Application for a new NVCP at Boodarie to replace CPS 2496/7

Native Vegetation Clearing Permit Application Supporting Document

July 2023

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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:
  - Whaleback hub located approximately two kilometres (km) west of Newman Township and consists of Mount Whaleback, and Orebodies 29, 30 and 35; and
  - Eastern Ridge hub located approximately 5 km east of Newman Township and consists of Orebodies 23, 24, 25 and 32;
- Mining Area C / Southern Flank (MAC) located approximately 90 km north west of Newman Township;
- Jimblebar Operations consisting of Wheelarra Hill (Jimblebar) Mine, Orebody 18 and Orebody 31 are located approximately 35 km east of Newman Township;
- Yandi Mine located approximately 100 km north west of Newman Township.

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

BHP currently holds Native Vegetation Clearing Permit (NVCP) CPS 2496/7 for the purposes of geotechnical investigations, accommodation camp, utilities installation, access to existing poles, road upgrades, staging, laydown activities, access roads and associated works (**Figure 1**). The permit expires on 10 August 2023.

A delay in obtaining updated letters of authority to access non-BHP tenure has delayed the application to renew this permit leaving insufficient time for the NVCP to be amended.

As the full extent of these works is yet to be undertaken BHP therefore seeking a new NVCP to allow for clearing of up to 95 hectares (ha) to replace CPS 2496/7 where this permit intersects BHP tenure.

In accordance with Part V Division 2 of the *Environmental Protection Act 1986* (EP Act), BHP hereby refers the application for a new NVCP to replace CPS 2496/7 to the Department of Water and Environmental Regulation (DWER).

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 Application Area is located approximately 2 km west of Port Hedland in the Pilbara region of Western Australia (**Figure 1**).

1.2 TENURE

The Application Area is located on:

- General Purpose Leases G45/65 to G52/200, G45/235 to G52/240 and G45/256.
- Miscellaneous Licence L45/129.
- Crown Lease I126342.
- Crown Lease K693814.
- Crown Lease K693809.
- Crown Lease J998595.
- Crown Lease M653978.

1.3 LOCAL GOVERNMENT JURISDICTION

The Application Area is located within the Town of Port Hedland.

1.4 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	DWER
Permit Title	Boodarie NVCP
Area to be cleared	95 hectares
Application Area	1,407.9 hectares
Purpose of the permit	Clearing for the purposes of geotechnical investigations, accommodation camp, utilities installation, access to existing poles, road upgrades, staging, laydown activities, access roads and associated works.
Tenure	The Application Area is located on: • General Purpose Leases G45/65 to G52/200, G45/235 to G52/240 and G45/256. • Miscellaneous Licence L45/129. • Crown Lease I126342: LOT 125 ON PLAN 219861 (BOODARIE 6722) • Crown Lease K693814: Pilbara Port Authority Lease, Finucane Island Utah Jild Point PPA Lot 370 (P015) on Deposited Plan 35619 (Volume LR3118 Folio 753) BHPBDRI Packet 110 (MGSA) (MGJV) • Crown Lease K693809: Pilbara Port Authority Lease, Pace Wharf Lot 370 on Deposited Plan 35619 (Volume LR3118 Folio 753) PPA (MGJV) (MGSA) Packet 111 (previously 3116/6163 & 3116/6169 • Crown Lease J998595: LOT 3000 ON PLAN 51079 (FINUCANE 6722) • Crown Lease M653978: Lots 321, 322, 323, 324 on DP 74344 (Lot 325 superseded), Lot 103 on DP 408102 and Lot 102 on DP 408103. Vol/Fol: 3164/492, 3164/493, 3164/494, 3164/495, 3172/909 and 3172/913. Railway line from Finucane Island to Goldsworthy Junction (MGJV) (MGSA) Packet 124
Permit Duration	Until 30 November 2028
Proposed Annual Reporting Date	01 October for the previous Financial Year
Proposed Final Reporting Date	30 November 2028
Application boundary	Map Reference: • PORT_007NVCP_001_RevA_0 • PORT_007NVCP_002_RevA_0 • PORT_007NVCP_003_RevA_0 BHP Shapefile 1 Doc Reference: https://waio-dctm.bhp.com/D2/?docbase=bhpbio_od_prod&locateId=0b03c41a8430b951&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
Where practicable, existing cleared tracks will be used to cross drainage lines. 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

2 ASSOCIATED APPROVALS

Any other additional approvals will be sought as required.

3 EXISTING ENVIRONMENT

3.1 CLIMATE

Port Hedland Airport (meteorological site 004032) is the closest Bureau of Meteorology (BoM) station to the Mooka Ore Car Repair Shop. Average annual rainfall at Port Hedland Airport is 318.5 mm with a dry season (mean monthly rainfall <5 mm) between August and November and a wet season (mean monthly rainfall between 54.8 mm and 90.2 mm) between January and March (BoM, 2023a). The highest and lowest annual rainfall recorded for Port Hedland was 713.2 mm (recorded in 2013) and 44.5 mm (recorded in 1944), respectively (BoM, 2023a). The highest ever recorded daily rainfall for Port Hedland was recorded on 27 January 1967 with 387.1 mm (BoM, 2023a) which is 68.6 mm over the current mean annual rainfall for Port Hedland. The mean maximum temperatures in summer months (October to April) is 35.1°C to 36.8°C, and mean maximum temperatures in winter (May to September) are between 27.4°C and 32.5°C at Port Hedland Airport (BoM, 2023a).

Wittenoom meteorological site (005026) is the closest station to the Application Area that records daily evaporation. Wittenoom is located approximately 90 km north west of the 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, 2023b).

3.2 BIOREGION, LANDFORMS AND LAND SYSTEMS

The Application Area is situated in the following biogeographic subregion:

- Roebourne subregion (PIL4) of the Pilbara region described as: "*Quaternary alluvial and older colluvial coastal and sub-coastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of Acacia stellaticeps or A. pyrifolia and A. inaequilatera. Uplands are dominated by Triodia hummock grasslands. Ephemeral drainage lines support Eucalyptus victrix or Corymbia hamersleyana woodlands. Samphire, Sporobolus and mangal occur on marine alluvial flats and river deltas. Resistant linear ranges of basalts occur across the coastal plains, with minor exposures of granite. Islands are either Quaternary sand accumulations, or composed of basalt or limestone, or combinations of any of these three. Climate is arid (semi-desert) tropical with highly variable rainfall, falling mainly in summer. Cyclonic activity is significant, with several systems affecting the coast and hinterland annually. Subregional area is 2, 008, 983ha.*" (Kendrick and Stanley, 2001).

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

Littoral: Bare coastal mudflats subject to occasional tidal inundation, minor samphire flats, sandy plains and islands, mangrove outer margins, coastal dunes and beaches.

Uaroo: Broad, level sandy surfaced plains, minor pebbly plains and tracts receiving sheet flow, relief mostly less than 10 m.

These Land Systems are well represented in the Pilbara.

3.3 GEOLOGY AND SOILS

Soils of the Pilbara region have been defined and mapped at a scale of 1:2,000,000 by Bettenay *et al.* (1967). The following soil units occur in the Application Area, based on mapping by Bettenay *et al*. (1967):

AB19: "Extensive sandy plains: chief soils are red earthy sands (Uc5.21) with extensive areas of red earths (Gn2.12) and with some hard red soils (Dr) along creek lines. Similar to unit AB21 but without sandstone residuals."

Lh1: "Coastal plains mainly beyond marine flooding influence: main soils are pedal calcareous earths (Gc2.22) with some associated highly calcareous earths (Gc1.12). On the seaward side are firstly samphire flats (Gc1.1) and then bare saline mud (Uf). Calcareous dunes (Uc1.11) commonly occur on the seaward edge of the plains."

3.4 FLORA, VEGETATION AND FAUNA

Twenty two flora and vegetation surveys, 17 weed surveys and 14 vertebrate fauna surveys have been undertaken across the Application Area between 2008 and 2020. Primary surveys for the Application Area:

- *BHP Western Australian Iron Ore Windfence Flora and Fauna Assessment Level 1 Fauna and Reconnaissance Flora Survey* (GHD, 2020) (**Appendix 1**).
- *Port Hedland Regional Flora and Vegetation Assessment* (ENV, 2011a) (**Appendix 2**);
- *Consolidated Fauna Habitat Mapping 2017* (Biologic, 2017) (**Appendix 3**); and
- *Port Hedland Regional Fauna Assessment* (ENV, 2011b) (**Appendix 4**).

3.4.1 Vegetation Communities

The 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), the bioregion is 99.9% vegetated (**Table 2**). The vegetation within the Application Area is classified as the following vegetation associations, as mapped by Beard (1975):

43 Low forest; mangroves (Kimberley) or thicket; mangroves (Pilbara).
117 Hummock grasslands, grass steppe; soft spinifex.
127 Bare areas; mudflats.
589 Mosaic: Short bunch grassland - savanna /grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex soft spinifex.
647 Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex.

There is more than 85% of the pre-European vegetation remaining of these vegetation associations (**Table 2**).

The 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 Application Area (Government of Western Australia, 2013)

Vegetation Sub-Association	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	Pre-European % in IUCN Class I-IV Reserves
Pilbara IBRA Bioregion	17,808,657.06	17,733,583	99.58	6.34
Vegetation Association 43 within Western Australia	193,260.12	175,893.26	91.01	20.83
Vegetation Association 43 within the Pilbara Bioregion	17,053.31	14,708.68	86.25	0.01
Vegetation Association 117 within Western Australia	897,107.76	883,703.73	98.51	13.87
Vegetation Association 117 within the Pilbara Bioregion	82,705.78	78,096.64	94.43	20.04
Vegetation Association 127 within Western Australia	716,160.82	691,516.27	96.56	8.02
Vegetation Association 127 within the Pilbara Bioregion	177,749.75	159,595.04	89.79	0.01
Vegetation Association 589 within Western Australia	806,985.08	802,646.84	99.46	1.60
Vegetation Association 589 within the Pilbara Bioregion	728,768.20	724,695.82	99.44	1.77
Vegetation Association 647 within Western Australia	195,859.95	191,710.98	97.88	0.00
Vegetation Association 647 within the Pilbara Bioregion	195,859.95	191,710.98	97.88	0.00

A total of nine broad floristic communities with 16 vegetation associations have been described and mapped within the Application Area (**Figure 2 and Table 3**). None of these vegetation associations are representative of a Threatened Ecological Community (TEC) or Priority Ecological Community (PEC) (ENV, 2011a and GHD, 2020). The closest PEC is more than 75 km to the south west.

The ENV (2011a) *Port Hedland Regional Flora and Vegetation Assessment* (**Appendix 2**) undertook a detailed review of all previous flora and vegetation surveys across Port Hedland. This review was supported by field visits where the analysis indicated that further information was required to confirm the exact vegetation associations.

The distinct mapped broad floristic communities and vegetation associations identified within the Application Area extend or occur beyond the proposed 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 Application Area were affiliated with any TECs or PECs and there are no vegetation associations within the Application Area that would be likely to be included in any updates to TEC or PEC listings.

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

Table 3: Vegetation associations of the Application Area (ENV, 2011a and GHD, 2020)

Broad Floristic Community	Vegetation Association	Vegetation Association Description
Beach	Beach	Unvegetated shoreline
Dune	Dune A	Scattered *Acacia bivenosa* shrubs over a low open *Crotalaria cunninghamii* shrubland over a **Cenchrus ciliiaris* tussock grassland over scattered **Aerva javanica* herbs.
	Dune C	A low open *Acacia stellaticeps*, *Acacia bivenosa* and *Acacia ampliceps* shrubland over a *Spinifex longifolius* and **Cenchrus ciliaris* open grassland over scattered *Gomphrena canescens* herbs.
Drainage	Drainage A	A low open *Eucalyptus victrix* woodland over a high open *Acacia ampliceps* and *Acacia trachycarpa* shrubland over a low open *Acacia stellaticeps*, *Pluchea ferdinandi-muelleri* and *Corchorus incanus* subsp. *incanus* shrubland over a *Triodia epactia* hummock grassland over an *Aristida holathera* var. *latifolia*, *Eriachne obtuse* and **Cenchrus ciliaris* tussock grassland.
	Drainage B	A low open *Eucalyptus victrix* woodland over a high open *Acacia ampliceps* shrubland over a low open *Acacia stellaticeps* and *Pluchea ferdinandi-muelleri* shrubland over a closed *Triodia epactia* and *Triodia secunda* hummock grassland over an open *Eriachne obtusa*, *Aristida holathera* var. *latifolia* and **Cenchrus ciliaris* tussock grassland.
	Major Drainage Line A	Scattered low *Eucalyptus victrix* trees over a high open *Melaleuca argentea*, *Acacia ampliceps* and *Acacia trachycarpa* shrubland over scattered *Adriana tomentosa* var. *tomentosa* and *Pluchea ferdinandi-muelleri* shrubs over open *Triodia epactia* hummock grassland.
Grassland	Grassland A	*Triodia secunda* and *Triodia epactia* hummock grassland.
Other	OT AbApAc	Shrubland of *Acacia bivenosa*, *Acacia pyrifolia* and *Acacia colei* over **Cenchrus ciliaris* (Buffel Grass), *Eragrostis falcata* and *Eragrostis eriopoda* open tussock grasses over mixed herbs on embankment soil/large boulders and gravel. Other associated species include *Cleome viscosa* **Aerva javanica*, *Enchylaena tomentosa*, *Ipomoea pes-caprae* and *Bonamia media*.
Mangrove	Mangrove M	A high closed *Rhizophora stylosa* and *Avicennia marina* shrubland.
Saline Flat and Marsh	SF - Am (VT01)	Low open forest of *Avicennia marina* (mangrove) on dark grey clay with some sand patches on tidal saline flats influenced by tidal inundation. VT01 does have tidal inundation in very high tides, however, influenced by road and rail line infrastructure.
Samphire	Samphire B	Scattered *Avicennia marina* shrubs over a low open *Tecticornia halocnemoides* subsp. tenuis, *Tecticornia halocnemoides* and *Trianthema turgidifolia* shrubland.
Sandplain	Sandplain A	Low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/*Triodia epactia* and *Triodia secunda* hummock grasslands mosaic.
	Sandplain B	An open *Acacia colei* var. *colei* shrublands over low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands mosaic.
	Sandplain C	Low open *Corymbia flavescens* woodland over open *Acacia colei* var. *colei* shrubland over low *Acacia stellaticeps* shrubland over *Triodia epactia* hummock grassland/ low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/ *Triodia epactia* and *Triodia secunda* hummock grasslands mosaic.

Broad Floristic Community	Vegetation Association	Vegetation Association Description
	Sandplain D	Low *Eucalyptus victrix* woodland over *Acacia colei* var. *colei* shrubland over low open *Acacia stellaticeps* and *Pluchea tetranthera* shrubland over *Triodia epactia* hummock grassland.
	Sandplain J	Scattered low *Corymbia flavescens* trees over open *Acacia tumida* var. *pilbarensis* shrubland over low open *Acacia stellaticeps* shrubland over *Triodia epactia* and *Triodia secunda* hummock grassland/*Triodia secunda* and *Triodia epactia* hummock grassland mosaic.

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) have been recorded within or adjacent to the Application Area.

Two Priority flora species have been identified within the Application Area (**Figure 2**):

- *Gomphrena pusilla* (Priority 2); and
- *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (Priority 1).

These species are located within and adjacent to the Application Area and are common in the broader region. Populations of Priority flora will be avoided by a 10 m buffer where practicable.

3.4.3 Weeds

Nineteen introduced flora species (weeds) have been recorded within the Application Area (**Table 4**). These weeds are typical introduced species commonly recorded in the Pilbara region.

One Declared Pest under s22 of the *Biosecurity and Agriculture Management Act, 2007* (BAM Act) has been recorded from the Application Area: **Calotropis procera* (Rubber Tree).

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 Application Area

Species	Common Name	DBCA Rating (DPAW, 2016)	Declared Pest (Pilbara)[1]
**Aerva javanica*	Kapok Bush	High and Rapid	No
**Calotropis procera*	Rubber Tree	Not listed	Yes
**Cenchrus ciliaris*	Buffel Grass	High and Rapid	No
**Cenchrus setiger*	Birdwood Grass	High and Rapid	No
**Chloris barbata*	Purpletop Feathertop	High and Rapid	No
**Chloris virgata*	Feathertop Rhodes Grass	High and Rapid	No
**Citrullus amarus*	Bitter melon	Unknown and Moderate	No
**Coccinia grandis*	Ivy gourd	Not listed	No
**Distimake dissectus*	Noyau Vine	Not listed	No
**Erigeron bonariensis*	Flax leaf Fleabane	Not listed	No
**Euphorbia hirta*	Asthma Plant	Low and Slow	No
**Leucaena leucocephala*	River tamarind	Not listed	No
**Physalis angulata*	Wild Gooseberry	Unknown and Unknown	No
**Rumix vesicarius*	Ruby Dock	High and Rapid	No
**Solanum nigrum*	Black Berry Nightshade	Low and Rapid	No
**Sonchus oleraceus*	Common Sowthistle	Low and Rapid	No
**Stylosanthes hamata*	Caribbean stylo	Not listed	No
**Tridax procumbens*	Tridax	Low and Slow	No
**Washingtonia filifera*	Cotton Palm	High and Rapid	No

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

3.4.4 Fauna Habitats and Significant Fauna

The Biologic (2017) and ENV (2011b) fauna assessments (**Appendix 2**) undertook a detailed review of all previous fauna surveys across BHP's Pilbara operations (Biologic) and the Port Hedland region. These reviews were supported by field visits where the analysis indicated that further information was required to confirm the fauna habitats. ENV (2011b), Biologic (2017) and GHD (2020) identified the following six vertebrate fauna habitats within the Application Area (**Figure 3**):

- **Beach / Dune**: The Beach/Dunal habitat type is the buffer zone that exists between the sea and land. The vegetation of this habitat type is characterised by scattered *Acacia bivenosa* shrubs over **Cenchrus ciliaris* (Buffel Grass) open tussock grassland. Given the large tides experienced in the Port Hedland region this habitat type is in continual change. Above the high tide mark limestone outcrops and sand dunes provide roost and nest locations for marine and shorebirds.
- **Major Drainage Line**: The two major Riverine habitats of the study area are located along the western and eastern boundaries and are called the Turner and Beebingarra rivers respectively. The vegetation of this habitat type is characterised by low open Eucalyptus victrix woodland over a high open Melaleuca - Acacia shrubland over open *Triodia epactia* hummock grassland. A large diversity of microhabitats are present in this habitat and include tree hollows, logs, leaf litter, thick vegetation and soft soil suitable for digging and burrowing fauna. Isolated areas of surface water were still present during the survey providing an important water source for the local fauna and shorebirds including those classified as Migratory under the EPBC Act. This habitat type contains mature eucalypt trees that are larger than other trees in the surrounding plains. These trees that line the watercourses most likely function as wildlife corridors. In particular, birds, bats, large mammals (such as the Euro *Macropus robustus*) and wide-ranging reptiles (such as snakes and goannas) are likely to use these drainage lines as a corridor for dispersal. Taking into consideration these factors, this habitat type is considered to be of High habitat value.
- **Mangrove**: Like the Tidal Flats, Mangrove habitat type is dominated by the tides and is in a constant transition between marine and terrestrial habitats. It differs from the Tidal Flats by the fact that it is dominated by thick groves of Mangrove trees. The vegetation of this habitat type is characterised by high closed *Rhizophora stylosa* and *Avicennia marina* shrubland. The Mangrove trees create a range of microhabitats in the form of tree hollows and foliage for birds to forage, roost and nest in. The Mangroves supports a unique faunal assemblage of Mangrove specialists such as the Mangrove Golden Whistler (*Pachycephala melanura*) and Mangrove Grey Fantail (*Rhipidura phasiana*).
- **Mixed Acacia shrubland**: Mixed Acacia shrubland (Embankment) habitat is completely modified and forms the transition from the roads to the mangroves. It is approximately 4 m wide from the low lying mangrove system to the completely modified road/rain area. Vegetation is very limited (30% cover) and provides little habitat for medium large fauna.
- **Sand Plain**: The Sandplain habitat type dominates the majority of the study area. The vegetation structure consists of a Low Acacia shrublands over *Triodia* hummock grasslands. A moderate diversity of microhabitats was present and includes shrubs, grass hummocks and leaf litter. In addition, the soils were suitable for digging and burrowing animals. Due to the microhabitat diversity and the number of conservation significant species this habitat may support, it has been classified as having Moderate habitat value.
- **Tidal Flat / Drainage**: The Tidal Flats is dominated by the tides and is in constant transition between marine and terrestrial habitats. At high tide most of the habitat type is inundated with seawater, however some areas of mudflats remain dry until the highest tides. The vegetation of this habitat type is characterised by scattered *Avicennia marina* shrubs over a low open *Tecticornia* spp. shrubland. The Tidal Flats have a distinct lack of vegetation and associated microhabitats, however due to the importance of this habitat type as a foraging resource for Migratory waders it is classified as having High habitat value.

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

The surveys undertaken across the Application Area have recorded four fauna species of significance from within the Application Area:

- Caspian Tern (*Sterna caspia*) (EPBC Act and BC Act Migratory);
- Eastern Osprey (*Pandion haliaetus*) (EPBC Act and BC Act Migratory);
- Gull-billed Tern (*Gelochelidon nilotica*) (EPBC Act and BC Act Migratory);

- Northern Coastal Free-tailed Bat (*Ozimops cobourgianus*) (DBCA Priority 1); and

Based on the occurrence of the habitat types and significant fauna species previously recorded in the vicinity, an additional 17 species are considered to potentially occur within the Application Area (i.e. those considered 'likely' or 'possible' to occur within the Application Area):

- Black-tailed Godwit (*Limosa limosa*) (EPBC Act and BC Act Migratory);
- Broad-billed Sandpiper (*Limicola falcinellus*) (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);
- Curlew Sandpiper (*Calidris ferruginea*) (EPBC Act and BC Act Critically Endangered);
- Critically Greater Sand Plover (*Charadrius leschenaultii*) (EPBC Act and BC Act Vulnerable);
- Eastern Curlew (*Numenius madagascariensis*) (EPBC Act and BC Act Critically Endangered);
- Grey Plover (*Pluvialis squatarola*) (EPBC Act and BC Act Migratory);
- Grey-tailed Tattler (*Tringa brevipes*) (EPBC Act and BC Act Migratory; DBCA Priority 4);
- Lesser Sand Plover (*Charadrius mongolus*) (EPBC Act and BC Act Endangered);
- Little Curlew (*Numenius minutus*) (EPBC Act and BC Act Migratory);
- Little Tern (*Sternula albifrons*) (EPBC Act and BC Act Migratory);
- Oriental Plover (*Charadrius veredus*) (EPBC Act and BC Act Migratory);
- Pacific Golden Plover (*Pluvialis fulva*) (EPBC Act and BC Act Migratory);
- Red-necked Stint (*Calidris ruficollis*) (EPBC Act and BC Act Migratory);
- Ruddy Turnstone (*Arenaria interpres*) (EPBC Act and BC Act Migratory);
- Sanderling (*Calidris alba*) (EPBC Act and BC Act Migratory);
- Terek Sandpiper (*Xenus cinereus*) (EPBC Act and BC Act Migratory); and
- Whimbrel (*Numenius phaeopus*) (EPBC Act and BC Act Migratory).
- Wood Sandpiper (*Tringa glareola*) (EPBC Act and BC Act Migratory).

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 Application Area

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Birds					
Black-tailed Godwit (*Limosa limosa*)	EPBC Act Migratory BC Act Migratory	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, 2012).	The small area of Tidal Flats habitat within the Application Area provides suitable habitat for this species. The Black-tailed Godwit has been recorded adjacent to the Application Area (ENV, 2011b).	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Broad-billed Sandpiper (*Limicola falcinellus*)	EPBC Act Migratory BC Act Migratory	The Broad-billed Sandpiper occurs in sheltered parts of the coast, favouring estuarine mudflats but also occasionally occur on saltmarshes, shallow freshwater lagoons, saltworks and sewage farms, and in areas with large soft intertidal mudflats, which may have shell or sandbanks nearby. Occasionally they occur on reefs or rocky platforms. They have also been recorded in creeks, swamps and lakes near the coast, particularly those with bare mudflats or sand exposed by receding water. They often favour mud among, or fringed by, mangroves, particularly on the seaward side and sometimes occur in estuaries edged by saltmarsh. They are rarely recorded inland. Foraging occurs on exposed flats of soft mud or wet sand at edges of coastal and near-coastal wetlands, often around channels on mudflats or in accumulated mud in swales between shell banks. In northern Australia, they forage in soft mud near mangroves, but may remain on same muddy section, even though fresher substrate may be exposed by the receding tide. They also forage in shallow water on muddy edges of ponds. They roost on the banks of sheltered sandy, shelly or shingly beaches (Higgins & Davies, 1996). They nest on the ground, frequently in the top of a tussock (Cramp, 1985).	The small area of Tidal Flats habitat within the Application Area provides suitable habitat for this species. The Broad-billed Sandpiper has been recorded adjacent to the west of the Application Area (ENV, 2011b).	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Caspian Tern (*Sterna caspia*)	EPBC Act Migratory BC Act Migratory	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 small area of Beach/Dunal habitat present in the Application Area provides suitable habitat for this species. The Caspian Tern has been recorded in the Application Area (ENV, 2011b) and in the broader area.	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Common Greenshank (*Tringa nebularia*)	EPBC Act Migratory BC Act Migratory	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 small areas of Tidal Flats and Riverine habitats provide the mudflats and freshwater wetlands preferred by this species. The Common Greenshank has been recorded adjacent to the Application Area (ENV, 2011b) and in the broader area.	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Common Sandpiper (*Actitis hypoleucos*)	EPBC Act Migratory BC Act Migratory	*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 small areas of Tidal Flats and Riverine habitats provide the mudflats and freshwater wetlands preferred by this species. This species has been recorded to the east the Application Area.	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Curlew Sandpiper (*Calidris ferruginea*)	EPBC Act Critically Endangered BC Act Critically Endangered	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 small areas of Tidal Flats habitat provides suitable habitat for this species. The Curlew Sandpiper has been previously recorded adjacent to the Application Area (ENV, 2011b).	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 of the Application Area and in the same or better condition to that of the Application Area.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Eastern Curlew (*Numenius madagascariensis*)	EPBC Act Critically Endangered BC Act Critically Endangered	The Eastern Curlew is a large nonbreeding migratory shorebird, found commonly along the north coast of Western Australia, but rarely south of Shark Bay. It inhabits a range of coastal habitats, but primarily intertidal mudflats, particularly on exposed seagrass beds or mudflats feeding on burrowing crabs or shrimps (Geering *et al.*, 2007).	The Beach/Dunal and Tidal Flats habitat provides suitable habitat for this species. There have been two records of the Eastern Curlew adjacent to Application Area. DBCA has a further five records of this species between Port Hedland and Onslow.	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Eastern Osprey (*Pandion haliaetus*)	EPBC Act Migratory BC Act Migratory	The breeding range of the Eastern Osprey extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in New South Wales (Barrett *et al.*, 2003). In the Pilbara region, the Eastern Osprey inhabits coastal areas, islands and larger rivers inland (Johnstone and Storr, 1998). Inland range extensions in north-west WA have been noted and may be an area of dispersal for first-year birds (Marchant and Higgins, 1993).	The small areas of coastal and near-coastal habitats (beach, dunes, tidal flats, riverine and mangroves) within the Application Area provide suitable habitat for this species. This species has been recorded from BHP Iron Ore's Nelson Point Wetlands in Port Hedland (Bennelongia, 2011). It has also been recorded near in the broader region.	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 of the Application Area and in the same or better condition to that of the Application Area.
Great Knot (*Calidris tenuirostris*)	EPBC Act Critically Endangered BC Act Critically Endangered	The Great Knot is a summer non-breeding migratory shorebird that occurs along most of the coast of Western Australia. It inhabits larger inter-tidal mud and sand flats (Geering *et al.*. 2007).	The small areas of Beach/Dunal and Tidal Flats habitat provides suitable habitat for this species. The Great Knot has been previously recorded adjacent to the Application Area (ENV, 2011b).	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Greater Sand Plover (*Charadrius leschenaultii*)	EPBC Act Vulnerable BC Act Vulnerable	The Greater Sand Plover is a summer non-breeding migratory shorebird that is common on the north and west coast of Western Australia. It inhabits exposed sand and mud flats (Geering *et al.*. 2007).	The small areas of Beach/Dunal and Tidal Flats habitat provides suitable habitat for this species. The Great Knot has been previously recorded adjacent to the Application Area (ENV, 2011b).	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Grey Plover (*Pluvialis squatarola*)	EPBC Act Migratory BC Act Migratory	The Grey Plover is a common summer migrant that inhabits coastal areas, preferring marine shores of estuaries or lagoons on broad open mudflats, sandy bars or beaches and rocky coasts as well as coastal salt lakes and swamps (Morcombe, 2000). They occasionally are found in drying freshwater lakes (Johnstone and Storr, 1998).	The small areas of Beach/Dunal, Tidal Flats and Riverine habitat particularly towards the Port Hedland harbour, provides suitable habitat for this species. The Grey Plover has been recorded in the adjacent to the Amendment Application (ENV, 2011b).	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Grey-tailed Tattler (*Tringa brevipes*)	BC Act Migratory DBCA Priority 4	The Grey-tailed Tattler is a non-breeding migratory shorebird, common on the north and west coasts of Western Australia, but rare on the south coast (Geering *et al.*, 2007). It inhabits sheltered coasts with reef and rock platforms or with inter-tidal mudflats (Morcombe, 2000).	The Beach/Dunal and Tidal Flats habitat provides suitable habitat for this species. The Grey-tailed Tattler has been recorded adjacent to the Application Area (ENV, 2011b).	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Gull-billed Tern (*Gelochelidon nilotica*)	EPBC Act Migratory BC Act Migratory	Habitat for this species includes beaches, mudflats, fresh, brackish wetlands including far inland, grasslands, crops, ploughed fields and airfields. Breeding occurs inland in in Western Australia when conditions are suitable (Pizzey & Knight, 2012).	Tidal Flats and Mangrove habitats provides suitable habitat for this species. The Gull-billed Tern has been recorded in the north of the Application Area and in the broader region to the east (ENV, 2011b).	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Lesser Sand Plover (*Charadrius mongolus*)	EPBC Act Endangered BC Act Endangered	The Lesser Sand Plover is a summer non-breeding migratory shorebird that occurs on the north and west coast of Western Australia, but rarely south of Shark Bay. It inhabits exposed sand and mud flats and often intermingles with flocks of the Greater Sand Plover (Geering *et al.*, 2007).	The small area of Beach/Dunal and Tidal Flats habitat of the Application Area provides ideal habitat for this species. The Lesser Sand Plover has been previously recorded adjacent to the Application Area (ENV, 2011b).	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 of the Application Area and in the same or better condition to that of the Application Area.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Little Curlew (*Numenius minutus*)	EPBC Act Migratory BC Act Migratory	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 Major Drainage Line habitat and the adjacent Sand Plain habitat of the Application Area, provides suitable habitat for this species (ENV, 2011b). The Little Curlew has been previously recorded adjacent to the Application Area (ENV, 2011b).	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 of the Application Area and in the same or better condition to that of the Application Area.
Little Tern (*Sternula albifrons*)	EPBC Act Migratory BC Act Migratory	The Little Tern is distributed along the northern coast of Western Australia south to Broome. There are three sub populations that occur; two that breed in Australia and the third that migrates north to breed in Asia but spends the spring/summer in Australia (DSEWPaC 2011). This species inhabits coastal and estuarine areas, breeding on sandy beaches and sand spits (Simpson and Day, 2004).	The small areas of Beach/Dunal the Application Area provide suitable habitat for this species. The Little Tern has been previously recorded east of the Application Area, just north of Wedgefield near Port Hedland.	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 of Application Area and in the same or better condition to that of the Application Area.
Oriental Plover (*Charadrius veredus*)	EPBC Act Migratory BC Act Migratory	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 small areas of Beach/Dunal the Application Area provide suitable habitat for this species. It has been recorded to the west of the Application Area (ENV, 2011b).	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Pacific Golden Plover (*Pluvialis fulva*)	EPBC Act Migratory BC Act Migratory	In non-breeding grounds in Australia this species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. Pacific Golden Plovers usually occur on beaches, mudflats and sandflats (sometimes in vegetation such as mangroves, low saltmarsh such as *Sarcocornia*, or beds of seagrass) in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in saltworks. The species is also sometimes recorded on islands, sand and coral cays and exposed reefs and rocks. They are less often recorded in terrestrial habitats, usually wetlands such as fresh, brackish or saline lakes, billabongs, pools, swamps and wet claypans, especially those with muddy margins and often with submerged vegetation or short emergent grass. Other terrestrial habitats inhabited include short (or, occasionally, long) grass in paddocks, crops or airstrips, or ploughed or recently burnt areas, and they are very occasionally recorded well away from water (Marchant & Higgins, 1993). This species usually forages on sandy or muddy shores (including mudflats and sandflats) or margins of sheltered areas such as estuaries and lagoons, though it also feeds on rocky shores, islands or reefs. In addition, Pacific Golden Plovers occasionally forage among vegetation, such as saltmarsh, mangroves or in pasture or crops (Evans, 1975; Ewart, 1973).	The small areas of Beach/Dunal the Application Area provide suitable habitat for this species. It has been recorded to the west of the Application Area (ENV, 2011b).	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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Red-necked Stint (*Calidris ruficollis*)	EPBC Act Migratory BC Act Migratory	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, 2012). This species requires marine waters for habitat such as coastal and inland shores (Simpson and Day, 2004).	The small areas of Beach/Dunal and Tidal Flat habitat in the Application Area provides suitable habitat for this species. The Red-necked Stint has been previously recorded in the Tidal Flats and Dune habitat around Port Hedland (ENV, 2011b).	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Ruddy Turnstone (*Arenaria interpres*)	EPBC Act Migratory BC Act Migratory	The Ruddy Turnstone is a summer non-breeding migratory shorebird that occurs on the coast of the north-west and west coast from Beagle Bay to Shark Bay (Johnstone and Storr, 1998). It occurs primarily on rocky coasts and rocky reefs, as well as tidal mudflats and beaches and pebbly shores of near-coastal salt lakes and salt-work ponds (Johnstone and Storr, 1998).	The small areas of Beach/Dunal and Tidal Flats habitat in the Application Area provides suitable habitat for this species. The Ruddy Turnstone has been previously recorded in the Tidal Flats and Dune habitat around Port Hedland (ENV, 2011b).	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Sanderling (*Calidris alba*)	EPBC Act Migratory BC Act Migratory	The Sanderling is a small compact shorebird and is often found in small to large flocks, mostly on open beaches exposed to surf. This species has also been recorded within inter-tidal mudflats. This species distinctly dashes between waves when feeding and is known at high tide to roost among beach debris (Geering *et al.*, 2007).	The small areas of Beach/Dunal and Tidal Flats habitat in the Application Area provides suitable habitat for this species. There have been numerous records of the Sanderling in the vicinity of Port Hedland (ENV, 2011b).	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Terek Sandpiper (*Xenus cinereus*)	EPBC Act Migratory BC Act Migratory	The Terek Sandpiper is a summer nonbreeding migratory shorebird that occurs along the north coast of Western Australia, but rarely south of Shark Bay. It inhabits exposed seagrass beds in estuaries and bays or on inter-tidal mudflats fringed by mangroves (Geering *et al.*, 2007).	The small areas of Tidal Flat habitat of the Application Area, particularly those situated close to the Mangroves, provide suitable habitat for this species. The Terek Sandpiper has been recorded in the vicinity of the Application Area (ENV, 2011b).	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.
Whimbrel (*Numenius phaeopus*)	EPBC Act Migratory BC Act Migratory	The Whimbrel is a large non-breeding migratory shorebird, found commonly along the north coast of Western Australia, but less commonly south of Shark Bay (Geering *et al.*, 2007). This species typically inhabits mudflats of estuaries or lagoons (Morcombe, 2000).	The small areas of Tidal Flat habitat of the Application Area provides suitable habitat for this species. The Whimbrel has been previously recorded in the adjacent to the Application Area at Port Hedland (ENV, 2011b).	Likely	**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 of the northern section of the Application Area and in the same or better condition to that of the Application Area.

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Wood Sandpiper (*Tringa glareola*)	EPBC Act Migratory BC Act Migratory	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 Wood Sandpiper may utilise the Application Area when temporary ponds are formed after heavy rains. This species has been recorded east of the Application Area (ENV, 2011b).	Possible	**Low** The proposed activities are unlikely to have an impact on this species given its high mobility, and large areas of its preferred habitat is present in the surrounding region in the same or better condition to that of the Application Area.
Mammals					
Northern Coastal Free-tailed Bat (*Ozimops cobourgianus*)	DBCA Priority 1	The Northern Coastal Freetail-bat inhabits mangrove communities, roosting in crevices and sprouts of the dead upper branches of the mangrove *Avicennia marina* (van Dyck and Strahan, 2008). The genus for this species is in the process of being renamed in a recent taxonomic review of molossids by Terry Reardon, which has shown the genus *Mormopterus* does not occur in Australia (Churchill, 2008).	The small areas of Mangrove and the surrounding Tidal Flat habitats within the Application Area provide suitable habitat for this species. The Little Northern Freetail-bat has been recorded within and adjacent to the Application Area (ENV, 2011b and GHD, 2020).	Recorded	**Low** While this species may forage over the Mangrove and the surrounding Tidal Flat habitats of the Application Area and its surrounds. Impact on this species is considered to be low as there are large areas of its preferred habitat is present in the surrounding region in the same or better condition to that of the Application Area.

3.5 GROUNDWATER

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

There are two main aquifers within the Application Area:

- **Pilbara Alluvial:** The main alluvial aquifers are developed along the Yule, Turner and De Grey Rivers. These are major aquifers which currently supply Port Hedland with potable water. The alluvium occupies the area close to the current river channels and is recharged directly from the rivers when they flow. The alluvium is up to about 60 metres thick in the De Grey valley. The salinity tends to be low along the river and increases outwards. The area of the alluvium aquifer also includes thinner and less permeable flood plain deposits on the coastal plain, and these are used principally for pastoral purposes. Bore yields are highest in the coarse alluvium along the river beds, but decrease with distance from the river. There is potential for further development along the Yule and De Grey Rivers (DoW, 2015a).
- **Pilbara Fractured Rock:** The Pilbara fractured rock aquifer consists of Precambrian granite-greenstone terrain overlain by surficial sediments in the river valleys. The water table is generally within 5 to 10 metres of the surface in the granitic areas, but may be quite deep below the greenstone hills. The major aquifers within these rocks are quartz veins, and chert layers. Groundwater is mainly fresh, ranging up to brackish towards the coast. Bore yields vary depending on intersection of fractures. Marble Bar town water supply is drawn from bores in acid volcanic rocks. Nullagine's town water supply is drawn from both shallow alluvium (less than 12 m deep) and fractured sandstones. Water has also been produced by dewatering from the iron ore mines in the Goldsworthy-Shay Gap-Yarrie area. There are not considered to be any major regional groundwater resources in the Pilbara fractured rock. Development will be on a local basis principally for mining and town water supply. Pastoral bores intercept both the fractured rock and the overlying weathered zone (DoW, 2015b).

There are no public drinking water source areas within or adjacent to the Application Area.

3.6 SURFACE WATER

The Application Area is located in the Pilbara Surface Water Area, proclaimed under the RIWI Act (DoW, 2009b). There are no permanent watercourses associated with the Application Area. One unnamed perennial drainage lines traverses the eastern edge of the Application Area flowing to the north.

Where practicable, existing cleared tracks will be used to cross drainage lines. 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.

The Application Area intersects an area of saline flats. A majority of this area has already been disturbed with existing infrastructure and the remaining undisturbed vegetation is not considered to be significant.

4 ENVIRONMENTAL MANAGEMENT

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

Additionally, operational controls for environmental management for the Project 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 Iron Ore operations. The Sustainable Development Policy outlines a commitment to setting objective and targets to achieve sustainable outcomes and to continually improve our performance.

To support these documents BHP has an internal Project Environmental and Aboriginal Heritage Review (PEAHR) system. The purpose of the system is to manage implementation of environmental,

Aboriginal heritage, land tenure and legal commitments prior to and during land disturbance. All ground disturbance activities will meet the requirements of the PEAHR system.

Within the Application Area all environmental management is currently governed by NVCP CPS 2496.

All personnel carrying out works associated within the Application Area are required to comply with the Sustainable Development Policy, NVCP CPS 2496, the PEAHR system and any other relevant legislative and licensing requirements.

5 PROJECT COMPLIANCE WITH THE TEN CLEARING PRINCIPLES

BHP considers that native vegetation clearing within the 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 Application Area is located outside the 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 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 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 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 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 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 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 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.	Two Priority flora species were recorded in the Application Area. Populations of Priority flora will be avoided by 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 Application Area (**Figure 3**).

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

Four fauna species of significance have been recorded from within the Application Area with 20 species considered to potentially occur within the Application Area (**Table 5**). As described in **Section 3.4.4** and **Table 5** clearing of the Application Area is expected to have a low impact on these species.

Table 7 provides an assessment of the proposed clearing activities within the 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.	Three BC Act protected species have been recorded from the Application Area with a further 20 BC Act protected species considered 'possible' or 'likely' to occur within the Application Area (**Table 5**). The proposed activities are unlikely to have a significant impact on these species as: • There is no critical habitat for these species within the Application Area; • All species are likely to be transient visitors to the Application Area; and • There are large areas of their preferred habitat present in the surrounding region in the same or better condition to that of the 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 Application Area with no other species considered 'possible' or 'likely' to occur. As detailed in **Table 5** these species are unlikely to be impacted for the following reasons: • There is no critical habitat for these species within the Application Area; • This species is likely to be a transient visitor to the Application Area; and • There are large areas of their preferred habitat present in the surrounding region in the same or better condition to that of the Application Area.	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 Application Area may be suitable for use by conservation significant fauna, however similar habitat in the same or better condition is widespread in the 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 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 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 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 Application Area is not considered to contain significant habitat for faunal assemblages that are not also present in other areas within the vicinity. The 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 Application Area.

Table 8 provides an assessment of the proposed clearing activities within the 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 Application Area.	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 Application Area.	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 2496 are associated with a TECs or PECs (ENV, 2011a and GHD, 2020).

Table 9 provides an assessment of the proposed clearing activities within the 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 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 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 Application Area is well represented in the Land Systems of the region (**Section 3.2**), and therefore it is unlikely individual species would be restricted to a particular habitat and vegetation occurring in the Application Area.

Table 10 provides an assessment of the proposed clearing activities within the 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 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 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 is more than 85% 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 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 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 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 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 may be at variance to this Principle.

There are no permanent watercourses associated with the Application Area. One unnamed perennial drainage line traverses the eastern edge of the Application Area flowing to the north.

Where practicable, existing cleared tracks will be used to cross drainage lines. 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.

The Application Area intersects an area of saline flats. A majority of this area has already been disturbed with existing infrastructure and the remaining undisturbed vegetation is not considered to be significant.

Table 11 provides an assessment of the proposed clearing activities within the 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 watercourse or wetland with significant environmental values occurs within the Application Area or immediate surrounds.	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).	One unnamed non-perennial minor drainage line runs south to north across the Application Area. Where practicable, existing cleared tracks will be used to cross drainage lines. 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. The Application Area intersects an area of saline flats. A majority of this area has already been disturbed with existing infrastructure and the remaining undisturbed vegetation is not considered to be significant.	May 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.	Due to the small scale of proposed clearing, it 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.	One unnamed non-perennial minor drainage line runs south to north across the Application Area. Where practicable, existing cleared tracks will be used to cross drainage lines. 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. The Application Area intersects an area of saline flats. A majority of this area has already been disturbed with existing infrastructure and the remaining undisturbed vegetation is not considered to be significant.	May 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 Application Area against the components of clearing 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 Application Area or adjacent areas.

6.7.2 Changes to pH

The Application Area is not in an area at risk of acid sulphate soils and there are no recorded acid sulphate soils within the 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

Nineteen introduced flora species have been recorded in the Application Area (**Table 4**). These weeds are typical introduced species commonly recorded in the Pilbara region.

One Declared Pest under s22 of the *Biosecurity and Agriculture Management Act, 2007* (BAM Act) has been recorded from the Application Area: **Calotropis procera* (Rubber Tree).

Control of established weed populations will be carried out according to BHP's standard *Weed Control and Management Procedures.*

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 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 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 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 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 the Millstream Chichester National Park which is located more than 130 km to the south west of the Application Area.

The Application Area is not considered to form an ecological linkage to this conservation area.

An assessment of the proposed clearing activities within the 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 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 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 130 km south west of the 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 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.

The disturbance footprint of the Application Area does not intersect any significant watercourses. One unnamed non-perennial minor drainage line runs across the Application Area. The Application Area intersects an area of saline flats. A majority of this area has already been disturbed with existing infrastructure and the remaining undisturbed vegetation is not considered to be significant.

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 drainage lines. 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 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 groundwater within the Application Area due to the small amount of clearing within the Application Area and lack of significant surface water features.	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 no permanent waterbodies present within the vicinity of the Application Area.	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 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 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 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 Team 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.

The Application Area is situated within the Kariyarra Native Title Claim (WC99/003). A number of heritage sies occur within the Application Area. Locations of these sites have not been provided out of respect for the Traditional Owners. In the event that a heritage site is identified which cannot be practicably be avoided, BHP would consult the relevant traditional owners and seek approval under the *Aboriginal Cultural Heritage Act, 2022* before the site is disturbed.

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.

8 CONCLUSION

The proposed clearing in the Application Area is unlikely to be at variance to any of the Ten Clearing Principles. The clearing of up to 95 ha within an Application Area of 1,407.9 ha is unlikely to have any significant negative impacts on biodiversity and environmental values in the area.

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Figures

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PORT HEDLAND
NEWMAN

Fnucane Island
Port Hedland
Nelson Point

BHP
ENVIRONMENTAL APPROVALS

N

REPLACEMENT FOR NVCP CPS 2496/7

REGIONAL OVERVIEW

SCALE (A3): 1:40,000	DATUM: GDA94/MGA 50	FIGURE 1
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 28 July 2023	Dwg: PORT_007NVCP_001_RevA_0

0 1 2 3 4
Kilometers

Legend
Proposed NVCP Boundary

Document Path: G:\AssetDev\Env A&I\01 Approvals\07 Port\02 NVCP\007 Boodarie Replacement NVCP\05 Spatial\PORT_007NVCP_001_RevA_0.mxd

BHP

ENVIRONMENTAL APPROVALS

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REPLACEMENT OF NVCP CPS 2496/7

VEGETATION AND SIGNIFICANT FLORA

SCALE (A3): 1:40,000	DATUM: GDA94/MGA 50	FIGURE 2
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 28 July 2023	Dwg: PORT_007NVCP_002_RevA_0

0 1 2 3 4
Kilometers

656000 660000 664000 668000

7752000

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Legend

Proposed NVCP Boundary

Significant Flora Location

- Gomphrena pusilla (Priority 2)
- Tephrosia rosea var. Port Hedland (A.S. George 1114) (Priority 1)

Broad Floristic Communities

- Beach
- Dune A
- Dune C
- Drainage A
- Drainage B
- Major Drainage Line A
- Grassland A
- Other (OT AbApAc)
- Mangrove
- Saline Flat and Marsh (SF - Am [VT01])
- Samphire B
- Sandplain A
- Sandplain B
- Sandplain C
- Sandplain D
- Sandplain J
- Disturbed Infrastructure

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BHP

ENVIRONMENTAL APPROVALS

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REPLACEMENT FOR NVCP CPS 2496/7

VERTEBRATE FAUNA HABITAT AND SIGNIFICANT FAUNA

SCALE (A3): 1:40,000	DATUM: GDA94/MGA 50	**FIGURE 3**
Prepared: Chris Hopkins	Revision: FINAL	
Centre: Perth	Date: 28 July 2023	Dwg: PORT_007NVCP_003_RevA_0

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Kilometers

656000 660000 664000 668000

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Legend

Proposed Boundary CPS 2496/8

Conservation Significant Vertebrate Fauna

- Gelochelidon nilotica (Gull-billed Tern) (EPBC Act and BC Act Migratory)
- Ozimops cobourgianus (Northern Coastal Free-tailed Bat) (DBCA Priority 1)
- Pandion haliaetus (Eastern Osprey) (EPBC Act and BC Act Migratory)
- Sterna caspia (Caspian Tern) (EPBC Act and BC Act Migratory)

Vertebrate Fauna Habitat

- Beach / Dunes
- Tidal Flat/ Drainage
- Mixed Acacia shrubland
- Mangrove
- Major Drainage Line
- Sand Plain
- Cleared/ Disturbed

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Appendices

Appendix 1: ***BHP Western Australian Iron Ore Windfence Flora and Fauna Assessment Level 1 Fauna and Reconnaissance Flora Survey*** **(GHD, 2020)**

Appendix 2: *Port Hedland Regional Flora and Vegetation Assessment* (ENV, 2011a)

Appendix 3: *Consolidated Fauna Habitat Mapping 2017* (Biologic, 2017)

Appendix 4: *Port Hedland Regional Fauna Assessment* (ENV, 2011b)