Application to Amend NVCP CPS 6141/1 Ophthalmia Exploration

Native Vegetation Clearing Permit Amendment Application Supporting Document

March 2024

Table of Contents

Tables

Figures

Appendices

1 INTRODUCTION

BHP Billiton 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 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 6141/1 for the purposes of mineral exploration, geotechnical and hydrogeological investigations and associated activities (**Figure 1**). The clearing period of this permit expires on 30 November 2024.

The full extent of these works is yet to be undertaken and therefore BHP is seeking to:

- Extend the permit duration to 30 November 2034;
- Extend the clearing period to 30 November 2029; and
- Extend the final reporting date to 30 November 2034.

BHP is also seeking to update the Permit Holder to BHP Iron Ore Pty Ltd.;

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 6141/1 to the Department of Energy, Mines, Industry Regulation and Safety (DMIRS).

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 EP Act.

1.1 LOCATION

The Amendment Application Area is located approximately 35 km west of Newman in the Pilbara region of Western Australia (**Figure 1**).

1.2 TENURE

The Amendment Application Area is located on State Agreement Mineral Lease 263SA.

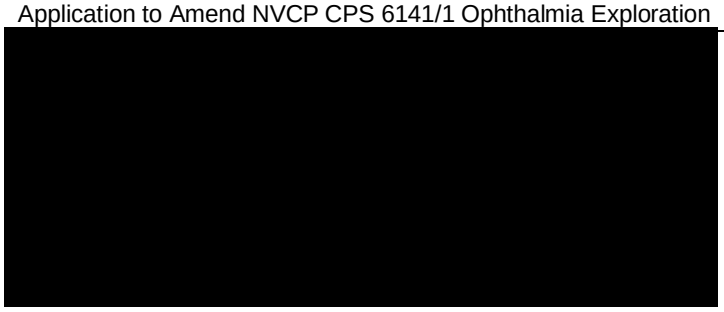
1.3 LOCAL GOVERNMENT JURISDICTION

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

1.4 PROPONENT

The Project is managed and operated by BHP Iron Ore on behalf of the owners, the Mount Goldsworthy Joint Venture (MGJV). The split between the partners of the MGJV is as follows:

- BHP Minerals Pty Ltd 85%
- Itochu Minerals and Energy Australia Pty Ltd 8%
- Mitsui Iron Ore Corporation Pty Ltd 7%



1.5 PROJECT DESCRIPTION

The proposed works will involve clearing for the purposes of mineral exploration, geotechnical and hydrogeological investigations and associated activities.

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	DMIRS
Permit Title	Ophthalmia Exploration Project
Area to be cleared	200 hectares (ha)
Amendment Application Area	8,327.95 ha
Purpose of the permit	Clearing for the purposes of mineral exploration, geotechnical and hydrogeological investigations and associated activities.
Tenure	Mineral Lease 263SA.
Clearing Duration	Until 30 November 2029
Permit Duration	Until 30 November 2034
Proposed Annual Reporting Date	01 October for the previous Financial Year
Proposed Final Reporting Date	30 November 2034
Application boundary	Map Reference: • EXP_025NVCP_001_RevA_0 • EXP_025NVCP_002_RevA_0 • EXP_025NVCP_003_RevA_0 BHP Shapefile D2 Reference: https://waio-dctm.bhp.com/D2/?docbase=bhpbio_od_prod&locateId=0b03c41a8471af9c&application=ManagedDocuments

Application Commitments	**Section**
Populations of Priority flora will be avoided by 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
Active Pebble-mouse mounds 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 unnamed non-perennial minor drainage line. 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. 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.

Clearing commenced in 2014 with a total of 6.13 ha cleared to the end of FY23 (BHP, 2023). No rehabilitation activities have been undertaken as all cleared areas are still required for the purpose for which they were cleared.

Clearing has been minimised by restricting activities to the minimal required for safety and equipment access. Populations of significant flora have been avoided using the BHP Project Environmental and Heritage Review (PEAHR) procedure. This internal BHP procedure authorises ground disturbing activities. No environmental offsets are required for this NVCP.

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 200 km north west of the Amendment Application Area. Mean daily evaporation at Wittenoom throughout the year is 8.6 mm/day (BoM, 2023b), 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:

- Hamersley subregion (PIL3) of the Pilbara region described as: "*Mountainous area of Proterozoic sedimentary ranges and plateaux, dissected by gorges (basalt, shale and dolerite). Mulga low woodland over bunch grasses on fine textured soils in valley floors, and Eucalyptus leucophloia over Triodia brizoides on skeletal soils of the ranges. The climate is semi-desert tropical, average 300 mm rainfall, usually in summer cyclonic or thunderstorm events. Winter rain is not uncommon. Drainage into either the Fortescue (to the north), the Ashburton to the south, or the Robe to the west. Subregional area is 6,215,092ha*" (Kendrick, 2001).

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

Boolgeeda: Stony lower slopes, level stony plains and narrow sub-parallel drainage floors, relief up to 20 metres (m). A common system in shallow valleys below hill systems such as Newman and Rocklea.

Egerton: Highly dissected hardpan plains, slopes and narrow drainage floors, relief up to 20 m.

Newman: Rugged high mountains, ridges and plateaux with near vertical escarpments of jaspilite, chert and shale, the second largest system in the survey area and prominent in southern parts (e.g. Ophthalmia Range, Hamersley Range), relief up to 450 m.

Platform: Narrow, raised plains and highly dissected slopes on partly consolidated colluvium below the footslopes of hill systems such as Newman, relief mostly up to about 30 m but occasionally considerably greater.

Rocklea: Rough hill and mountain tracts predominantly of basalt, the largest land system in the survey area and widespread throughout, relief up to 110 m.

Spearhole: Level to gently undulating hardpan wash plains with abundant to very abundant surface mantles of ironstone pebbles and prominent grove patterns of vegetation, widely spaced tributary drainage channels, low rises and dissected slopes with relief up to 35 m.

Tableland: Plateaux remnants, mesas, buttes, breakaways and lower plains (relief up to 60 m) of calcrete, similar to Oakover system, differing mainly in the vegetation it supports. A minor system restricted to a few locations in south central parts of survey area.

These Land Systems are well represented in their bioregions.

3.3 GEOLOGY AND SOILS

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

Fa13: Ranges of banded jaspilite and chert along with shales, dolomites, and iron ore formations; some areas of ferruginous duricrust as well as occasional narrow winding valley plains and steeply dissected pediments. This unit is largely associated with the Hamersley and Ophthalmia Ranges. The soils are frequently stony and shallow and there are extensive areas without soil cover: chief soils are shallow stony earthy loams (Um5.51) along with some (Uc5.11) soils on the steeper slopes. Associated are (Dr2.33 and Dr2.32) soils on the limited areas of dissected pediments, while (Um5.52) and (Uf6.71) soils occur on the valley plains.

Fa14: Steep hills and steeply dissected pediments on areas of banded jaspilite and chert along with shales, dolomite, and iron ore formations; some narrow winding valley plains: chief soils are shallow stony earthy loams (Um5.51) along with some (Uc5.11) soils on the steeper slopes. (Dr2.33, Dr2.32) soils which occur on the pediments are more extensive in this unit than in unit Fa13. (Um5.52) and (Uf6.71) soils occur on the valley plains.

3.4 FLORA, VEGETATION AND FAUNA

Three biological surveys have been completed over the proposed Amendment Application Area:

- *Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure* (Onshore Environmental, 2014) (**Appendix 1**);
- *Consolidated Fauna Habitat Mapping* (Biologic Environmental Survey, 2017) (**Appendix 2**); and
- *Ophthalmia Flora, Vegetation and Fauna Assessment* (ENV Australia, 2010) (**Appendix 3**)**.**

3.4.1 Vegetation Communities

The Amendment Application Area is located within the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion (Department of Environment and Heritage, 2005). According to the Government of Western Australia (2013), these bioregions are more than 99.9% vegetated (**Table 2**). The vegetation within the Amendment Application Area is classified as the following vegetation associations, as mapped by Beard (1975):

18 Low woodland; mulga (*Acacia aneura*)
82 Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

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 (Shepherd *et al.*, 2001)

Vegetation Association	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	Pre-European % in IUCN Class I-IV Reserves
Pilbara IBRA Bioregion	17,808,657	17,733,584	99.58	6.34
Vegetation type 18 in Western Australia	19,890,664	19,843,409	99.76	2.13
Vegetation type 18 in the Pilbara IBRA Bioregion	676,556	672,424	99.39	16.78
Vegetation association 82 within Western Australia	2,565,901	2,553,217	99.51	10.25
Vegetation association 82 within the Pilbara IBRA	2,563,583	2,550,899	99.51	10.26

A total of three broad floristic formations with five vegetation associations have been described and mapped within the Amendment Application Area (**Figure 2 and Table 3**).

The Onshore Environmental (2014) *Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure* (**Appendix 1**) undertook a detailed review of all previous flora and vegetation surveys across BHP's Pilbara operations (162 baseline flora and vegetation surveys between 2004 and 2013). This review was supported by field visits where the analysis indicated that further information was required to confirm the exact vegetation associations.

Table 3 Vegetation associations of the Amendment Application Area (Spectrum Ecology and Spatial, 2022; Onshore 2014; and Astron, 2013)

Broad Floristic Formation	Vegetation Association Description	
Acacia Low Woodland	FP AcaoAaEx Erff T	Low Woodland of *Acacia catenulata* subsp. *occidentalis*, *Acacia aptaneura* and *Eucalyptus xerothermica* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii* over Open Hummock Grassland of *Triodia pungens* on red sandy loam on floodplains.
Themeda Tussock Grassland	ME TtChfEua ExEvCh PlApaApyp	Tussock Grassland of *Themeda triandra*, *Chrysopogon fallax* and *Eulalia aurea* with Low Open Woodland of *Eucalyptus xerothermica*, *Eucalyptus victrix* and *Corymbia hamersleyana* and Shrubland of *Petalostylis labicheoides*, *Acacia pachyacra* and *Acacia pyrifolia* var. *pyrifolia* on red sandy loam on medium 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.
	HC TsTp EkkEg	Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Trioidia pungens* with Very Open Mallee of *Eucalyptus kingsmillii* subsp. *kingsmillii* and *Eucalyptus gamophylla* on red sandy loam on hill crests and upper hill slopes.
	HS TpTs CdEll AancAbAten	Hummock Grassland of *Triodia pungens* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of *Corymbia deserticola* subsp. *deserticola* and *Eucalyptus leucophloia* subsp. *leucophloia* over Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia tenuissima* on red loamy sand on lower hill slopes and footslopes.

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

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

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 8 km southwest and 10 km northwest.

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 good.

3.4.2 Significant Flora

No species listed under the *Environment Protection and Biodiversity Conservation Act*, *1999* (EPBC Act) or gazetted as Threatened Flora species under the *Biodiversity Conservation Act, 2016* (BC Act) were identified within the Amendment Application Area.

Three Priority Flora have been identified within the Amendment Application Area (**Figure 2**):

- *Acacia subtiliformis* (Priority 3);
- *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) (Priority 3); and
- *Rhagodia* sp. Hamersley (M. Trudgen 17794) (Priority 3).

Populations of Priority flora will be avoided using a 10 m buffer, where practicable.

3.4.3 Weeds

Two 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]
**Bidens bipinnata*	Bipinnate Beggartick	Unknown and Rapid	No
**Cenchrus ciliaris*	Buffel Grass	High and Rapid	No
**Malvastrum americanum*	Spiked Malvastrum	High and Rapid	No

3.4.4 Fauna Habitats and Significant Fauna

Biologic (2017) and ENV Australia (2010) identified the following four vertebrate fauna habitats within the Amendment Application Area (**Figure 4**):

- **Calcrete Plain:** The vegetation occurring on calcrete differs from that of the surroundings, largely due to the differences in soil type. The substrate is white and consists of skeletal soil, gravel and small jagged pebbles. Trees are isolated and the shrub layer tends to be sparse, with a low hummock grassland (*Triodia* sp.) dominant.
- **Drainage Area / Floodplain:** Characterised by *Eucalyptus xerothermica* and *Corymbia hamersleyana* woodland over broad-leafed *Acacia* shrubland on sandy loam soils sometimes with exposed rocky areas. These can have high vegetation density, complexity and diversity, and because they tend to occur on accretional or depositional areas, often have deeper and richer soils than other fauna habitats. Grasses tend to be dominated by tussock grasses rather than spinifex, or the weed Buffel Grass **Cenchrus ciliaris*.
- **Hillcrest / Hillslope:** These fauna habitats tend to be more open and structurally simple due to their recent depositional history than other fauna habitats, and are dominated by varying species of spinifex. A common feature of these habitats is a rocky substrate, often with exposed bedrock, and skeletal red soils. These are usually dominated by *Eucalyptus* woodlands, *Acacia* and *Grevillea* scrublands and *Triodia* spp. low hummock grasslands.
- **Mulga Woodland:** This habitat includes woodlands and other ecosystems in which Mulga (*Acacia aneura*) is dominant, either as the principal *Acacia* species or mixed with others. It consists of disintegrating groves on stony soils with spinifex. This habitat type is grouped with other habitat occurring on the plains; however it is noted that small groves of Mulga occur on ridgelines.

The Biologic (2017) *Consolidated Fauna Habitat Mapping BHP Billiton Iron Ore Pilbara Tenure* (**Appendix 2**) undertook a detailed review of all previous fauna surveys across BHP's Pilbara operations and the outputs from the Onshore Environmental (2014) Consolidation project. This review was supported by field visits where the analysis indicated that further information was required to confirm the fauna habitats.

The Project resolved the inconsistencies between previous mapping and created one consolidated regional GIS database which:

- Serves as BHP's base line fauna habitat dataset;
- 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.

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

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

- Western Pebble-mound Mouse (*Pseudomys chapmani*) (DBCA Priority 4).

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

Based on the occurrence of the habitat types and significant fauna species previously recorded in the vicinity an additional seven significant fauna 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):

- Fork-tailed Swift (*Apus pacificus*) (Migratory, EPBC Act; Schedule 5, BC Act);
- Ghost Bat (*Macroderma gigas*) (Vulnerable EPBC Act; Vulnerable BC Act);
- Grey Falcon (*Falco hypoleucos*) (Vulnerable, EPBC Act; Vulnerable, BC Act)
- Peregrine Falcon (*Falco peregrinus*) ('Other Specially Protected Fauna' BC Act);
- Pilbara Flat-headed Blind-snake (*Anilios ganei*) (DBCA Priority 1);
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (Vulnerable EPBC Act; Vulnerable BC Act); and
- Pilbara Olive Python (*Liasis olivaceus barroni)* (Vulnerable, EPBC Act; Vulnerable, BC Act);

An assessment of the potential impact of the proposed clearing on the species of significant fauna that may occur in the Amendment Application 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					
Fork-tailed Swift (*Apus pacificus*)	Migratory (EPBC Act) Schedule 5 (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.	Possible	**Negligible** As this species is entirely aerial and not reliant on terrestrial habitats, the impact to this species is considered to be negligible.
Grey Falcon (*Falco hypoleucos*)	Vulnerable (EPBC Act) Vulnerable (BC Act)	The Grey Falcon occurs at low densities across inland Australia. This species frequents timbered lowlands, particularly Acacia shrublands that are crossed by tree-lined drainage systems (Threatened Species Scientific Committee, 2020). The species also frequents spinifex and tussock grassland.	Possible nesting habitat occurs for this species in the large trees found in the Drainage Area habitat of the Amendment Application Area.	Possible	**Low** The Grey Falcon could potentially nest in the taller trees of the Drainage Area habitat within the Amendment Application Area. Given that the habitat for this species occurs extensively throughout the Pilbara and its ability to egress from the area, the proposed clearing activities will have negligible impact on the Grey Falcon.
Peregrine Falcon (*Falco peregrinus*)	Other Specially Protected Fauna (BC Act)	The Peregrine Falcon is uncommon but wide ranging across Australia. They occur mainly along coastal cliffs, rivers and ranges as well as wooded watercourses and lakes. The Peregrine Falcon nests primarily on cliffs, granite outcrops and quarries, and feed mostly on birds (Johnstone and Storr 1998).	There are no suitable breeding sites in the Amendment Application Area for this species. Although it may forage in this area as part of a wider home range.	Possible	**Low** The proposed clearing activities are unlikely to impact on the Peregrine Falcon as it has the ability to egress from areas being disturbed. More suitable habitat for this species occurs outside of the Amendment Application Area.
Mammals					
Ghost Bat (*Macroderma gigas*)	Vulnerable (EPBC Act) Vulnerable (BC Act)	Ghost Bats are patchily distributed across most of northern Australia, however the recent contraction in the distribution in central Australia has left the Pilbara population of ghost bats isolated by extensive sandy deserts (Worthington-Wilmer et al., 1994). They are generally associated with Gorge / Gully or drainage line habitats, requiring an undisturbed cave, deep fissure or disused mine shaft in which to roost. The Ghost Bat forages in areas of open woodland (Churchill, 2008).	There are no caves suitable for roosting sites in the Amendment Application Area. This species may forage over parts of the Amendment Application Area sporadically as part of a larger home range.	Possible	**Low** This species may forage over the habitats within the Amendment Application Area and surrounds. As no suitable roosting habitat occurs within the Amendment Application Area, the Ghost Bat would not be dependant on the habitats present within the Amendment Application Area and are unlikely to be impacted from proposed activities.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Pilbara Leaf-nosed Bat (*Rhinonicteris aurantius*)	Vulnerable (EPBC Act) Vulnerable (WC Act)	The Pilbara Leaf-nosed Bat requires deep caves or disused mine shafts in which to roost (van Dyck and Strahan, 2008), at least in the dry season. These bats have been recorded in isolated populations in the Pilbara, and are present only where suitable roosting niches are available. They are generally sparsely distributed. The Pilbara Leaf-nosed Bat forages in areas of open woodland (Churchill, 2008).	There are no caves suitable for roosting sites in the Amendment Application Area. This species may forage over parts of the Amendment Application Area sporadically as part of a larger home range.	Possible	**Low** This species may forage over the habitats within the Amendment Application Area and surrounds. No suitable roosting habitat has been identified within the Amendment Application Area and therefore the Pilbara Leaf-nosed Bat would not be dependant on the habitats present within the Amendment Application Area and are therefore unlikely to be impacted from proposed activities.
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 / Hillslope habitat provides suitable habitat for this species.	Recorded	**Low** This species was recorded and it is likely to utilise the Hillcrest / Hillslope habitats within the Amendment Application Area. While the Hillcrest / Hillslope may be utilised by the Western Pebble-mound Mouse, the proposed area for clearing is small in a regional context and is contiguous with habitats in the local and regional area. Active Pebble-mouse mounds 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)	Suitable habitat for this species occurs in the Amendment Application Area, although limited records make habitat relevance hard to assess. However a recording was made by Outback Ecology (2009) within an alluvial floodplain. This habitat type (Drainage Area / Floodplain) occurs in the Amendment Application Area. The Hillcrest / Hillslope habitats of the Amendment Application Area may also provide suitable habitat for this species, so it may disperse and forage through the Amendment Application Area.	Possible	**Low** It is possible that the grading of access tracks and drill pads may result in a localised impact on this species' habitat. Any potential impact is likely to be moderated by the minimal disturbance associated with the clearing activities, and extensive undisturbed areas. Given the regional distribution of Pilbara Flat-headed Blind Snake, the loss of some habitat from the proposed clearing associated with the Amendment Application Area is considered as being low when compared to the expansive areas of suitable habitat remaining and throughout in the Pilbara.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
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, wetlands and drainage lines, 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).	This species may utilise the Drainage Area / Floodplain habitat of the Amendment Application Area in a transitory nature when conditions are suitable.	Possible	**Low** The impact upon this species is likely to be low as there are larger areas of suitable rocky habitat and drainage line habitat in a similar or better condition adjacent to the Amendment Application Area and in the wider area.

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).

The Western Creek (a non-perennial creek) runs through the Application Area. There are also a number of other minor drainage lines that run south-easterly across the Application Area and feed into the Western Creek.

Where practicable, existing cleared tracks will be used to cross the unnamed non-perennial minor drainage line. 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.	Three Priority flora species have been recorded in the Amendment Application Area; however, the vegetation associations these are found within are considered to be well represented in the Pilbara bioregion. The records of identified Priority flora populations 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 four broad fauna habitat types within the Amendment Application Area (**Figure 3**).

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

One fauna species of significance have been recorded from within the Amendment Application Area with an additional seven 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.	No BC Act protected species have been recorded from the Amendment Application and six 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; • There are no key habitat features (caves and waterholes) within the Amendment Application Area; • 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.	One Priority fauna species has been recorded within the Amendment Application Area and one Priority fauna species is considered 'possible' or 'likely' to occur within the Amendment Application Area. 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 • Active mounds of the Western Pebble-mound Mouse 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 significant fauna, however similar habitat in the same or better condition is widespread adjacent the Amendment Application Area.	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 in the area surrounding 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.

Principle	Criteria	Assessment	Outcome
	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.
	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 6141/1 are associated with a TECs or PECs (Onshore Environmental, 2014). The closest PEC is more than 8 km southwest 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 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 habitat and vegetation within the Amendment Application Area is 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 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.

A non-perennial creek (Western Creek) and a number of other minor drainage lines run south-easterly across the Amendment Application Area.

Where practicable, existing cleared tracks will be used to cross the unnamed non-perennial minor drainage line. 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 permanent watercourses or wetlands are located within with the Amendment Application Area. A non-perennial creek (Western Creek) and a number of other minor drainage lines run south-easterly across the Amendment Application Area. Where practicable, existing cleared tracks will be used to cross the unnamed non-perennial minor drainage line. 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	Not 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 permanent watercourses or wetlands are located within with the Amendment Application Area. A non-perennial creek (Western Creek) and a number of other minor drainage lines run south-easterly across the Amendment Application Area. Where practicable, existing cleared tracks will be used to cross the unnamed non-perennial minor drainage line. 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	Not 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.	Due to the small scale of clearing this project is not considered likely to adversely alter water tables, and as such will not impact on any ecological communities that are wetland or groundwater dependent.	Not at variance with clearing principle.
	f4) Native vegetation should not be cleared if it is growing in other watercourses or wetlands.	No permanent watercourses or wetlands are located within with the Amendment Application Area or in association with any other immediate watercourses or wetland in the surrounding area.	Not 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 localised 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

Three 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 65 km north 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 65 km north 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.

Appropriate surface water management practices will be implemented to minimise erosion and minimise potential impacts on the quality of surface water. The clearing is unlikely to cause deterioration in the quality of any surface or underground water.

Where practicable, existing cleared tracks will be used to cross the unnamed non-perennial minor drainage line. 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.	The clearing of native vegetation is not considered likely to alter the quality of surface or ground water within the Amendment Application Area due to the limited nature of the clearing 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.	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.	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 Amendment Application Area is located within the Kyiyaparli Native Title Claim (WC2005/006). Ethnographic and archaeological surveys of the Application Area have been conducted in consultation with the Nyiyaparli and Ngarlawangga people. A number of heritage sites were identified within the Amendment Application Area (site details are not provided here out of respect of the wishes of the Traditional Owners).

If any heritage site cannot practicably be avoided, BHP Iron Ore 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 6141/1 authorises the clearing of up to 200 ha. To date BHP has cleared 6.13 ha and the clearing of the remaining 193.87 ha within an Amendment Application Area of 8,327.95 ha is unlikely to have any significant negative impacts on biodiversity and environmental values in the area.

9 REFERENCES

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

BHP (2023) *BHP Iron Ore Annual Environmental Report July 2022 – June 2023*.

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

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..

Churchill, S. K. (2008). 'Australian Bats.' (Allen and Unwin: Sydney).

CSIRO (2013) *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.

ENV Australia (2010) *Ophthalmia Flora, Vegetation and Fauna Assessment*. Unpublished Report for BHP Billiton Iron Ore.

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.

Kendrick, P and McKenzie, N (2001) *Pilbara 3 (PIL3 – Hamersley subregion). In: A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002*. Department of Conservation and Land Management, 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.

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

Thackway and Cresswell (1995) *An Interim Biogeographic Regionalisation for Australia: A framework for setting priorities in the National Reserves System Cooperative Program Version 4*. Australian Nature Conservation Agency, Canberra.

Threatened Species Scientific Committee (2020). *Conservation Advice Falco hypoleucos Grey Falcon*. Department of Agriculture, Water and the Environment.

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.

Figures

BHP

ENVIRONMENTAL APPROVALS

RENEWAL OF NVCP CPS 6141/1 OPHTHALMIA EXPLORATION

REGIONAL OVERVIEW

SCALE (A3): 1:60,000	DATUM: GDA2020/MGA 50	FIGURE 1
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 21 February 2024	Dwg: EXP_025NVCP_001_RevA_0

N

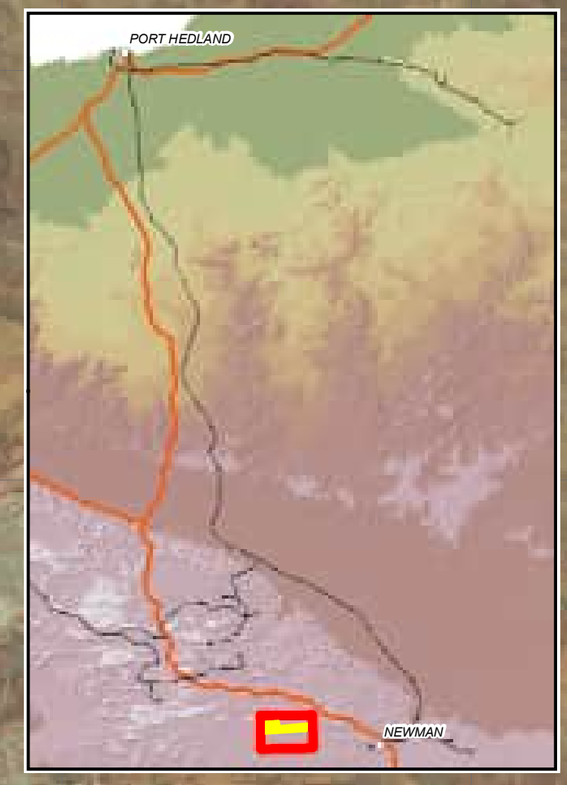
0 1 2 3 4
Kilometers

728000 732000 736000 740000 744000 748000

7428000 7424000 7420000 7416000

Legend

Proposed boundary for CPS 6141/2



Document Path: \\entper-fil01\2groups\AssetDev\Env A&I\01 Approvals\11 Geoscience\02 NVCP\025 Renewal of CPS 6141_1 Ophthalmia\05 Spatial\EXP_025NVCP_001_RevA_0.mxd

BHP

ENVIRONMENTAL APPROVALS

RENEWAL OF NVCP CPS 6141/1 OPHTHALMIA EXPLORATION

VEGETATION ASSOCIATIONS AND SIGNIFICANT FLORA

SCALE (A3): 1:60,000	DATUM: GDA2020/MGA 50	FIGURE 2
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 21 February 2024	Dwg: EXP_025NVCP_002_RevA_0

N

0 1 2 3 4
Kilometers

728000 732000 736000 740000 744000 748000

7428000 7424000 7420000 7416000

Legend

Proposed boundary for CPS 6141/2

Significant Flora

- Acacia subtiliformis (Priority 3)
- Goodenia sp. East Pilbara (A.A. Mitchell PRP 727) (Priority 3)
- Rhagodia sp. Hamersley (M. Trudgen 17794) (Priority 3)

Vegetation Associations (Onshore, 2014)

- Acacia Low Woodland (FP AcaoAaEx Erff Tp)
- Themeda Tussock Grassland (ME TtChfEua ExEvCh PlApaApyp)
- Triodia Hummock Grassland (CP TwTa Ese AbPlApyp)
- Triodia Hummock Grassland (HC TsTp EkkEg)
- Triodia Hummock Grassland (HS TpTs CdEll AancAbAten)

Document Path: \\entper-fil01\2groups\AssetDev\Env A&I\01 Approvals\11 Geoscience\02 NVCP\025 Renewal of CPS 6141_1 Ophthalmia\05 Spatial\EXP_025NVCP_003_RevA_0.mxd

BHP

ENVIRONMENTAL APPROVALS

RENEWAL OF NVCP CPS 6141/1 OPHTHALMIA EXPLORATION

VERTEBRATE HABITAT AND SIGNIFICANT FAUNA

SCALE (A3): 1:60,000	DATUM: GDA2020/MGA 50	FIGURE 3
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 21 February 2024	Dwg: EXP_025NVCP_003_RevA_0

N

0 1 2 3 4
Kilometers

728000 732000 736000 740000 744000 748000

7428000 7424000 7420000 7416000

Legend

Conservation Significant Vertebrate Fauna

- Pseudomys chapmani (Western Pebble-mound Mouse) (Priority 4)

Vertebrate Habitat

- Calcrete Plain
- Drainage Area/ Floodplain
- Hillcrest/ Hillslope
- Mulga Woodland
- Proposed boundary for CPS 6141/2

Document Path: \\entper-fil01\2groups\AssetDev\Env A&I\01 Approvals\11 Geoscience\02 NVCP\025 Renewal of CPS 6141_1 Ophthalmia\05 Spatial\EXP_025NVCP_003_RevA_0.mxd

Appendices

Appendix 1: Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure (Onshore Environmental, 2014)

Appendix 2: Consolidated Fauna Habitat Mapping 2017 (Biologic Environmental Survey, 2017)

Appendix 3: Ophthalmia Flora, Vegetation and Fauna Assessment (ENV Australia, 2010)