



# Clearing Permit Decision Report

## 1. Application details and outcomes

### 1.1. Permit application details

<b>Permit number:</b>	7409/2
<b>Permit type:</b>	Purpose Permit
<b>Applicant name:</b>	BHP Iron Ore Pty Ltd
<b>Application received:</b>	12 August 2022
<b>Application area:</b>	10 hectares
<b>Purpose of clearing:</b>	Hydrogeological investigations, construction and maintenance of water bores and associated infrastructure
<b>Method of clearing:</b>	Mechanical Removal
<b>Tenure:</b>	Miscellaneous Licence 47/771
<b>Location (LGA area/s):</b>	Shire of East Pilbara
<b>Colloquial name:</b>	Yandi Bores

### 1.2. Description of clearing activities

BHP Iron Ore Pty Ltd proposes to clear up to 10 hectares of native vegetation within a boundary of approximately 46 hectares, for the purpose of hydrogeological investigations, construction and maintenance of water bores and associated infrastructure. The project is located approximately 100 kilometres northwest of Newman, within the Shire of East Pilbara.

The application is to allow for continued hydrogeological investigations (BPH, 2022). A total of 1.82 hectares has been cleared under this permit (BHP, 2022).

Clearing permit CPS 7409/1 was granted by the Department of Mines, Industry Regulation and Safety on 27 July 2017 and was valid from 19 August 2017 to 30 November 2022. The permit authorised the clearing of up to 10 hectares of native vegetation within a boundary of approximately 46 hectares, for the purpose of hydrogeological investigations, construction and maintenance of water bores and associated infrastructure.

On 12 August 2022, the permit holder applied to amend CPS 7409/1 to extend the permit duration by five years and update the permit holder name.

### 1.3. Decision on application and key considerations

<b>Decision:</b>	Grant
<b>Decision date:</b>	13 October 2022
<b>Decision area:</b>	10 hectares of native vegetation

### 1.4. Reasons for decision

This clearing permit amendment application was made in accordance with section 51KA of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 12 August 2022. DMIRS advertised the application for a 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 (Appendix A), relevant datasets (Appendix E), supporting information provided by the applicant including the results of flora and vegetation surveys, fauna surveys, 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; and
- impacts to vegetation growing in association with a watercourse.

After consideration of the available information, 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 conditions currently imposed on clearing permit CPS 7409/2 are considered adequate to manage the impacts of clearing:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds; and
- watercourse management condition to reduce the impacts to riparian vegetation.

The assessment has not changed since the assessment for CPS 7409/1. The Delegated Officer determined that the proposed extension to the permit duration is not likely to lead to an unacceptable risk to environmental values. Given the age of available flora and vegetation surveys of the amendment area future amendments of this permit will be subject to additional surveys.

## 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)
- *Mining Act 1978* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

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. Avoidance and mitigation measures include the following (BHP, 2022).

- Clearing will be managed under a ground disturbance procedure;
- Areas already disturbed will be utilised where practicable; and
- Surface water management practices will be implemented to minimise erosion and minimise potential impacts on the quality of surface water.

### 3.2. Assessment of impacts on environmental values

A review of current environmental information (Section 3.2.1; Appendix A; Appendix B) reveals that the assessment against the clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 7409/1.

#### 3.2.1. Biological values (fauna) - Clearing Principles (b)

##### Assessment

A targeted fauna survey was conducted over the amendment area and surrounds between 17-24 November 2020, 18-20 January 2021, and 25-31 March 2021 (Biota, 2021). One broad fauna habitat was identified within the amendment area during this survey: undulating low ironstone hills and footslopes supporting soft and hard spinifex (Biota, 2021). Three detailed fauna habitats have previously been identified within the amendment area (BPH, 2022):

- **Crest / 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 *Eucalyptus* woodlands, *Acacia* and *Grevillea* scrublands and *Triodia* low hummock grasslands.
- **Drainage Area:** Characterised by *Eucalyptus xerothermica* and *Corymbia hamersleyana* woodland over broad-leaved *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 habitats. Grasses tend to be dominated by tussock grasses rather than spinifex.
- **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. The substrate can be sandy in places but generally consists of a skeletal loam gravel or stone.

Two conservation significant fauna species were identified in habitats outside the amendment area during the targeted survey and have the potential to occur within the amendment boundary: Pilbara olive python (*Liasis olivaceus barroni*, VU) and western pebble-mound mouse (*Pseudomys chapmani*, P4) (Biota, 2021). These species were not identified in any of the habitats found within the amendment area (Biota, 2021). The fauna habitats found within the amendment area may provide some foraging or dispersal habitat for these species, however they aren't limited to the permit area (BHP 2022; Biota, 2021). The proposed clearing is unlikely to significantly impact habitat availability for any conservation significant fauna species, and no fauna species are considered to be dependent on habitats present (BHP, 2022).

### Conclusion

Based on the above assessment, the proposed clearing may result in a small loss in foraging and dispersal habitat for some conservation significant fauna species (BHP 2022; Biota, 2021). These fauna habitats found within the amendment area are common and widespread throughout the local area and in the broader region (BHP 2022; Biota, 2021). The clearing of 10 hectares of these habitats is unlikely to significantly impact habitat availability for any conservation significant fauna species.

### Conditions

No fauna management conditions are required.

### **3.3. Relevant planning instruments and other matters**

There is one native title claim over the area under application (DPLH, 2022). 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 three registered Aboriginal Sites of Significance within the application area (DPLH, 2022). 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.

Other relevant authorisations that may be required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.
- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

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 and ecological linkage	The area proposed to be cleared part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is surrounded by large areas of uncleared land, mining and state agreement tenure. The amendment area is not representative of an ecological linkage.
Conservation areas	The amendment area does not intersect any conservation areas and there are no (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:            18: Low woodland; mulga (<i>Acacia aneura</i>); and            82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> (GIS Database).</p> <p>Several flora and vegetation surveys have been conducted over BHP tenure over many years, and results from the various survey reports have been reviewed and consolidated by Onshore Environmental (2014). The consolidated survey report identified the following three broad floristic communities and four vegetation types within the application area (BHP, 2022; Onshore Environmental, 2014):</p> <p><b>Eucalyptus Low Woodland</b>            ME TtEaEte ApyAtpPI EvCh: Tussock Grassland of <i>Themeda triandra</i>, <i>Eulalia aurea</i> and <i>Eriachne tenuiculmis</i> with High Shrubland of <i>Acacia pyrifolia</i> var. <i>pyrifolia</i>, <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Petalostylis labicheoides</i> and Open Woodland of <i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> on red brown silty loam on medium drainage lines and flood plains;</p> <p><b>Themeda Tussock Grassland</b>            FP TtEa ExAa AprAtpElo: Tussock Grassland of <i>Themeda triandra</i> and <i>Eulalia aurea</i> with Low Woodland of <i>Eucalyptus xerothermica</i> and <i>Acacia aptaneura</i> over Open Shrubland of <i>Acacia pruinocarpa</i>, <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Eremophila longifolia</i> on red brown clay loam on unincised drainage lines and floodplains;</p> <p><b>Triodia Hummock Grassland</b>            HS TsTwTp ElCh AhiAad: 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;</p> <p>HS TwTbrTs ElExCh PcaPasAhi: Hummock Grassland of <i>Triodia wiseana</i>, <i>Triodia brizoides</i> and <i>Triodia</i> sp. Shovellana Hill with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>, <i>Eucalyptus xerothermica</i> and <i>Corymbia hamersleyana</i> over Low Open Shrubland of <i>Ptilotus calostachyus</i>, <i>Ptilotus astrolasius</i> and <i>Acacia hilliana</i> on brown loam on eroded outcropping upper slopes and crests.</p>
Vegetation condition	<p>The vegetation survey (BPH, 2022; Onshore Environmental, 2014) indicate the vegetation within the proposed clearing area is in excellent to degraded (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> <li>- <b>Excellent:</b> vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.</li> <li>- <b>Very good:</b> vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.</li> <li>- <b>Degraded:</b> basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.</li> </ul> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	The amendment area is mapped within elevations of 650 metres AHD (GIS Database). The climate of the region is semi-desert tropical, with an average rainfall of approximately 324.4 millimetres per year (BoM, 2022; CALM, 2002).

Characteristic	Details
Soil description and land degradation risk	The amendment area lies within the McKay and Robe land systems (GIS Database). The McKay land system is described as hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands. The Robe Land System consists of low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands. These land systems are generally not susceptible to erosion (Van Vreeswyk et al., 2004).
Waterbodies	The desktop assessment identified multiple ephemeral drainage lines intersect the amendment area (GIS Database). There are not permanent watercourse of wetlands located within the amendment area (GIS Database).
Hydrogeography	The application area is located within the Pilbara Groundwater Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (GIS Database). The mapped groundwater salinity is 500-1,000 milligrams per litre total dissolved solids which is described as marginal (GIS Database).
Flora	There are records of 22 priority flora within 20 kilometres of the amendment area (GIS Database). No surveys of the amendment area have identified any species of conservation significance (BHP, 2022).
Ecological communities	There are no ecological communities record within or adjacent that amendment area (GIS Database). The nearest ecological community is located approximately 28 kilometres northeast of the amendment area (GIS Database).
Fauna	There are records of seven fauna of conservation significance within 20 kilometres of the amendment area (GIS Database). Fauna surveys of the amendment area and surrounds identified two conservation significant fauna species outside the permit area (Biota, 2021). These species may potentially utilise habitat within the amendment area.

## Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><b>Principle (a):</b> <i>"Native vegetation should not be cleared if it comprises a high level of biodiversity."</i></p> <p><b>Assessment:</b> The area proposed to be cleared does not contain locally or regionally significant flora, fauna, habitats, assemblages of plants (BHP, 2022; Biota, 2021; Onshore Environmental, 2014). The vegetation and fauna habitats are common and widespread within the region (BHP, 2022).</p>	Not likely to be at variance as per CPS 7409/1	No
<p><b>Principle (b):</b> <i>"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."</i></p> <p><b>Assessment:</b> The area proposed to be cleared may contain foraging and dispersal habitat for conservation significant fauna.</p>	Not likely to be at variance as per CPS 7409/1	Yes <i>Refer to Section 3.2.1, above.</i>
<p><b>Principle (c):</b> <i>"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</i></p> <p><b>Assessment:</b> There are no known records of Threatened flora within or within close proximity to the amendment area (GIS Database). Flora surveys of the amendment area did not record any Threatened flora species (BPH, 2022). The nearest records of known Threatened flora are approximately 49 kilometres from the amendment area (GIS Database).</p> <p>The vegetation types within the amendment area are common and widespread within the region (BPH, 2022; GIS Database). The vegetation proposed to be cleared is unlikely to be necessary for the continued existence of Threatened flora.</p>	Not likely to be at variance as per CPS 7409/1	No
<p><b>Principle (d):</b> <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><b>Assessment:</b> There are no known threatened ecological communities located within or in close proximity to the amendment area (GIS Database). The vegetation recorded</p>	Not likely to be at variance as per CPS 7409/1	No

Assessment against the clearing principles	Variance level	Is further consideration required?
within the amendment area is not representative of any known threatened ecological community (BPH, 2022).		
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<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> The application area falls within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Database). Approximately 99% of the pre-European vegetation still exists in the IBRA Pilbara Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation association 18: Low woodland; mulga (<i>Acacia aneura</i>); and 82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> (GIS Database). Approximately 99% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019).</p> <p>Although large scale mining operations are located in close proximity to the application area, the region in which the clearing is proposed to occur has not undergone broad scale clearing. Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.</p>	Not at variance as per CPS 7409/1	No
<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> Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of any conservation areas.</p>	Not likely to be at variance as per CPS 7409/1	No
<b>Environmental value: land and water resources</b>		
<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> There are no permanent watercourses or wetlands within the amendment area (GIS Database). Multiple perennial drainage lines intersect the amendment area that flow following large rainfall events (BPH, 2022; GIS Database).</p> <p>Two of the vegetation types mapped within the amendment area occur within these drainage lines (BPH, 2022). Potential impacts to vegetation growing in association with these drainage lines may be minimised by the continued implementation of a watercourse management condition.</p>	At variance as per CPS 7409/1	No
<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> The amendment area lies within the McKay and Robe land systems (GIS Database).</p> <p>The McKay land system is described as hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands. The Robe Land System consists of low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands. These land systems are generally not susceptible to erosion (Van Vreeswyk et al., 2004).</p> <p>The proposed clearing unlikely to have an appreciable impact on land degradation.</p>	Not likely to be at variance as per CPS 7409/1	No
<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> There are no permanent watercourses or wetlands located within the amendment area (GIS Database). Drainage lines that intersect the amendment area are dry for most of the year, and only flow following significant rainfall. The proposed clearing is unlikely to cause deterioration to the quality of surface or underground water.</p>	Not likely to be at variance as per CPS 7409/1	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><b>Principle (j):</b> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><b>Assessment:</b> The amendment area is mapped within elevations of 650 metres AHD (GIS Database). The climate of the region is semi-desert tropical, with an average rainfall of approximately 324.4 millimetres per year (BoM, 2022; CALM, 2002).</p> <p>There are no permanent water courses or waterbodies within the application area (GIS Database). There are multiple drainage lines that intersect the amendment area, where temporary localised flooding may occur briefly following heavy rainfall events (GIS Database). It is unlikely that the proposed clearing will increase the incidence or intensity of natural flooding events.</p>	<p>Not likely to be at variance</p> <p>as per CPS 7409/1</p>	<p>No</p>

## 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 Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

### Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs.

## Appendix E. Sources of information

### E.1. GIS databases

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

- Contours (DPIRD-073)
- 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)
- 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

- BHP (2022) Application to Renew NVCP CPS 7409/1 Yandi Potable Water Bores, Native Vegetation Clearing Permit Amendment Application Supporting Document. Prepared by BHP Iron Ore Pty Ltd, August 2022.
- Biota (2021) MAC Phase 4 Marillana Creek Targeted MNES Fauna Survey. Prepared by Biota Environmental Sciences, for BHP WAIO, January 2022.
- BoM (2022) Bureau of Meteorology Website – Climate Data Online, Newman Aero. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 7 October 2022).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- Department of Environment Regulation (DER) (2013) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: [https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2\\_assessment\\_native\\_veg.pdf](https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf)
- Department of Planning, Lands and Heritage (DPLH) (2022) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 5 October 2022).
- 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](https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.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](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)
- 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>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Onshore Environmental (2014) Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure. Report prepared for BHP Billiton Iron Ore Pty Ltd by Onshore Environmental.
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia. Department of Agriculture, Western Australia.

## 4. Glossary

### Acronyms:

<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i> , Western Australia
<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia (now DPLH)
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia (now DPIRD)
<b>DAWE</b>	Department of Agriculture, Water and the Environment, Australian Government
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions, Western Australia
<b>DER</b>	Department of Environment Regulation, Western Australia (now DWER)
<b>DMIRS</b>	Department of Mines, Industry Regulation and Safety, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia (now DMIRS)
<b>DoEE</b>	Department of the Environment and Energy (now DAWE)
<b>DoW</b>	Department of Water, Western Australia (now DWER)
<b>DPaW</b>	Department of Parks and Wildlife, Western Australia (now DBCA)
<b>DPIRD</b>	Department of Primary Industries and Regional Development, Western Australia
<b>DPLH</b>	Department of Planning, Lands and Heritage, Western Australia
<b>DRF</b>	Declared Rare Flora (now known as Threatened Flora)
<b>DWER</b>	Department of Water and Environmental Regulation, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPA</b>	Environmental Protection Authority, Western Australia
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
<b>GIS</b>	Geographical Information System
<b>ha</b>	Hectare (10,000 square metres)
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>PEC</b>	Priority Ecological Community, Western Australia
<b>RIWI Act</b>	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
<b>TEC</b>	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.