



Application for Works Approval

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

Works Approval Number	W6858/2023/1
Applicant	BHP Iron Ore Pty Ltd
ACN	008 700 981
File number	DER2023/000636
Premises	Eastern Ridge – OB32 Shire of East Pilbara Legal description: Part of Mineral Lease ML244SA As defined by the premises maps attached to the issued works approval
Date of report	29 April 2024
Proposed Decision	Works approval granted

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

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Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and of the premises. As a result of this assessment, works approval W6858/2023/1 has been granted.

1. Scope of assessment

1.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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>.

1.2 Application summary and overview of premises

On 27 September 2023, BHP Iron Ore Pty Ltd (the applicant) applied for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to undertake construction, commissioning and time limited operations of dewatering infrastructure at the premises, with a proposed mine dewatering discharge throughput of 21.9 GL per annual period. The premises is approximately 3.6 km north-east of the town of Newman.

The premises currently operates under Licence L6942/1997/13 for categories 5, 6, 63 and 85. Mine dewatering is approved under the existing licence and is undertaken at a rate of 19 gigalitres per annual period and is discharged to Ophthalmia Dam over existing rip-rap disposal area. There are a number of contingency discharge points included on the licence to allow for the discharge of overflow during wet weather events and equipment malfunctions via v-drains.

The applicant is proposing to undertake the following works that triggers regulation under Part V of the EP Act:

Construction:

1. An approximate 12km pipeline from the Orebody 32 (OB32) dewatering network to Ophthalmia Dam (gravity fed system).
2. A new surplus water discharge point at the Ophthalmia Dam.

Commissioning phase (up to 2 months long):

3. Testing the pipeline by pressuring each section in sequence from OB32 to Ophthalmia Dam.

Time-limited-operations:

4. Disposing up to 21.9 GL/annum (nominal 60 ML/day) of surplus mine dewater to the Ophthalmia Dam via the pipeline.

Figure 1 outlines the pipeline routes and discharge point.

The premises relates to the category 6 mine dewatering and assessed production/design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6858/2023/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6858/2023/1.

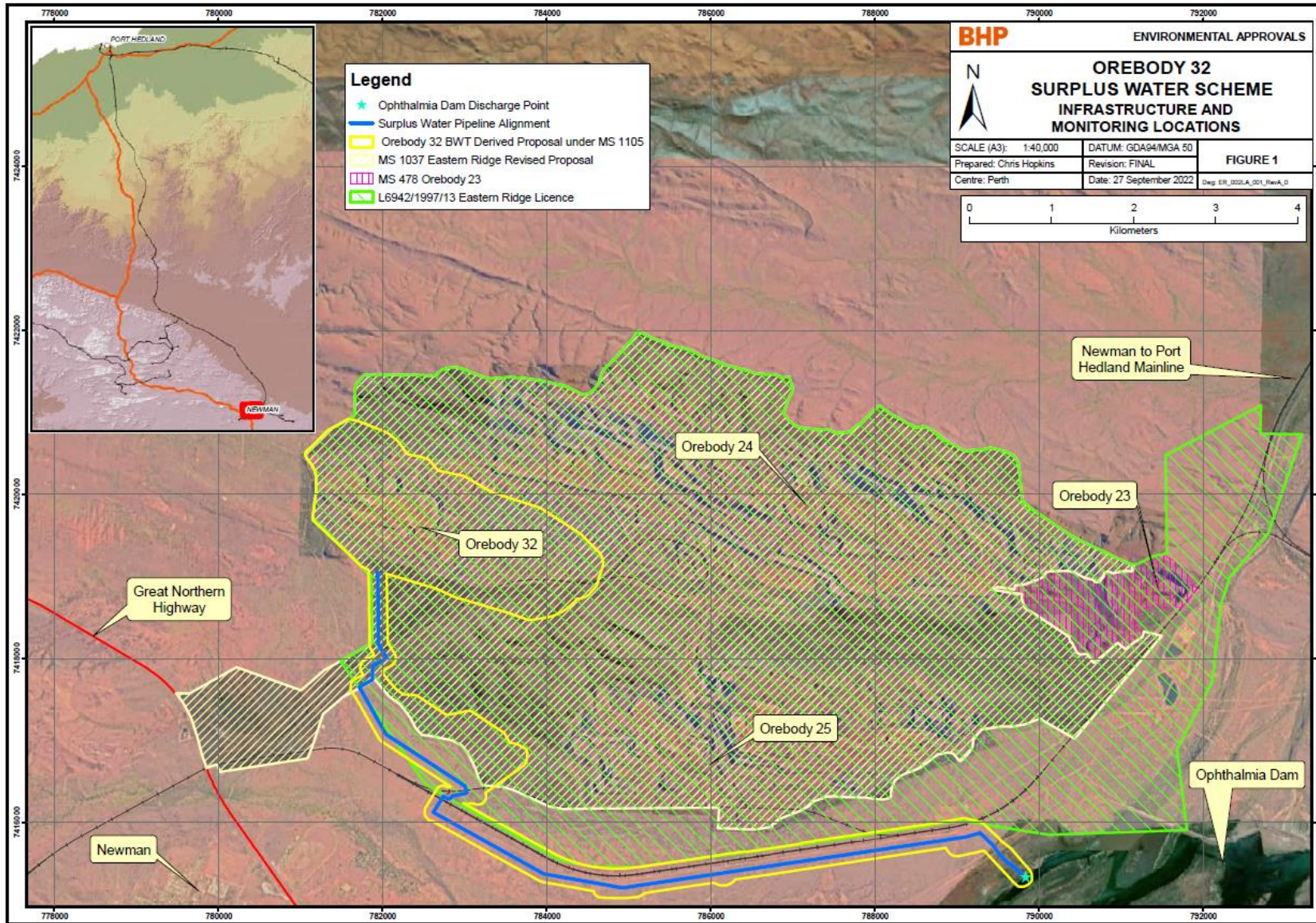


Figure 2: Orebody 32 Surplus Water Scheme infrastructure

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1.3 Overview of proposed activities

Dewatering

Groundwater abstraction (for mine water dewatering) for the OB32 below water table (OB32 BWT) has the potential to change the groundwater regime by decreasing groundwater levels (groundwater drawdown) extending from the OB32 mine area. It also has the potential to increase groundwater levels through managed aquifer recharge (MAR) scheme via the discharge of surplus mine dewater to Ophthalmia Dam (BHP 2022, Derived Proposal).

Within the Homestead East/OB32E aquifer compartment, the applicant has estimated that groundwater levels would need to be lowered by approximately 200 m from the current groundwater levels at OB32. The applicant undertook a groundwater model that was run for 27 years from Financial Year (FY) 2022 to FY 2049 to achieve the target of lowering groundwater levels by 200 m. The 2022 model predicted that a peak dewatering rate at OB32 of between 59.9ML/day and 70.4 ML/day (equivalent to 25.7 GL/a) will be required.

The water balance indicates that a pit lake will form after dewatering ceases, with a final elevation at equilibrium between 470 and 480 mAHD. This is lower than the pre-development groundwater level at OB32 prior to abstraction from the Homestead Borefield (526 mAHD) and in the Ethel Gorge Aquifer (500 mAHD). Because the final water level is predicted to be lower than the surrounding groundwater level, the pit will be a sink, where groundwater will flow into the pit lake. It is predicted to take between 50 and 200 years the water level in the pit void to reach equilibrium (BHP 2022).

Ophthalmia Dam

The Ophthalmia Dam system is located to the southwest of the Eastern Ridge and comprises the dam, infiltration basins and recharge ponds. The Ophthalmia Dam system is adjacent to and partially overlies the Ethel Gorge aquifer system, which supports the Ethel Gorge Threatened Ecological Community (TEC) (Figure 3).

The Ophthalmia Dam system was constructed in 1981 and has altered the natural flow of the upper Fortescue River. The Ophthalmia Dam system provides a location for the discharge of surplus mine water from approved BHP eastern mines (currently Eastern Ridge OB29/30/35, Jimblebar and OB31). Uncontrolled releases occur when the dam fills from rainfall events and overtops the spillway.

Water quality

Increasing the discharge of surplus mine dewater into the Ophthalmia Dam from OB32 has the potential to impact groundwater levels, salinity, acid and metalliferous drainage (AMD) and contaminants in the Ophthalmia Dam and Ethel Gorge aquifer.

A number of studies were undertaken to assess the groundwater quality in the surrounding area of Newman Hub (including the Eastern Ridge area) and low levels of per- and polyfluoroalkyl substances (PFAS) contaminants were identified in the ambient environment PFAS. The PFAS may be present due to groundwater migration from potential historical sources of PFAS use, that could be present within the existing Eastern Ridge mines and Whaleback mine sites. Figure 2 shows the potential PFAS sources in relation to OB32.

Sampling at Eastern Ridge and the surrounding environment was undertaken in three sampling rounds between November 2020 and April 2021, with the third sampling round focusing on OB32 and the Ethel Gorge TEC (Tetra Tech 2021).

PFAS was detected at very low levels (at or slightly above the PFAS National Environmental Management Plan (NEMP) (HEPA 2020) ecological freshwater 99% species protection guidelines value of 0.00023µg/L Perfluoro octane sulfonate (PFOS) in groundwater in the vicinity of OB32.

During operations, there is the potential for migration of PFAS contaminants from abstraction of groundwater for OB32 BWT mining, and discharge of surplus water to Ophthalmia Dam.

PFAS concentrations in the environment are expected to be similar to currently observed ambient levels and will remain well below the PFAS NEMP human health drinking water guideline values.

The use of chemicals containing PFAS ceased at the existing Easter Ridge operation in mid-2022. No chemicals containing PFAS will be used for the OB32 BWT proposal.

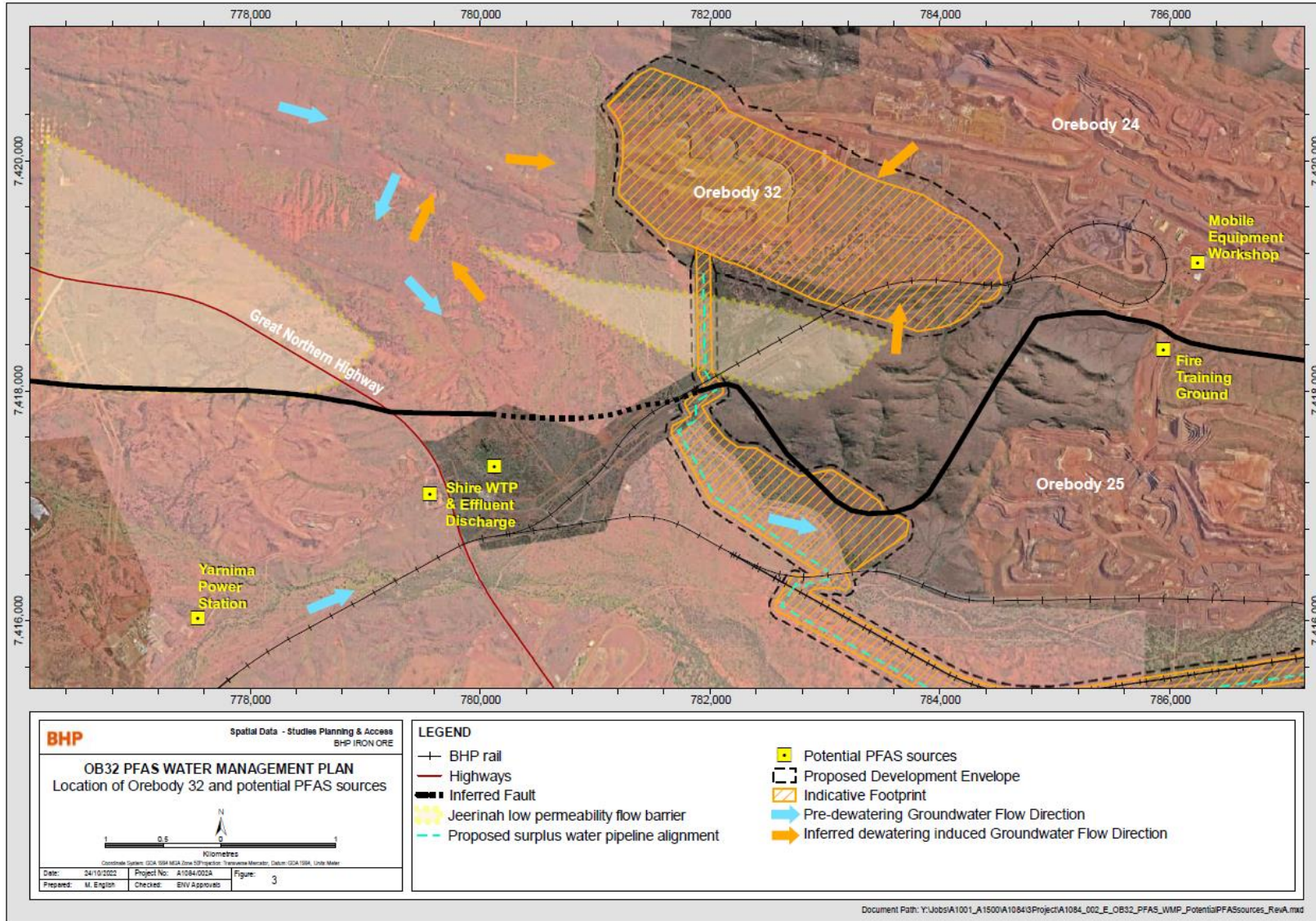


Figure 2: Potential PFAS Sources

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2. Legislative context

2.1 Iron Ore (Mount Newman) Agreement 1964

The State Agreement details the rights, obligations, terms and conditions for the development of the project, and it is administered by Department of Jobs, Tourism, Science and Innovation (DJTSI) on behalf of the Western Australian Government.

In the case of the Newman Operations, the State Agreement negates the requirement for the regulation under the *Mining Act 1978*. However, Department of Mines and Industry Regulation and Safety (DMIRS) will continue to provide advice to DJTSI on the implementation of the State Agreement as required.

No activity conducted under the State Agreement is exempt from compliance with the EP Act.

2.2 Part IV of the EP Act

The Project Area lies within Ministerial Statement (MS) 1037 and MS 1105 and the proposed activities are heavily managed under MS 1105. Subsequently, this decision report will only risk assess that which is not covered by existing Ministerial Statements.

Ministerial Statement 1105

MS 1105 provides conditions to future iron ore mining and associated activities and operations under the boundary of the Pilbara Expansion and Strategic Proposal.

On 28 October 2022, the applicant submitted a derived proposal to the Environmental Protection Authority (EPA) to expand existing mining operations at the Newman Hub in the Pilbara, previously authorised by MS 1105 Pilbara Expansion Strategic Proposal.

The applicant proposes to expand the existing OB32 above water table iron ore mine (currently authorised by MS 1037 Eastern Ridge proposal) in BHP's Newman Hub to below the water table.

The proposal includes activities permitted to be proposed under MS 1105 Table 3, such as (but not limited to):

- Groundwater abstraction
- Excavation of the existing mine pit below the water table,
- Ground disturbance (vegetation and habitat removal up to 224 ha),
- Surplus water discharge into Ophthalmia Dam through the development of the new pipeline; and
- Rehabilitation and decommissioning.

The proposal would have a maximum project life of 30 years and have the option for the formation of a pit lake in OB32 upon decommissioning and rehabilitation.

The Derived Proposal approved the below water table mining of OB32 deposit and the disposal of up to 21.9 gigalitres per annum (GL/a) (nominal 60ML/day) of surplus mine dewater to Ophthalmia Dam. On 17 October 2023 EPA Services received notice from the Minister for Environment that the Notice of Taking Effect section 45B notice (s45B Notice) for the Derived Proposal (under the Pilbara Expansion Strategic Proposal, Ministerial Statement 1105) took effect on 27 September 2023. Conditions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15 and 16 in MS 1105 dated 11 July 2019 apply to the Derived Proposal.

Approved limits and extents for the Derived Proposal, as outlined in the attached s45B Notice include:

- Clearing up to 224 hectares (ha) within the pipeline corridor (undertaken within the MS 1105 cumulative clearing limit of 98,500 ha)
- Dewatering and abstraction up to 25.7 GL/a
- Controlled discharge of up to 21.9 GL/a to Ophthalmia Dam.

Any impacts relating to the discharge of surplus water upon environmental values are to be managed under condition 10 of MS 1105. See condition 10-1(1) below for specific environmental values.

Water Environmental Management Plan

The proponent shall manage the implementation of the proposal the following environmental objective:

Maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected, including where relevant avoiding and minimizing direct impacts of the proposal on:

- a. Fortescue Marsh;
- b. Hydrological regimes that support threatened and priority ecological communities;
- c. Proclaimed Public Drinking Water Source Areas;
- d. Permanent and ephemeral rock pools;
- e. Wetlands which are Ramsar listed, or listed in the Director of Important Wetlands in Australia;
- f. Wild rivers
- g. Wetland types which may be poorly represented;
- h. Natural springs
- i. Ecosystems which support conservation significant flora / vegetation and fauna species or communities, including migratory waterbirds, bats, groundwater dependent biota, and subterranean fauna; and
- j. Ecosystems which support significant amenity, recreation and cultural values.

Ministerial Statement 1037

Ministerial Statement 712 (replaced by Statement 1037) was issued on 26 January 2006 the statement relates to the expansion of the existing mining operations at Orebody 25 including allowing mining below water table.

Ministerial Statement Number 834 (replaced by Statement 1037) was issued on 8 July 2010 for the Orebody 24/25 Upgrade Project allowing the development of Orebody 24 and installation of new processing equipment (OHP24). The statement was amended on 16 November 2011 to increase the ore processing rate from 15mtpa to 18mtpa.

Ministerial Statement Number 1018 (replaced by Statement 1037) issued on 15 October 2015 for the above ground mining of a new orebody (OB32).

Ministerial Statement 1037 was published on 21 September 2016 for the Eastern Ridge Revised Proposal and combines previously issued Statements 712, 834 and 1018. It also allows changes to existing mining operations including extension of Orebodies 24, 25 & 32, mining below the water table at Orebody 24 development of a new orebody (Orebody 25 West) and discharge and excess dewatering into Ophthalmia Dam.

2.3 Aboriginal Heritage

The Nyiyaparli People are the Traditional Owners of the land that underlies the OB32. The premises sits wholly within the external boundaries of the Nyiyaparli Traditional Owner determination area (WCD2018/008). The applicant has an existing Comprehensive Agreement and associated registered Indigenous Land Use Agreement (ILUA). The Comprehensive Agreement includes a heritage protocol supporting the identification and management of heritage sites within the premises.

The Karlka Nyiyaparli Aboriginal Corporation (KNAC) represents the Nyiyaparli People and the applicant maintains an ongoing relationship with them.

Condition 13 of MS1105 requires the applicant to have a Cultural Heritage Management Plan to minimise the impacts on Aboriginal heritage and culture including, but not limited to, disturbance of the ground that may impact cultural associations and heritage; potential loss of access to areas to undertake traditional activities; and changes to water regimes of water resources known to have Aboriginal heritage value.

2.4 Water legislation

The proposal is located within the Newman Water Reserve, proclaimed under the *Country Areas Water Supply (CAWS) Act 1947* in 1983. The proposal occurs within the Priority 1 (P1) area of the reserve. P1 areas are defined and managed to maintain or improve the quality of the drinking water source, with the objective of “risk avoidance”.

The proposed activities also occur within the Pilbara groundwater and surface water areas proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act).

The applicant holds groundwater licence (GWL 182237(4)) under the RIWI Act for the proposed extraction at OB32. There are no requirements to amend the existing groundwater licence or associated document including the Groundwater Operating Strategy.

Internal technical advice was sought on the proposal and it was determined that the proposed activity is unlikely to result in an increased risk to water related environmental receptors.

3. Risk assessment

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

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

3.1 Source-pathways and receptors

Emissions and controls

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

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust (PM ₁₀)	Movement of mobile equipment (e.g. light vehicles and heavy equipment) during construction of dewatering pipeline and excavation of trenches	Air / windborne pathway	<p>Dust will be managed via the use of water carts and minimising clearing to the smallest area practicable.</p> <p>Under boring of Great Northern Highway will be undertaken for the pipeline crossing.</p> <p>All clearing will be in accordance with the OB32 below water table Derived Proposal under MS 1105.</p>
Noise	Movement of mobile equipment (e.g. light vehicles and heavy equipment) during construction of dewatering pipeline and excavation of trenches	Air / windborne pathway	No specific controls proposed.
Commissioning			
Mine dewater	Commissioning of pipeline: testing the pipeline by pressuring each section in sequence from OB32 to Ophthalmia Dam.	Infiltration of water from Ophthalmia Dam resulting in changes to groundwater quality from reinjection, resulting in degradation subterranean fauna (stygo fauna habitat) (TEC).	<p>Commissioning of the Project will involve testing the pipeline by pressuring each section in sequence from OB32 to Ophthalmia Dam. It is not anticipated that there will be any discharge from the pipeline during this testing.</p> <p>The discharge water quality will be tested monthly at the Ophthalmia Dam discharge point during commissioning.</p>
		Direct discharge of mine dewater resulting in erosion at the Ophthalmia Dam discharge point.	<p>Erosion controls will be built as part of the discharge point design Figure 3).</p> <p>The discharge point will be inspected regularly during commissioning to identify any erosion that may have occurred.</p> <p>Discharges will commence with low volumes allowing the risk of significant erosion at higher volumes to be identified early. In the event that erosion is identified additional control measures will be implemented (e.g. extending rip rap) and if necessary repairs undertaken.</p>

Emission	Sources	Potential pathways	Proposed controls
Mine dewater	Commissioning of pipeline: testing the pipeline by pressuring each section in sequence from OB32 to Ophthalmia Dam.	Direct discharge to land from pipeline testing resulting in erosion along the pipeline route.	In the event that a discharge occurs due to a pipeline during commissioning, the water feed from OB32 will be turned off. The pipework will be trenched so that any erosion occurs this will be rehabilitated once the area can be accessed.
Operation (including time limited operations)			
Mine dewater	Discharge to Ophthalmia Dam	Infiltration of water from Ophthalmia Dam resulting in changes to groundwater quality from reinjection, resulting in degradation subterranean fauna (stygo fauna habitat) (TEC).	<p>Ophthalmia Dam receives water from the Eastern Ridge and Jimblebar Hub and is managed via the Eastern Pilbara Surplus Water Management Plan (Figure 5).</p> <p>The discharge water quality will be tested monthly at the Ophthalmia Dam discharge point.</p>
		Direct discharge of mine dewater resulting in erosion at the ophthalmia dam discharge point and/or along the pipeline route	<p>Erosion controls will be built as part of the discharge point design and confirmed to be effective during commissioning period. The discharge point will continue to be regularly inspected during Time Limited Operations / Ongoing Operation to identify any erosion that may have occurred.</p> <p>In the event that erosion is identified additional erosion control measures will be implemented (e.g extending the rip rap) and if necessary, repairs undertaken.</p>
Mine dewater	Discharge to Ophthalmia Dam	Pipeline leak or rupture	<p>In the event that a discharge occurs due to a pipe failure the water feed from OB32 will be turned off.</p> <p>The pipework will be trenched so that any discharge should be contained within the trench.</p>

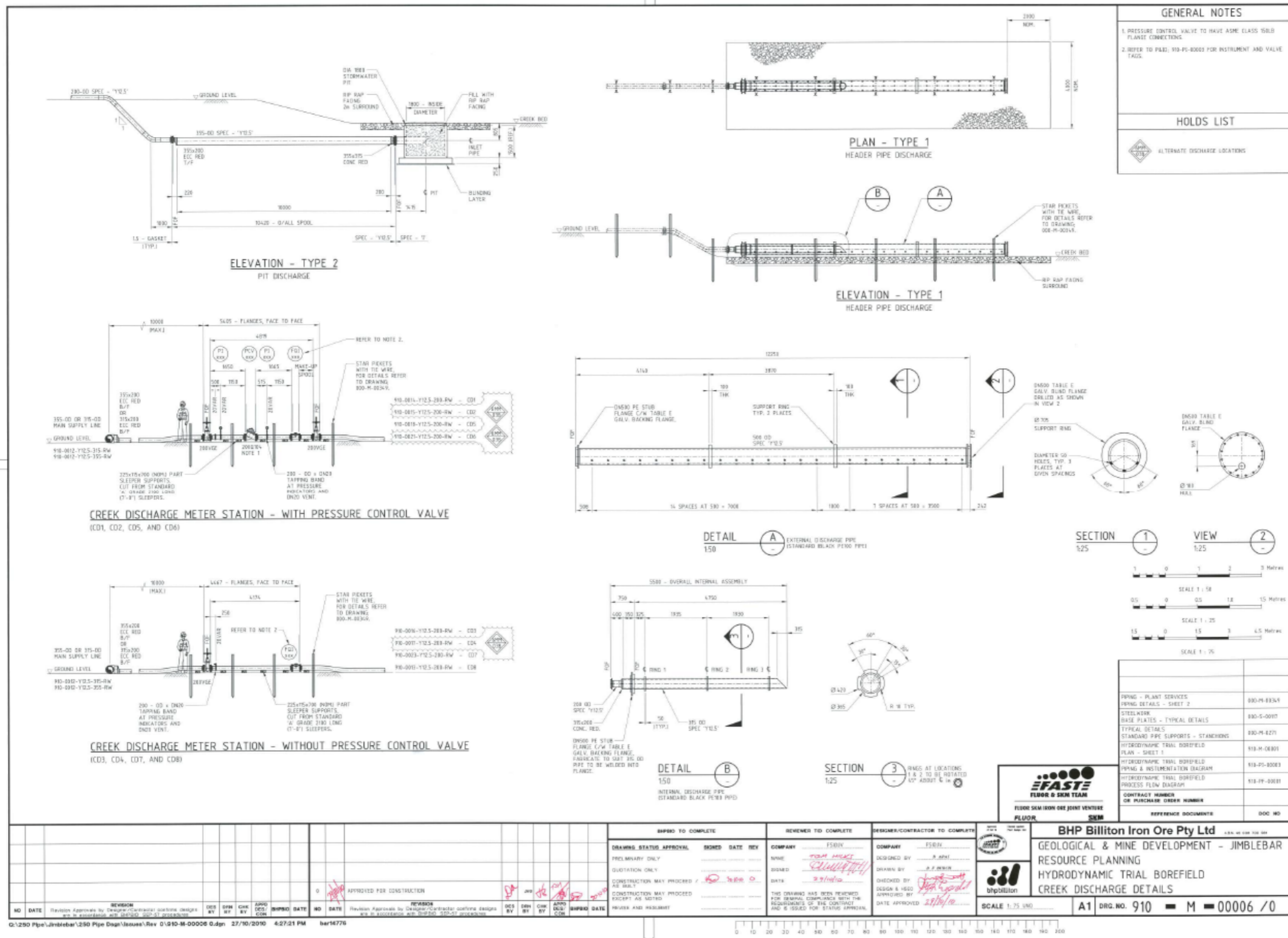


Figure 3: Creek discharge details

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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 and Figure 44 below provides a summary of potential human and environmental receptors that may be impacted because 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																																		
Residential receptors Town of Newman	3.6 km to the west of the Premises. Given the distance to this receptor, the Delegated Officer does not consider that a Risk Event associated with this proposal (i.e. construction and operation of dewatering pipelines) is likely. This receptor has therefore been screened out and not considered further in this assessment.																																		
Aboriginal sites and heritage places: <table border="1" data-bbox="205 1003 742 2029"> <thead> <tr> <th data-bbox="205 1003 344 1064">ID</th> <th data-bbox="344 1003 742 1064">NAME</th> </tr> </thead> <tbody> <tr><td data-bbox="205 1064 344 1124">9189</td><td data-bbox="344 1064 742 1124">SHOVELANNA HILL 15</td></tr> <tr><td data-bbox="205 1124 344 1184">35779</td><td data-bbox="344 1124 742 1184">MYO KC 10-02</td></tr> <tr><td data-bbox="205 1184 344 1245">35646</td><td data-bbox="344 1184 742 1245">BP Scatter 09-03</td></tr> <tr><td data-bbox="205 1245 344 1305">9079</td><td data-bbox="344 1245 742 1305">BORROW PIT MRD NEWMAN</td></tr> <tr><td data-bbox="205 1305 344 1366">9187</td><td data-bbox="344 1305 742 1366">SHOVELANNA HILL 13</td></tr> <tr><td data-bbox="205 1366 344 1426">35787</td><td data-bbox="344 1366 742 1426">PIL_1675</td></tr> <tr><td data-bbox="205 1426 344 1487">35641</td><td data-bbox="344 1426 742 1487">PIL_1594</td></tr> <tr><td data-bbox="205 1487 344 1547">9208</td><td data-bbox="344 1487 742 1547">SHOVELANNA HILL 34.</td></tr> <tr><td data-bbox="205 1547 344 1608">35788</td><td data-bbox="344 1547 742 1608">PIL_1663</td></tr> <tr><td data-bbox="205 1608 344 1668">35645</td><td data-bbox="344 1608 742 1668">BP Scatter 09-02</td></tr> <tr><td data-bbox="205 1668 344 1729">9190</td><td data-bbox="344 1668 742 1729">SHOVELANNA HILL 16</td></tr> <tr><td data-bbox="205 1729 344 1789">35642</td><td data-bbox="344 1729 742 1789">PIL_1598</td></tr> <tr><td data-bbox="205 1789 344 1850">17394</td><td data-bbox="344 1789 742 1850">PUMPING STATION</td></tr> <tr><td data-bbox="205 1850 344 1910">9188</td><td data-bbox="344 1850 742 1910">SHOVELANNA HILL 14</td></tr> <tr><td data-bbox="205 1910 344 1971">35789</td><td data-bbox="344 1910 742 1971">PIL_1673</td></tr> <tr><td data-bbox="205 1971 344 2029">35644</td><td data-bbox="344 1971 742 2029">OB25 2004/03</td></tr> </tbody> </table>	ID	NAME	9189	SHOVELANNA HILL 15	35779	MYO KC 10-02	35646	BP Scatter 09-03	9079	BORROW PIT MRD NEWMAN	9187	SHOVELANNA HILL 13	35787	PIL_1675	35641	PIL_1594	9208	SHOVELANNA HILL 34.	35788	PIL_1663	35645	BP Scatter 09-02	9190	SHOVELANNA HILL 16	35642	PIL_1598	17394	PUMPING STATION	9188	SHOVELANNA HILL 14	35789	PIL_1673	35644	OB25 2004/03	All located within 1km away from the pipeline. Managed under MS 1105 (Cultural Heritage Management Plan)
ID	NAME																																		
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Environmental receptors	Distance from prescribed activity
Threatened Ecological Communities: Ethel Gorge aquifer stygobiont community (critically endangered)	<p>Located in the Ethel Gorge, where the Fortescue River forms through the Ophthalmia Range in a northerly direction. TEC overlapping the pipeline on the eastern end and within 600m south of the pipeline for roughly half of pipeline.</p> <p>Managed under MS 1105 (Subterranean Fauna Environmental Management Plan).</p>
<p>Priority flora:</p> <ol style="list-style-type: none"> 1. Goodenia nuda: Priority 4; and 2. Themeda sp. Hamersley Station (M.E. Trudgen 11431): Priority 3. 3. Aristida jerichoensis var. subspinulifera 	<p>All recorded within the project area.</p> <p>Managed under MS 1037 and MS 1105 (Flora and Vegetation Environmental Management Plan)</p>
Priority fauna: Actitis hypoleucos	<p>Within prescribed premises</p> <p>Managed under MS 1105 (Terrestrial Fauna Environmental Management Plan)</p>
<p>Underlying groundwater</p> <ol style="list-style-type: none"> 1. Priority 1 Newman Water Reserve. 2. Hamersley – Fractured Rock Aquifer 3. Ethel Gorge and Ophthalmia Dam 	<p>1. & 2. The project area lies within</p> <p>3. Groundwater flows from the entire upstream catchment area are focused into the Gorge resulting in relatively shallow groundwater levels (less than 10mbgl).</p> <p>The current depth to groundwater varies across the Eastern Ridge area (i.e. 36-38 mbgl at O32 pit and 40-65 mbgl in the vicinity of the Homestead Borefield west of OB32)</p> <p>Regional groundwater salinity also varies across the Eastern Ridge area (500 mg/L and 2,000 mg/L TDS) and is in the fresh to brackish range.</p> <p>Managed under MS 1105 (Water Environmental Management Plan and Eastern Pilbara Surplus Water Management Plan)</p>
<p>Surface water</p> <ol style="list-style-type: none"> 1. Ophthalmia dam 2. Perennial watercourse: Homestead Creek 3. Unnamed perennial watercourses 	<p>1. Proposed pipeline to be connected to the dam located on the south-eastern side of the premises</p> <p>2 & 3. Flow across the project area. High inter-annual variability of streamflow with long periods of low or no flow</p> <p>Surface water partially managed by MS 1105 (Water Environmental Management Plan)</p> <p>Erosion risks were not assessed under MS 1105 however any impacts relating to the discharge of surplus water upon environmental values is addressed through this plan.</p>

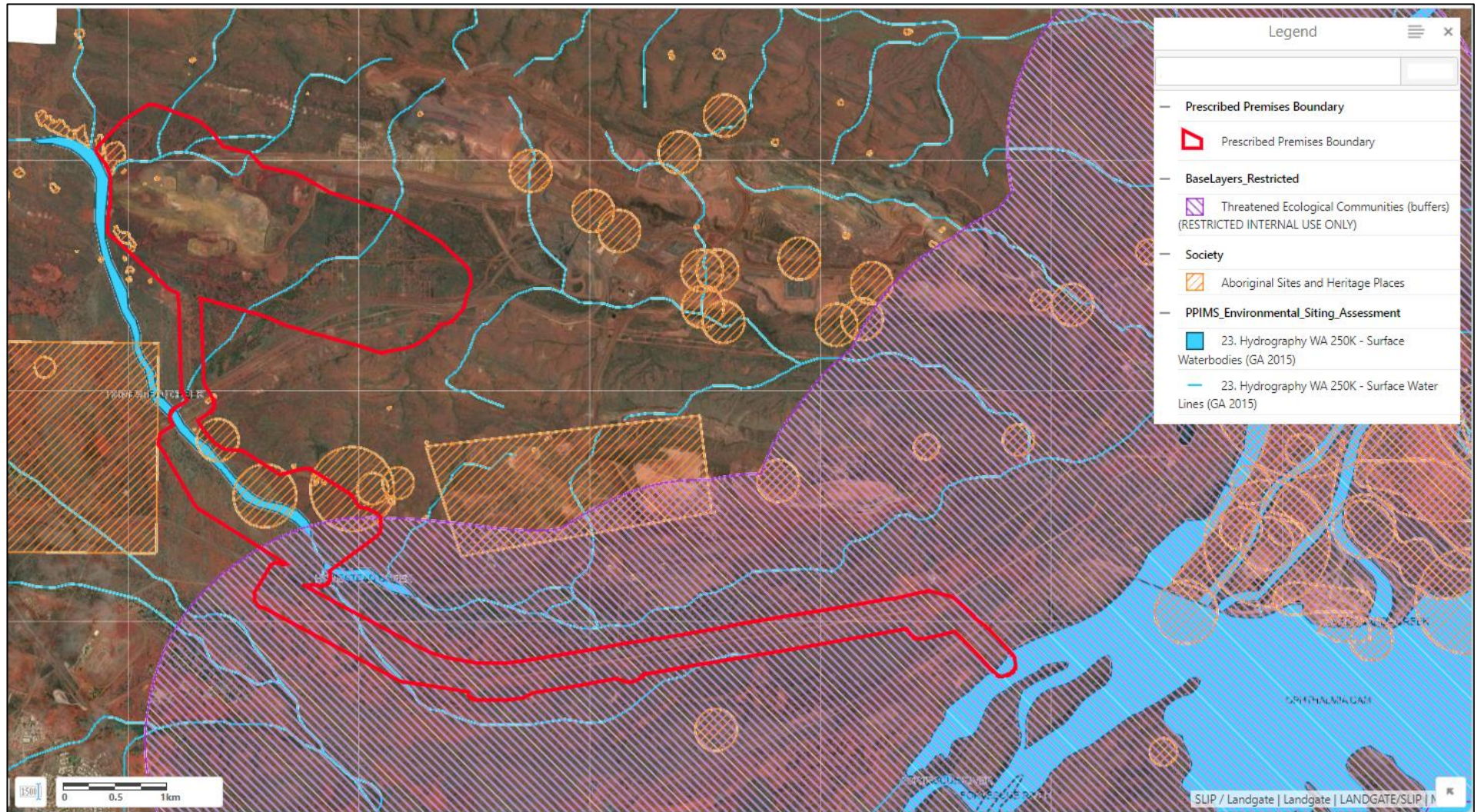


Figure 4: Distance to sensitive receptors

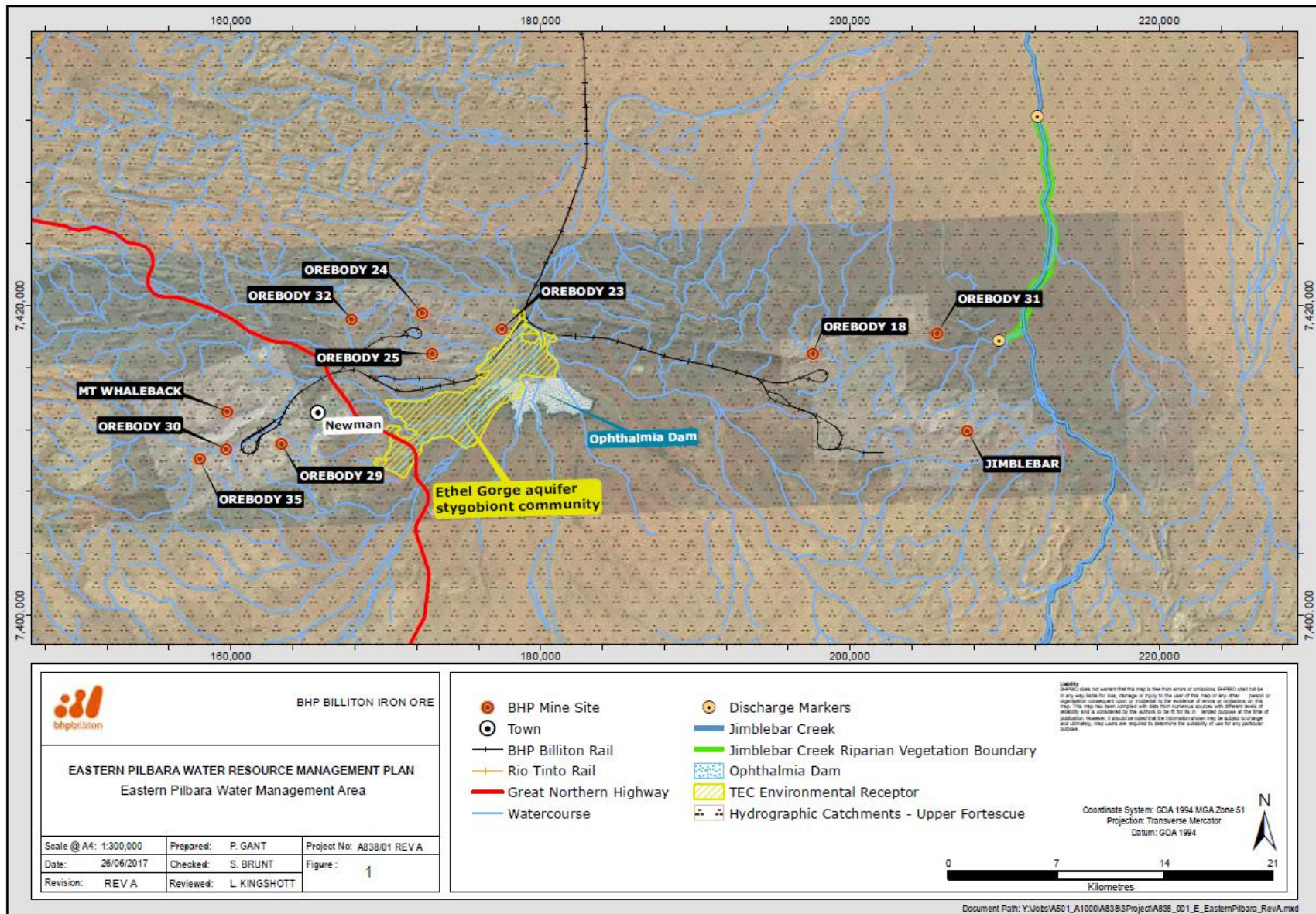


Figure 5: Water Management Plan Area

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3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

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

Works approval W6858/2023/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises i.e. category 6 activities. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

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

Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Construction								
Movement of mobile equipment (e.g. light vehicles and heavy equipment) during construction of dewatering pipeline and excavation of trenches	Dust	Air / windborne pathway causing impacts to health and amenity	Priority flora Priority fauna TEC	Refer to Section 0	C = Moderate L = Unlikely Medium Risk	Y	None	N/A
	Noise		Aboriginal heritage sites and places	Refer to Section 0	C = Slight L = Rare Low Risk	Y	None	N/A
Commissioning								
Commissioning of pipeline: testing the pipeline by pressuring each section in sequence from OB32 to Ophthalmia Dam	Mine dewater	Infiltration of water from Ophthalmia Dam resulting in changes to groundwater quality from reinjection, resulting in degradation of vegetation.	Groundwater TEC Priority flora	Refer to Section 0	C = Moderate L = Unlikely Medium Risk	Y	Conditions 4, 5, 6, 7, 8, 9 and 10.	N/A
		Direct discharge of mine dewater resulting in erosion at the ophthalmia dam discharge point and / or along the pipeline route.	Surface water Priority flora Priority fauna Aboriginal sites and heritage places					

Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Operation (including time-limited-operations operations)								
Dewatering from the OB32 to Ophthalmia Dam via the pipeline	Mine dewater	Infiltration of water from Ophthalmia Dam resulting in changes to groundwater quality from discharge, resulting in degradation of TEC	Groundwater TEC	Refer to Section 0	C = Moderate L = Unlikely Medium Risk	N	Conditions 11, 12, 13, 14 & 15 <u>Conditions 16 and 18: PFAS monitoring</u>	As PFAS has been previously identified at the premises, the Delegated Officer considers it necessary to determine the extent of any possible PFAS contaminant within the dewater.
		Direct discharge of mine dewater resulting in erosion at the ophthalmia dam discharge point and/or along the pipeline route	Surface water Priority flora Priority fauna TEC Aboriginal sites and heritage places	Refer to Section 0	C = Moderate L = Unlikely Medium Risk	Y	Conditions 1, 5 and 13	N/A
Transportation of mine dewatering water by pipelines	Spill of mine dewatering water from rupture or leaks of dewatering pipelines	Direct discharge and / or seepage causing deterioration in soils, seepage into groundwater and inundation to vegetation and erosion	Groundwater Priority flora Priority fauna TEC	Refer to Section 0	C = Moderate L = Unlikely Medium Risk	N	<u>Condition 1: Construction requirements</u>	The Delegated Officer has considered the distance of the pipelines to be installed and has included the requirement for telemetry leak detection systems installed to monitor pipelines for leaks or pipeline failures.

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Risk events					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
								<p>Pipelines are to have scour pits at low points on the land to completely contain spills from pipelines leaks or breaches.</p> <p>Pipelines to be installed in accordance with relevant Australian Standards to further minimise the risks of pipe failure during operations.</p>

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.

4. Consultation

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

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 04/01/2024	None received	N/A
Local Government Authority – Shire of east Pilbara advised of proposal on 08/01/2024.	None received	N/A
Department of Energy, Mines, Industry Regulation and Safety (DMIRS) advised of proposal 08/01/2024.	DEMIRS replied on 18/01/2024 advising that the proposal is located on State Agreement Act tenure and not Mining Act tenure and therefore does not require approval under the Mining Act.	N/A
Department of Planning, Lands and Heritage (DPLH) advised of proposal on 08/01/2024.	<p>DPLS replied on 1 February 2024 advising that a review of the works approval boundary against the Register of Places and Objects, as well as DPLH's Aboriginal Heritage Data base concludes that the subject area intersects with the actual boundary of Aboriginal Site ID 9189 (SHOVELANNA HILL 13). However, the Surplus Water Pipeline Alignment, as depicted in the application, does not intersect with any known Aboriginal Registered Sites or Heritage Places. Therefore, approval under the <i>Aboriginal Heritage Act 1972</i> (AH Act) will only be required if impacts to the above, or any nearby, Aboriginal Sites and Heritage Places cannot be avoided.</p> <p>Project is located solely within the Niyaparli and Niyaparli #3 Native Title Determination Areas, represented by the Karlka Niyaparli Aboriginal Corporation (KNAC).</p> <p>DPLH encourage ongoing consultation with KNAC to allow for best practice management of the Aboriginal Heritage extant in the vicinity of the project, and to ensure heritage surveys undertaken to date remain fit for purpose to manage Aboriginal Heritage. BHPIO should ensure compliance under the current AHA and I encourage them to contact Aboriginal heritage conservation if they have any further questions.</p>	Noted
Karlka Niyaparli Aboriginal Corporation RNTBC advised of proposal on 08/01/2024.	None received	N/A
Applicant was provided with draft documents on 12/04/2024	Refer to Appendix 1	Appendix 1

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. BHP, *Eastern Pilbara Water Resource Management Plan*, October 2022, Version 6.3
2. BHP *Orebody 32 Below Water Table: Ophthalmia Dam surplus water impact assessment*. August 2022.
3. BHP Newman Hub (*Orebody 32 Below Water Table*) *MS1105 Water Management Plan*, October 2022
4. BHP Newman Hub (*Orebody 32 Below Water Table*) *Derived Proposal Request, Ministerial Statement 1105*, 25 October 2022
5. BHP, *Orebody 32 below water table: Groundwater impact assessment*, August 2022
6. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
7. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
8. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
9. PFAS National Environmental Management Plan, Version 2.0 – January 2020 HEPA
10. Tetra Tech (2021) *Eastern Ridge Mine Site: Limited Site Investigation for Per- and Polyfluoroalkyl Substances*. Report prepared for BHP. September 2021

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Item No.	Condition	Summary of applicant's comment	Department's response
1	Condition 1, Table 1, Row 1, Point 2: Pipelines	<p>BHP change request:</p> <p>The first 1 km of the pipeline from OB32 (northern end of the pipeline) ties into the bore field pipeline and forms part of the site's water network. At the ~1km mark a valve will be fitted between this section of the pipeline and the remaining ~10km of the dewatering pipeline.</p> <p>Given the nature of the activities undertaken within the first ~1 km, burying pipeline or fitting with v-drains in the entirety of this area may be impractical, given the need for ongoing access.</p> <p>Proposed change:</p> <p>Update Point 2 to:</p> <ul style="list-style-type: none"> • The first ~1 km of the pipeline from Orebody 32 may either be buried or above ground. <p>Add a new Dot Point:</p> <ul style="list-style-type: none"> • The remaining ~10 km of pipeline to Ophthalmia Dam must be bunded within V drains or buried. 	The Delegated Officer accepts the proposed changes and the works approval has been amended accordingly.
2	Condition 1, Table 1, Row 1, Point 4: Scour protection	<p>BHP Change request:</p> <p>The current design doesn't have scour pits along the pipeline, it has scour points along the pipeline with the discharge from these points flowing onto rip-rap and then into the area around it.</p> <p>The construction of scour pits to completely contain spills associated with an ~11 km, ~60ML/day pipeline is not practicable (would be extremely large and costly) given the risks around spills will be minimal given the other controls:</p> <ul style="list-style-type: none"> • Pipelines bunded within V drains or buried; and • Pipelines fitted with telemetry leak detection systems and auto shut-off systems installed to monitor leaks or pipeline failures. 	The Delegated Officer accepts the proposed changes and the works approval has been amended accordingly.

Item No.	Condition	Summary of applicant's comment	Department's response
		<p>Proposed Change:</p> <p>Replace Point 4 with the following:</p> <ul style="list-style-type: none"> • Pipeline scour points at strategic locations to be fitted with rip-rap protection to prevent erosion during pipeline flushing / draining. 	
3	<p>Condition 5, Table 2, Row 1, Dot Point 4: Dewatering Pipeline</p>	<p>BHP Change request:</p> <p>As per Item 2 above.</p> <p>Proposed change:</p> <p>Replace dot point 4 (As per Item 2 above).</p> <p>Pipeline scour points at strategic locations to be fitted with rip-rap protection to prevent erosion during pipeline flushing / draining</p>	<p>The Delegated Officer accepts the proposed changes and the works approval has been amended accordingly.</p>
4	<p>Condition 5, Table 2, Row 1, Dot Point 4: Commissioning Period</p>	<p>BHP Change request:</p> <p>BHP has a number of bores to bring online to reach the sufficient volume for a full performance test. It is likely to take up to ~50 days to reach this volume and it needs to run for ~2 weeks to complete the full performance test.</p> <p>Proposed change:</p> <p>Replace "30 calendar days" with "65 calendar days in aggregate".</p>	<p>The Delegated Officer has agreed to increase the commissioning period to 65 calendar days.</p>
5	<p>Condition 5, Table 2, Row 2: Discharge Point</p>	<p>BHP Change request:</p> <p>Commissioning may not be over consecutive days. Water pooling / erosion are not at risk of occurring when there is no discharge.</p> <p>Proposed Change:</p> <p>Update the Discharge point Commissioning requirements to:</p> <p>"Outfall infrastructure must be inspected daily when discharging to confirm structural integrity of rip rap material, check for signs of erosion and ensure discharged mine dewater is not pooling along the lake shore."</p>	<p>The Delegated Officer accepts the proposed changes and the works approval has been amended accordingly.</p>
6	<p>Condition 7, Table 4: Applicant to confirm location of monitoring point</p>	<p>BHP Action:</p> <p>The monitoring location for Ophthalmia Dam will be the at the sample tap located approximately 200 m upstream the proposed discharge point.</p> <p>Coordinates (GDA202, Z50):</p> <p>Easting: 789659.04</p>	<p>The information has been included in the works approval.</p>

Item No.	Condition	Summary of applicant's comment	Department's response
		Northing: 7415491.23 Response / Proposed change: This is consistent with monitoring associated with discharge points D01 to D07 on the current Eastern Ridge Licence.	
7	Condition 13, Table 5, Row 1, Dot Point 3: Dewatering pipeline visual inspections	BHP change request: Remove the Operational Requirement: "Undertake 48 hourly visual inspections of the pipeline to ensure integrity". Given that leak detection telemetry will be installed and needs to be operational a visual inspection every 48 hours adds no value during time limited operations (noting this is appropriate during commissioning (Condition 5, Table 2) to ensure the telemetry is working correctly). Proposed change: Remove Row 1 Dot Point 3.	The Delegated Officer accepts the proposed changes and the works approval has been amended accordingly.
8	Condition 13, Table 5, Row 1, Dot Point 4: Scour protection	BHP Change request: As per Item 2 above. Proposed change: Replace dot point 4 (As per Item 2 above): Pipeline scour points to be fitted with rip-rap protection to prevent erosion during pipeline flushing / draining.	The Delegated Officer accepts the proposed changes and the works approval has been amended accordingly.
9	Condition 13, Table 5, Row 2: Discharge point	BHP Change request: Remove the Operational Requirement: "Outfall infrastructure must be inspected daily to confirm structural integrity of rip rap material, check for signs of erosion and ensure discharged mine dewater is not pooling along the lake shore." and replace with "Maintain perforated outlet and rip rap at the contingency discharge point at the Ophthalmia Dam discharge point." Following construction and commissioning it is unlikely that the rip rap would not be working as expected. The proposed new wording aligns to the wording for the Ophthalmia Dam discharge point in BHP's Jimblebar Licence L5415/1988/9. Proposed Change:	The Delegated Officer accepts the proposed changes and the works approval has been amended accordingly.

Item No.	Condition	Summary of applicant's comment	Department's response
		Replace Row 2 Operational requirement with: "Maintain perforated outlet and rip rap at the contingency discharge point at the Ophthalmia Dam discharge point."	
10	Condition 14, Table 6, Row 1: Emission	BHP Change request: Effluent is a triggering word and is more related to sewage than surplus water. The proposed wording is consistent with a similar condition in BHP's Jimblebar Licence L5415/1988/9. The rewording to "Eastern Ridge" means if the mine water network is connected together there is no risk of a technical non-compliance should the water come from other locations within the Eastern Ridge prescribed premises which are already approved to discharge to Ophthalmia Dam. Proposed change: Remove "Mine dewatering effluent from Orebody 32" and replace with "Water from dewatering of Eastern Ridge".	The Delegated Officer accepts the changes as a minor revision of the wording and the proposed wording is adequate for the purpose.
11	Condition 15	BHP Request Change: There is a referencing error. Proposed Change: Replace "Error! Not a valid bookmark self-reference" with "Table 15"	This error has been amended.
12	Condition 15, Table 7: Applicant to confirm location of monitoring point	BHP Action: As per Item 6 above. Response: As per Item 6 above.	This information has been included in the works approval.
13	Condition 16, Table 8: Applicant to confirm location of monitoring point	BHP Action: As per Item 6 above. Response: As per Item 6 above.	This information has been included in the works approval.

Item No.	Condition	Summary of applicant's comment	Department's response
14	Figure 1: Applicant to confirm location of monitoring point	<p>BHP Action: As per Item 6 above.</p> <p>Response: As per Item 6 above.</p>	This information has been included in the works approval.
15	Schedule 2, Table 9: Licence holder to provide word version	<p>BHP Action: As per Item 6 above.</p> <p>Response / Proposed change: See updated Table 9 below.</p>	This information has been included in the works approval.