

Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	5990/2
Permit type:	Purpose Permit
Applicant name:	BHP Iron Ore Pty Ltd
Application received:	6 November 2023
Application area:	190 hectares
Purpose of clearing:	Mineral Exploration, Geotechnical, Hydrogeological Investigations, Weather masts, LiDAR and Associated Activities
Method of clearing:	Mechanical Removal
Tenure:	<i>Iron Ore (Mount Newman) Agreement Act 1972</i> , Mineral Lease 244SA (AML 70/244)
Location (LGA area/s):	Shire of East Pilbara
Colloquial name:	Orebodies 21 and 22

1.2. Description of clearing activities

BHP Iron Ore Pty Ltd proposes to clear up to 190 hectares of native vegetation within a total boundary of approximately 3,835 hectares for the purposes of mineral exploration, hydrogeological and geotechnical investigations, Weather masts, LiDAR and associated activities. The project is located approximately 14 kilometres east of Newman within the Shire of East Pilbara.

Clearing permit CPS 5990/1 was granted by the Department of Mines, Industry Regulation and Safety (now Department of Energy, Mines, Industry Regulation and Safety) on 27 March 2014 and was valid from 19 April 2014 to 19 April 2029. The permit authorised the clearing of up to 190 hectares of native vegetation within a boundary of approximately 3,836 hectares, for the purpose of mineral exploration, geotechnical and hydrogeological investigations, and associated activities.

On 6 November 2023, the Permit Holder applied to amend CPS 5990/1 to include weather masts and LiDAR to the purpose of clearing, to extend the permit duration by five years, and consequently, the period in which the clearing is authorised by five years, extend the final reporting date to 30 November 2034, update the permit holder name to BHP Iron Ore Pty Ltd, and amend the permit boundary to exclude a number of caves and water holes that have been identified since the permit was last issued.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	6 November 2024
Decision area:	190 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51KA(1) and 51O of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) on 6 November 2023. DEMIRS advertised the application for public comment for a period of 7 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics, relevant datasets, supporting information provided by the applicant including the results of a flora and vegetation survey and fauna survey, the clearing principles set out in Schedule 5 of the EP Act, and any other matters considered relevant to the assessment.

The assessment has not changed since the assessment for CPS 5990/1, except in the case of principle (c) due to the reclassification of *Lepidium catapycnon* from threatened to a Priority 4 flora species (Western Australian Herbarium 1998-). The Delegated Officer determined that the proposed amendments are not likely to lead to an unacceptable risk to environmental values.

2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section **Error! Reference source not found.**), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)
- *Iron Ore (Mount Newman) Agreement Act 1972*

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3. Assessment of application

3.1. Avoidance and mitigation measures

The applicant has provided the following avoidance and mitigation measures to support this clearing permit amendment application (BHP, 2023a):

- Populations of Priority flora will be avoided by a 10 metre buffer where practicable;
- In the event that active Mulgara burrows are identified they will be avoided using a 10 metre buffer, where practicable;
- Active mounds of the Western Pebble-mound Mouse will be avoided using a 10 metre buffer, where practicable;
- 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; and
- Control of established weed populations will be carried out according to BHP's standard Weed Control and Management Procedures.

Additionally, during the assessment and following discussions with DEMIRS, the applicant has implemented and advised further avoidance and mitigation measures:

- Committed to avoid clearing of records of a novel flora species (*Hibiscus* aff. *campanulatus*) with a 10-metre buffer;
- Minimising clearing of vegetation within the buffer of the Ethel Gorge stygobiont community TEC;

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

Assessment

The Permit Holder has reported that a total of 107.54 hectares of clearing have been undertaken to date and has rehabilitated 4.17 hectares pursuant to permit CPS 5990/1, remaining 82.46 hectares to clear (BHP, 2023a).

Additional biological information has been provided in support of the amendment application, including details covering parts of the application area and its surroundings. These surveys include:

- 1) Spectrum (2023): East Ophthalmia and Ninga Detailed Flora Assessment
- 2) Biologic Environmental (2021) BHP WAIO Jimblebar *Eremophila capricornica* Targeted Flora Survey
- 3) GHD (2020) Jimblebar Targeted Ghost Bat Survey
- 4) Onshore Environmental (2015): Targeted Survey for *Acacia* sp. East Fortescue (surrounding OB31)
- 5) Onshore Environmental (2014a): Consolidation of Regional Vegetation Mapping - BHP Iron Ore Pilbara Tenure Onshore
- 6) Biologic Environmental (2014) Orebody 19 Level 2 Vertebrate Fauna Survey
- 7) Biologic Environmental (2014) Consolidated Fauna Habitat Mapping

The environmental values of the application area are described in the previous decision report, based on biological studies undertaken by ENV Australia (2011), Ecological (2013), Astron (2013) and Onshore Environmental (2014b). This current assessment also considered information based on other surveys undertaken by Onshore Environmental (2014a and 2015), Biologic Environmental (2014 and 2021), GHD (2020), Spectrum (2023) and the BHP (2023) NVCP supporting documentation. Therefore, the potential environmental impacts were revised and updated.

Previous surveys have recorded five Priority flora species within the application area: *Aristida jerichoensis* var *subspinulifera* (Priority 3), *Isotropis parviflora* (Priority 3), *Gymnanthera cunninghamii* (Priority 3), *Triodia* sp. Mt Ella (Priority 3) and *Bulbostylis burbigdeae* (Priority 4) (Astron, 2013; ENV, 2011; Onshore Environmental, 2014). The locations of these species were excised from the application with a buffer of 10 metre, so the proposed clearing is unlikely to impact on any recorded Priority flora species (BHP, 2014, 2023; GIS Database).

Spectrum (2023) conducted a more recent detailed flora and vegetation survey over an area that extends well beyond the application area and recorded a total of 320 taxa from 46 families and 132 genera, of which nine were introduced species. The Fabaceae family had the most species richness, with 61 species, followed by Poaceae with 52 species (Spectrum, 2023). Three Priority 3 flora species (*Rhagodia* sp. Hamersley (M. Trudgen 17794), *Gymnanthera cunninghamii*, and *Triodia* sp. Mt Ella), one novel species (*Hibiscus* aff. *campanulatus*) and one range extension (*Frankenia magnifica*) were recorded within the survey area (Spectrum, 2023). However, all records of *Rhagodia* sp. Hamersley (M. Trudgen 17794) occur outside of the application area (Spectrum, 2023; GIS Database). *Gymnanthera cunninghamii* (P3) and *Triodia* sp. Mt Ella (P3) were previously excluded from the application area. There were 1,266 plants of the novel species *Hibiscus* aff. *campanulatus* recorded from the application area (Spectrum, 2023). This appears to be a range extension for the species (DBCA, 2024). There is limited information available on its current distribution and impacts could be significant if it determined to be a novel species. BHP has committed to avoiding the location of these species with a 10 metre buffer.

The permit area includes part of the mapped area for the 'Ethel Gorge aquifer stygobiont community' Threatened Ecological Community (TEC) (GIS Database). This community comprises a diverse assemblage of stygofaunal species within the Ethel Gorge (Ophthalmia Basin) alluvium calcrete aquifer on the Fortescue River in the vicinity of Newman (DBCA, 2023b). This community is reliant on the maintenance of the Ophthalmia aquifer which is its main habitat (DBCA, 2023a). The high stygofauna abundance may be associated with active creek recharge, infiltration from Ophthalmia Dam and shallow groundwater levels (DBCA, 2023a). It is currently not known how the vegetation influences the groundwater and surface water in association with the aquifer of this TEC. There is potential that there will be some secondary impacts from the removal of vegetation due to the changes in surface water flows and reduced groundwater uptake from vegetation (DBCA, 2024). This could change the groundwater levels on which the TEC relies and impact on the water quality (DBCA, 2024). Therefore, it is important to monitor and consider cumulative impacts within the TEC to minimise any potential risk to the groundwater within the aquifer. Potential impacts from cumulative impacts may be managed by the inclusion of a condition restricting the amount of clearing within the buffer of the TEC.

Fauna

Given the range of habitats present within the application area, it is likely to support a diverse assemblage of fauna species (Ecological, 2013). Whilst there are significant habitats within the application area, the majority of the significant features such as caves and waterholes have been excluded from the application. The amendment has reduced the clearing permit area to exclude additional areas of significant habitat.

Water

The amendment application is located within Newman Water Reserve, designated as a Public Drinking Water Source Area and classified as Priority 1 under the CAWS Act. However, the Department of Water and Environmental Regulation (DWER) has no objections to the proposed amendment of clearing activities (DWER, 2023).

Conclusion

The amendment application has been assessed against the clearing principles, planning instruments and other matters in accordance with s.51O of the *Environmental Protection Act 1986*. Environmental information has been reviewed, and the assessment of the proposed clearing against the clearing principles remains consistent with the assessment contained in decision report CPS 5990/2 apart from principle (c) which was changed due to the reclassification of *Lepidium catapycnon* and principle (d) which was changed after considering secondary impacts from the clearing on the TEC.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Flora management condition to avoid clearing within 10 metres of recorded *Hibiscus* aff. *campanulatus* individuals;
- Restricted clearing condition limiting the amount of clearing within the buffer of the TEC.

3.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 17 November 2023 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim over the area under application (DPLH, 2024). This claim has been determined by the Federal Court on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are seven registered Aboriginal Sites of Significance within the application area (DPLH, 2024). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details	
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia (GIS Database). It is surrounded by large areas of uncleared land and some mining exploration activities (GIS Database).	
Ecological linkage	According to available databases, the application area is extensive (approximately 3,835 hectares) but is not considered an ecological linkage due to the size of proposed clearing (190 hectares) (GIS Database).	
Conservation areas	The application area does not lie within any conservation areas (GIS Database). The nearest conservation area is Karijini National Park which is located approximately 130 kilometres west of the application area (GIS Database).	
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>29: Sparse low woodland; mulga, discontinuous in scattered groups;</p> <p>82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i>; and</p> <p>216: Low woodland; mulga (with <i>spinifex</i>) on rises.</p> <p>Four flora and vegetation surveys were conducted over the application area by (Spectrum, 2023; Onshore 2014a; Astron, 2013, and ENV, 2011). The following vegetation associations were recorded within the application area (Spectrum, 2023; Onshore 2014a; and Astron, 2013):</p>	
	Broad Floristic Formation	Vegetation Association Description
	* <i>Cenchrus</i> Open Tussock Grassland	4c Low Open Woodland of <i>Corymbia hamersleyana</i> and <i>Acacia citrinoviridis</i> over Tall Open Shrubland of <i>Petalostylis labicheoides</i> , <i>Santalum lanceolatum</i> and <i>Grevillea wickhamii</i> over Tussock Grassland of * <i>Cenchrus ciliaris</i> , <i>Enneapogon robustissimus</i> and <i>Eriachne mucronata</i> and Open Hummock Grassland of <i>Triodia epactia</i> .
	* <i>Cenchrus</i> Tussock Grassland	MA CcTtEuaC hCa AbAtpAss Tussock Grassland of * <i>Cenchrus ciliaris</i> , <i>Themeda triandra</i> and <i>Eulalia aurea</i> with Low Open Woodland of <i>Corymbia hamersleyana</i> and <i>Corymbia aspera</i> over High Open Shrubland of <i>Acacia bivenosa</i> , <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> on brown loamy sand on levee banks of major drainage lines
	Acacia High Shrubland	FPAaAssA ancTp High Shrubland of <i>Acacia aptaneura</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>Acacia ancistrocarpa</i> over Very Open Hummock Grassland of <i>Triodia pungens</i> on red brown sandy loam on floodplains and medium drainage lines.
		FP Aa ChTtChfAr c High Shrubland of <i>Acacia aptaneura</i> with Low Open Woodland of <i>Corymbia hamersleyana</i> over Open Tussock Grassland of <i>Themeda triandra</i> , <i>Chrysopogon fallax</i> and <i>Aristida contorta</i> on red loamy sand on floodplains.
	Acacia Low Open Woodland	FP AaAciAprA syAssAbTp Low Open Woodland of <i>Acacia aptaneura</i> , <i>Acacia citrinoviridis</i> and <i>Acacia pruinocarpa</i> over Open Shrubland of <i>Acacia synchronicia</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>Acacia bivenosa</i> over Very Open Hummock Grassland of <i>Triodia pungens</i> on red brown clay loam on floodplains and medium drainage lines
	Acacia Low Woodland	FP AciChAaA ancApyPl TtAriCc Low Woodland of <i>Acacia citrinoviridis</i> , <i>Corymbia hamersleyana</i> and <i>Acacia aptaneura</i> over High Shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Petalostylis labicheoides</i> over Very Open Tussock Grassland of <i>Themeda triandra</i> , <i>Aristida inaequiglumis</i> and * <i>Cenchrus ciliaris</i> on brown sandy loam on floodplains and medium drainage lines.
Acacia Open Scrub	MI AtpPIAmTp Ts ChEII Open Scrub of <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Petalostylis labicheoides</i> and <i>Acacia monticola</i> over Open Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia</i> sp. Shovelanna Hill (S.van Leeuwen 3835) with Low Open Woodland of <i>Corymbia hamersleyana</i> and <i>Eucalyptus</i>	

Characteristic	Details	
		<i>leucophloia</i> subsp. <i>leucophloia</i> on red brown sandy loam on minor drainage lines.
Acacia Open Shrubland	SS TeAsEse	Open hummock grassland of <i>Triodia epactia</i> and <i>Triodia angusta</i> with very open tussock grassland of * <i>Cenchrus ciliaris</i> under Open shrubland of <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Stylobasium spathulatum</i> , and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> . over and low open woodland of <i>Eucalyptus socialis</i> subsp. <i>eucentrica</i> or <i>Corymbia hamersleyana</i> on orange sandy stone plains.
	SA AinErer	High open shrubland of <i>Acacia incurvaneura</i> , (+/-) <i>Acacia catenulata</i> subsp. <i>occidentalis</i> , and <i>Acacia ayersiana</i> over scattered tussock grasses of <i>Eragrostis eriopoda</i> , <i>Eriachne helmsii</i> , and or <i>Digitaria brownii</i> on orange sandy clay plains.
	SA AaCocTb	Open shrubland of <i>Acacia aptaneura</i> with lower shrubland of <i>Grevillea striata</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> with low open woodland of <i>Corymbia candida</i> over very open hummock grassland of <i>Triodia basedowii</i> and very open tussock grassland of <i>Aristida pruinosa</i> , and * <i>Cenchrus ciliaris</i> on orange sandy clay plains.
Acacia Shrubland	AmAancPI ChEII TtAri	Shrubland of <i>Acacia monticola</i> , <i>Acacia ancistrocarpa</i> and <i>Petalostylis labicheoides</i> with Scattered Low Trees of <i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over Open Tussock Grassland of <i>Themeda triandra</i> and <i>Aristida inaequiglumis</i> on red loamy sand on minor drainage lines
Acacia Tall Open Scrub	11b	This is a mosaic of two vegetation associations: 11a :Tall scrub of <i>Acacia ancistrocarpa</i> , <i>A. discylophleba</i> , <i>Grevillea wickhamii</i> and <i>A. inaequilatera</i> over Open Hummock Grassland of <i>Triodia basedowii</i> , and <i>T. sp.</i> Shovellana Hill (S. van Leeuwen 3835) and Very Open Tussock Grassland of <i>Paraneurachne muelleri</i> which occurs as a mosaic with vegetation association 5a.5a: Open Woodland of <i>Corymbia hamersleyana</i> and <i>Eucalyptus gamophylla</i> over Tall Shrubland of <i>Acacia monticola</i> , <i>Petalostylis labicheoides</i> and <i>Santalum lanceolatum</i> and <i>A. bivenosa</i> over Hummock Grassland of <i>Triodia epactia</i> and <i>T. basedowii</i> and Open Tussock Grassland of <i>Themeda triandra</i> .
Acacia Tall Shrubland	2a	Tall Open Shrubland to Tall Shrubland of <i>Acacia pruinocarpa</i> , <i>A. aptaneura</i> and <i>A. catenulata</i> subsp. <i>occidentalis</i> over Shrubland of <i>A. aptaneura</i> , <i>A. aneura</i> , <i>A. bivenosa</i> and <i>Eremophila forrestii</i> subsp. <i>forrestii</i> over Scattered Low Shrubs of <i>Scaevola parvifolia</i> subsp. <i>pilbarae</i> over Open Hummock Grassland of <i>Triodia basedowii</i> and Very Open Tussock Grasses of <i>Aristida contorta</i> , <i>Paraneurachne muelleri</i> and <i>Cymbopogon procerus</i> .
Corymbia Low Open Woodland	SP ChEoCd AancApaA ad s TbTscTs	Low Open Woodland of <i>Corymbia hamersleyana</i> , <i>Eucalyptus odontocarpa</i> and <i>Corymbia deserticola</i> subsp. <i>deserticola</i> over Open Shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia pachyacra</i> and <i>Acacia adsurgens</i> over Open Hummock Grassland of <i>Triodia basedowii</i> , <i>Triodia schinzii</i> and <i>Triodia sp.</i> Shovelanna Hill (S. van Leeuwen 3835) on red brown sandy loam on footslopes and stony plains.
Eucalyptus Open Woodland	MI EgAdTp	Low open woodland of <i>Eucalyptus gamophylla</i> over tall shrubland of <i>Acacia dictyophleba</i> , <i>Petalostylis labicheoides</i> and <i>Grevillea wickhamii</i> over hummock grassland of <i>Triodia pungens</i> on orange sandy clay in minor drainage line.
	MAEcoAci Cyix	Low open woodland of <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus victrix</i> over high open shrubland of <i>Acacia citrinoviridis</i> and (+/-) <i>Melaleuca glomerata</i> over very open sedgeland of <i>Cyperus ixiocarpus</i> and <i>Cyperus vaginatus</i> with very open tussock grassland of * <i>Cenchrus ciliaris</i> on orange sandy clay in major creek lines.
	ME EIIAciTt	Low open woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Eucalyptus victrix</i> over high open shrubland of <i>Acacia citrinoviridis</i> , <i>Acacia monticola</i> , and <i>Gossypium robinsonii</i> over very open tussock grassland of <i>Themeda triandra</i> , and * <i>Cenchrus ciliaris</i> tall sparse grassland with open hummock grassland of <i>Triodia pungens</i> on orange sandy clay in medium drainage line.
Eucalyptus Woodland	MA EcrEvAciA pypMgCcE uaTt	Woodland of <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>Eucalyptus victrix</i> over High Open Shrubland of <i>Acacia citrinoviridis</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Melaleuca glomerata</i> over Tussock Grassland of * <i>Cenchrus ciliaris</i> , <i>Eulalia aurea</i> and <i>Themeda triandra</i> on brown clay loam on banks of major drainage lines.

Characteristic	Details	
Themeda Tussock Grassland	GGTtErmu ThmbEIICh CfAtpGoro PI	Tussock Grassland of <i>Themeda triandra</i> , <i>Eriachne mucronata</i> and <i>Themeda</i> sp. Mt Barricade with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia hamersleyana</i> and <i>Corymbia ferritcola</i> over High Shrubland of <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Gossypium robinsonii</i> and <i>Petalostylis labicheoides</i> on red brown sandy loam on narrowly incised rocky drainage lines
	METtChfE uaExEvCh PIApaAyp	Tussock Grassland of <i>Themeda triandra</i> , <i>Chrysopogon fallax</i> and <i>Eulalia aurea</i> with Low Open Woodland of <i>Eucalyptus xerothermica</i> , <i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> and Shrubland of <i>Petalostylis labicheoides</i> , <i>Acacia pachyacra</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> on red sandy loam on medium drainage lines.
	MITtCyoEr muChEgGr whPIErti	Tussock Grassland of <i>Themeda triandra</i> , <i>Cymbopogon obtectus</i> and <i>Eriachne mucronata</i> with Open Woodland of <i>Corymbia hamersleyana</i> and <i>Eucalyptus gamophylla</i> over High Open Shrubland of <i>Grevillea wickhamii</i> subsp. <i>hispidula</i> , <i>Petalostylis labicheoides</i> and <i>Eremophila tietkensis</i> on red loamy sand on minor drainage lines
Triodia Hummock Grassland	3a	3a: Low Open Woodland of <i>Hakea lorea</i> subsp. <i>lorea</i> and <i>Corymbia aspera</i> over Scattered Tall Shrubs of <i>Acacia pruinocarpa</i> over Hummock Grassland of <i>Triodia schinzii</i> and Scattered herbs of <i>Bonamia rosea</i> and <i>Duperreya commixta</i> .
	3c	3c: Scattered Low Trees of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over Scattered Tall Shrubs of <i>Acacia pruinocarpa</i> and <i>A. aptaneura</i> over Low Open Shrubland of <i>A. hilliana</i> and <i>A. adoxa</i> var. <i>adoxo</i> over Open Hummock Grassland of <i>Triodia basedowii</i> .
	FP Tb AaAprErff	Hummock Grassland of <i>Triodia basedowii</i> with Low Open Woodland of <i>Acacia aptaneura</i> and <i>Acacia pruinocarpa</i> over Open Shrubland of <i>Eremophila forrestii</i> subsp. <i>forrestii</i> on red sandy loam on floodplains
	FS Ts CdHc AancAiGrw h	Hummock Grassland of <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of <i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>Hakea chordophylla</i> over Open Shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> and <i>Grevillea wickhamii</i> subsp. <i>hispidula</i> on red brown sandy loam on footslopes and stony plains
	GG Tp EIIcfdop	Hummock Grassland of <i>Triodia pungens</i> with Low Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia ferritcola</i> over Open Shrubland of <i>Dodonaea pachyneura</i> on red brown sandy clay loam in gullies
	HC Tw AhEkkEgC h	Hummock Grassland of <i>Triodia wiseana</i> with Shrubland of <i>Acacia hamersleyensis</i> and Open Mallee of <i>Eucalyptus kingsmillii</i> subsp. <i>kingsmillii</i> , <i>Eucalyptus gamophylla</i> and <i>Corymbia hamersleyana</i> (mallee form) on red brown loam and silty loam on hill crests
	HS Tb EIIAbAiPI	Hummock Grassland of <i>Triodia basedowii</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over Open Shrubland of <i>Acacia bivenosa</i> , <i>Acacia inaequilatera</i> and <i>Petalostylis labicheoides</i> on red brown sandy loam on lower hill slopes.
	HS Tp AoAiSeaol nrSiar	Hummock Grassland of <i>Triodia pungens</i> with High Open Shrubland of <i>Acacia orthocarpa</i> and <i>Acacia inaequilatera</i> and Low Open Shrubland of <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Indigofera rugosa</i> and <i>Sida arsinata</i> on brown loamy sand on dolerite hills and steep scree slopes below ironstone ridges.
	HS TpTsCdEII AancAbAte n	Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of <i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over Open Shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> and <i>Acacia tenuissima</i> on red loamy sand on lower hill slopes and footslopes
	HS Ts	Hummock Grassland of <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) on red brown sandy loam on hill slopes
	HS TsAbEII	Hummock grassland of <i>Triodia vanleeuwenii</i> and <i>Triodia pungens</i> with very open tussock grassland of <i>Eriachne lanata</i> under open shrubland of <i>Acacia bivenosa</i> and or <i>Acacia hilliana</i> and woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> on stony hillslopes.
	HS TsTwTpEII ChAhiAaa	Hummock Grassland of <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835), <i>Triodia wiseana</i> and <i>Triodia pungens</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> over Low Open Shrubland of <i>Acacia hilliana</i> and <i>Acacia adoxa</i> var. <i>adoxo</i> on red brown sandy loam on hill slopes

Characteristic	Details		
		HS TwEIIChHc AancAbAa	Hummock Grassland of <i>Triodia wiseana</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia hamersleyana</i> and <i>Hakea chordophylla</i> and Open Shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> and <i>Acacia aptaneura</i> on red sandy loam on hill slopes
		MI TsTp AancAmGr wh	Hummock Grassland of <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) and <i>Triodia pungens</i> with Shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia monticola</i> and <i>Grevillea wickhamii</i> subsp. <i>hispidula</i> on brown sandy loam on minor drainage lines
		SP TpTb EgPIAbAa nc	Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia basedowii</i> with Open Mallee of <i>Eucalyptus gamophylla</i> and Shrubland of <i>Petalostylis labicheoides</i> , <i>Acacia bivenosa</i> and <i>Acacia ancistrocarpa</i> on red brown loamy sand on stony plains and footslopes
		SS TbApaCh	Hummock grassland of <i>Triodia basedowii</i> with scattered tussock grasses of <i>Paraneurachne muelleri</i> and <i>Eragrostis eriopoda</i> under open shrubland of <i>Acacia pachyacra</i> , <i>Acacia aptaneura</i> , and <i>Hakea chordophylla</i> and scattered tall <i>Corymbia hamersleyana</i> trees on orange sandy stone plains.
		UH TsSeglCh	Hummock grassland of <i>Triodia vanleeuwenii</i> , and <i>Triodia pungens</i> with very open tussock grassland of <i>Paraneurachne muelleri</i> under open shrubland of <i>Senna glutinosa</i> subsp. <i>x luerssenii</i> , (+/-) <i>Acacia bivenosa</i> and <i>Grevillea wickhamii</i> subsp. <i>aprica</i> and woodland of <i>Corymbia deserticola</i> subsp. <i>deserticola</i> , <i>Corymbia hamersleyana</i> , and <i>Eucalyptus gamophylla</i> on orange sandy stone undulating low hills.
	Triodia OpenHummo ckGrassland	ME TscTs Ch AadsErla anc	Open Hummock Grassland of <i>Triodia schinzii</i> and <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) with Scattered Low Trees of <i>Corymbia hamersleyana</i> over Open Shrubland of <i>Acacia adsurgens</i> , <i>Eremophila longifolia</i> and <i>Acacia ancistrocarpa</i> on red sandy loam on medium drainage lines
		HS TpTbEIIAa AcaoSesS eglErcu	Open Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia basedowii</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Acacia aptaneura</i> and <i>Acacia catenulata</i> subsp. <i>occidentalis</i> over Open Shrubland of <i>Senna stricta</i> , <i>Senna glutinosa</i> subsp. <i>x luerssenii</i> and <i>Eremophila cuneifolia</i> on orange sandy loam on hill slopes
		HS TbTsAsyA aAteErcuM agSol	Open Hummock Grassland of <i>Triodia basedowii</i> and <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) with Open Shrubland of <i>Acacia synchronicia</i> , <i>Acacia aptaneura</i> and <i>Acacia tetragonophylla</i> over Low Open Shrubland of <i>Eremophila cuneifolia</i> , <i>Maireana georgei</i> and <i>Solanum lasiophyllum</i> on red sandy loam on floodplains and lower hill slopes.
Vegetation condition	<p>The vegetation survey (Spectrum, 2023; Onshore 2014a; and Astron, 2013) indicate the vegetation within the proposed clearing area is in Excellent to Completely Degraded condition (Keighery, 1994), described as:</p> <ul style="list-style-type: none"> Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive; <p>to</p> <ul style="list-style-type: none"> Completely Degraded: No longer intact; completely/almost completely without native species. <p>The full Keighery (1994) condition rating scale is provided in Appendix B.</p>		
Climate and landform	The application area is mapped within elevations of 670 to 520 meters AHD (GIS Database). The climate of the region is described as semi-desert-tropical, and the annual rainfall average of approximately 321.8 millimetres (BoM, 2023).		
Soil description & Land degradation risk	<p>The soil is mapped as part of the following soil systems (DPIRD, 2023), described as:</p> <ul style="list-style-type: none"> Newman system (285Ne): Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands; Boolgeeda system (285Bg): Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrubland. River system (285Ri and 290Ri): Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex; 		

Characteristic	Details
	The soils systems abovementioned have very low risk soils erosion; however, susceptibility to erosion is high or very high if vegetative cover is removed from the River system (DPIRD, 2023).
Waterbodies & Hydrogeography	There are numerous minor ephemeral drainage lines and one significant ephemeral watercourse (Fortescue River) that intersect the application area (GIS Database). The application area is located within Newman Water Reserve, a Public Drinking Water Source Area, classified as Priority 1 under the CAWS Act (GIS Database). The mapped groundwater salinity is between 500 - 1,000 milligrams per litre total dissolved solids, which is described as marginal water quality (GIS Database).
Flora	There are records of 18 priority flora species within a 20 kilometre radius of the application area (GIS Database). Five priority flora species have been previously recorded within the application area (BHP, 2023a).
Ecological communities	The application area is partly within the buffer of the Threatened Ecological Community (TEC) known as the 'Ethel Gorge aquifer stygobiont community' (GIS Database).
Fauna	There are 23 known records of conservation significant species within 20 kilometres of the application area (GIS Database).
Fauna habitat	The following fauna habitats were identified within the application area: <ul style="list-style-type: none"> • Breakaway / Cliff: Breakaways/Cliffs are rugged, incised rocky hills and ranges. They tend to contain large rock fragments and more rock outcropping than other fauna habitats. Significant habitat features such as caves were sometimes encountered in this habitat type. Vegetation can be dense and complex in areas of soil deposition or sparse and simple where erosion has occurred. • Drainage Area / Floodplain: Characterised by <i>Eucalyptus xerothermica</i> and <i>Corymbia hamersleyana</i> woodland over broad-leafed <i>Acacia</i> 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 *<i>Cenchrus ciliaris</i>. • Gorge / Gully: Gorges and gullies are rugged, steep-sided valleys incised into the surrounding landscape. Gorges tend to be deeply incised, with vertical cliff faces, while gullies are more open (but not as open as Minor Drainage Lines). Caves and rock pools are most often encountered in this habitat type. Vegetation can be dense and complex in areas of soil deposition or sparse and simple where erosion has occurred. • Hillcrest / Hill slope: 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 <i>Eucalyptus</i> woodlands, <i>Acacia</i> and <i>Grevillea</i> scrublands and <i>Triodia</i> spp. low hummock grasslands. • Minor Drainage Line: Located within the minor gullies and depressions, generally through the Crest/Slope habitat. Consists primarily of <i>Acacia</i> low shrubland. The understorey generally lacks density and often consists solely of sparse tussock grassland, often including the weed Buffel Grass *<i>Cenchrus ciliaris</i> where it has been introduced. The substrate can be sandy in places but generally consists of a skeletal loam gravel or stone. • Major Drainage Line: Major Drainage Lines comprise mature River Red Gums (<i>Eucalyptus camaldulensis</i>), Coolibahs and stands of Silver Cadjeput (<i>Melaleuca argentea</i>) over river pools. Open, sandy or gravelly riverbeds characterise this habitat type. In ungrazed areas, the vegetation adjacent to the main channel or channels is denser, taller and more diverse than adjacent terrain and can include reedbeds around pools. • Sand Plain: Sand Plain habitat is characterised by relatively deep sandy soils supporting dense spinifex grasslands and sparse shrubs. This habitat transitions into patches of Mulga in places. This habitat often occurs as terraces along Major Drainage Lines. • Stony Plain: These are erosional surfaces of gently undulating plains, ridges and associated footslopes. Mainly support hard spinifex (and occasionally soft spinifex) with a mantle of gravel and pebbles.

A.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current extent in all DBCA Managed Land (proportion of pre-European extent) (%)
IBRA Bioregion - Pilbara	17,808,657	17,731,764	~99	1,802,099	~10
Beard vegetation associations - State					
29	7,903,991	7,898,973	~99	496,368	~6
82	2,565,901	2,553,206	~99	295,378	~12
216	280,759	279,237	~99	0	0
Beard vegetation associations - Bioregion					
29	1,133,219	1,131,712	~99	106,259	~9
82	2,563,583	2,550,888	~99	295,377	~11
216	26,669	26,372	~99	0	0

Government of Western Australia (2019)

A.1. Flora analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia corusca</i>	Priority 1	Y	Y	3.9	Y
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	Priority 3	Y	Y	6.4	Y
<i>Crotalaria smithiana</i>	Priority 3	Y	Y	11.9	Y
<i>Eremophila capricornica</i>	Priority 1	Y	Y	16.9	Y
<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	Priority 4	Y	Y	17.1	Y
<i>Eremophila naaykensis</i>	Priority 3	Y	Y	7.6	Y
<i>Eremophila youngii</i> subsp. <i>lepidota</i>	Priority 4	Y	Y	5.5	Y
<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i>	Priority 3	Y	Y	7.2	Y
<i>Goodenia berringbinensis</i>	Priority 4	Y	Y	5.8	Y
<i>Goodenia hartiana</i>	Priority 2	Y	Y	5.7	Y
<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727)	Priority 3	Y	Y	5.8	Y
<i>Gymnanthera cunninghamii</i>	Priority 3	Y	Y	0	Y
<i>Ipomoea racemigera</i>	Priority 3	Y	Y	6.3	Y
<i>Isotropis parviflora</i>	Priority 3	Y	Y	0.3	Y
<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)	Priority 3	Y	Y	5.7	Y
<i>Swainsona thompsoniana</i>	Priority 3	Y	Y	16.3	Y
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	Priority 3	Y	Y	16.1	Y
<i>Triodia</i> sp. Mt Ella (M.E. Trudgen 12739)	Priority 3	Y	Y	0.1	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Vittadinia</i> sp. Coondewanna Flats (S. van Leeuwen 4684)	Priority 3	Y	Y	6.9	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.2. Fauna analysis table

Significant Species	Conservation Status	Distribution and Ecology	Habitat Relevance	Likelihood	Potential Impact on Species
Birds					
Curlw Sandpiper (<i>Calidris ferruginea</i>)	Critically Endangered, EPBC Act Critically Endangered, BC Act	The Curlw Sandpiper is a summer non-breeding migratory shorebird that occurs along most of the coast of Western Australia (Geering <i>et al.</i> , 2007). It inhabits exposed tidal mudflats, and is less frequently found on inland freshwater wetlands (Geering <i>et al.</i> , 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).	This species has been recorded at Ophthalmia Dam (DEC 2013b) and due to the proximity to the dam this species may fly over the Amendment Application Area. The Major Creek Line habitat type within the Amendment Application Area represents potentially suitable, albeit marginal, seasonal foraging habitat.	Possible	Low Although the Amendment Application Area contains some potentially suitable, albeit marginal, seasonal foraging habitat, the species is more typically associated with marine and tidal estuaries found on the coast of Western Australia.
Fork-tailed Swift (<i>Apus pacificus</i>)	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.	Likely	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 (<i>Falco hypoleucos</i>)	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.	This species has been recorded flying within the Amendment Application Area. Potential nesting habitat occurs for this species in the taller trees of the Major Drainage Line and the Breakaway habitat type. Suitable foraging and potential breeding habitats for this species within the Amendment Application Area include the Major Creek Line habitat.	Recorded	Low The Grey Falcon could potentially nest in the taller trees of the Major Drainage Line habitat and larger cliff edges of 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 (<i>Falco peregrinus</i>)	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).	While this species has not been recorded within the Amendment Application Area the steep rocky canyon habitat type of the Amendment Application Area represent potentially suitable nesting habitat. All habitat types within the Amendment Application Area are potential foraging habitat.	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. The habitat that could potentially be associated with this species also occurs extensively throughout the Pilbara.
Pilbara Flat-headed Blind Snake (<i>Anilius ganei</i>)	Priority 1 (DBCA)	The Pilbara Flat-headed Blind Snake is a moderately robust blind snake known from widely separated areas between Newman and Pannawonica. A very cryptic species. Most often recorded in rocky or stony areas and considered to be possibly associated with moist gorges and gullies (Wilson and Swan, 2010)	Little is known about this species habitat preferences and it may occur within habitats of the Amendment Application Area. This species is likely to occur in deeper gorge and gully habitat which are typically avoided during exploration activities.	Possible	Low This species may utilise the habitat types within the Amendment Application Area however is unlikely to be reliant on the areas within the Amendment Application Area.
Pilbara Olive Python (<i>Liasis olivaceus barroni</i>)	Vulnerable (EPBC Act) Vulnerable (BC Act)	The Pilbara Olive Python's range is restricted to the Pilbara region, north Western Australia and the Dampier Archipelago. Habitat consists of rocky escarpments, gorges and waterholes within the Pilbara Region. The preferred microhabitat for this species are under rock piles, on top of rocks and under spinifex as well as in artificial features such as overburden heaps, railway embankments and 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).	Within the Amendment Application Area, potential habitat for this species exists within the Major Drainage Line Habitat and the rocky features associated with the Hillcrest/ Hillslope and Gorge/ Gully habitat types. This species has been recorded from one location within the Amendment Application Area, two locations in close proximity to waterhole features, which have been clipped from the Amendment Application Area with a 10 m buffer and five locations within 1 km of the Amendment Application Area.	Recorded	Low Pilbara Olive Python may forage within the Major Drainage Line, Hillcrest/ Hillslope and Gorge/ Gully habitats within the Amendment Application Area but are unlikely to be reliant on these habitats.

Brush-tailed Mulgara (<i>Dasymercus blythi</i>)	Priority 4 (DBCA) (only Brush-tailed Mulgara)	Brush-tailed mulgaras occur in a range of vegetation types, however, the principal habitat is mature hummock grasslands of spinifex, especially <i>Triodia basedowii</i> and <i>T. pungens</i> (Masters <i>et al.</i> , 2003). Note: Woolley, <i>et. al.</i> (2013) noted that the Crest-tailed Mulgara (<i>Dasymercus cristicauda</i>) is unlikely to occur within the Pilbara.	Sandplain habitat of the Amendment Application Area represent suitable habitat for this species. Sandplains are present within Amendment Application Area (on the southern end) and adjacent to the Amendment Application Area. There are three records from the eastern edge and six records along the southern edge of the Amendment Application area, as well as multiple records in the broader region.	Recorded	Low Nine Mulgara have been recorded from the Amendment Application Area and are managed under Condition 5. A small area of preferred habitat (sandplain) occurs within the Amendment Application Area. There are large areas of Sandplain habitat outside of the Amendment Application Area and in the broader region. In the event that active Mulgara burrows are identified they will be avoided using a 10 m buffer, where practicable.
Ghost Bat (<i>Macroderma gigas</i>)	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 <i>et al.</i> , 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).	While there is no record of Ghost Bats within the Amendment Application Area they may forage in the Hill Crest habitat type. <i>Biologic</i> (2014) identified a number of caves within the Gorge / Gully habitat adjacent to the Amendment Application Area which, while they exhibited no evidence of recent use, may provide potential feeding roosts. These caves have been excluded from the Amendment Application Area with a 50m buffer.	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.
Western Pebble-mound mouse (<i>Pseudomys chapmani</i>)	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 (Menkhurst and Knight, 2004). Abandoned mounds in disturbed areas suggest that the species is under threat by grazing and mining activities. The construction of extensive pebble mounds, built from small stones, which typically cover areas from 0.5-9.0 square metres, is characteristic of this species. Mounds are restricted to suitable class stones, and are usually found on gentle slopes and spurs (van Dyck and Strahan, 2008).	The Hillcrest / Hill slope and Stony Plain habitats of the Amendment Application Area is suitable for this species. This species has been recorded within the Amendment Application Area. Active mounds of the Western Pebble-mound Mouse will be avoided using a 10 m buffer, where practicable.	Recorded	Low There are large areas of suitable habitat adjacent to the Amendment Application Area. Active mounds of the Western Pebble-mound Mouse will be avoided using a 10 m buffer, where practicable.

(Spectrum Ecology, 2023)

Appendix A. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains habitat that is likely to support priority flora species. There are also records of the potential novel species <i>Hibiscus aff. campanulatus</i>.</p>	<p>May be at variance</p> <p>as per CPS 5990/1</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
<p><u>Principle (b):</u> "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."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains suitable habitat for conservation significant fauna. The majority of significant features such as caves and waterholes have been excluded from the permit area.</p>	<p>May be at variance</p> <p>as per CPS 5990/1</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain habitat for Threatened flora species listed under the BC Act. The assessment of impacts to Threatened flora for CPS 5990/1 considered that there is areas of suitable habitat for <i>Lepidium catapycnon</i>. This species has since been reclassified as a priority 4 flora species (Western Australian Herbarium, 1998-).</p>	<p>Not likely to be at variance</p> <p>changed from CPS 5990/1</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is within the mapped boundary of the ‘Ethel Gorge stygobiont community’ threatened ecological community.</p>	<p>May be at variance</p> <p>changed from CPS 5990/1</p>	<p>Yes</p> <p><i>Refer to Section 3.2.1, above.</i></p>
<p>Environmental value: significant remnant vegetation and conservation areas</p>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	<p>Not at variance</p> <p>as per CPS 5990/1</p>	<p>No</p>
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	<p>Not likely to be at variance</p> <p>as per CPS 5990/1</p>	<p>No</p>
<p>Environmental value: land and water resources</p>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>There are numerous ephemeral watercourses within the application area (GIS Database). The majority of these are minor drainage lines similar to those that are widespread throughout the surrounding area. Given the proposed clearing is spread over a large area, it is not anticipated that it will have a significant impact on minor drainage lines within the application area.</p> <p>The most significant ephemeral watercourse that passes through the application area is the Fortescue River (BHP Billiton, 2014). The vegetation association 6a: Eucalyptus Open Forest (Astron, 2013) is growing in association with the Fortescue River. The only proposed activities within this vegetation association are for access tracks (BHP Billiton, 2014). Potential impacts to the Fortescue River may be minimised by the continued implementation of a watercourse management condition and a condition restricting the clearing of vegetation associated with the river.</p>	<p>At variance</p> <p>as per CPS 5990/1</p>	<p>No</p>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The application area is mapped as occurring on the Boolgeeda, Divide, Newman, River, Rocklea and Washplain land systems (GIS Database). The Boolgeeda and Newman land systems cover the overwhelming majority of the application area (GIS Database). Both of these land systems are generally not prone to erosion (Van Vreeswyk et al., 2004).</p> <p>The Divide, Rocklea and Washplain land systems only make up less than 1% of the application area cumulatively (GIS Database). The Divide land system has some susceptibility to wind erosion immediately following fire and areas receiving concentrated flow within the Washplain land system are moderately susceptible to erosion following disturbance (Van Vreeswyk et al., 2004). The Rocklea land system has a very low erosion hazard (Van Vreeswyk et al., 2004).</p>	<p>Not likely to be at variance</p> <p>as per CPS 5990/1</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
The River land system correlates to vegetation associated with the Fortescue River in the west of the application area (BHP Billiton, 2014; GIS Database). This land system is highly susceptible to erosion when disturbed (Van Vreeswyk et al., 2004). Potential impacts of erosion may be minimised by the implementation of a condition limiting the clearing of vegetation within this land system to be only for the purpose of access tracks.		
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>There are no permanent watercourses within the application area, however, the Fortescue River passes through the western most end (GIS Database). Proposed activities within the Fortescue River are the creation of access tracks. Potential impacts to the surface water in the Fortescue River may be minimised by the implementation of a watercourse management condition and a condition restricting the clearing within the river for access tracks only.</p> <p>During fauna surveys within the application area it was noted that there were several semi-permanent water pools within many of the gorges (Biologic, 2014). However, these pools have been excluded from the application area and will not be impacted by the proposed clearing. There are numerous minor ephemeral watercourses within the application area (GIS Database). Given the proposed clearing is spread out of a large area (3,835 hectares) it is not likely to have a significant impact on surface water quality in the local area.</p> <p>The application area is not located within a Public Drinking Water Source Area (GIS Database). The groundwater within the application area ranges from 500 to 1,000 milligrams per litre of total dissolved solids (GIS Database). Given the relative scale of the proposed clearing (190 hectares within a boundary of 3,835 hectares), it would not be expected that it would cause salinity levels within the application or surrounding area to alter.</p>	<p>Not likely to be at variance</p> <p>as per CPS 5990/1</p>	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding (GIS Database). Whilst large rainfall events may result in the flooding of the area, the proposed clearing is spread over a large area (190 hectares within a boundary of 3,835 hectares) and is not likely to lead to an increase in incidence or intensity of flooding.</p>	<p>Not likely to be at variance</p> <p>as per CPS 5990/1</p>	No

Appendix B. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.

Condition	Description
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix A - References and databases

1. GIS datasets

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- IBRA Vegetation Statistics
- Regional Parks (DBCA-026)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

2. References

- Astron (2013) Ninga Flora and Vegetation Assessment. Unpublished report prepared for BHP Pty Ltd by Astron Environmental Services, April 2013.
- BHP (2014) Orebodies 21 and 22. Supporting information for a clearing permit application CPS 5990/1, January 2014.
- BHP (2023) Application to Amend NVCP CPS 5990/1 Orebodies 21 and 22 - Native Vegetation Clearing Permit Amendment Application Supporting Document, November 2023.
- Biologic Environmental (2014) Consolidated Regional Fauna Habitat Mapping 2014. Unpublished report prepared for BHP Pty Ltd by Biologic Environmental, May 2014.
- Biologic Environmental (2014) Orebody 19 Level 2 Vertebrate Fauna Survey. Unpublished report for BHP Billiton Pty Ltd by Biologic Environmental, January 2014.
- Biologic Environmental (2021) BHP WAIO Jimblebar *Eremophila capricornica* Targeted Flora Survey. Unpublished report prepared for BHP Pty Ltd by Biologic Environmental, March 2021
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023a) Ethel Gorge Aquifer Stygobiont Community. Fact Sheet published by the Department of Biodiversity, Conservation and Attractions, September 2023.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023b) Threatened Ecological Communities List May 2023. Available from: <https://www.dbca.wa.gov.au/wildlife-and-ecosystems/threatened-ecological-communities/list-threatened-ecological-communities>
- Department of Biodiversity, Conservation and Attractions (2024) Advice received for clearing permit application 5990/2. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, January 2024.

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- Department of Planning, Lands and Heritage (DPLH) (2024) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 3 November 2024).
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- Department of Water and Environmental Regulation (DWER) (2023) Advice received in relation to Clearing Permit Application CPS 5990/2. Department of Water and Environmental Regulation, Western Australia, December 2023.
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.
- Ecological (2013) Ninga Level 1 Vertebrate Fauna Assessment. Unpublished report for BHP Billiton Pty Ltd by Ecological, September 2013.
- ENV (2011) Orebody 42/43 Flora, Vegetation and Fauna Assessment. Unpublished report for BHP Billiton Iron Ore Pty Ltd, June 2011.
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf
- Environmental Protection Authority (EPA) (2020) Technical Guidance – Terrestrial Fauna Surveys. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf
- GHD (2019) North Jiblebar Vertebrate Fauna Survey. Report prepared for BHP Iron Ore by GHD, August 2019.
- GHD (2020) Jiblebar targeted ghost bat survey. Report prepared for BHP Iron Ore by GHD, June 2020.
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Onshore Environmental (2014a) Consolidated Pilbara Vegetation Mapping. Report prepared for BHP Pty Ltd by Onshore Environmental, June 2014.
- Onshore Environmental (2014b) Orebody 31 - Targeted Significant Flora Survey. Report prepared for BHP Pty Ltd by Onshore Environmental, June 2014.
- Onshore Environmental (2015) Targeted Survey for *Acacia* sp. East Fortescue (surrounding OB31). Report prepared for BHP Pty Ltd by Onshore Environmental, November 2015.
- Spectrum (Spectrum Ecology and Spatial) (2023) East Ophthalmia & Ninga Detailed Flora & Vegetation Survey. Unpublished report prepared for BHP Pty Ltd by Spectrum Ecology and Spatial, May 2023.
- Trudgen, M.E. (1991) Vegetation condition scale in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.
- Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 10 January 2024).

3. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, Western Australia

EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**

Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU **Vulnerable species**

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX **Extinct species**

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW **Extinct in the wild species**

Species that “*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its*

life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P Priority species:

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 Priority One - Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey

requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 Priority Two - Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 Priority Three - Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 Priority Four - Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.