Application to Amend NVCP CPS 6924/3 Ophthalmia Dam Maintenance

Native Vegetation Clearing Permit Amendment Application Supporting Document

February 2025

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1 INTRODUCTION

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

- Newman Operations consisting of:
  - The Mount Whaleback hub (including Orebodies 29, 30 and 35) located approximately two kilometres (km) west of Newman Township; and;
  - The Eastern Ridge hub (Consisting of Orebodies 23, 24, 25 25 West and 32) located approximately 5 km east of Newman Township;
- Mining Area C / South Flank located approximately 90 km north west of Newman Township;
- Orebodies 18 and Wheelarra Hill (Jimblebar) Mine located approximately 35 km east of Newman Township; and
- Yandi Mine located approximately 100 km north west of Newman Township.

Ore from the above mining operations is transported to Port Hedland via the BHP Newman to Port Hedland Mainline (and associated spur lines) and is then shipped out through Port Hedland at the BHP facilities at Nelson Point and Finucane Island.

BHP currently holds Native Vegetation Clearing Permit (NVCP) CPS 6924/3 for the purposes of maintenance to Ophthalmia Dam and all associated infrastructure. BHP has identified the need to make some minor expansions to CPS 6924 to enable ongoing maintenance activities for the dam (**Figure 1**).

No other changes to the permit are required.

In accordance with Part V Division 2 of the *Environmental Protection Act 1986* (EP Act), BHP hereby refers the application to amend NVCP CPS 6924/3 to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS).

BHP considers that the proposed amendment application will not result in any significant environmental or social impacts and that the proposed Project complies with the 'Ten Clearing Principles', as defined in Schedule 5 of the *Environmental Protection Act 1986* (EP Act).

1.1 LOCATION

The Amendment Application Area is located approximately 8 km east of Newman in the Pilbara region of Western Australia (**Figure 1**).

1.2 TENURE

The Amendment Application Area is located on:

- Iron ore (Mt Newman) Agreement Act 1964, Mineral Lease 244SA (AML 70/244)
- Special Lease for Mining Operations 3116/3684, Crown Lease N088235, Newman Water Lease, Lot 351 on Deposited Plan 74327 pursuant to the Iron Ore (Mount Newman) Agreement Act 1964

1.3 LOCAL GOVERNMENT JURISDICTION

The Amendment Application Area is located within the Shire of East Pilbara.

1.4 PROPONENT

This Licence Amendment application has been submitted by BHP on behalf of the owners being BHP Mt Newman Joint Venture.

- BHP Minerals Pty Ltd 51%
- Itochu Minerals and Energy Australia Pty Ltd 4%
- Mitsui Iron Ore Corporation 10%

The key contact for this proposal is:

Mr Chris Hopkins
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1.5 PROJECT DESCRIPTION

The proposed works will involve clearing for the purposes of maintenance to Ophthalmia Dam and all associated infrastructure.

1.6 PROJECT CHARACTERISTICS AND COMMITMENTS.

BHP commits to undertake the Project in accordance with the details set out in **Table 1**.

Table 1: Project Characteristics and Commitments

Permit Characteristics	
Authorising Agency	DEMIRS
Permit Title	Ophthalmia Dam Maintenance
Area to be cleared	40 ha
Amendment Application Area	276.21 ha
Purpose of the permit	Clearing for the purposes of maintenance to Ophthalmia Dam and all associated infrastructure.
Tenure	• Mineral Lease M244SA; and • Crown Lease N088235.
Clearing Duration	Until 30 November 2031
Permit Duration	Until 30 November 2036
Proposed Annual Reporting Date	01 October for the previous Financial Year
Proposed Final Reporting Date	30 November 2036
Application boundary	Map Reference: • NPI_006NVCP_001_RevA_0 • NPI_006NVCP_002_RevA_0 • NPI_006NVCP_003_RevA_0 BHP Shapefile D2 Reference: https://waio-dctm.bhp.com/D2/?docbase=bhpbio_od_prod&locateId=0b03c41a84a8609a&application=ManagedDocuments

Application Commitments	**Section**
In the event that any populations of Priority flora are identified they will be avoided using a 10 m buffer, where practicable.	3.4.2 6.1
Control of established weed populations will be carried out according to BHP's standard Weed Control and Management Procedures.	3.4.3 6.7.4
In the event that any active mounds of the Western Pebble-mound Mouse are identified they will be avoided using a 10 m buffer, where practicable.	3.4.4 6.2
Where practicable, existing cleared tracks will be used to cross the Fortescue River. If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow.	3.6 6.6 6.9

1.7 NVCP RECORDS

BHP reports on each NVCP in accordance with the permit reporting conditions. For a majority of BHP reports on each NVCP in accordance with the permit reporting conditions. For a majority of NVCPs this is incorporated into BHP Iron Ore's Annual Environmental Report (AER) which is submitted to government prior to the 01 October each year.

No clearing has occurred under CPS 6924.

2 ASSOCIATED APPROVALS

Any other additional approvals will be sought as required.

3 EXISTING ENVIRONMENT

3.1 CLIMATE

Newman Aero meteorological site (007176) is the closest Bureau of Meteorology (BoM) station to the to the Amendment Application Area. Average annual rainfall at Newman Aero is 318.0 mm (BOM, 2024a). This is mainly derived from tropical storms and cyclones during summer, producing sporadic, heavy rains over the area. Mean monthly rainfall varies from 4.6 mm in September to 71.6 mm in February (BoM, 2024a). Daily rainfall is highly variable; the highest maximum daily rainfall ranges from 34.8 mm in October, to 305.6 mm in February (BoM, 2024a). The mean maximum temperature in summer months (October to March) is 35.2°C to 39.4°C, and mean maximum temperature in winter (April to September) is between 23.0°C and 32.1°C (BoM, 2024a).

Wittenoom meteorological site (005026) is the closest station to the Amendment Application Area that records daily evaporation. Wittenoom is located approximately 120 km northwest of the Amendment Application Area. Mean daily evaporation at Wittenoom throughout the year is 8.6 mm/day (BoM, 2024b), which equates to 3.1 metres per year. Evaporation greatly exceeds rainfall in the region throughout the year and on a month-by-month basis (BoM, 2024b).

3.2 BIOREGION, LANDFORMS AND LAND SYSTEMS

The Amendment Application Area is situated in the following biogeographic sub-region:

- Augustus subregion (GAS3) of the Gascoyne region described as: "*Rugged low Proterozoic sedimentary and granite ranges divided by broad flat valleys. Also includes the Narryera Complex and Bryah Basin of the Proterozoic Capricorn Orogen (on northern margin of the Yilgarn Craton), as well as the Archaean Marymia and Sylvania Inliers. Although the Gascoyne River System provides the main drainage of this subregion, it is also the headwaters of the Ashburton and Fortescue Rivers. There are extensive areas of alluvial valley-fill deposits. Mulga woodland with Triodia occur on shallow stony loams on rises, while the shallow earthy loams over hardpan on the plains are covered by Mulga parkland. A desert climate with bimodal rainfall*." (Desmond et al, 2001).

The proposed Amendment Application Area is also located in the following land systems, as mapped by van Vreeswyk et al. (2004):

Elimunna: "Level to gently undulating stony plains, gilgai plains and drainage tracts derived from basalt, relief up to 15 m."

McKay: "Hills, ridges, plateaux remnants and minor breakaways of sedimentary and meta sedimentary rocks, relief up to 100 m.

Newman: Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands.

River: "Narrow floodplains and major channels."

These Land Systems are well represented in the bioregions.

3.3 GEOLOGY AND SOILS

The Australian Soil Resource Information System (ASRIS) provides soil and land resource information across Australia. The following soil type occurs within the Amendment Application Area (CSIRO, 2021):

BE6: Extensive flat and gently sloping plains, which sometimes have a surface cover of gravels and on which red-brown hardpan frequently outcrops: chief soils are shallow earthy loams.

3.4 FLORA, VEGETATION AND FAUNA

A total of 24 flora and vegetation surveys have previously been completed within and adjacent to the proposed Amendment Application Area. The key flora and vegetation surveys relevant to this application are:

- East Ophthalmia & Ninga Detailed Flora & Vegetation Survey (Spectrum Ecology, 2022) (**Appendix 1**)
- OB32 Surplus Water & Homestead Creek Wetting Front Flora and Vegetation Assessment (Spectrum Ecology, 2021)
- Western Ridge Pipeline Reconnaissance Flora and Vegetation Survey (Biologic, 2021);

- Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure (Onshore Environmental, 2014) (**Appendix 2**); and
- Targeted Survey for *Acacia* sp. East Fortescue (surrounding OB31) (Onshore Environmental, 2015).

A total of 18 vertebrate fauna surveys have been completed within and adjacent to the Amendment Application Area. The key vertebrate fauna surveys relevant to this application are:

- *Pilbara Olive Python Monitoring Western Ridge, Ophthalmia Dam and Millstream 2022-23* (Helix Molecular Solutions and Biota Environmental Sciences, 2024);
- OB29, 30 and 35 Expansion and Newman Surplus Water Targeted Significant Fauna Survey (Astron, 2023);
- East Ophthalmia and Ninga Detailed Vertebrate Fauna Survey (Biologic, 2022) (**Appendix 3**); and
- Consolidated Fauna Habitat Mapping (Biologic Environmental Survey, 2017) (**Appendix 4**);
- Jimblebar Targeted Ghost Bat Survey (GHD, 2020).

The Onshore Environmental (2014) *Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure* (**Appendix 2**) and Biologic (2017) *Consolidated Fauna Habitat Mapping 2017* (**Appendix 4**). undertook a detailed review of all previous flora and vegetation surveys and vertebrate fauna surveys, respectively, across BHP's Pilbara operations. These reviews were supported by field visits where the analysis indicated that further information was required to confirm the exact vegetation associations.

Historical survey reports often used different techniques and/or nomenclature, however they generally utilised similar field methods. The Consolidation Projects resolved the inconsistencies between previous mapping and created one consolidated regional vegetation and one fauna habitat Geographic Information System (GIS) database which:

- Serves as BHP's base line vegetation and fauna datasets;
- Maps and describes a total of 53 broad floristic communities with 218 distinct vegetation associations across BHP's Pilbara operations;
- Maps and describes a total of 17 fauna habitats across BHP's Pilbara operations; and
- Provides consistency in methods and nomenclature across BHP's Pilbara operations.

3.4.1 Vegetation Communities

The Amendment Application Area is located within the Interim Biogeographic Regionalisation for Australia (IBRA) Gascoyne Bioregions (Department of Environment and Heritage, 2005). According to the Government of Western Australia (2013), this bioregion is more than 99% vegetated (**Table 2**). The vegetation within the Amendment Application Area is classified as the following vegetation associations, as mapped by Beard (1975):

29 Low woodland, open low woodland or sparse woodland

There is more than 99% of the pre-European vegetation remaining of these vegetation associations (**Table 2**). The Amendment Application Area is not part of any significant remnant vegetation in the wider regional area.

Table 2 Pre European extent of vegetation associations occurring within the Amendment Application Area (Government of Western Australia, 2013)

Vegetation Association	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	Pre-European % in IUCN Class I-IV Reserves
Gascoyne IBRA Bioregion	18,075,219	18,067,441	99.96	1.93
Vegetation association 29 within Western Australia	7,903,991	7,900,200	99.95	0.29
Vegetation association 29 within the Gascoyne IBRA	3,802,459.63	3,799,635	99.93	0.03

A total of 12 broad floristic formations with 17 vegetation associations have been described and mapped within the Amendment Application Area (**Figure 2 and Table 3**). The vegetation consolidation project also identified one Threatened Ecological Community (TEC) and six Priority Ecological Communities (PECs) within the Consolidation Study Area. None of the vegetation associations or

landforms identified within the boundary of the Amendment Application Area are associated with a TEC or PEC (Onshore Environmental, 2014). The closest PEC is more than 70 km north west.

The distinct mapped broad floristic communities and vegetation associations identified within Amendment Application Area extend or occur beyond the project boundary. It is considered unlikely that any changes in vegetation associations and local species over the time since the vegetation consolidation project would lead to elevated significance of the vegetation given that none of the vegetation associations identified within the Amendment Application Area were affiliated with any TECs or PECs and there are no vegetation associations within the Amendment Application Area that would be likely to be included in any updates to TEC or PEC listings.

Vegetation condition within the Amendment Application Area ranges from excellent to completely degraded.

Table 3 Vegetation associations of the Amendment Application Area

Broad Floristic Formation	Vegetation Association Description	
**Cenchrus* Tussock Grassland	FP Cci ChaAci AbiApr	Tussock Grassland of **Cenchrus ciliaris* with Low Woodland of *Corymbia hamersleyana* and *Acacia citrinoviridis* over High Shrubland of *Acacia bivenosa* and *Acacia pruinocarpa* over Open Hummock Grassland of *Triodia pungens* on orange sand on floodplains.
	SC CciEpo Aci	Tussock Grassland of **Cenchrus ciliaris* and *Enneapogon polyphyllus* and Low Woodland of *Acacia citrinoviridis* on orange brown sand and clay on floodplains.
**Cenchrus* mid tussock grassland	ME CcCsChf EvAci Aads	Mid tussock grassland of **Cenchrus ciliaris*, **Cenchrus setiger* and *Chrysopogon fallax* with low to mid open woodland of *Eucalyptus victrix* and *Acacia citrinoviridis* over tall scattered shrubs of *Acacia ?adsurgens* on brown clay loam on medium drainage lines.
Acacia High Shrubland	FP AaAssAanc Tp	High Shrubland of *Acacia aptaneura*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia ancistrocarpa* over Very Open Hummock Grassland of *Triodia pungens* on red brown sandy loam on floodplains and medium drainage lines.
Acacia Low Open Woodland	FP AaAciApr AsyAssAb Tp	Low Open Woodland of *Acacia aptaneura*, *Acacia citrinoviridis* and *Acacia pruinocarpa* over Open Shrubland of *Acacia synchronicia*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia bivenosa* over Very Open Hummock Grassland of *Triodia pungens* on red brown clay loam on floodplains and medium drainage lines.
Acacia Low Woodland	FP AaAprAcao ErffDopeSie ArcDiaAri	Low Woodland of *Acacia aptanerua*, *Acacia pruinocarpa* and *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Dodonaea petiolaris* and *Sida ectogama* over Open Tussock Grassland of *Aristida contorta*, *Digitaria ammophila* and *Aristida inaequiglumis* on red orange clay loam on floodplains.
Acacia Open Shrubland	SA AaCocTb	Open shrubland of *Acacia aptaneura* with lower shrubland of *Grevillea striata*, *Eremophila forrestii* subsp. *forrestii* with low open woodland of *Corymbia candida* over very open hummock grassland of *Triodia basedowii* and very open tussock grassland of *Aristida pruinosa*, and **Cenchrus ciliaris* on orange sandy clay plains.
Eucalyptus Open Woodland	MA EcoAciCyix	Low open woodland of *Eucalyptus camaldulensis* and *Eucalyptus victrix* over high open shrubland of *Acacia citrinoviridis* and (+/-) *Melaleuca glomerata* over very open sedgeland of *Cyperus ixiocarpus* and *Cyperus vaginatus* with very open tussock grassland of **Cenchrus ciliaris* on orange sandy clay in major creek lines.
Eucalyptus Woodland	MA EcrEvi Aci Mgl	Woodland of *Eucalyptus camaldulensis* and *Eucalyptus victrix* with Low Woodland of *Acacia citrinoviridis* and High Open Shrubland of *Melaleuca glomerata* with Low Scattered Shrubs of *Corchorus crozophorifolius* over Scattered Hummock Grass of *Triodia pungens* with Open Tussock Grassland of **Cenchrus ciliaris* and *Eulalia aurea* with Scattered Sedges of *Cyperus vaginatus* on orange sandy clay in major creek lines.
	MA EcrEv AciApypMg CcEuaTt	Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over High Open Shrubland of *Acacia citrinoviridis*, *Acacia pyrifolia* var. *pyrifolia* and *Melaleuca glomerata* over Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown clay loam on banks of major drainage lines.

Broad Floristic Formation	Vegetation Association Description	
	MA EvAciEcr TercCocrApyp CcEuaTt	Woodland of *Eucalyptus victrix*, *Acacia citrinoviridis* and *Eucalyptus camaldulensis* subsp. *refulgens* over Low Open Shrubland of *Tephrosia rosea* var. *clementii*, *Corchorus crozophorifolius* and *Acacia pyrifolia* var. *pyrifolia* over Very Open Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown loamy sand on channels of major drainage lines.
Triodia Hummock Grassland	CP TwTa Ese AbPlApyp	Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Open Mallee of *Eucalyptus socialis* subsp. *eucentrica* and Open Shrubland of *Acacia bivenosa*, *Petalostylis labicheoides* and *Acacia pyrifolia* var. *pyrifolia* on light brown clay loam on calcrete plains and rises.
	HS TsAbEll	Hummock grassland of *Triodia vanleeuwenii* and *Triodia pungens* with very open tussock grassland of *Eriachne lanata* under open shrubland of *Acacia bivenosa* and or *Acacia hilliana* and woodland of *Eucalyptus leucophloia* subsp. *leucophloia* on stony hillslopes.
	HS Tw EllChHc AancAbAa	Hummock Grassland of *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Hakea chordophylla* and Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia aptaneura* on red sandy loam on hill slopes.
	RP Tpu EsoExe AciAscAbi	Hummock Grassland of *Triodia pungens* and Low Woodland of *Eucalyptus socialis* and *Eucalyptus xerothermica* over High Open Shrubland of *Acacia citrinoviridis*, *Acacia sclerosperma*, and *Acacia bivenosa* and Very Open Tussock Grassland of **Cenchrus ciliaris* and *Paraneurachne muelleri* on rocky plains.
Triodia low hummock grassland	CP TragTpTw AbAsySeao Ese(±Et)	Low hummock grassland of *Triodia angusta*, *Triodia pungens*, and *Triodia wiseana* with mid to tall sparse shrubland to scattered shrubs of *Acacia bivenosa* (wispy form), *Acacia synchronicia*, and *Senna artemisioides* subsp. *oligophylla* with low scattered tree of *Eucalyptus socialis* subsp. *eucentrica* (± *Eucalyptus trivalva*) on red-brown clay loam on calcrete stony plains and platforms.
	HS Ts(±TragTw) AbHallAads SeahSeglErfs	Low hummock grassland of *Triodia vanleeuwenii* ± *Triodia angusta*, and *Triodia wiseana* with mid to tall sparse shrubland to scattered shrubs of *Acacia bivenosa*, *Hakea lorea* subsp. *lorea*, and *Acacia adsurgens* over low scattered shrubs of *Senna artemisioides* subsp. *helmsii*, *Senna glutinosa* subsp. ×*luerssenii*, and *Eremophila fraseri* subsp. *fraseri* on brown silty loam on undulating low hills.

The Ethel Gorge TEC occurs within the Amendment Application Area. This TEC is a stygofauna community and is not related to any vegetation associations. Groundwater levels for this community are managed by a series of aquifer recharge schemes of which Ophthalmia Dam is the main contributor. Clearing within the Amendment Application Area will not impact on groundwater levels and/or quality. The Ethel Gorge TEC is closely monitored via the Eastern Pilbara Surplus Water Management Plan, which has been approved under Part IV of the EP Act..

3.4.2 Significant Flora

No species listed under the *Environment Protection and Biodiversity Conservation Act*, *1999* (EPBC Act), gazetted as Threatened Flora species under the *Biodiversity Conservation Act, 2016* (BC Act) or listed as Priority Flora by the Department of Biodiversity Conservation and Attractions (DBCA) have been identified within the Amendment Application Area.

In the event that any populations of Priority flora are identified they will be avoided using a 10 m buffer, where practicable.

3.4.3 Weeds

Fifteen introduced flora species (weeds) have been recorded within the Amendment Application Area (**Table 4**). Control of established weed populations will be carried out according to BHP's standard *Weed Control and Management Procedures.*

Table 4 Introduced Flora of the Amendment Application Area

Species	Common Name	DPAW Rating (DPAW, 2016)	Declared Pest[1]
**Aerva javanica*	Kapok Bush	High and Rapid	No
**Bidens bipinnata*	Bipinnate Beggartick	Unknown and Rapid	No
**Cenchrus ciliaris*	Buffel Grass	High and Rapid	No
**Cenchrus setiger*	Birdwood Grass	High and Rapid	No
**Chloris barbata*	Purpletop Feathertop	High and Rapid	No
**Citrullus amarus*	Pie Melon	Unknown and Moderate	No
**Cynodon dactylon*	Couch	High and Rapid	No
**Echinochloa colona*	Awnless Barnyard Grass	High and Rapid	No
**Flaveria trinervia*	Speedy Weed	Not listed	No
**Malvastrum americanum*	Spiked Malvastrum	High and Rapid	No
**Rumix vesicarius*	Ruby Dock	High and Rapid	No
**Sisymbrium orientale*	Indian Hedge Mustard	Low and Unknown	No
**Solanum nigrum*	Black Berry Nightshade	Low and Rapid	No
**Sonchus oleraceus*	Common Sowthistle	Low and Rapid	No
**Vachellia farnesiana*	Mimosa Bush	High and Rapid	No

3.4.4 Fauna Habitats and Significant Fauna

Biologic (2017 and 2022) identified the following six vertebrate fauna habitats within the Amendment Application Area (**Figure 3**):

- **Drainage Area/ Floodplain:** Lower lying plain often subjected to sheet flow following large rainfall events. Vegetation and substrates of this habitat was variable, often comprising scattered *Eucalyptus* over *Acacia* and/or *Grevillea* shrubs with an understory dominated by *Triodia* hummock grasses and/or mixed tussock grasses on alluvial substrates, often with heavy clays and gravel. Tussock grasses can be dominant within Drainage Area/ Floodplain habitat as a result of high rainfall events.
- **Major Drainage Line**: Major Drainage Line habitat is prone to flooding and is more likely to retain water when inundated. The structure and condition of vegetation often varies seasonally, particularly following rainfall events. This habitat supports an upper story of relatively tall *Eucalyptus*.
- **Mulga Woodland:** Comprises stands of mulga (*Acacia aneura*) over clay or stony substrates. Differs from other plains by having a monoculture of mulga compared to a diversity of other Acacia species.
- **Sand Plain:** Sand Plain habitat is characterised by relatively deep sandy soils supporting dense spinifex grasslands and sparse shrubs. This habitat transitions into patches of Mulga in places. This habitat often occurs as terraces along Major Drainage Lines.
- **Stony Plain:** Comprises low-lying open plains and the rolling hills below upland areas, with very slight to no gradient. The substrate consists of gravel and pebbles, with vegetation dominated by *Triodia* and scattered Mulga, eucalpyt and *Acacia* trees, with patches of various small to medium shrub species.
- **Hillcrest/ Hillslope:** Comprises a rocky substrate, often with exposed bedrock, on moderate to steep slopes leading into lower footslopes. This habitat was characterised by steep slopes with a high proportion of coarse fragments dominated by ironstone. These can contain cracks and crevices. Instances of Gorge/ Gully is contained within this habitat. This habitat is usually dominated by open *Eucalyptus* woodlands, *Acacia* and *Grevillea* scrublands and *Triodia* low hummock grasslands.

The fauna habitats identified within the Amendment Application Area extend beyond the project boundary and are common in the surrounding region.

[1] *Biosecurity and Agriculture Management Act*, 2007 (BAM Act) s22

The surveys undertaken across the Amendment Application Area have resulted in ten fauna species of significance being recorded from within the Amendment Application Area (**Figure 3**):

- Barn Swallow (*Hirundo rustica*), (Migratory EPBC Act and BC Act);
- Black-tailed Godwit (*Limosa limosa*), (Migratory EPBC Act and BC Act);
- Common Greenshank (*Tringa nebularia*), (Migratory EPBC Act and BC Act);
- Common Sandpiper (*Tringa hypoleucos*) (Migratory EPBC Act and BC Act);
- Fork-tailed Swift (Apus pacificus) (Migratory EPBC Act and BC Act);
- Glossy Ibis (*Plegadis falcinellus*) (Migratory EPBC Act and BC Act);
- Marsh Sandpiper (*Tringa stagnatilis*) (Migratory EPBC Act and BC Act);
- Pilbara Olive Python (*Liasis olivaceus barroni)* (Vulnerable, EPBC Act and BC Act);
- Sharp-tailed Sandpiper (*Calidris acuminata*), (Migratory EPBC Act and BC Act); and
- Wood Sandpiper (*Tringa glareola*), (Migratory EPBC Act and BC Act).

Based on the occurrence of the habitat types and significant fauna species previously recorded in the vicinity an additional 13 species are considered to potentially occur within the Amendment Application Area (i.e. those considered 'likely' or 'possible' to occur within the Amendment Application Area):

- Caspian Tern (*Sterna caspia*), (Migratory EPBC Act and BC Act);
- Common Redshank (*Tringa totanus*) (Migratory EPBC Act and BC Act);
- Curlew Sandpiper (*Calidris ferruginea*), (Critically Endangered EPBC Act and BC Act);
- Grey Falcon (*Falco hypoleucos*) (Vulnerable EPBC Act and BC Act);
- Little Curlew (*Numenius minutus*), (Migratory EPBC Act and BC Act);
- Little Ringed Plover (*Charadrius dubius*), (Migratory EPBC Act and BC Act);
- Long-toed Stint (*Calidris subminuta*), (Migratory EPBC Act and BC Act);
- Oriental Plover (*Charadrius veredus*), (Migratory EPBC Act and BC Act);
- Pectoral Sandpiper (*Calidris melanotos*), (Migratory EPBC Act and BC Act);
- Pilbara Flat-headed Blind-snake (*Anilios ganei*), (Priority 1 DBCA);
- Red-necked Stint (*Calidris ruficollis*), (Migratory EPBC Act and BC Act);
- Ruff (*Philomachus pugnax*), (Migratory EPBC Act and BC Act); and
- Western Pebble-mound Mouse (*Pseudomys champmani*) (Priority 4 DBCA).

An assessment of the potential impact of the proposed clearing on the species of significant fauna that may occur in the application amendment area is provided in **Table 5**.

Table 5 Significant Fauna Potentially Occurring within the Amendment Application Area

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Birds					
Barn Swallow (*Hirundo rustica*)	Migratory EPBC Act Migratory BC Act	The Barn Swallow is found in open country and agricultural lands, especially near water.	Given known range of this species within Australia, it is likely that it visits the Amendment Application Area during the migratory period, mostly September to March.	Recorded	**Negligible** This species is wide ranging, and is unlikely to rely just on habitats within the Amendment Application Area, given that suitable habitat occurs in the Amendment Application Area surrounds.
Black-tailed Godwit (*Limosa limosa*)	Migratory EPBC Act Migratory BC Act	The Black-tailed Godwit is an uncommon summer non-breeding migratory shorebird that occurs along most of the coast of Western Australia (Geering et al. 2007). It inhabits fresh and brackish wetlands as well as inter-tidal mudflats (Geering et al. 2007). This Migratory bird breeds off the coast of Mongolia and Siberia. It migrates to Australian waters in September to May (Pizzey and Knight 2007).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Caspian Tern (*Hydroprogne caspia*)	Migratory EPBC Act Migratory BC Act	The Caspian Tern is distributed along the coast of Western Australia. It is scarce or uncommon north of Broome and uncommon to moderately common further south (Johnstone and Storr, 1998). This species inhabits coastal areas as well as inland watercourses, saline and brackish lakes (Simpson and Day, 2004).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Common Greenshank (*Tringa nebularia*)	Migratory EPBC Act Migratory BC Act	The Common Greenshank is a nonbreeding migratory shorebird common along most of the coast of Western Australia (Geering et al. 2007). It inhabits intertidal mudflats as well as fresh and saltwater wetlands of the coast or inland (Geering et al. 2007).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Common Redshank (*Tringa totanus*)	Migratory EPBC Act Migratory BC Act	This species occurs both in coastal areas and inland, where it inhabits estuaries, mudflats, mangroves, lagoons, billabongs, sewage farms and flooded cropland (Birds Australia, 2010).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Common Sandpiper (*Actitis hypoleucos*)	Migratory EPBC Act Migratory BC Act	*Actitis hypoleucos* is a nonbreeding migratory shorebird which utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Geering et al. 2007).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Fork-tailed Swift (*Apus pacificus*)	Migratory EPBC Act Migratory BC Act	The Fork-tailed Swift breeds in north-east and east Asia, wintering in Australia and southern New Guinea (Johnstone and Storr, 1998). Fork-tailed Swifts are entirely aerial within the Pilbara and may forage sporadically over the Amendment Application Area in the summer months, associated with thunderstorms and cyclonic systems (Johnstone and Storr, 1998).	The Fork-tailed Swift is largely an aerial species and has a broad distribution across much of Western Australia. It is viewed as a nomadic species and may fly over the Amendment Application Area.	Recorded	**Negligible** As this species is entirely aerial and not reliant on terrestrial habitats, the impact to this species is considered to be negligible.
Curlew Sandpiper (*Calidris ferruginea*)	Critically Endangered and Migratory EPBC Act EPBC Act Critically Endangered and Migratory BC Act	The Curlew Sandpiper is a summer non-breeding migratory shorebird that occurs along most of the coast of Western Australia (Geering *et al*., 2007). It inhabits exposed tidal mudflats, and is less frequently found on inland freshwater wetlands (Geering *et al*., 2007). This Migratory bird breeds in Siberia and migrates to Australian waters in August to April (Pizzey and Knight, 2007). It is abundant to common around Perth and Mandurah. This species is found in coastal and inland mudflats and sometimes on salt works (Simpson and Day, 2004).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Glossy Ibis (*Plegadis falcinellus*)	Migratory EPBC Act Migratory BC Act	The Glossy Ibis inhabits areas of freshwater wetlands, irrigated areas, and margins of dams, floodplains, brackish and saline wetlands, tidal mudflats, pastures, lawns and public gardens (Johnstone and Storr, 2004). This species is a casual vagrant in dry and hilly areas and is mainly a non-breeding visitor to Western Australia (Johnstone and Storr, 1998).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Grey Falcon (*Falco hypoleucos*)	Vulnerable EPBC Act Vulnerable BC Act	This species appears to have a distribution centred on ephemeral or permanent drainage lines (Garnett and Crowley, 2000) with numerous records from the Fortescue Marsh region. Grey Falcons prefer sparsely-treed open plains and drainage lines for hunting (Slater et al., 2009). They typically nest in the abandoned nest of a raptor or corvid (Slater et al., 2009) in trees or man-made structures, most notably repeater towers.	Suitable habitat for breeding may occur in the taller trees of the Major Drainage line habitat..	Possible	**Negligible** While the Grey Falcon could potentially nest in the taller trees of the Major Drainage habitat of the Amendment Application Area, the proposed clearing is unlikely to impact on this species as: • the habitat for this species occurs extensively throughout the Pilbara; and • this species has the ability to rapidly egress from the area.
Little Curlew (*Numenius minutus*)	Migratory EPBC Act Migratory BC Act	The Little Curlew is a medium sized shorebird and is typically found on short, dry grasslands. Flocks are highly mobile moving unpredictably according to grassland conditions, often congregating in wetlands to drink when conditions are hot. This species breeds in north-east Siberia and migrates to the sub-coastal plains of northern Australia during summer (Geering et al. 2007).	The Sand Plain habitat, particularly around the Riverine habitat of the Amendment Application Area, provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Little Ringed Plover (*Charadrius dubius*)	Migratory EPBC Act Migratory BC Act	This is a summer non-breeding species which favours extensive sandbanks, muddy and sandy shores of rivers and lakes, residual flood waters, short grassy areas on dry ground around villages or near water, airfields and pastures. It less commonly inhabits coastal areas such as saltpans, estuaries, creeks or rainwater pools on dry salt-flats bordering mangroves.	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Long-toed Stint (*Calidris subminuta*)	Migratory EPBC Act Migratory BC Act	The Long-toed Stint is a moderately common summer non-breeding migrant that occurs along the coast and inland waterways of Western Australia. It inhabits mainly inland freshwater swamps, lagoons, claypans, sewerage ponds, salt lakes and estuaries (Johnstone and Storr, 1998). This Migratory bird breeds in Siberia to the North Pacific and migrates to Australian waters in August to April (Pizzey and Knight, 2007). This species prefers coastal and inland swamps for habitat (Simpson and Day, 2004).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Marsh Sandpiper (*Tringa stagnatilis)*	Migratory EPBC Act Migratory BC Act	The Marsh Sandpiper inhabits fresh or brackish wetlands including rivers, sewage farms, drains, lagoons and swamps (Birds Australia, 2010).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Oriental Plover (*Charadrius veredus*)	Migratory EPBC Act Migratory BC Act	The Oriental Plover occurs in the Kimberley and in the north-eastern interior at Lake Gregory and on the north-west coastal plains (Johnstone and Storr, 1998). It is found on sparsely vegetated plains including Samphire, Spinifex plains (particularly after fire), as well as beaches and tidal flats (Johnstone and Storr, 1998). This species often feeds on insects (Johnstone and Storr, 1998).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Pectoral Sandpiper (*Calidris melanotos*)	Migratory EPBC Act Migratory BC Act	The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands (Higgins & Davies, 1996)	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Red-necked Stint (*Calidris ruficollis*)	Migratory EPBC Act Migratory BC Act	The Red-necked Stint is a summer non-breeding migratory shorebird that occurs along most of the coast of Western Australia (Geering *et al*., 2007). It inhabits a wide range of fresh and saltwater habitats (Geering *et al*., 2007). This Migratory bird breeds in Siberia and Alaska and migrates to Australian waters in August to April (Pizzey and Knight, 2007). This species requires marine waters for habitat such as coastal and inland shores (Simpson and Day, 2004).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Ruff (Philomachus pugnax)	Migratory EPBC Act Migratory BC Act	The Ruff is a summer nonbreeding migratory shorebird found on generally fresh, brackish of saline wetlands with exposed mudflats at the edges. It forages on exposed mudflats, in shallow water and occasionally on dry mud. They have been observed foraging in dry waterside plants and in swampy areas next to aeration tanks in sewage farms. They prefer to roost amongst shorter vegetation (Higgins & Davies 1996).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Sharp-tailed Sandpiper (*Calidris acuminata*)	Migratory EPBC Act Migratory BC Act	The Sharp-tailed Sandpiper is a summer non-breeding migratory shorebird that occurs along most of the coast of Western Australia except for the south coast, and in well-watered parts of the interior and casually in the arid east south of Lake Gregory (Johnstone and Storr 1998). The Sharp-tailed Sandpiper uses fresh and salt water wetlands as its preferred habitat. Eighty Mile Beach has peak numbers in August to September (Johnstone and Storr, 1998). It inhabits both coastal and inland areas but prefers non-tidal fresh or brackish wetlands (Geering *et al*., 2007).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.
Wood Sandpiper (*Tringa glareola*)	Migratory EPBC Act Migratory BC Act	The Wood Sandpiper is a summer non-breeding migratory shorebird that occurs along the coast and inland regions of Western Australia. It primarily inhabits shallow fresh waters such as lagoons, swamps, claypans, dams and sewerage ponds (Johnstone and Storr 1998; Geering et al., 2007).	The shallows on the edge of the Major Drainage Line habitat associated with Ophthalmia Dam provides suitable habitat for this species.	Recorded	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility and the presence of large areas of its preferred habitat in the surrounding areas.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Mammals					
Western Pebble-mound mouse (*Pseudomys chapmani*)	Priority 4 DBCA	The Western Pebble-mound Mouse is restricted to the Pilbara region, where it is recognised as an endemic species. Abandoned mounds to the east of its current range indicate a decline in distribution (Menkhorst and Knight, 2004). Abandoned mounds in disturbed areas suggest that the species is under threat by grazing and mining activities. The construction of extensive pebble mounds, built from small stones, which typically cover areas from 0.5-9.0 square metres, is characteristic of this species. Mounds are restricted to suitable class stones, and are usually found on gentle slopes and spurs (van Dyck and Strahan, 2008).	The Hillcrest / Hill slope and Stony Plain habitats of the Amendment Application Area is suitable for this species. This species has been recorded within the broader region. In the event that any active mounds of the Western Pebble-mound Mouse are identified they will be avoided using a 10 m buffer, where practicable.	Possible	**Low** There are large areas of suitable habitat adjacent to the Amendment Application Area. In the event that any active mounds of the Western Pebble-mound Mouse are identified they will be avoided using a 10 m buffer, where practicable.
Reptiles					
Pilbara Flat-headed Blind Snake (*Anilios ganei*)	Priority 1 DBCA	The Pilbara Flat-headed Blind Snake is a moderately robust blind snake known from widely separated areas between Newman and Pannawonica. A very cryptic species. Most often recorded in rocky or stony areas and considered to be possibly associated with moist gorges and gullies (Wilson and Swan, 2010)	Little is known about this species habitat preferences and it may be a transient visitor to the Amendment Application Area.	Possible	**Low** This species may utilise the habitat types within the Amendment Application Area however is unlikely to be reliant on the areas within the Amendment Application Area.
Pilbara Olive Python (*Liasis olivaceus barroni)*	Vulnerable EPBC Act Vulnerable BC Act	The Pilbara Olive Python's range is restricted to the Pilbara region, north Western Australia and the Dampier Archipelago. Habitat consists of rocky escarpments, gorges and waterholes within the Pilbara Region. The preferred microhabitat for this species are under rock piles, on top of rocks and under spinifex as well as in artificial features such as overburden heaps, railway embankments an sewerage treatment ponds. The species' breeding season occurs from June to August, with males moving long distances in search of breeding females (Wilson and Swan, 2017).	The Major Drainage Line Habitat and the rocky features associated with the Hillcrest/ Hillslope habitat of the Amendment Application Area provide potential habitat for this species.	Recorded	**Low** Pilbara Olive Python may forage within the Major Drainage Line and Hillcrest/ Hillslope habitats within the Amendment Application Area but are unlikely to be reliant on these habitats.

3.5 GROUNDWATER

The Amendment Application Area is located in the Pilbara Groundwater Area, proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) (DoW, 2009a).

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

3.6 SURFACE WATER

The Amendment Application Area is situated in the Pilbara Surface Water Area, proclaimed under the RIWI Act (DoW, 2009b).

Ophthalmia Dam is a dam across the Fortescue River. The dam serves as a surplus water disposal repository for the adjunct BHP mining operations and also as a managed aquifer recharge scheme to maintain the Ethel Gorge TEC.

Where practicable, existing cleared tracks will be used to cross the Fortescue River. If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow.

4 ENVIRONMENTAL MANAGEMENT

The management of the environmental aspects of BHP's operations at the Amendment Application Area are managed under the company's AS/NZS ISO 14001:2004 certified Environmental Management System (EMS). The EMS describes the organisational structure, responsibilities, practices, processes and resources for implementing and maintaining environmental objectives at all BHP sites

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

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

BHP also has an internal Project Environmental and Aboriginal Heritage Review (PEAHR) Procedure. The purpose of the procedure is to manage implementation of environmental, Aboriginal heritage, land tenure and legal commitments prior to and during land disturbance. All ground disturbance activities will meet the requirements of the PEAHR procedure, all relevant legislative and regulatory requirements, the BHP Charter, industry standards, and codes of practice.

All personnel carrying out works associated with clearing activities are required to comply with BHP's Charter Values, BHP's Our Requirements, and relevant legislative and licensing requirements.

5 PROJECT COMPLIANCE WITH THE TEN CLEARING PRINCIPLES

BHP considers that native vegetation clearing within the Amendment Application Area will not result in any significant environmental or social impacts, and complies with the Ten Clearing Principles, as defined in Schedule 5 of the EP Act. **Section 6** provides an assessment of project compliance with the Ten Clearing Principles.

6 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

The information used to assess the application against the Ten Clearing Principles has been based on the findings of multiple baseline surveys (**Section 3**).

6.1 PRINCIPLE A

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

This proposal is not likely to be at variance to this Principle.

Similar habitat to the Amendment Application Area is located outside the Amendment Application Area. These other areas of similar vegetation type are therefore expected to have a similar biological diversity and conservation value than that of the Amendment Application Area.

The proposed clearing is therefore unlikely to have any significant impact on the biodiversity of the region.

Table 6 provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle A.

Table 6 Assessment against Principle A components

Principle	Criteria	Assessment	Outcome
a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	a1) Native vegetation should not be cleared if it is representative of an area of outstanding biodiversity in the Bioregion.	The native vegetation within the Amendment Application Area is represented in the same condition within the broader region and is not considered to be of outstanding biodiversity in the Bioregion.	Not at variance with clearing principle.
	a2) Native vegetation should not be cleared if it has higher diversity of indigenous aquatic or terrestrial plant or fauna species than native vegetation of that ecological community in good or better condition in the Bioregion.	The native vegetation within the Amendment Application Area is in the same condition as other areas of similar vegetation type within the broader region.	Not at variance with clearing principle.
	a3) Native vegetation should not be cleared if it has higher diversity of indigenous aquatic or terrestrial plant or fauna species than the remaining vegetation of that ecological community in the local area.	The native vegetation within the Amendment Application Area is not considered to have higher biodiversity and conservation value than that of the surrounding vegetation within the local area.	Not at variance with clearing principle.
	a4) Native vegetation should not be cleared if it has higher ecosystem diversity than other native vegetation of that local area.	The native vegetation within the Amendment Application Area is not considered to have a higher ecosystem diversity than other native vegetation of that local area.	Not at variance with clearing principle.
	a5) Native vegetation should not be cleared if it has higher genetic diversity than the remaining native vegetation of that ecological community.	The native vegetation within the Amendment Application Area is not considered to have a higher genetic diversity than the remaining native vegetation of that ecological community as the vegetation is contiguous with adjacent native vegetation and has no special features.	Not at variance with clearing principle.
	A6) Native vegetation should not be cleared if it is necessary for the continued in situ existence of significant habitat for priority flora species published by the Department of Environment and Conservation.	No Priority flora species have been recorded in the Amendment Application Area. In the event that any populations of Priority flora are identified they will be avoided using a 10 m buffer, where practicable.	Not at variance with clearing principle.

6.2 PRINCIPLE B

Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia

This proposal is not likely to be at variance to this Principle.

There are six broad fauna habitat types within the Amendment Application Area (**Figure 3**).

The vegetation and habitats found within the Amendment Application Area are considered to be well represented in the Pilbara bioregions.

Ten fauna species of significance have been recorded from within the Amendment Application Area with an additional 13 species considered to potentially occur within the Amendment Application Area (**Table 5**). As described in **Section 3.4.4** and **Table 5** clearing of the Amendment Application Area is expected to have a low impact on these species.

Table 7 provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle B.

Table 7 Assessment against Principle B components

Principle	Criteria	Assessment	Outcome
b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	b1) Native vegetation should not be cleared if it is or is likely to be habitat for fauna that is declared Specially Protected under the BC Act.	Ten BC Act protected species have been recorded from the Amendment Application and 11 BC Act protected species are considered 'possible' or 'likely' to occur within the Amendment Application Area (**Table 5**). The proposed activities are unlikely to have a significant impact on these species as: • All species are wide-ranging and found throughout the broader region; • All species are only likely to forage within the Amendment Application Area; • These species do not exclusively depend on any habitat type or feature within the Amendment Application Area; and • Similar habitat is well represented outside the Amendment Application Area.	Not at variance with clearing principle.
	b2) Native vegetation should not be cleared if it is or is likely to be habitat for Priority Listed Fauna.	No priority fauna species have been recorded within the Amendment Application Area and two Priority species may occur. As detailed in **Table 5** these species are unlikely to be impacted for the following reasons: • The preferred habitat for these species is well represented outside the Amendment Application Area; • Similar habitat within close vicinity to the Amendment Application Area was found to be the same or better condition than that of the Amendment Application Area; and • In the event that any active mounds of the Western Pebble-mound Mouse are identified they will be avoided using a 10 m buffer, where practicable.	Not at variance with clearing principle.
	b3) Native vegetation should not be cleared if it is or is likely to be habitat for fauna that is otherwise significant.	Habitat found within the Amendment Application Area may be suitable for use by conservation significant fauna, however similar habitat in the same or better condition is widespread in the Amendment Application Area surrounds	Not at variance with clearing principle.
	b4) Native vegetation should not be cleared if it provides significant habitat for fauna species in the local area.	Habitat within the Amendment Application Area is not considered significant habitat for fauna species within the local area. Similar habitat to that proposed to be cleared is located to the area surrounding of the Amendment Application Area.	Not at variance with clearing principle.
	b5) Native vegetation should not be cleared if it maintains ecological functions and processes that protect significant habitat for fauna.	The clearing of native vegetation is not considered to alter ecological functions and processes that protect significant habitat for fauna.	Not at variance with clearing principle.
	b6) Native vegetation should not be cleared if it forms, or is part of, an ecological linkage that is necessary for the maintenance of fauna.	No ecological linkages run through the Amendment Application Area that are necessary for the maintenance of fauna.	Not at variance with clearing principle.

Principle	Criteria	Assessment	Outcome
	b7) Native vegetation should not be cleared if it provides significant habitat for fauna communities (assemblages) and meta-populations.	The Amendment Application Area is not considered to contain significant habitat for faunal assemblages that are not also present in other areas within the vicinity. The Amendment Application Area is not considered likely to contain geographically isolated fauna populations.	Not at variance with clearing principle.

6.3 PRINCIPLE C

Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora

This proposal is not likely to be at variance to this Principle.

No species listed under the EPBC Act or gazetted as Threatened under the BC Act were recorded in the Amendment Application Area. Three species listed as Priority Flora by the DBCA have been recorded in the Amendment Application Area (**Section 3.4.2**).

Table 8 provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle C.

Table 8 Assessment against Principle C components

Principle	Criteria	Assessment	Outcome
c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	c1) Native vegetation should not be cleared if it is necessary for the continued *in situ* existence of populations of Declared Rare Flora under the *BC Act 2016*	No Threatened flora species were recorded in the Amendment Application Area (Spectrum Ecology and Spatial, 2022; Biologic, 2021; Onshore Environmental, 2015; Astron, 2013).	Not at variance with clearing principle.
	c2) Native vegetation should not be cleared if it is necessary for the continued *in situ* existence of other significant flora.	No species listed under the EPBC Act or other significant flora species were recorded in the Amendment Application Area (Spectrum Ecology and Spatial, 2022; Biologic, 2021; Onshore Environmental, 2015; Astron, 2013).	Not at variance with clearing principle.

6.4 PRINCIPLE D

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

This proposal is not likely to be at variance to this Principle.

None of the vegetation associations or landforms identified within the boundaries of CPS 2161/7 are associated with a TEC or PEC (GHD, 2019 and Environmental, 2014). The closest PEC is more than 70km north west of the Amendment Application Area (**Section 3.4.1**). **Table 9** provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle D.

Table 9 Assessment against Principle D components

Principle	Criteria	Assessment	Outcome
d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.	d1) Native vegetation should not be cleared if threatened ecological communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* are present.	No EPBC Act TECs are present in the Amendment Application Area.	Not at variance with clearing principle.
	d2) Native vegetation should not be cleared if it is necessary for the maintenance of Threatened Ecological Communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.	No EPBC Act TECs or associated native vegetation will be impacted by the proposed works.	Not at variance with clearing principle.
	d3) Native vegetation should not be cleared if other significant ecological communities are present.	No other significant ecological communities are known to occur or are likely to occur within the Amendment Application Area.	Not at variance with clearing principle.
	d4) Native vegetation should not be cleared if it is necessary for the maintenance of other significant ecological communities.	No DBCA listed TECs or associated native vegetation will be impacted by the proposed works.	Not at variance with clearing principle.
	d5) Native vegetation should not be cleared if it is necessary for the continued *in situ* existence of significant examples of priority threatened ecological communities published by the Department of Environment and Conservation.	No DBCA listed PECs or associated native vegetation will be impacted by the proposed works.	Not at variance with clearing principle.

6.5 PRINCIPLE E

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

This proposal is not likely to be at variance to this Principle.

The habitats and vegetation within the Amendment Application Area are well represented in the Land Systems of the region (**Section 3.4.1**), and therefore it is unlikely individual species would be restricted to a particular habitat and / or vegetation occurring in the Amendment Application Area.

Table 10 provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle E.

Table 10 Assessment against Principle E components

Principle	Criteria	Assessment	Outcome
e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	e1) Native vegetation should not be cleared if the remaining native vegetation represents less than 30%, or the clearing would reduce the representation of remaining native vegetation to less than 30% in the Bioregion (or subregion where applicable).	Clearing native vegetation within the Amendment Application Area will not reduce the extent of native vegetation below 30% in the bioregion or subregion.	Not at variance with clearing principle.
	e2) Native vegetation should not be cleared if an ecological community represents less than 30% of its original extent or clearing would reduce the representation of any ecological community to less than 30% of its original extent in the Bioregion (or subregion where applicable).	Clearing native vegetation within the Amendment Application Area will not significantly reduce the known extent of the ecological community from pre-European extents. Current remaining extents of the vegetation communities in the bioregion are almost 100% of pre-European extents.	Not at variance with clearing principle.
	e3) Native vegetation should not be cleared if clearing would reduce an ecological community to less than 1% of the Bioregion (or subregion where applicable)	Clearing native vegetation within the Amendment Application Area will not significantly reduce the known extent of the vegetation community in the bioregion.	Not at variance with clearing principle.
	e4) Native vegetation should not be cleared if the remaining native vegetation represents less than 30% or the clearing would reduce the representation of remaining native vegetation to less than 30% in the Local Area.	Clearing native vegetation within the Amendment Application Area will not reduce the representation of remaining native vegetation to less than 30% in the local area.	Not at variance with clearing principle.
	e5) Native vegetation should not be cleared if an ecological community represents less than 30% of its original extent or clearing will reduce the representation of any ecological community to less than 30% of its original extent in the Local Area.	Clearing native vegetation within the Amendment Application Area will not reduce the representation of any ecological community to less than 30% of its original extent in the local area.	Not at variance with clearing principle.
	e6) Native vegetation should not be cleared if clearing would reduce any ecological community to less than 1% of the Local Area.	Clearing native vegetation within the Amendment Application Area will not significantly reduce the known extent of the vegetation community in the local area.	Not at variance with clearing principle.

6.6 PRINCIPLE F

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

This proposal is unlikely to be at variance to this Principle.

Ophthalmia Dam is a dam across the Fortescue River. The dam serves as a surplus water disposal repository for the adjunct BHP mining operations and also as a managed aquifer recharge scheme to maintain the Ethel Gorge TEC.

Where practicable, existing cleared tracks will be used to cross the Fortescue River. If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow.

Table 11 provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle F.

Table 11 Assessment against Principle F components

Principle	Criteria	Assessment	Outcome
f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	f1) Native vegetation should not be cleared if it is growing in a watercourse or wetland that has been identified as having significant environmental values.	No watercourses of significant environmental value occur within the Amendment Application Area Ophthalmia Dam is a dam across the Fortescue River. The dam serves as a surplus water disposal repository for the adjunct BHP mining operations and also as a managed aquifer recharge scheme to maintain the Ethel Gorge TEC.	Unlikely to be at variance with clearing principle.
	f2) Native vegetation should not be cleared if it provides a buffer area for watercourses and wetlands identified in criteria (f1) and (f2).	No native vegetation occurs within the Amendment Application Area that provides a buffer to watercourses or wetlands that have been identified as having significant environmental values.	Unlikely to be at variance with clearing principle.
	f3) Native vegetation should not be cleared if water tables are likely to change and adversely affect ecological communities that are wetland or groundwater dependent.	Groundwater levels within the Amendment Application Area and its surrounds are maintained by recharge from Ophthalmia Dam. Clearing for maintenance of the dam will not impact of groundwater levels.	Not at variance with clearing principle.
	f4) Native vegetation should not be cleared if it is growing in other watercourses or wetlands.	Where practicable, existing cleared tracks will be used to cross the Fortescue River. If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow.	Unlikely to be at variance with clearing principle.

6.7 PRINCIPLE G

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

This proposal is not likely to be at variance to this Principle.

Land degradation may include impacts such as erosion, changes to pH, water logging, salinisation or spread of weeds. These potential impacts are assessed in the sections below. **Table 12** provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle G.

Given the relatively small amount of clearing required for the project, the proposed management strategies for weed species within the Amendment Application Area and the low susceptibility of the soils to erosion, it is considered that the project will not be at variance to Principle G.

6.7.1 Erosion

It is not anticipated that the removal of vegetation will contribute to increased amounts of wind or water erosion in the Amendment Application Area or adjacent areas.

6.7.2 Changes to pH

The Amendment Application Area is not in an area at risk of acid sulphate soils and there are no recorded acid sulphate soils within the Amendment Application Area. It is not expected that the proposed clearing will result in changes to soil pH.

6.7.3 Water logging and salinisation

It is not expected that there will be a significant reduction in groundwater uptake due to the proposed clearing. No water logging or increased salinisation is expected to occur as a result of the proposed clearing.

6.7.4 Weeds

Fifteen introduced flora species have been recorded in the Amendment Application Area (**Table 4**). None are listed as a Declared Pest under the BAM Act. These are typical introduced species commonly recorded in the Pilbara region.

Control of established weed populations will be carried out according to the *BHP Weed Control and Management Procedure*.

Table 12 Assessment against Principle G components

Principle	Criteria	Assessment	Outcome
g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	g1) Native vegetation should not be cleared if wind or water erosion of soil is likely to be increased (on or off site).	Soil erosion is not anticipated to occur as any areas cleared will be revegetated where practicable, if not required for infrastructure.	Not considered to be at variance with clearing principle.
	g2) Native vegetation on land with soils with high or low pH should not be cleared.	The Amendment Application Area is not considered to contain soils at risk of having acid sulphate soils present. No vegetation on soils with significantly low (or high) pH will be impacted by the proposed works.	Not at variance with clearing principle.
	g3) Native vegetation should not be cleared if water logging is likely to be increased (on or off site).	It is not expected that water logging would be increased by the clearing of native vegetation within the Amendment Application Area.	Not at variance with clearing principle.
	g4) Native vegetation should not be cleared if land salinisation is likely to be increased (on or off site).	Soil salinity is not considered to be increased in the Amendment Application Area (on or off site) by the clearing of native vegetation.	Not at variance with clearing principle.

6.8 PRINCIPLE H

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

This proposal is not likely to be at variance to this Principle.

The Amendment Application Area is not within any conservation areas as listed by the DBCA or those protected under the EPBC Act. The closest conservation area is Karijini National Park which is more than 140 km west of the Amendment Application Area.

The Amendment Application Area is not considered to form an ecological linkage to these conservation areas.

An assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle H is provided in **Table 13** below.

Table 13 Assessment against Principle H components

Principle	Criteria	Assessment	Outcome
h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	h1) Native vegetation should not be cleared if it contributes significantly to the environmental values of a conservation area.	The vegetation of the Amendment Application Area does not contribute to the environmental values of a conservation area.	Not at variance with clearing principle.
	h2) Native vegetation should not be cleared if that vegetation provides a buffer to a conservation area.	There are no conservation areas within the vicinity of the Amendment Application Area.	Not at variance with clearing principle.
	h3) Native vegetation should not be cleared if the land contributes to an ecological linkage to a conservation area.	The nearest conservation area is more than 140 km west of the Amendment Application Area.	Not at variance with clearing principle.
	h4) Native vegetation should not be cleared if it provides habitats not well represented on conservation land.	There are no habitats within the Amendment Application Area that are not well represented on conservation land.	Not at variance with clearing principle.

6.9 PRINCIPLE I

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

This proposal is not likely to be at variance to this Principle.

Ophthalmia Dam is a dam across the Fortescue River. The dam serves as a surplus water disposal repository for the adjunct BHP mining operations and also as a managed aquifer recharge scheme to maintain the Ethel Gorge TEC.

Where practicable, existing cleared tracks will be used to cross the Fortescue River. If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow.

Table 14 provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle I.

Table 14 Assessment against Principle I components

Principle	Criteria	Assessment	Outcome
i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	i1) Native vegetation should not be cleared if clearing the vegetation will reduce the quality of surface or underground water in proclaimed, gazetted or declared areas or catchments.	Groundwater levels within the Amendment Application Area and its surrounds are maintained by recharge from Ophthalmia Dam. The clearing of native vegetation is not considered likely to alter the quality of surface or ground water within the Amendment Application Area	Not at variance with clearing principle.
	i2) Native vegetation should not be cleared if sedimentation, erosion, turbidity or eutrophication of water bodies on or off site is likely to be caused or increased.	Localised erosion will not impact any waterbodies as clearing will be restricted to a bare minimum near surface water features and cleared areas that are no longer required will be revegetated.	Not at variance with clearing principle.
	i3) Native vegetation should not be cleared if water tables are likely to change significantly altering salinity or pH.	Groundwater levels within the Amendment Application Area and its surrounds are maintained by recharge from Ophthalmia Dam. The clearing of native vegetation is not considered likely to alter the quality of surface or ground water within the Amendment Application Area.	Not at variance with clearing principle.
	i4) Native vegetation should not be cleared if the clearing is likely to alter the water regimes of groundwater-dependent ecosystems on or off site, causing degradation to the biological communities associated with these systems.	Groundwater levels within the Amendment Application Area and its surrounds are maintained by recharge from Ophthalmia Dam. The clearing of native vegetation is not considered likely to alter the regimes of surface or groundwater dependent vegetation within the vicinity of the Amendment Application Area.	Not at variance with clearing principle.

6.10 PRINCIPLE J

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

This proposal is not likely to be at variance to this Principle.

Massive surface water runoff and localised flooding occurs following intense rainfall events during December to April. However, the incidence or intensity of flooding is not likely to be significantly influenced by the proposed vegetation clearing. It is highly improbable that surface runoff generated from the cleared area could create sufficient concentrated water volumes to cause even a localised flood event. Drainage infrastructure will be designed to ensure that post-construction flows will not differ significantly from pre-construction flows. Therefore the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding.

Table 15 provides an assessment of the proposed clearing activities within the Amendment Application Area against the components of clearing Principle J.

Table 15 Assessment against Principle J components

Principle	Criteria	Assessment	Outcome
j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	j1) Native vegetation should not be cleared if it is likely to lead to an incremental increase in peak flood height.	The clearing of native vegetation is not considered likely to cause any alteration to peak flood height.	Not at variance with clearing principle.
	j2) Native vegetation should not be cleared if it is likely to lead to an incremental increase in duration of flood peak.	The clearing of native vegetation is not considered likely to cause any impact on duration of flood peak.	Not at variance with clearing principle.

7 HERITAGE

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

The Project Area falls within the Nyiyaparli Native Title Claim (WC05/6). Archaeological and ethnographic surveys of the proposed Amendment Application Area have been undertaken by BHP and a number of heritage sites have been identified. All heritage sites will be avoided, however if any heritage site cannot practicably be avoided, BHP would consult the relevant traditional owners and seek approval under the *Aboriginal Heritage Act*, *1972* before the site is disturbed.

8 CONCLUSION

The proposed clearing in the Amendment Application Area is unlikely to be at variance to any of the Ten Clearing Principles. CPS 6924/3 authorises the clearing of up to 40 ha. To date BHP no clearing has occurred. The clearing of 40 ha within the 276.21 ha Amendment Application Area is unlikely to have any significant negative impacts on biodiversity and environmental values in the area.

9 REFERENCES

Astron (2023) *OB29, 30 and 35 Expansion and Newman Surplus Water Targeted Significant Fauna Survey*. Unpublished report prepared for BHP Pty Ltd.

Beard, JS (1975) *Vegetation Survey of Western Australia; Sheet 5 Pilbara*. University of Western Australia Press, Perth, Western Australia.

BHP (2024) *BHP Iron Ore Annual Environmental Report July 2023 – June 2024*.

Biologic (2017) *Consolidated Fauna Habitat Mapping 2017.* Unpublished report prepared for BHP Pty Ltd.

Biologic (2021) *Western Ridge Pipeline Reconnaissance Flora and Vegetation Survey*. Unpublished report prepared for BHP Pty Ltd.

Biologic (2022) *East Ophthalmia and Ninga Detailed Vertebrate Fauna Survey.* Unpublished report prepared for BHP Pty Ltd.

Birds Australia (2010) *Birdata*. http://www.birdata.com.au/homecontent.do . Last accessed October 2010.

BoM (Bureau of Meteorology) (2024a) Climate statistics for Australian locations – Newman Aero. Website: http://www.bom.gov.au/climate/averages/tables/cw_007176_All.shtml Accessed: 15 February 2024.

BoM (2024b) Climate statistics for Australian locations – Wittenoom. Website: http://www.bom.gov.au/climate/averages/tables/cw_005026_All.shtml Accessed: 15 February 2024..

CSIRO (2014) *Australian Soil Resource Information System (ASRIS).* Available from: http://www.asris.csiro.au/index.html, Accessed 31/03/2021.

Department of Water, 2009a. *Groundwater Proclamation Areas 2009*. Accessed 19 February 2015 at http://www.water.wa.gov.au/PublicationStore/first/86307.pdf.

Department of Water, 2009b. *Surface Water Proclamation Areas 2009*. Accessed 19 February 2015 at http://www.water.wa.gov.au/PublicationStore/first/86306.pdf.

Department of Water (2015a) *Hydrogeological Atlas: Hamersley – Fractured Rock*. http://www.water.wa.gov.au/idelve/hydroatlas/ioiQuery.jsp?ts=1421024384008&d=hydroatlas&bb=116.2710462,-23.570724506092837,119.38272319999999,-21.29263989390716&k=NONE&w=1034&h=757&z=1003199.8498259148&x=118.62436478220502&y=-23.254741832011604&i=782&j=652 Accessed 12 January 15.

Desmond, A; Kendrick, P; Chant, A. (2001) *Gascoyne 3 (GAS3 – Augustus subregion). In: A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002*. Department of Conservation and Land Management, Western Australia.

Garnett and Crowley (2000) *The Action Plan for Australian Birds*. Department of Environment.

Geering, A, Agnew, L and Harding, S (2007) *Shorebirds of Australia*. CSIRO Publishing, Collingwood, Victoria.

GHD (2020) *Jimblebar targeted ghost bat survey*. Unpublished report for BHP Iron Ore

Helix Molecular Solutions and Biota Environmental Sciences (2024) *Pilbara Olive Python Monitoring Western Ridge, Ophthalmia Dam and Millstream 2022-23*. Unpublished report for BHP Iron Ore

Higgins, P.J. and Davies, S.J.J.F. (1996) *Handbook of Australian. New Zealand and Antarctic Birds, Volume 3, Snipe to Pigeons*. Oxford University Press.

Johnstone, RE and G.M., Storr (1998) *Handbook of Western Australian Birds: Volume 1 – Non-passerines (Emu to Dollarbird).* Western Australian Museum, Perth, Western Australia.

Johnstone, RE and Storr, GM (2004) *Handbook of Western Australian Birds: Volume 2 – Passerines (Blue-winged Pitta to Goldfinch).* Western Australian Museum, Perth, Western Australia.

Menkhorst, P and F., Knight (2004) *A Field Guide to the Mammals of Australia, Second edition*.

Onshore Environmental (2014) *Consolidated Pilbara Vegetation Mapping*. Unpublished report prepared for BHP Pty Ltd.

Onshore Environmental (2015) Ta*rgeted Survey for Acacia sp. East Fortescue (surrounding OB31)*. Unpublished report prepared for BHP Pty Ltd

Pizzey, G and Knight, F (2007) *The Field Guide to the Birds of Australia*. Eighth Edition, Harper Collins, Sydney New South Wales.

Simpson K and Day N (2004). *A Field Guide to the Birds of Australia*. Penguin Books Australia Ltd, Melbourne.

Slater, P. Slater, P. and Slater, R. (2009) *The Slater Field Guide to Australian Birds*, 2nd edn. (Reed New Holland: Sydney.)

Spectrum Ecology (2021) *OB32 Surplus Water & Homestead Creek Wetting Front Flora and Vegetation Assessment*. Unpublished report prepared for BHP Pty Ltd.

Spectrum Ecology (2022) *East Ophthalmia & Ninga Detailed Flora & Vegetation Survey*. Unpublished report prepared for BHP Pty Ltd.

van Dyck, S and Strahan R (2008) *The Mammals of Australia – Third Edition*. Reed New Holland, Sydney.

van Vreeswyk, A.M.E, Payne, A.L, Leighton, K.A. and Hennig, P. (2004) *An inventory and condition survey of the Pilbara region, Western Australia*. Western Australian Department of Agriculture Technical Bulletin No. 92.

Wilson, S and Swan, G (2010) *A Complete Guide to Reptiles of Australia*. New Holland Publishers, Australia.

Wilson, S and Swan, G (2017) *A Complete Guide to Reptiles of Australia - Fifth Edition*. New Holland Publishers, Australia.

Figures

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Kilometers

BHP

ENVIRONMENTAL APPROVALS

N

AMENDMENT OF NVCP CPS 6924/3 OPHTHALMIA DAM MAINTENANCE

REGIONAL OVERVIEW

SCALE (A3): 1:40,000	DATUM: GDA2020/MGA50	FIGURE 1
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 04 February 2025	Dwg: NPI_006NVCP_001_RevB_0

BHP Newamn to Port Hedland Rail Line

Eastern Ridge

Ophthalmia Dam

Fortescue River

Newman

Great Northern Highway

Legend

Proposed Boundary for NVCP CPS 6924/4

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Legend

Proposed Boundary for NVCP CPS 6924/4

Broad Floristic Communities

- *Cenchrus Tussock Grassland
- *Cenchrus mid tussock grassland
- Acacia Low Open Woodland
- Acacia Low Woodland
- Acacia Open Shrubland
- Eucalyptus Open Woodland
- Eucalyptus Woodland
- Eucalyptus low woodland to low open woodland
- Triodia Hummock Grassland
- Triodia low hummock grassland
- Typha Sedges
- Open water
- Cleared

0 0.5 1 1.5 2
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BHP

ENVIRONMENTAL APPROVALS

N

AMENDMENT OF NVCP CPS 6924/3
OPHTHALMIA DAM MAINTENANCE
BROAD FLORISTIC COMMUNITIES

SCALE (A3): 1:18,000	DATUM: GDA2020/MGA50	FIGURE 2
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 04 February 2025	Dwg: NPI_006NVCP_002_RevA_0

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Proposed Boundary for NVCP CPS 6924/4

Conservation Significant Vertebrate Fauna

- Barn Swallow (Hirundo rustica) (EPBC Act and BC Act Migratory)
- Black-tailed Godwit (Limosa limosa) (EPBC Act and BC Act Migratory)
- Common Greenshank (Tringa nebularia) (EPBC Act and BC Act Migratory)
- Common Sandpiper (Actitis hypoleucos) (EPBC Act and BC Act Migratory)
- Fork-tailed Swift (Apus pacificus) (EPBC Act and BC Act Migratory)
- Glossy Ibis (Plegadis falcinellus) (EPBC Act and BC Act Migratory)
- Marsh Sandpiper (Tringa stagnatilis) (EPBC Act and BC Act Migratory)
- Pilbara Olive Python (Liasis olivaceus subsp. barroni) (EPBC Act and BC Act Vulnerable)
- Sharp-tailed Sandpiper (Calidris acuminata) (EPBC Act and BC Act Migratory)
- Wood Sandpiper (Tringa glareola) (EPBC Act and BC Act Migratory)

Vertebrate Habitat

- Drainage Area/ Floodplain
- Major Drainage Line
- Mulga Woodland
- Sand Plain
- Stony Plain
- Hillcrest/ Hillslope
- Cleared/ Disturbed

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Kilometers

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BHP ENVIRONMENTAL APPROVALS

AMENDMENT OF NVCP CPS 6924/3
OPHTHALMIA DAM MAINTENANCE
VERTEBRATE HABITAT AND SIGNIFICANT FAUNA

SCALE (A3): 1:18,000	DATUM: GDA2020/MGA50	FIGURE 3
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 04 February 2025	Dwg: NPI_006NVCP_003_RevA_0

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Appendices

Appendix 1: *East Ophthalmia & Ninga Detailed Flora & Vegetation Survey* (Spectrum Ecology, 2022)

Appendix 2: ***Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure*** **(Onshore Environmental, 2014)**

Appendix 3: *East Ophthalmia and Ninga Detailed Vertebrate Fauna Survey* (Biologic, 2022)

Appendix 4: Consolidated Fauna Habitat Mapping 2017 (Biologic Environmental Survey, 2017)