OWMF emission limits
Condition 28	New OWMF emission monitoring
Condition 41	New OWMF construction compliance reporting
New soil bioremediation facilities (SBFs)	
Condition 9	Specification of waste material authorised to be stored/treated at the new SBFs
Condition 11	New SBFs design and construction requirements
Condition 16	New SBFs operational requirements
Condition 31	Material inputs and outputs monitoring for the new SBFs
Condition 32	Specified measures for reuse of material from the new SBFs
Condition 33	
Condition 34	Records requirements for SBF material analysis, reuse and disposal
Condition 41	New SBF construction compliance reporting
Administrative amendments	
Conditions 26, 27 and 29 - Monitoring of point source emissions to surface water and groundwater. Monitoring of ambient groundwater and surface water quality.	Conditions amended with additional notes to clarify that water quality monitoring parameters are for “dissolved ions” (where applicable)
Condition 26 monitoring of point source emissions to surface water	In relation to discharge point FNPI0002 (Ophthalmia Dam Discharge Point Sample Tap) the requirement to record “cumulative flow rate” on a quarterly basis has been amended to “cumulative volume”.
Condition 9	Minor amendments to table format and condition wording
Condition 28	Minor amendments to condition wording

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.