



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3273/1
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
Mining Lease 272SA (AM 70/272)
Local Government Area: Shire of Ashburton
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
4.9		Mechanical Removal	Drain extension, access track and geotechnical drilling

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. Two Beard Vegetation Associations have been mapped within the application areas (GIS Database; Shepherd, 2007).

18: Low woodland; mulga (*Acacia aneura*); and
82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

The application areas and surrounding vegetation on Mining Lease 272SA was flora surveyed by Biota Environmental Sciences between 6 to 9 March 2007, 18 to 26 May 2007 and 21 to 28 April 2008 (Biota Environmental Sciences, 2008a). The following vegetation types were identified within the application areas:

Broad Drainage Areas and Basins

1c: *Triodia melvillei* hummock grassland;

Major Creeklines and Floodplains

2b: *Eucalyptus xerothermica* - *Acacia aneura* woodland in major flowlines;

Minor Creeks

3a: *Acacia* species shrubland in minor flowlines;

Flats

4e: *Triodia wiseana*, *T pungens* hummock grassland;

Ridges and Erosional Spurs

5c: *Eucalyptus leucophloia* scattered low trees over *Acacia* spp. scattered shrubs over *Triodia* sp. Shovelanna Hill (*T. wiseana*) hummock grassland; and

5h: *Triodia wiseana* hummock grassland with mixed *Acacia* spp. emergent shrubs (Biota Environmental Sciences, 2008a).

Clearing Description

Hamersley Iron Pty Ltd has applied to clear up to 4.9 hectares of native vegetation within an application area of 17 hectares for the purposes of a drain extension, access track and geotechnical drilling.

Vegetation will be cleared by a bulldozer with its blade down. The vegetation and topsoil will be collected and stockpiled for use in future rehabilitation activities (Hamersley Iron Pty Ltd, 2009).

Vegetation Condition

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

to

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

Comment

The application areas are located in the Pilbara region, approximately 31 kilometres east-north-east of Tom Price.

The vegetation condition was derived from a vegetation survey conducted by Biota Environmental Sciences (2008a).

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 may be at variance to this Principle

The application areas occur within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils on the ranges (CALM, 2001). Vegetation mapping by Shepherd (2007) indicates that the vegetation associations and landforms within the application areas are common and widespread throughout the local and regional area with approximately 100% remaining.

A vegetation survey of the application areas and surrounding vegetation on Mining Lease 272SA (AM70/272) identified a total of 537 native flora, from 176 genera and belonging to 60 families. Twenty-seven vegetation communities were recorded (Biota Environmental Sciences, 2008a). This is considered to be particularly diverse for the survey area, and can most likely be attributed to the variety of habitats encompassed by the survey area, including extensive areas of Mulga vegetation on clayey substrates which are generally recognised to be species rich (Biota Environmental Sciences, 2008a). Vegetation mapping indicates that six vegetation communities occur within the two application areas (Hamersley Iron Pty Ltd, 2009). There is no information regarding the total number of species recorded within the application areas, however, it is inferred that the floristic diversity would be less given the lower number of vegetation communities within the application areas compared to the survey area. All of the vegetation communities within the application areas are broadly represented throughout the local and regional area (Biota Environmental Sciences, 2008a).

Aerial imagery demonstrates that the western-most application area is located adjacent to an existing mining area, and the eastern-most application area is located immediately south of an area that has been subject to an extensive infill drilling program (Hamersley Iron Pty Ltd, 2009). Although these disturbances have occurred nearby, the condition of the vegetation within the application areas ranges from Excellent to Degraded.

Twenty-three introduced (weed) species were recorded during the vegetation survey (Biota Environmental Sciences, 2008a). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This in turn can lead to greater rates of infestation and further loss of biodiversity. None of these species are listed as 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976*.

Based on the above, the proposed clearing may be at variance to this Principle. Should the permit be granted, it is recommended that conditions be imposed on the permit for the purpose of weed management.

Methodology

Biota Environmental Sciences (2008a)
CALM (2001)
Shepherd (2007)
GIS Database
- Interim Biogeographic Regionalisation of Australia
- Interim Biogeographic Regionalisation of Australia (subregions)

(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

Biota Environmental Sciences conducted an initial fauna survey of the application areas and surrounding vegetation on Mining Lease 272SA between 1 and 11 March 2007, however, this was interrupted by rainfall associated with Cyclone Jacob and was subsequently recommenced and completed between 10 and 15 April 2007. A seasonal fauna survey was conducted between 6 and 12 November 2007 (Biota Environmental Sciences, 2008b).

Biota Environmental Sciences (2008b) identified four primary habitats on the basis of vegetation structure and landforms. Three of the four primary fauna habitats are likely to occur within the application areas based on the recorded vegetation types. These are:

- Small drainage lines vegetated with *Acacia aneura* over tussock grassland on loamy substrates;
- Stony hillslopes vegetated with *Acacia* shrubs over *Triodia* on stony loam substrates; and
- Flat outwash plains vegetated with *Acacia* shrubs on loamy substrates.

The fauna habitats proposed to be cleared are well represented elsewhere within the local and regional area (Biota Environmental Sciences, 2008b). Aerial imagery indicates that the proposed clearing will not impact on any ranges, ridges, outcrops or caves which may be suitable to provide habitat for fauna. The area to be cleared does not represent a fauna corridor, therefore the clearing will not remove an ecological linkage that is necessary for the maintenance of fauna.

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

Methodology Biota Environmental Sciences (2008b)

(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 Flora (DRF) or Priority Flora species occur within the application areas (GIS Database). The DRF species *Lepidium catapycnon* (DRF) has been recorded approximately 43 kilometres north-east and *Thyryptomene wittweri* has been recorded approximately 54 kilometres south-east of the application areas (GIS Database). The Priority 3 species *Triodia biflora* has been recorded approximately 35 kilometres north-east (GIS Database).

A flora survey was conducted over the application areas and surrounding areas by staff from Biota Environmental Sciences between 6 and 9 March 2007, 18 and 26 May 2007 and 21 and 28 April 2008 (Biota Environmental Sciences, 2008a). A total of seven Priority Flora species were recorded during the survey of the application areas and surrounding vegetation (Biota Environmental Sciences, 2008a). These are *Calotis latiuscula* (Priority 1), *Goodenia lyrata* (Priority 1), *Josephinia* sp. Marandoo (M. E. Trudgen 1554) (Priority 1), *Lobelia heterophylla* subsp. Pilbara (R. Meissner & Y. Caruso 1) (Priority 1), *Rhagodia* sp. Hamersley (M. Trudgen) (Priority 1), *Indigofera ixocarpa* (Priority 2), and *Eremophila magnifica* subsp. *magnifica* (Priority 4). Whilst none of the Priority 1 or Priority 2 flora species have been recorded within the application areas, these species have been recorded within 2 kilometres of the application areas (Biota Environmental Sciences). The Priority 4 species *Eremophila magnifica* subsp. *magnifica* has been recorded within 200 metres of the application areas, however, population estimates place the number of individuals recorded from the Marandoo lease area in the thousands (Biota Environmental Sciences, 2008a).

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

Methodology Biota Environmental Sciences (2008a)
GIS Database:
- Declared Rare and Priority Flora List

(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**

According to available databases no Threatened Ecological Communities (TEC's) have been recorded within the application areas (GIS Database).

The nearest (TEC) is located approximately 31 kilometres north-west of the application areas (Themeda Grasslands), while the nearest Priority Ecological Community (PEC) is located approximately 3 kilometres north-east of the application areas (Coolabah-lignum flats). At this distance the proposed clearing is not likely to impact the TEC or PEC.

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

Methodology 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 areas falls within the Pilbara IBRA bioregion (GIS Database). Shepherd (2007) report that approximately 99.95% of the pre-European vegetation remains in this bioregion.

The vegetation in the application areas has been mapped as Beard Vegetation Associations 18: Low woodland; mulga (*Acacia aneura*), and 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database; Shepherd, 2007).

According to Shepherd (2007) approximately 100% of these Beard Vegetation Associations remain within the Pilbara bioregion (see table below).

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Pilbara Bioregion and Beard vegetation association 18 and 82 is of "Least Concern" (Department of Natural Resources and Environment, 2002) (see table).

While a small percentage of the vegetation types within the Pilbara bioregion are protected within conservation reserves, the bioregion remains largely uncleared. As a result, the conservation of the vegetation associations

within the bioregion is not likely to be impacted on by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,187	17,794,646	~99.95%	Least Concern	~6.32%
Beard veg assoc. - State					
18	19,892,305	19,890,195	~100%	Least Concern	~2.1%
82	2,565,901	2,565,901	~100%	Least Concern	~10.2%
Beard veg assoc. - Bioregion					
18	676,557	676,557	~100%	Least Concern	~16.8%
82	2,563,583	2,563,583	~100%	Least Concern	~10.2%

* Shepherd (2007)

** Department of Natural Resources and Environment (2002)

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd (2007)
GIS Database:
- Interim Biogeographic Regionalisation of Australia
- 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**
According to available GIS Databases there are no permanent watercourses within the application areas, however, there are numerous minor, non-perennial watercourses within the application areas (GIS Database).

Based on the above, the proposed clearing is at variance to this Principle. However, the vegetation communities growing in association with the watercourses are not unique and are considered common and widespread in the Pilbara bioregion (Shepherd, 2007; GIS Database). The proposed clearing is unlikely to significantly impact on vegetation communities growing in association with these drainage channels.

Methodology Shepherd (2007)
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**
According to Geographic Information System (GIS) Rangeland Mapping, the application areas are comprised of the following land systems:

- Newman Land System; and
- Boolgeeda Land System.

The Newman Land System is described as rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). Most of this system is not susceptible to erosion or vegetation degradation (Van Vreeswyk et al., 2004). An analysis of aerial photography reveals that the application areas most likely comprise of the 'plateaux, ridges, mountains and hills' land unit. The soils of this land unit (stony soils, red shallow loams and some red shallow sands) are not susceptible to erosion due to a surface mantle of pebbles of ironstone and other rocks, as well as outcrops of parent rock.

The Boolgeeda Land System is described as stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). The vegetation of this land system is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004). An analysis of aerial photography reveals the eastern-most application area most likely falls within the 'stony slopes and upper plains' land unit of this land system. The soils of this land unit are not susceptible to erosion due to surface mantle of very abundant pebbles of ironstone and other rocks.

There is negligible risk of water logging or land salinisation occurring as a result of the proposed clearing activities.

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

Methodology 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 areas are located within the Hamersley Range National Park (1977 boundary) Register of National Estate (GIS Database). Areas on the Register of National Estate are declared Environmentally Sensitive Area's (ESA's).

According to the Australian Heritage Database (2009) the Hamersley Range National Park (1977 boundary) covers an area of approximately 620,000 hectares, and is an area of great flora diversity with eight of the flora species found within the area listed as either rare, poorly known or of restricted distribution (Department of Environment, Water, Heritage and the Arts, 2009). The area is also considered an important refuge for three mammal species which are endemic to the Pilbara; the Western Pebble-mound Mouse (*Pseudomys chapmani*), *Ninguai timealeyi* and *Antechinus rosamondae* (Department of Environment, Water, Heritage and the Arts, 2009). Its value as a representative example of the Hamersley Ranges is enhanced given that most of the area remains relatively unmodified by pastoralism or large scale mining operations.

The application areas are located within the Hamersley Iron Pty Ltd Marandoo Iron Ore mine site which is located on an area of approximately 48 square kilometres held under a Government Agreement Act (Department of Environment and Conservation, 1999). Mining at Marandoo was approved on 6 October 1992 subject to Ministerial conditions on the protection of the environment and pursuant to the provisions of the *Environmental Protection Act 1986* (Department of Environment and Conservation, 1999). The Marandoo mine site Mining Lease 70/272SA (AM 70/272) has been excised from Karijini National Park to facilitate mining of the Marandoo deposit (Department of Environment and Conservation, 1999). The application areas are located within an area that has been excised from Karijini National Park (GIS Database).

The application areas are located approximately 2 kilometres from Karijini National Park at the closest point (GIS Database). The vegetation to be cleared is not considered an important linkage to Karijini National Park. Considering the application areas are located adjacent to existing mining operations and on previously disturbed land, it is not likely that the proposal will cause any appreciable additional impact on the conservation values of Karijini National Park.

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

Methodology Department of Environment and Conservation (1999)
Department of Environment, Water, Heritage and the Arts (2009)
GIS Database
- CALM Managed Lands and Waters
- Environmentally Sensitive Areas

(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

According to available databases the application areas are not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The groundwater salinity within the application areas is approximately 500 - 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the size of the area to be cleared (4.9 hectares) compared to the size of the Hamersley Groundwater Province (10,166,832 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application areas to alter significantly.

There are no known groundwater dependent ecosystems within the application areas (GIS Database).

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

- Methodology** GIS Database
- Groundwater Provinces
 - Groundwater Salinity, Statewide
 - Potential Groundwater Dependent Ecosystems
 - Public Drinking Water Source Area

(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 areas are located within the Ashburton River catchment area which covers a total area of approximately 7,877,743 hectares (GIS Database). The proposed clearing of up to 4.9 hectares is not likely to increase the potential for flooding within either the application, local or catchment area.

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

- Methodology** GIS Database
- Hydrographic Catchments - Catchments

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

Comments

There is one Native Title Claim (WC97_089) over the areas under application. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenements have 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 known Aboriginal Sites of Significance within the application areas (ID_11268 and 747) (GIS Database). 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. Hamersley Iron Pty Ltd has advised that the application areas have been subject to a heritage survey. Although sites have been identified in the general vicinity no sites were recorded within the application areas (Hamersley Iron Pty Ltd, 2009).

One submission was received in relation to the proposal stating no objection.

In their application Hamersley Iron Pty Ltd stated that the proposed activities associated with this clearing application do not form a component of the Marandoo Mine Phase 2 (MMP2) proposal which is currently subject to assessment by the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986* (Hamersley Iron Pty Ltd, 2009). The EPA Service Unit at the Department of Environment and Conservation confirmed on 14 September 2009 that the proposed works are outside of the area being assessed for the MMP2 project.

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.

- Methodology** Hamersley Iron Pty Ltd (2009)
GIS Database
- Aboriginal Sites of Significance
 - Native Title Claims

4. Assessor's comments

Comment

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

It is recommended that should a permit be granted, conditions be imposed on the permit for the purpose of weed management, retention of topsoil and vegetation, record keeping and permit reporting.

5. References

- Biota Environmental Sciences (2008a). Marandoo Mine Phase 2 Project Vegetation and Flora Survey. Unpublished report prepared for Rio Tinto, August 2008.
- Biota Environmental Sciences (2008b). Marandoo Mine Phase 2 Seasonal Fauna Survey. Unpublished report prepared for Rio Tinto, August 2008.
- CALM (2001). A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 - Hamersley subregion) Department of Conservation and Land Management, Western Australia
- Department of Environment and Conservation (1999). Karijini National Park Management Plan 1999 - 2009. Management Plan No 40. Department of Conservation and Land Management for the National Parks and Nature Conservation Authority, Western Australia.
- Department of Environment, Water, Heritage and the Arts (2009). Australian Heritage Database - Hamersley Range National Park (1977 boundary), Department of the Environment, Water, Heritage and the Arts, Canberra, viewed 11 September 2009, <<http://www.environment.gov.au/cgi-bin/ahdb/search.pl>>.
- Department of Natural Resources and Environment (2002). Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Hamersley Iron Pty Ltd (2009). Supplementary Information for Clearing Permit Application CPS 3273/1. Information for assessing officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP), received 14 August 2009, Rio Tinto Iron Ore.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Shepherd, D.P. (2007). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Van Vreeswyk A.M.E., Payne A.L., Leighton K.A. and Hennig P. (2004). Technical Bulletin - An inventory and condition survey of rangelands in Pilbara Region, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DMP	Department of Mines and Petroleum, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	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} :-

P1	Priority One - Poorly Known taxa: 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.
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- P2 Priority Two - Poorly Known taxa:** 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.
- P3 Priority Three - Poorly Known taxa:** 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.
- P4 Priority Four – Rare taxa:** 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.
- R Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** 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.
- X Declared Rare Flora - Presumed Extinct taxa:** 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:
- is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
 - 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:
- is not critically endangered; and
 - 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.