



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 2815/2  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

### 1.3. Property details

Property: Iron Ore (Hamersley Range) Agreement Act 1963, Special Lease for Mining Operations 3116/4984, Document I 195323 L, Lots 9, 13, 32 on Deposited Plans 47815  
Miscellaneous Licence 47/47  
Local Government Area: Shire of Ashburton  
Colloquial name: Rail Duplication Development Area Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
6.7		Mechanical Removal	Railway construction or maintenance

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

##### Vegetation Description

Beard vegetation associations have been mapped at a 1:250,000 scale for the whole of Western Australia. One Beard vegetation association is located within the application area; 587: Mosaic: Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana* / Hummock grasslands, shrub-steppe; Kanji over *Triodia pungens* (Shepherd et al, 2001).

Biota Environmental Sciences (Biota) undertook a flora and vegetation survey for the application area. The survey comprised of a desktop review of published and unpublished reports with relevance to the area, a search of Department of Environment and Conservation (DEC) and Western Australian (WA) Herbarium databases, and a field survey performed in July 2008 (Biota, 2008). All the major habitats within the survey area were traversed on foot and described, and all species present were recorded, in addition all vegetation types were mapped and described (Biota, 2008). This survey focused primarily on species of conservation significance and weed species (Biota, 2008). Biota (2008) have identified the following three vegetation types within the survey area:

#### 1) *Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia*, *A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland.

This vegetation type occurred broadly over the stony plains and low stony rises of the study area, occupying 5.3ha. Other associated species included *Gomphrena cunninghamii*, *Hakea chordophylla*, *Hakea lorea* subsp. *lorea*, *Mollugo molluginea*, *Ptilotus exaltatus* var. *exaltatus* and *Sida pilbarensis* (ferruginous form). This vegetation was in Very Good to Excellent condition (Biota, 2008).

#### 2) *Terminalia canescens* low open woodland over *Acacia trachycarpa* tall open shrubland over *Triodia wiseana* open hummock grassland and *Cenchrus ciliaris*, *C. setiger* tussock grassland.

This vegetation occurred in moderate-sized creeklines which intersected with the study area, occupying 0.3ha. Other associated species included *Acacia coriacea* subsp. *pendens*, *A. pyrifolia*, *Alternanthera nana*, *A. nodiflora*, *Cymbopogon ambiguus*, *Flueggea virosa* subsp. *melanthesoides*, *Phyllanthus maderaspatensis* and *Sesbania cannabina*. This vegetation was in Poor condition due to invasion by *Cenchrus* species (Biota, 2008).

##### Clearing Description

This clearing permit is for a purpose permit to clear up to 6.7ha of native vegetation within an area of approximately 7.2ha (GIS Database). The area applied to clear is located approximately 55km south of Roebourne (GIS Database).

The purpose of the proposed clearing is to duplicate or modify part of the existing rail network that extends from Cape Lambert Port to Juna Downs (Biota, 2008). The current clearing permit is required for the construction of a railway crossover (Biota, 2008). Vegetation clearing will be undertaken by mechanical means and vegetation will be stockpiled for rehabilitation purposes (Hamersley Iron, 2008).

##### Vegetation Condition

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).

To

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

##### Comment

The vegetation condition rating was based on the results from the flora and vegetation survey of the proposed clearing area which was conducted by Biota Environmental Sciences in July 2008. Biota (2008) report that there is invasion by weed species particularly in vegetation types on the railway embankment and in adjacent creeklines.

Hamersley Iron have applied for an amendment to Clearing Permit 2815/1 (granted on 5 February 2009). Hamersley Iron have requested an additional area of 0.3ha to be cleared. Aerial photographs of the additional 0.3ha application area and the flora and vegetation survey conducted by Biota (2008) suggest that the additional area applied to be cleared is fairly degraded.

**3) *Eucalyptus victrix* low open woodland over *Acacia trachycarpa* tall open shrubland over *Triodia epactia* open hummock grassland and *Cenchrus ciliaris* tussock grassland.**

This vegetation occurred in moderate-sized creeklines which intersected the study area and occupied 0.4ha. Other associated species included *Acacia coriacea* subsp. *pendens*, *A. pyrifolia*, *Dactyloctenium radulans*, *Phyllanthus maderaspatensis* and *Sesbania cannabina*. This vegetation was in Good to Poor condition (Biota, 2008).

### **3. Assessment of application against clearing principles**

#### **(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.**

**Comments**      **Proposal is not likely to be at variance to this Principle**

The application area is located within the Chichester Interim Biogeographic Regionalisation for Australia (IBRA) subregion (GIS Database). The plains of the Chichester sub-region primarily consist of a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands (CALM, 2002). The region is relatively high in biodiversity as it incorporates the Millstream Chichester National Park. This Park has numerous permanent waterholes which support a variety of species, including up to 108 bird species, nine fish species and 29 species of dragon and damselflies (DEWHA, 2008).

The application area is located adjacent to an existing railway line and road. The vegetation of the application area has been reported as varying from excellent condition to degraded (Biota, 2008), with areas that suffer from fairly extensive weed invasion (Biota, 2008). Aerial photos of the site would suggest that much of the application area has suffered varying degrees of disturbance from access tracks, and railway construction and maintenance activities.

A flora survey of the application area was conducted by Biota in July 2008. The flora survey recorded a total of 82 native vascular flora from 58 genera, belonging to 30 families (Biota, 2008). The most notable families consisted of the Grass family (*Poaceae*), Pea family (*Papilionaceae*), Mulla-mulla family (*Amaranthaceae*) and the Spurge family (*Euphorbiaceae*) (Biota, 2008).

According to Biota (2008) seven weed species have been recorded as occurring within the application area: Kapok Bush (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*), Purslane (*Portulaca oleracea*), Ulcardo Melon (*Cucumis melo* subsp. *agrestis*), Ruby Dock (*Acetosa vesicaria*) and Awnless Barnyard Grass (*Echinochloa colona*). The presence of introduced flora species lowers the biodiversity of the application area. Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

A desktop fauna review was performed by Biota (2008) for the application area and surrounding areas. The review involved searching the DEC Threatened Fauna Database, the WA Museum Faunabase database and the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* Protected Matters database (Biota, 2008). In addition previous survey work conducted in adjacent areas was reviewed (Biota, 2008). The desktop review identified a total of 132 avifauna, 32 native mammals, 6 non-native mammals, 105 reptiles and 6 amphibians that could possibly occur within the application area (Biota, 2008).

The landforms, vegetation types and fauna habitats in the application area are well represented in the Pilbara region, including within the Millstream-Chichester National Park (Biota, 2008). In addition the application area is located adjacent to a railway and road and has suffered previous disturbance from railway construction and maintenance activities and parts of the application area have fairly extensive weed infestations. Based on this, the application area is not expected to represent a higher level of diversity than other surrounding areas within the Millstream-Chichester National Park.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology**      Biota (2008)  
CALM (2002)  
DEWHA (2008)  
GIS Database  
- Interim Biogeographic Regionalisation for Australia

#### **(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.**

**Comments**      **Proposal is not likely to be at variance to this Principle**

A Level 1 desktop fauna review was performed for the application area and surrounding areas. In addition a flora and vegetation survey was performed by Biota in July 2008 that identified the following two broad

terrestrial fauna habitats within the application area (Biota, 2008):

- 1) Stony hills and slopes vegetated with *Corymbia hamersleyana* scattered low trees over *Acacia* spp. Scattered shrubs with a hummock grassland of *Triodia wiseana* on gravelly loam; and
- 2) Creeklines with low open woodlands of *Terminalia canescens* or *Eucalyptus victrix*, tall open shrublands of *Acacia trachycarpa* and *Triodia* and *Cenchrus* spp. hummock/tussock grasslands.

The fauna species of conservation significance most likely to occur within the application area, based on habitat and range are listed below:

- Australian Bustard (*Ardeotis australis*) – Priority 4 on the DEC Threatened and Priority Fauna List.
- Peregrine Falcon (*Falco peregrinus*) – Schedule 4, Wildlife Conservation (Specially Protected Fauna) Notice 2008.
- Bush Stone Curlew (*Burhinus grallarius*) – Priority 4 on the DEC Threatened and Priority Fauna List.
- Western Pebble-mound Mouse (*Pseudomys chapmani*) – Priority 4 on the DEC Threatened and Priority Fauna List.

The Australian Bustard is a dispersive species with widespread movements over long distances (DECC, 2005a). The Australian Bustard is known to inhabit grasslands, low shrublands, grassy woodlands as well as altered environments such as croplands and airfields (DECC, 2005a). The species usually breeds on bare ground, on low sandy ridges or stony rises (DECC, 2005a). This species has been recorded on numerous occasions within the vicinity of the application area. However, given widespread distribution of this species, and the disturbed nature of the application area, the clearing of 6.4ha of native vegetation is unlikely to affect the conservation status of this species.

The Peregrine Falcon is known to inhabit most areas and utilise cliffs, tall trees and granite outcrops for nesting (Australian Museum Online, 2003). These habitat types are not typical of the application area, although, the Peregrine Falcon has been recorded at one site during a previous survey of surrounding areas (Biota, 2008). However, given the vast amounts of available habitat within the Pilbara region and the small amount of clearing to occur, it is unlikely that the vegetation to be cleared represents significant habitat for this species.

The Bush Stone-Curlew prefers relatively undisturbed grasslands and grassy woodlands with a groundcover of fallen timber and leaf litter (DECC, 2005b). The species is known to nest on bare ground and often returns to the same site each year (DECC, 2005b). The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner and Tasmania (DECC, 2005b). This species has previously been recorded within the vicinity of the application area. However given its mobility and wide spread distribution, it is unlikely that the vegetation of the application area represents significant habitat for this species.

The Western Pebble-mound Mouse generally occurs on gentler slopes of rocky ranges where the ground is covered by a stony mulch and vegetated by hard Spinifex, often with an overstorey of Eucalypts and scattered shrubs (Van Dyck and Strahan, 2008). Mounds are often sited close to narrow ribbons of Acacia-dominated scrub that grow along incised drainage lines (Van Dyck and Strahan, 2008). Suitable habitat for this species occurs within the application area, however, given the broad distribution of this species and the disturbed nature of the application area, the vegetation of the application area is unlikely to represent significant habitat for this species.

The landforms and fauna habitats of the application area are well represented throughout the Pilbara region and within the Millstream-Chichester National Park (Biota, 2008). The application area has suffered from previous disturbance due to access roads and railway construction and maintenance activities (Biota, 2008). Therefore, the vegetation of the application area is unlikely to represent significant habitat for any fauna species.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** Australian Museum Online (2003)  
Biota (2008)  
DECC (2005a)  
DECC (2005b)  
Van Dyck and Strahan (2008)

**(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.**

**Comments Proposal is not likely to be at variance to this Principle**

According to available databases, no Declared Rare or Priority flora species occur within the application area (GIS Database). The nearest known Priority flora are populations of *Terminalia supranitifolia* (Priority 1), located approximately 35km north-west of the application area (GIS Database). DEC databases have no other records of any other populations of Declared Rare or Priority flora within a 50km radius of the application area (GIS Database).

Biota conducted a flora survey of the application area in July 2008, focusing primarily on Declared Rare and Priority flora (Biota, 2008). No Declared Rare or Priority flora were recorded within the application area.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** Biota (2008)  
GIS Database  
- Declared Rare and Priority 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.**

**Comments Proposal is not likely to be at variance to this Principle**

There are no known Threatened Ecological Communities (TEC's) within the area applied to clear (GIS Database). The nearest known TECs are located approximately 35km south of the application area (GIS Database). At such distance from the application area, these ecosystems are unlikely to be affected by the proposed clearing.

Biota (2008) reported that no TEC's were identified during the flora and vegetation survey of the application area.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** Biota (2008)  
GIS Database  
- Threatened Ecological Communities

**(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.**

**Comments Proposal is not at variance to this Principle**

The application area falls within the IBRA Pilbara Bioregion. Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in this Bioregion (see table). The vegetation in the application area is recorded as Beard Vegetation Association 587: Mosaic: Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana*/Hummock grasslands, shrub-steppe; Kanji over *Triodia pungens* (GIS Database; Shepherd et al, 2001). According to Shepherd et al., (2001) approximately 100% of this vegetation association remains within the Bioregion (see table below). Furthermore, the vegetation association is very well represented in conservation estate (Shepherd et al, 2001).

Therefore the vegetation within the application area is not a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
587	585,724	585,724	~100	Least Concern	21.0
Beard veg assoc. – Bioregion					
587	585,724	585,724	~100	Least Concern	21.0

\* Shepherd et al. (2001) updated 2005

\*\* Department of Natural Resources and Environment (2002)

Based on the above, the proposed clearing is not at variance to this Principle.

**Methodology** Department of Natural Resources and Environment (2002)  
Shepherd et al. (2001)  
GIS Database  
- Interim Biogeographic Regionalisation of Australia (subregions)  
- Pre-European Vegetation

**(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

**Comments Proposal is at variance to this Principle**

The application area contains several minor, ephemeral drainage lines and the Harding River lies less than 100m east of the application area (GIS Database). Biota (2008), have identified two vegetation units within the application area that are generally associated with watercourses:

- **Vegetation Type 2:** *Terminalia canescens* low open woodland over *Acacia trachycarpa* tall open shrubland over *Triodia wiseana* open hummock grassland and *Cenchrus ciliaris*, *C. setiger* tussock grassland; and
- **Vegetation Type 3:** *Eucalyptus victrix* low open woodland over *Acacia trachycarpa* tall open shrubland over *Triodia epactia* open hummock grassland and *Cenchrus ciliaris* tussock grassland.

These vegetation units have been somewhat modified through the construction of the existing rail and access roads and this is evident in the photos and vegetation descriptions provided by Biota (2008). In addition, only approximately 0.3ha of Vegetation Type 2 and 0.4ha of Vegetation Type 3 falls within the application area (Biota, 2008). The DoW has advised that the proposed clearing of 6.7ha of native vegetation is acceptable as it is not likely to impact upon surface and groundwater resources in the area (DoW, 2009).

Should a permit be granted, it is recommended that if any watercourses are to be disturbed the proponent should liaise with the Department of Water (DoW) to determine whether a Bed and Banks permit is necessary for the proposed works.

Based on the above, the proposed clearing is at variance to this Principle, however, due to the small amount of vegetation associated with watercourses that falls within the application area, and its modified nature, the proposed clearing is not likely to have a significant impact upon any watercourses or wetlands.

**Methodology** Biota (2008)  
DoW (2009)  
GIS Database  
- Hydrography, linear

**(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

**Comments Proposal is not likely to be at variance to this Principle**

The application area is broadly mapped as falling within the Rocklea Land System (GIS Database).

The Rocklea Land System consists of basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex grasslands (Van Vreeswyk et al, 2004). According to Van Vreeswyk et al. (2004) this system is subject to fairly regular burning and has a very low erosion risk. Biota (2008) report that the soils of the application area consist of stony loams to clay-loams, which are not overly susceptible to erosion following disturbance, and this is consistent with Van Vreeswyk et al's (2004) assessment of the Rocklea land system.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** Biota (2008)  
Van Vreeswyk et al. (2004)  
GIS Database  
- Rangeland Land System Mapping

**(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.**

**Comments Proposal is not likely to be at variance to this Principle**

The application area is located within the Millstream Chichester National Park (GIS Database). The National Park covers approximately 200,000ha and crosses a number of different major land forms such as the Fortescue River and Valley, and the Hamersley and Chichester Ranges (Main Roads, 2003). The Millstream Chichester National Park is an important area of natural heritage and biodiversity with up to 108 bird species, nine fish species and 29 species of dragon and damselflies occurring within the park (DEWHA, 2008).

The vegetation types and habitats within the application area are well represented within the Millstream Chichester National Park and within the Pilbara region generally (Shepherd et al., 2001). The application area lies adjacent to a railway line and access roads (GIS Database). Aerial photographs of the region show that sites directly surrounding the application area have previously suffered from disturbance, most likely from the construction and maintenance of the access roads and railway. Given previous disturbance, and the size of the application area (6.7ha) in contrast to the size of the Millstream Chichester National Park (200,000ha), it is not expected that the proposed clearing of native vegetation will have a significant impact on the environmental

values of this conservation area.

Hamersley Iron (2008) have liaised with the DEC and Conservation Commission regarding the Railway Duplication Project and its impacts on the environment, particularly within National Parks. Hamersley Iron (2008) have addressed the DEC's concerns regarding location of borrow pits, weed management and minimising impacts to the existing hydrological regime.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** DEWHA (2008)  
Hamersley Iron (2008)  
Main Roads (2003)  
Shepherd et al. (2001)  
GIS Database  
- CALM Managed Land and Waters

**(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.**

**Comments Proposal is not likely to be at variance to this Principle**

The application area is located within the Harding Dam Catchment area with the Harding River lying less than 100m east of the application area (GIS Database). The Harding Dam Catchment area is gazetted under the *Country Areas Water Supply (CAWS) Act 1947* and has been assigned 'Priority 1' under the Water Source Protection Classification System (DOW, 2009). A Drinking Water Source Protection Plan exists for the Harding Dam Catchment Area (West Pilbara - Water Supply Scheme) (DOW, 2009).

The DoW has advised that the proposed clearing of 6.7ha of native vegetation is acceptable as it is not likely to impact upon surface and groundwater resources in the area (DoW, 2009). However, they have also advised that since the proposed works are located within the Harding Dam Catchment Area the proponent should submit a Notice of Intent (NOI) to the DoW for assessment (DoW, 2009). The NOI should include the following details (DoW, 2009):

- Site owner or operating tenant's contact name and details.
- Site plan showing the location of the works.
- Description of the activities that will be carried out.
- Description of any materials/chemicals to be stored or handled on site.
- Description of the types and quantities of waste that will be generated at the facility.
- Proposals for chemical containment waste management and disposal.
- Details of any contingency measures to minimise the impacts of chemical spills, and disposal of contaminated waters from fire, flood or other emergency.

The proponent is advised to liaise with the DoW in this regard.

Aerial photographs indicate that the application area has suffered from previous disturbance, most likely from the construction and maintenance of the adjacent road and rail (Hamersley Iron, 2008). Therefore the additional 6.7ha of clearing is unlikely to have any further impact on surface or groundwater quality, or groundwater levels.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** DOW (2009)  
Hamersley (2008)  
GIS Database  
- Hydrographic Catchments - Catchments  
- Public Drinking Water Source Area (PDWSA's)

**(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.**

**Comments Proposal is not likely to be at variance to this Principle**

The application area is located within the Harding River Catchment area; a Priority 1 groundwater protection area (GIS Database). Natural flooding can occur occasionally within this catchment area during the wet season (November to March), or following significant rainfall, in particular rainfall that is associated with tropical cyclones (BOM, 2008).

The small area to be cleared (6.7ha) in relation to the size of the Harding River catchment area (approximately 155,807ha; GIS Database), is not likely to cause or exacerbate the incidence or intensity of flooding.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** BOM (2008)  
GIS Database  
- Hydrographic Catchments - Catchments

#### **Planning instrument, Native Title, Previous EPA decision or other matter.**

##### **Comments**

There is one Native Title claim (WC99-014) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement 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 two Aboriginal Sites of Significance (Site IDs: 18790 and 663) within the vicinity of the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Significance are damaged through the clearing process.

The DoW has advised that since the proposed works are located within the Harding Dam Catchment Area the proponent should submit a NOI to the DoW for assessment (DOW, 2009).

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

There were no public submissions received during the public comments period.

Hamersley Iron have applied for an amendment to Clearing Permit 2815/1 (granted on 5 February 2009). Hamersley Iron have requested an additional area of 0.3ha to be cleared. Aerial photographs of the additional 0.3ha application area and the flora and vegetation survey conducted by Biota (2008) suggest that the additional area applied to be cleared is fairly degraded.

**Methodology** DoW (2009)  
GIS Database  
- Aboriginal Sites of Significance  
- Native Title Claims

#### **4. Assessor's comments**

##### **Comment**

The amended proposal has been assessed against the clearing principles and is not at variance to Principle (e), is not likely to be at variance to Principles (a), (b), (c), (d), (g), (h), (i) and (j) and is at variance to Principle (f).

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, rehabilitation, record keeping and permit reporting.

#### **5. References**

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- Biota (2008) Rio Tinto Rail Duplication Area 02 (Chainage 84): Native Vegetation Clearing Permit Report. Biota Environmental Sciences, Western Australia.
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- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Van Dyck, S. and Strahan, R. (eds.) (2008) The Mammals of Australia. Third Edition. New Holland Publisher (Australia) Pty Ltd, Australia.
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## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia.
<b>DA</b>	Department of Agriculture, Western Australia.
<b>DEC</b>	Department of Environment and Conservation
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DoE), Western Australia.
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DMP</b>	Department of Mines and Petroleum, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environment Protection Act 1986, Western Australia.
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System.
<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>RIWI</b>	Rights in Water and Irrigation Act 1914, Western Australia.
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia.
<b>TECs</b>	Threatened Ecological Communities.

### Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005*. Department of Conservation and Land Management, Como, Western Australia} :-

<b>P1</b>	<b>Priority One - Poorly Known taxa:</b> taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
<b>P2</b>	<b>Priority Two - Poorly Known taxa:</b> taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
<b>P3</b>	<b>Priority Three - Poorly Known taxa:</b> taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
<b>P4</b>	<b>Priority Four – Rare taxa:</b> taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
<b>R</b>	<b>Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):</b> taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
<b>X</b>	<b>Declared Rare Flora - Presumed Extinct taxa:</b> taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

**Schedule 1**    **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become



extinct, are declared to be fauna that is need of special protection.

- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

#### **Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)**

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:  
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or  
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:  
(a) is not critically endangered; and  
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:  
(a) is not critically endangered or endangered; and  
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.