Department of Energy, Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	4469/3
Permit type:	Purpose Permit
Applicant name:	BHP Iron Ore Pty Ltd
Application received:	15 March 2023
Application area:	300 hectares
Purpose of clearing:	Mineral exploration, geotechnical investigations, hydrological investigations, installation of meteorological masts and light detection and ranging (LiDAR) stations and any associated activities
Method of clearing:	Mechanical Removal
Tenure:	*Iron Ore (Mount Newman) Agreement Act 1964,* Mineral Lease 244SA (AML 70/244)
Location (LGA area/s):	Shire of East Pilbara
Colloquial name:	Gurinbiddy Exploration Program

1.2. Description of clearing activities

BHP Iron Ore Pty Ltd proposes to clear up to 300 hectares of native vegetation within a boundary of approximately 10,163 hectares, for the purpose of mineral exploration, geotechnical investigations, hydrological investigations, installation of meteorological masts and light detection and ranging (LiDAR) stations and any associated activities. The project is located approximately 75 kilometres west of Newman, within the Shire of East Pilbara.

Clearing permit CPS 4469/1 was granted by the Department of Mines and Petroleum (now the Department of Energy, Mines, Industry Regulation and Safety) on 8 September 2011 and was valid from 1 October 2011 to 31 July 2018. The permit authorised the clearing of up to 150 hectares of native vegetation within a boundary of approximately 4,077 hectares, for the purpose of mineral exploration.

CPS 4469/2 was granted on 21 July 2016, amending the permit to increase the clearing authorised to 300 hectares, increase the permit boundary to approximately 10,184 hectares, extend the permit duration to 30 November 2031 and amend the annual reporting date to 1 October each year.

On 15 March 2023, the Permit Holder applied to amend CPS 4469/2 to change the permit holder name, include additional purposes for clearing, amend the permit boundary to exclude significant areas, and include an additional condition on the permit to only allow clearing in certain areas for access tracks until further biological surveys have been undertaken.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	18 December 2023
Decision area:	300 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51KA(1) of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) on 15 March 2023. DEMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix E), information of a flora and vegetation and fauna survey (Appendix D), the clearing principles set out in Schedule 5 of the EP Act (Appendix C), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;

- impacts to vegetation growing in association with a watercouse; and
- the loss of native vegetation that is suitable habitat for conservation significant fauna.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- avoid clearing riparian vegetation and maintain water flows;
- avoid clearing within areas containing gullies / gorges habitat;
- restricting the clearing of native vegetation for the purpose of clearing tracks to conduct biological surveys within areas that only have extrapolated data; and
- retain cleared vegetation and topsoil and respread this on a cleared area of equivalent size within the adjacent existing gravel extraction area within 12 months of clearing to ensure fauna habitat is not permanently lost.

The assessment has not changed since the assessment for CPS 4469/2. The Delegated Officer determined that the proposed change in Permit Holder name, change in clearing purpose, amendment of the boundary to excise potential bat caves, restoration of an exclusion zone, and restriction of clearing in the eastern side of the amendment application area for the purpose of clearing tracks to conduct biological surveys is not likely to lead to an unacceptable risk to environmental values.

1.5. Site map

A site map of proposed clearing is provided in Figure 1 below.

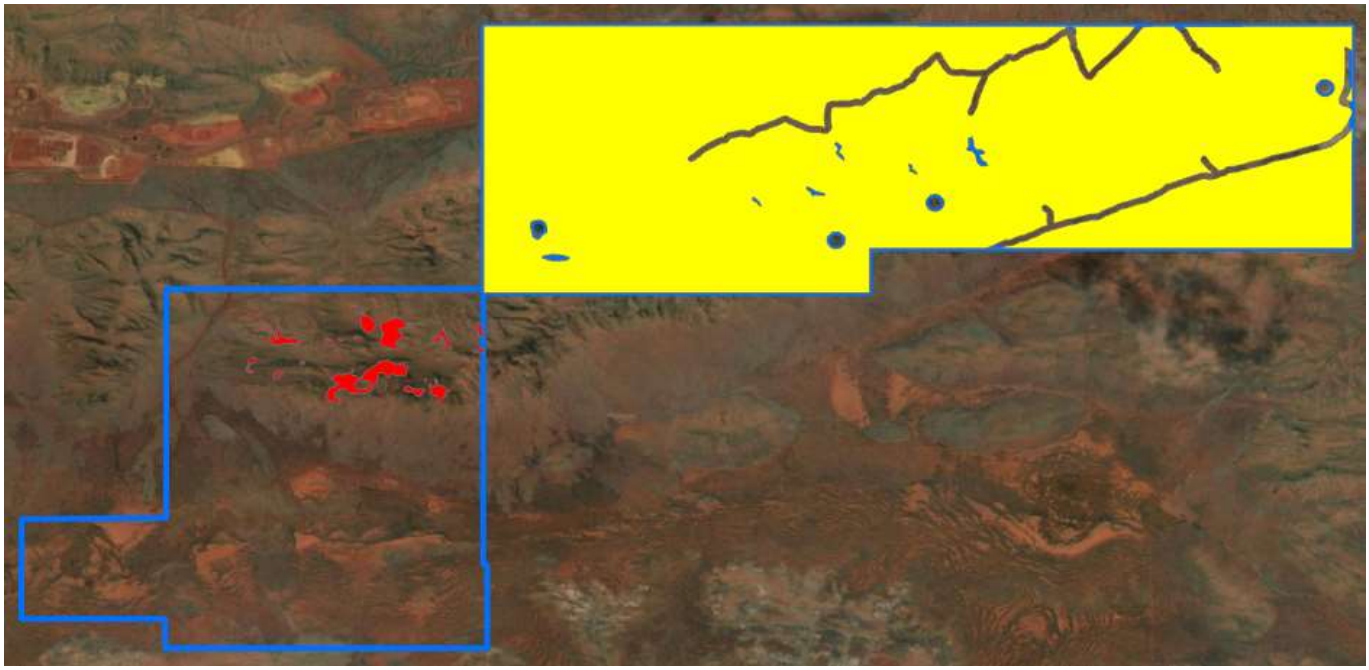

Figure 1. Map of the application area. The blue line indicates the boundary of the amendment application area. The yellow area indicates the area within which clearing can only occur for the purpose of clearing tracks to conduct biological surveys. The red area indicates the areas within which clearing cannot occur.

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 1.4), 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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Iron Ore (Mount Newman) Agreement Act 1964*

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, 2016)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The Permit Holder requested a condition to be placed in the amended clearing permit to restrict clearing conducted in areas where surveys had not been conducted and only contained extrapolated data (BHP, 2023a). The Permit Holder also requested a condition to be placed in the amended clearing permit to not allow clearing to be undertaken in an area that contains significant habitat for conservation significant fauna. The amendment clearing permit boundary was reduced by excising three areas with potential bat caves that were identified by a targeted ghost bat population and roost survey (Biologic, 2017). The proponent has advised that the Priority flora individuals recorded within the amendment application area will be avoided with a 10 metre buffer where practicable (BHP, 2023b). The same will be done where practicable with the recorded active mounds of the western pebble-mound mouse (BHP, 2023b).

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

A review of current environmental information (Appendix C) reveals that the assessment against the clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 9383/2. The amendment proposed that in areas that have not been adequately surveyed and contain extrapolated data, that the proposed clearing is restricted to clearing only for the purpose of clearing tracks to conduct biological surveys. It will also contain and exclusion area which contains significant habitat for conservation significant fauna. Given the avoidance and mitigation measures proposed and conditioned on the permit, the clearing is not considered to result in significant impacts to this area.

3.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 4 April 2023 by the Department of Energy, Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There are two native title claims (WCD2005/001 and WCD2015/007) over the area under application (DPLH, 2023). These claims have been determined by the Federal Court on behalf of the claimant groups (Ngarluma and Yindjibarndi). However, the 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 10 registered Aboriginal Sites of Significance within the application area (DPLH, 2023). 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.

End

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. It is surrounded by the landscape of the Pilbara bioregion, native vegetation and some mining developments (GIS Database).
Ecological linkage	According to spatial imagery, the application area does not form part of any formal or informal ecological linkages (GIS Database).
Conservation areas	The application area is not located within any known or mapped conservation areas. The closest conservation area is Karijini National Park, located 26.2 kilometres northwest of the application area (GIS Database). There is also DBCA interested land located 17.6 kilometres northwest of the application area (GIS Database).
Vegetation description	The vegetation of the application area is broadly mapped as the following Beard vegetation associations: 18: Low woodland; mulga (*Acacia aneura*); 29: Sparse low woodland; mulga discontinuous in scattered groups; and 82: Hummock grassland with scattered bloodwoods & snappy gum *Triodia* spp., *Corymbia dichromophloia*, *Eucalyptus leucophloia* (GIS Database). Various flora and vegetation surveys were conducted over the application area by various consultants over the past decade. The following vegetation associations were recorded within the application area (Onshore, 2014): ***Acacia* Low Open Forest (GG AadsAcaAmuAaAtenTp):** Low Open Forest of *Acacia adsurgens* and *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Acacia mulganeura*, *Acacia aptaneura* and *Acacia tenuissima* over Very Open Hummock Grassland of *Triodia pungens* on skeletal red loams in deeply incised gullies. ***Acacia* Low Open Woodland (FP AaAcaoApErlnSolPtoArcErdiArj):** Low Open Woodland of *Acacia aptaneura*, *Acacia catenulata* subsp. *occidentalis* and *Acacia paraneura* over Low Open Shrubland of *Eremophila lanceolata*, *Solanum lasiophyllum* and *Ptilotus obovatus* over Very Open Tussock Grassland of *Aristida contorta*, *Eragrostis dielsii* and *Aristida jerichoensis* var. *subspinulifera* on red brown clay loam on hardpan intergrove plains. ***Callitris* Low Open Forest (GG CcolCfEllErmuThmbCya):** Low Open Forest of *Callitris columellaris*, *Corymbia ferriticola* and *Eucalyptus leucophloia* subsp. *leucophloia* over Open Tussock Grassland of *Eriachne mucronata*, *Themeda* sp. Mt Barricade (M.E. Trudgen 2471) and *Cymbopogon ambiguus* and Very Open Hummock Grassland of *Triodia pungens* on orange brown loam on upper gorges. ***Themelda* Closed Tussock Grassland (ME Tt ExChAaApaAaAci):** Closed Tussock Grassland of *Themeda triandra* with Low Woodland of *Eucalyptus xerothermica*, *Corymbia hamersleyana* and *Acacia aptaneura* over High Open Shrubland of *Acacia pachyacra*, *Acacia aptaneura* and *Acacia citrinoviridis* on red brown clay loam along unincised medium drainage lines. ***Triodia* Hummock Grassland (FS Ts CdHcAancAiGrwh):** Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of *Corymbia deserticola* subsp. *deserticola* and *Hakea chordophylla* over Open Shrubland of *Acacia ancistrocarpa*, *Acacia inaequilatera* and *Grevillea wickhamii* subsp. *hispidula* on red brown sandy loam on footslopes and stony plains. ***Triodia* Hummock Grassland (HC TpTwTsEllChAarGooKeve):** Hummock Grassland of *Triodia pungens*, *Triodia wiseana* and *Triodia* sp. Shovelanna Hill (S. van Leeeuwin 3835) with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over Low Shrubland of *Acacia arida*, *Gompholobium oreophilum* and *Keraudrenia velutina* subsp. *elliptica* on red brown loam on hills. ***Triodia* Hummock Grassland (HC Tw AhEkkEgCh):** Hummock Grassland of *Triodia wiseana* with Shrubland of *Acacia hamersleyensis* and Open Mallee of *Eucalyptus kingsmillii* subsp. *kingsmillii*, *Eucalyptus gamophylla* and *Corymbia hamersleyana* (mallee form) on red brown loam and silty loam on hill crests. ***Triodia* Hummock Grassland (HC TwTsTpEllCh Ah):** Hummock Grassland of *Triodia wiseana*, *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over Open Shrubland of *Acacia hamersleyensis* on red brown clay loam on hill crests and upper hill slopes. ***Triodia* Hummock Grassland (HS TmTpEllChMivSiaKeve):** Hummock Grassland of *Triodia melvillei* and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over Low Open Shrubland of *Mirbelia viminalis*, *Sida arenicola* and *Keraudrenia velutina* subsp. *elliptica* on red skeletal clay loam on steep slopes.

Characteristic	Details
	***Triodia* Hummock Grassland (ME TpTloExAciChPlApypGoro):** Hummock Grassland of *Triodia pungens* and *Triodia longiceps* with Low Woodland of *Eucalyptus xerothermica*, *Acacia citrinoviridis* and *Corymbia hamersleyana* over High Shrubland of *Petalostylis labicheoides*, *Acacia pyrifolia* var. *pyrifolia* and *Gossypium robinsonii* on red brown clay loam on medium drainage lines and surrounding floodplains. ***Triodia* Hummock Grassland (SP TpTb EgPlAbAanc):** Hummock Grassland of *Triodia pungens* and *Triodia basedowii* with Open Mallee of *Eucalyptus gamophylla* and Shrubland of *Petalostylis labicheoides*, *Acacia bivenosa* and *Acacia ancistrocarpa* on red brown loamy sand on stony plains and footslopes. ***Triodia* Hummock Grassland (SP TsTwTpEgEt AbApaApr):** Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *Triodia wiseana* and *Triodia pungens* with Very Open Mallee of *Eucalyptus gamophylla* and *Eucalyptus trivalva* over Open Shrubland of *Acacia bivenosa*, *Acacia pachyacra* and *Acacia pruinocarpa* on red brown sandy loam and clay loam on stony plains. ***Triodia* Open Hummock Grassland (HC TpAaAprAcaoErllErfrEre):** Open Hummock Grassland of *Triodia pungens* with High Open Shrubland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Eremophila latrobei* subsp. *latrobei*, *Eremophila fraseri* and *Eremophila exilifolia* on orange red sandy loam on laterised hills and rises. ***Triodia* Open Hummock Grassland (HS TmeTpAprAcaAmuCyaErmu):** Open Hummock Grassland of *Triodia* sp. Mt Ella and *Triodia pungens* with Low Open Woodland of *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis* and *Acacia mulganeura* over Open Tussock Grassland of *Cymbopogon ambiguus* and *Eriachne mucronata* on red brown loam on very steep ravine slopes. ***Triodia* Open Hummock Grassland (SP TpTmAaExAcaoApaErffAads):** Hummock Grassland of *Triodia pungens* and *Triodia melvillei* with Low Open Woodland of *Acacia aptaneura*, *Eucalyptus xerothermica* and *Acacia catenulata* subsp. *occidentalis* and Open Shrubland of *Acacia pachyacra*, *Eremophila forrestii* subsp. *forrestii* and *Acacia adsurgens* on red brown clay loam or silty loam on stony plains and floodplains.
Fauna habitat	A total of six habitat types were identified within the Amendment Application Area (Biologic, 2014; GHD, 2010). **Drainage Area / Floodplain**: Characterised by *Eucalyptus xerothermica* and *Corymbia hamersleyana* woodland over broad-leafed *Acacia* shrubland on sandy loam soils sometimes with exposed rocky areas. These can have high vegetation density, complexity, and diversity, and because they tend to occur on accretional or depositional areas, and often have deeper and richer soils than other fauna habitat. Grasses tend to be dominated by tussock grasses rather than spinifex, or the weed Buffel Grass **Cenchrus ciliaris*. **Gully / Gorges**: Gorges / gullies occur between the hills. These occur as a mix of rocky cliffs and breakaways from erosion. Some areas encompass different riparian vegetation. Most gorges / gullies are associated with temporary drainage lines from flash flooding. **Hardpan Plain**: Generally inclined alluvial plains with shallow loams. Typically covered by low scattered woodlands of Mulga in groves arranged at right angles to the direction of sheet water flow. In areas where the hardpan is close to the surface and soil depth is insufficient to support trees, an open scrub may persist. **Hillcrest / Hillslope**: These fauna habitats tend to be more open and structurally simple due to their recent depositional history than other fauna habitats and are dominated by varying species of spinifex. A common feature of these habitats is a rocky substrate, often with exposed bedrock, and skeletal red soils. These are usually dominated by *Eucalyptus* woodlands, *Acacia* and *Grevillea* scrublands and *Triodia* spp. Low hummock grasslands. **Minor Drainage Line**: Located within the minor gullies and depressions, generally through the Crest / Slope habitat. Consists primarily of *Acacia* low shrubland. The understorey generally lacks density and often consists solely of sparse tussock grassland, often including the weed Buffel Grass **Cenchrus ciliaris* where it has been introduced. The substrate can be sandy in placed but generally consists of a skeletal loam gravel or stone. **Mulga Woodland**: This habitat includes woodlands and other ecosystems in which Mulga (*Acacia aneura*) is dominant, either as the principal *Acacia* species or mixed with others. It consists of disintegrating groves on stony soils with spinifex. This habitat type is grouped with other habitat occurring on the plains; however, it is noted that small groves of Mulga occur on ridgelines. **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.

Characteristic	Details
Vegetation condition	The vegetation survey (Onshore, 2014) and aerial imagery indicate the vegetation within the proposed clearing area is in Pristine to Very Good (Trudgen, 1991) condition. The full Trudgen (1991) condition rating scale is provided in Appendix C.
Climate and landform	The application area is located within an arid zone with an annual average rainfall (Newman Aero) of 323.8 millimetres (BoM, 2023).
Soil description	The soil within the amendment application area is mapped as soil units Fa13, Fa14, and Fb3 (GIS Database). These units are described below (Northcote et al., 1960-68): **Fa13:** Ranges of banded jaspilite and chert along with shales, dolomites, and iron ore formations; some areas of ferruginous duricrust as well as occasional narrow winding valley plains and steeply dissected pediments. This unit is largely associated with the Hamersley and Ophthalmia Ranges. The soils are frequently stony and shallow and there are extensive areas without soil cover: chief soils are shallow stony earthy loams. **Fa14:** Steep hills and steeply dissected pediments on areas of banded jaspilite and chert along with shales, dolomite, and iron ore formations; some narrow winding valley plains: chief soils are shallow stony earthy loams. **Fb3:** High-level valley plains set in extensive areas of unit Fa13 (described above). There are extensive areas of pisolitic limonite deposits: principal soils are deep earthy loams.
Land degradation risk	The application area falls within the Boolgeeda, Newman, Platform, Rocklea, Spearhole, and Wannamunna land systems (DPIRD, 2023). These landscape systems are described below (van Vreeswyk et al., 2004): **Boolgeeda land system:** Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands. Vegetation is generally not prone to degradation and the system is not susceptible to erosion. **Newman land system:** Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. The system contains iron ore deposits which are currently being mined and deposits which are likely to be mined in the future. **Platform land system:** Dissected slopes and raised plains supporting hard spinifex grasslands. The system is not susceptible to erosion. **Rocklea land system:** Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. The system has very low erosion hazard. **Spearhole land system:** Gently undulating hardpan plains supporting groved mulga shrublands and hard spinifex. The system is not prone to erosion. **Wannamunna land system:** Hardpan plains and internal drainage tracts supporting mulga shrublands and woodlands (and occasionally eucalypt woodlands). Generally, the system has low susceptibility to erosion.
Waterbodies	The desktop assessment and aerial imagery indicated that several, non-perennial watercourses transect the area proposed to be cleared (GIS Database).
Hydrogeography	The application area falls within the Pilbara Groundwater Area, which is legislated by the RIWI Act 1914. The mapped groundwater salinity is 500-1,000 milligrams per litre total dissolved solids which is described as marginal (GIS Database).
Flora	Five Priority flora species have been identified within the amendment application area and no Threatened flora were recorded in the amendment application area (BHP, 2023b).
Ecological communities	There were no Threatened Ecological Communities or Priority Ecological Communities recorded within the amendment application area (Onshore, 2014).
Fauna	Two conservation significant fauna species were recorded within the amendment application area, and five conservation significant fauna species are considered to potentially to occur in the amendment application area (see appendix A.3) (BHP, 2023b).

A.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat? [Y/N]	Distance of closest record to application area (km)	Number of individuals (application area)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Aristida jerichoensis var. *subspinulifera*	P3	Y	0 km	2	45	Y
Dampiera metallorum	P3	Y	0 km	4	21	Y
Eremophila magnifica subsp. *magnifica*	P4	Y	0 km	1	46	Y
Indigofera sp. *gilesii* Peter G. Wilson & Rowe	P3	Y	0 km	1	39	Y
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	Y	0 km	9	75	Y

(BHP, 2023b; Western Australian Herbarium, 1998-; GIS Database).

A.3. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), and biological survey information, impacts to the following conservation significant flora required further consideration. Only records within 50 kilometres of the application area were considered.

Species name	Conservation status	Suitable habitat? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Ghost bat	VU	Y	0 km	2,004	Y
Northern quoll	EN	N	15.8 km	8,776	N
Pilbara leaf-nosed bat	VU	Y	9.5 km	3,229	Y
Pilbara olive python	VU	Y	7 km	269	N
Short-tailed mouse	P4	Y	10.8 km	761	N
Western pebble-mound mouse	P4	Y	0 km	1,913	Y

(BHP, 2023b; GIS Database).

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The amendment application area contains five Priority flora species. The proponent has advised that the individuals recorded within the amendment application area will be avoided with a 10 metre buffer where practicable (BHP, 2023b). Even if all the Priority flora individuals within the amendment application area were cleared, impacts to these species are unlikely to be significant given the small number of individuals located within the amendment application area and the widespread availability of suitable habitat for these species outside of the amendment application area (BHP, 2023b). There are no Priority Ecological Communities recorded within the amendment application area (GIS Database). No weeds were recorded in the amendment application area (BHP, 2023b). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.	Not likely to be at variance (as per CPS 4469/2)	No

Assessment against the clearing principles	Variance level	Is further consideration required?
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."* Assessment: The vegetation and habitat found within the amendment application area are well represented in the Pilbara bioregion (BHP, 2023b). The area proposed to be cleared contains habitat for conservation significant fauna. The Gorge/Gullies habitat is considered highly significant, potentially providing habitat for the northern quoll, Pilbara leaf-nosed bat, Pilbara olive python and the ghost bat (BHP, 2023b). Potential impacts to these fauna species as a result of the proposed clearing may be minimised by the implementation of a fauna habitat protection condition prohibiting clearing Gorge/Gully habitat.	Not likely to be at variance (as per CPS 4469/2)	No
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: There were no Threatened flora species recorded within the amendment application area (BHP, 2023b).	Not likely to be at variance (as per CPS 4469/2)	No
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."* Assessment: The amendment application area does not intersect any know or mapped Threatened Ecological Community (BHP, 2023b; GIS Database).	Not likely to be at variance (as per CPS 4469/2)	No
Environmental value: significant remnant vegetation and conservation areas		
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."* Assessment: The application area falls within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Database). Over 99 per cent of the pre-European vegetation still exists in the Pilbara Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 18, 29, and 82 (GIS Database). These vegetation associations have not been extensively cleared as over 99 per cent of the pre-European extent of these vegetation associations remain uncleared at both the state and bioregional level (Government of Western Australia, 2019).	Not at variance (as per CPS 4469/2)	No
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."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of conservation areas (GIS Database).	Not likely to be at variance (as per CPS 4469/2)	No
Environmental value: land and water resources		
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."* Assessment: Given several ephemeral water courses are recorded within the application area (GIS Database), the proposed clearing is likely to impact vegetation growing in, or in association with, an environment associated with a watercourse.	At variance (as per CPS 4469/2)	No .
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped land systems that intersect the amendment application area are not susceptible to erosion (van Vreeswyk et al., 2004). Noting the location of the	Not likely to be at variance (as per CPS 4469/2)	No

Assessment against the clearing principles	Variance level	Is further consideration required?
application area, the proposed clearing is not likely to have an appreciable impact on land degradation.		
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."* Assessment: Given no permanent water courses, wetlands, or Public Drinking Water Sources Areas are recorded within the application area (GIS Database), the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.	Not likely to be at variance (as per CPS 4469/2)	No
Principle (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."* Assessment: Given no permanent water courses or wetlands are recorded within the application area (GIS Database), the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.	Not likely to be at variance (as per CPS 4469/2)	No

Appendix C. 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.
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 D. Biological survey mapping

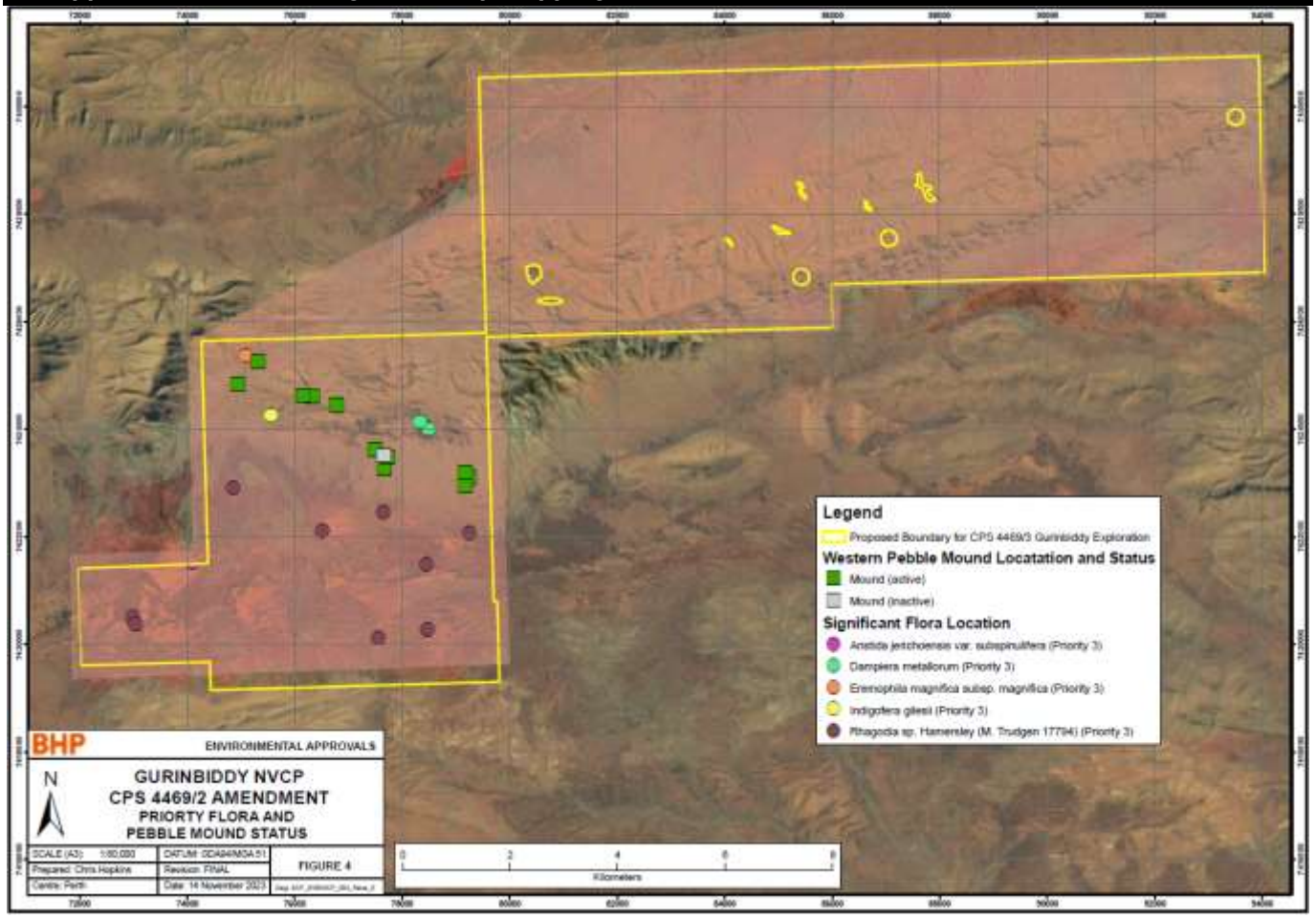

Figure 1. Location of recorded Priority flora and western pebble-mound mouse mounds (pers. comm., Chris Hopkins, BHP, November 2023).

Appendix E. Sources of information

E.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.2. References

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Bureau of Meteorology (BoM) (2023) Bureau of Meteorology Website – Climate Data Online, Newman Aero Station. Bureau of Meteorology. http://www.bom.gov.au/climate/data/ (Accessed 16 November 2023).

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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

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Environmental Protection Authority (EPA) (2016) Technical Guidance – Terrestrial Fauna Surveys. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf

GHD (2010) Report for Coondewana Exploration Tenement. Level2 Flora and Level 1 Fauna Report, August 2010.

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

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Onshore (2014) Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure. Prepared for BHP Billiton Iron Ore Pty Ltd by Onshore Environmental Consultants Pty Ltd, June 2014.

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Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dpaw.wa.gov.au/ (Accessed 16 November 2023).

4. Glossary

Acronyms:

BC Act	*Biodiversity Conservation Act 2016,* 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)
DCCEEW	Department of Climate Change, Energy, the Environment and Water, Australian Government
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety (now DEMIRS)
DMP	Department of Mines and Petroleum, Western Australia (now DEMIRS)
DoEE	Department of the Environment and Energy (now DCCEEW)
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	*Environmental Protection Act 1986*, Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (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	*Rights in Water and Irrigation Act 1914*, 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.