



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3145/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Temporary Reserve 70/4882 pursuant to *Iron Ore (Rhodes Ridge) Agreement Authorisation Act 1972*
Temporary Reserve 70/4882 pursuant to *Iron Ore (Rhodes Ridge) Agreement Authorisation Act 1972*
Temporary Reserve 70/4192 pursuant to *Iron Ore (Rhodes Ridge) Agreement Authorisation Act 1972*

Local Government Area: Shire of East Pilbara
Colloquial name: Rhodes Ridge Drilling Program

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
49.3		Mechanical Removal	Mineral Exploration

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 area (GIS Database; Shepherd et al., 2001).

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; and

175: Short bunch grassland - savanna/grass plain (Pilbara).

The application area was surveyed by Biota Environmental Sciences Pty Ltd staff during August and September 2007 (Rio Tinto, 2008). The following vegetation types were identified within the application area:

Woodlands: *Eucalyptus leucophloia*, *Corymbia deserticola* and *Acacia catenulata* subsp. *occidentalis* low open woodland over very open to open hummock grassland of *Triodia basedowii*;

Mulga Woodland: *Acacia catenulata* subsp. *occidentalis* scattered trees over *Acacia* aff. *aneura* narrow fine vein low woodland over *Triodia melvillei* open hummock grassland;

Mixed Low Open Forest: *Eucalyptus xerothermica*, *Corymbia candida* scattered trees over *Acacia* aff. *aneura* narrow fine vein low open forest over *Themeda triandra*, mixed tussock grassland;

Grassland: *Hakea lorea* scattered low trees over *Aristida contorta* tussock grassland;

Mixed Open Shrubland: *Eucalyptus leucophloia*, *Corymbia deserticola* scattered trees over *Acacia pruinocarpa*, *Acacia rhodophloia* scattered low trees over *Cassia luerksenii*, *Ptilotus rotundifolius* open shrubland/*Triodia basedowii* open hummock grassland;

Flat Plain Mulga Low Open Forest: *Eucalyptus xerothermica* scattered low trees over *Acacia* aff. *aneura* narrow fine vein low open forest over very open tussock grassland of mixed species;

Mixed Open Woodland: *Eucalyptus gamophylla*, *Acacia* aff. *aneura* narrow fine vein low open woodland over *Acacia pachyacra*, *Acacia maitlandii* open shrubland over *Triodia basedowii* hummock grassland;

Mixed Acacia Shrubland: *Eucalyptus leucophloia* and/or *Corymbia hamersleyana* over *Acacia rhodophloia*, *Acacia monticola* and *Cassia glutinosa* open shrubland over an *Acacia hilliana* low open shrubland over *Triodia basedowii* closed hummock grassland;

Acacia Woodland: *Acacia* aff. *aneura* narrow fine vein, *Acacia pruinocarpa*, (*Acacia pachyacra*) low woodland over *Triodia melvillei* very open hummock grassland/mixed grass species tussock grassland;

Mixed Open Woodland: *Corymbia hamersleyana*, *Eucalyptus leucophloia*, *Acacia* aff. *aneura* narrow fine vein open woodland over *Eremophila fraseri*, *Eremophila exilifolia* open shrubland over *Aristida holathera* very open tussock grassland;

Mixed Acacia Woodland: *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis*, *Acacia* aff. *aneura* narrow fine vein, *Acacia pachyacra* low open forest over *Triodia basedowii*, *Triodia wiseana* scattered hummock grasses;

Mixed Forest: *Eucalyptus victrix* and *Acacia* aff. *aneura* narrow fine vein open forest over a very open tussock grassland (occasionally scattered tussock grasses) of mixed species; and

Mixed Acacia Open Woodland: *Eucalyptus leucophloia* scattered trees over *Acacia monticola*, *Acacia pruinocarpa*, *Acacia catenulata* subsp. *occidentalis* low open woodland over *Triodia epactia*, *Triodia basedowii* hummock grassland (Rio Tinto, 2008).

Four alien weed species were recorded within the application area (Rio Tinto, 2008). These were: Beggars Tick (*Bidens bipinnata*), Buffel Grass (*Cenchrus ciliaris*), Spiked Malvastrum (*Malvastrum americanum*) and Whorled Pigeon Grass (*Setaria verticillata*) (Rio Tinto, 2008).

Clearing Description	Hamersley Iron Pty Ltd intend to clear up to 49.3 hectares of native vegetation within a boundary of approximately 1038.6 hectares for the purposes of creating an access track and exploration drilling.
Vegetation Condition	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).
Comment	<p>The application area is located in the Pilbara region, approximately 37 kilometres north-west of Newman.</p> <p>The vegetation of the application area is classified as very good with minimal disturbance from human-related influences such as drill lines from previous drilling programs (Rio Tinto, 2008).</p> <p>The vegetation condition was derived from a vegetation survey conducted by Biota Environmental Sciences Pty Ltd (Rio Tinto, 2008).</p>

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 area occurs 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).

A vegetation survey of the application area and surrounding vegetation identified 341 native flora species belonging to 104 genera from 41 families (Rio Tinto, 2008). This is considered to be particularly diverse for the survey area, due to recent rainfall allowing ephemeral species to be recorded (Rio Tinto, 2008).

Four alien weed species were recorded within the vegetation survey area (Rio Tinto, 2008). These were Beggars Ticks (*Bidens bipinnata*), Buffel Grass (*Cenchrus ciliaris*), Spiked Malvastrum (*Malvastrum americanum*) and Whorled Pigeon Grass (*Setaria verticillata*) (Rio Tinto, 2008). 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 if the area is subject to repeated fires. None of these species are listed as 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food (DAFWA). Should the permit be granted, it is recommended that appropriate conditions be imposed on the permit for the purpose of weed management.

An area search of the Department of Environment and Conservation's online fauna database conducted by the assessing officer suggests that the application area is diverse in reptile species (DEC, 2009). The database search found 68 reptile species as potentially occurring within the application area, or within a 20 kilometre radius of the application area.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology CALM (2001)
DEC (2009)

Rio Tinto (2008)
GIS Database
- Interim Biogeographic Regionalisation of 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

The assessing officer has conducted a search of the Department of Environment and Conservation's online fauna database between the coordinates 119.6303°E, 22.9615°S and 119.0338°E, 23.3792°S, representing a 20 kilometre radius around the application area.

This search identified 2 Amphibian, 12 Avian, 20 Mammalian and 68 Reptilian species that may occur within the application area (DEC, 2009). Of these, the following species of conservation significance have previously been recorded within the search area: *Ramphotyphlops ganeii*, *Liasis olivaceus* subsp. *barroni*, Australian Bustard (*Ardeotis australis*), Star Finch (*Neochmia ruficauda* subsp. *subclarescens*), Western Pebble-mound Mouse (*Pseudomys chapmani*), Ghost Bat (*Macroderma gigas*) and the Orange Leaf-nosed Bat (*Rhinonictus aurantius*).

Rio Tinto (2008) conducted a desktop fauna search of the Department of Environment and Conservation's (DEC) online Threatened and Priority Fauna Database on 23 November 2007. In addition to those species listed above, the following fauna species of conservation significance were identified through this desktop search: Black-flanked Rock Wallaby (*Petrogale lateralis lateralis*) and the Grey Falcon (*Falco hypoleucos*) (Rio Tinto, 2008).

Biota Environmental Sciences Pty Ltd (Rio Tinto, 2008) recorded thirteen habitat types as occurring within the survey area. The landforms, vegetation and habitats within the application area are well-represented regionally, and are not considered to be restricted to the locality (Rio Tinto, 2008; GIS Database).

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

Methodology DEC (2009)
Rio Tinto (2008)
GIS Database
- Pre-European Vegetation

(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 area (GIS Database).

A flora survey was conducted over the application area by staff from Biota Environmental Sciences Pty Ltd during August and September 2006 (Rio Tinto, 2008). The application area was traversed by botanists spaced at 50-100 metre intervals where possible (Rio Tinto, 2008).

No DRF were recorded during the survey. Two species of Priority flora were recorded within the application area (Rio Tinto, 2008):

P1 - *Goodenia* sp. East Pilbara;
P3 - *Goodenia nuda* (Rio Tinto, 2008).

Goodenia sp. East Pilbara is found across the Weeli Wolli, Mulga Downs, Nullagine districts and north-west of Newman (Rio Tinto, 2008). Biota Environmental Sciences Pty Ltd (2006) recorded two populations as occurring within the application area, with population sizes ranging from 5 to 100+ individuals (Rio Tinto, 2008). Given its wide distribution outside of the application area, the proposed clearing is unlikely to affect the conservation status of this species

Biota Environmental Sciences Pty Ltd recorded one population of five individuals of *Goodenia nuda* as occurring within the application area. All of these individuals will be disturbed by the proposed clearing. This species is recorded within the Weeli Wolli, Roy Hill and Mt Stuart (Rio Tinto, 2008). Given its wide distribution outside of the application area, the proposed clearing is unlikely to affect the conservation status of this species.

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

Methodology Rio Tinto (2008)
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

A search of available databases reveals that there are no Threatened Ecological Communities (TEC's) within the application area (GIS Database).

The nearest TEC occurs approximately 46 kilometres south-east of the application area (Ethel Gorge). The nearest Priority Ecological Community (PEC) is located approximately 43 kilometres west of the application area (West Angelas Cracking Clays). At this remote distance there is little likelihood of any impact to any known TEC or PEC from the proposed clearing.

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 area falls within the IBRA Pilbara Bioregion (GIS Database). Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in this Bioregion.

The vegetation in the application area is recorded as Beard Vegetation Association 82: Hummock grasslands, low tree steppe; snappygum over *Triodia wiseana*.; and 175: Short bunch grassland - savanna/grass plain (Pilbara) (GIS Database; Shepherd et al., 2001).

According to Shepherd et al., (2001) approximately 100% of Beard Vegetation Associations 82 and 175 remain within the Pilbara Bioregion (see table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9%	Least Concern	6.3%
Beard veg assoc. – State					
82	2,565,930	2,565,930	~100%	Least Concern	~10.2%
175	526,208	524,863	~99.7%	Least Concern	~4.2%
Beard veg assoc. – Bioregion					
82	2,563,610	2,563,610	~100%	Least Concern	~10.2%
175	507,038	507,008	~100%	Least Concern	~4.4%

* 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) updated 2005
GIS Database
- Pre-European Vegetation
- Interim Biogeographic Regionalisation for Australia

(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 is located in a semi-desert-tropical region (CALM, 2001). This region has an average annual rainfall of approximately 310 millimetres falling mainly during the summer months, and an average annual evaporation rate of approximately 3,200 millimetres (BoM, 2009). Hence, the presence of surface water resulting from significant rain events is relatively short-lived.

According to available GIS Databases, there are no permanent watercourses within the application area, however, there are several minor, non-perennial watercourses within the application area (GIS Database). One of the thirteen vegetation associations found within the application area is associated with drainage areas (Rio Tinto, 2008).

Based on the above, the watercourses present are expected to be dry except following heavy rainfall which is usually associated with tropical cyclone events (CALM, 2001). The access tracks within the application area will intersect a few minor ephemeral drainage lines and minor creek beds (GIS Database). To minimise the impact to surface water regimes and ensure the nature surface water flow is maintained it is recommended that culverts and floodways be installed where access tracks intersect drainage lines.

Based on the above, the proposed clearing is at variance to this Principle. However, as the minor drainage lines located within the application area are only likely to flow following significant rainfall, the proposed clearing is unlikely to result in any significant impact to any watercourse or wetland provided natural surface water flow patterns are not disturbed.

Methodology BoM (2009)
CALM (2001)
Rio Tinto (2008)
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 has been surveyed by the Department of Agriculture and Food (Van Vreeswyk et al., 2004). The application area is composed of the following land systems (GIS Database):

- Boolgeeda Land System
- Newman Land System
- Spearhole Land System
- Wannamunna Land System

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 for the application area reveals the application area is most likely to fall within the 'stony slopes and upper plains' and 'low hills and rises' land units. The soils of these land units are not susceptible to erosion due to surface mantle of very abundant pebbles of ironstone and other rocks.

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 for the application area reveals the application area is most likely to fall within the 'stony plains' land unit. The soils of these land units (red loamy earths) are not susceptible to erosion due to a surface mantle of pebbles of ironstone and other rocks.

The Spearhole Land System is described as gently undulating hardpan plains supporting groved mulga shrublands and hard spinifex (Van Vreeswyk et al., 2004). This system is not susceptible to erosion or vegetation degradation (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'groves' land unit. The soils of this land unit (red loamy earths and red-brown hardpan loams) are not susceptible to erosion.

The Wannamunna Land System is described as hardpan plains and internal drainage tracts supporting mulga shrublands and woodlands (and occasionally eucalypt woodlands (Van Vreeswyk et al., 2004). This system generally has a low susceptibility to erosion (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'stony plains', 'hardpan plains' and 'groves' land units. The soils of these land units (red loamy earths, red-brown hardpan shallow loams) are not susceptible to erosion due to a surface mantle of pebbles of ironstone and other rocks.

Based on the above, the proposed clearing is not likely to be at variance to this Principle. It is recommended that should a permit be granted, a condition be imposed on the permit to retain vegetative material and topsoil for rehabilitation purposes.

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 area is located approximately 67 kilometres to the east of Karijini National Park (GIS Database). At this distance it is not likely that the vegetation within the application area provides a buffer to a conservation area, or is important as an ecological linkage to a conservation area.

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

Methodology GIS Database
- CALM Managed Lands 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

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

The application area is located within a *Rights in Water Irrigation Act, 1914* (RIWI Act) Groundwater Area (DoW, 2008; GIS Database). The proponent is required to obtain permits to abstract groundwater in this area.

The application area is located within the Pilbara Groundwater Area (DoW, 2008). Any extraction of groundwater in this area will require a groundwater license. The groundwater salinity within the application area is approximately 500 - 1000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the size of the area to be cleared (49.3 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 area to alter significantly.

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

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

Methodology DoW (2008)
GIS Database
- Public Drinking Water Source Area
- Groundwater Salinity, Statewide
- RIWI Act, Groundwater Areas
- Groundwater Provinces
- Potential Groundwater Dependent Ecosystems

(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 experiences a semi-desert, tropical climate with an average annual rainfall of 310 millimetres (CALM, 2001; BoM, 2009). Rainfall is usually experienced during summer months and can be either cyclonic or thunderstorm events (CALM, 2001). It is likely that during times of intense rainfall there may be some localised flooding in adjacent areas.

The application area is located within the Fortescue River_Upper catchment area (GIS Database). However, the scale of the area to be cleared (49.3 hectares) in relation to the size of the Fortescue River_Upper catchment area (2,975,192 hectares) (GIS Database) is not likely to increase the potential for flooding within the application area (GIS Database).

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

Methodology BoM (2009)
CALM (2001)
GIS Database
- Hydrographic Catchments - Catchments

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

Comments

There is one Native Title Claim (WC99-004) over the area 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 five known Aboriginal sites of significance within the application area (ID_7453, ID_7452, ID_8146, ID_8148 and ID_8153) (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.

The application area falls within a surface water and groundwater management area under the *Rights in Water Irrigation Act, 1914* (DoW, 2008). Extraction of groundwater, obstruction or interference of the beds and banks of a watercourse or wetland is subject to licensing by the Department of Water (DoW).

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.

No public submissions were received in regard to this Clearing Permit application.

Methodology DoW (2008)
GIS Database
- Aboriginal Sites of Significance
- Native Title Claims
- RIWI Areas

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles, and the proposal is at variance to 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, stockpiling all cleared topsoil and vegetation, record keeping and permit reporting.

5. References

- BoM (2009) Bureau of Meteorology Website - Climate Averages by Number, Averages for NEWMAN. www.bom.gov.au/climate/averages/tables/cw_007151.shtml (Accessed 8 June 2009)
- 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
- DEC (2009) NatureMap - Department of environment and Conservation and Western Australian Museum. <http://naturemap.dec.wa.gov.au/default.aspx> (Accessed 11 June 2009)
- 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.
- DoW (2008). Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR), received 15/4/08. Department of Water, Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Rio Tinto (2008) Botanical Survey for the Bakers North Drilling Program 2007 AR_07_02042. July 2008. Rio Tinto, Western Australia.
- 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 (updated 2005).
- 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

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.
- 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:
(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.