



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4303/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Company Pty Ltd

1.3. Property details

Property: Iron Ore (Robe River) Agreement Act 1964, Mineral Lease 248SA (AML 70/248)
Local Government Area: Shire of Ashburton
Colloquial name: Jimmawurrada Exploration Drilling Program

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 16 June 2011

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 and are useful to look at vegetation in a regional context.

The following Beard vegetation associations have been mapped within the application area:
- 82: Hummock Grasslands, low tree steppe; Snappy Gum over *Triodia wiseana*; and
- 609: Mosaic: Hummock Grasslands, open low tree steppe; bloodwood with sparse Kanji shrubs over soft Spinifex/Hummock Grassland, open low tree steppe; snappy gum over *Triodia wiseana* on a lateritic crust (GIS Database).

Three flora and vegetation surveys have been undertaken on the Robe River project area. The most recent and relevant flora and vegetation survey for the area under application was conducted by Biota Environmental Sciences Pty Ltd (Biota) and involved a single phase flora and vegetation survey in 2009 (Biota, 2011). This survey covered 8,765 hectares and contained the application area. Eighteen vegetation units were described and mapped and the following three broad landscape types were associated with these vegetation units:
-plains;
-low hills and rises; and
-creeklines and soaks.

Clearing Description

Robe River Mining Company Pty Ltd (Robe River) has applied to clear up to 69 hectares of native vegetation within an application area covering approximately 3,041 hectares.

The application area is located approximately 18 kilometres south of Pannawonica (GIS Database).

The purpose of the clearing permit application is to conduct further exploration drilling (Robe River, 2011).

Vegetation Condition

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

To

Pristine: No obvious signs of disturbance (Keighery, 1994).

Comment

The vegetation condition and description is based on the flora and vegetation survey conducted by Biota. This was assessed utilising Trudgen's vegetation condition scale and was converted to the Keighery scale for consistency.

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 lies within the Hamersley sub-region of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The vegetation within this sub-region is characterised as Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002).

During the flora and vegetation surveys of the application area and the surrounds, a total of 286 flora taxa from 121 genera and 49 families were recorded (Biota, 2011). Of these no Declared Rare Flora (DRF) listed under the *Wildlife Conservation Act 1950*, or Threatened species under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* were recorded (Biota, 2011). A number of Priority Flora were recorded during flora and vegetation surveys in the vicinity of the application area. Of these the following five Priority Flora species were recorded within the application area:

- Stylidium weeliwollii* (Priority 2);
- Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) (Priority 3);
- Triodia* sp. Robe River (M.E. Trudgen et al. MET 12367) (Priority 3);
- Rhynchosia bungarensis* (Priority 4); and
- Eragrostis surreyana* (Priority 3) (Biota, 2011).

The locations of these species should be considered during project planning, and clearing of these areas should be minimised, however given these species are relatively widespread in other parts of the state (Western Australian Herbarium, 1998), it is unlikely that the conservation status of these species would be impacted by the proposed clearing.

During the Biota 2009 flora and vegetation survey, two possible new taxonomic entities in the genus *Solanum* were collected within the vicinity of application area: *Solanum* aff. *phlomoides*; and *Solanum* aff. *gabrielae* (Biota, 2011). These species have previously been collected in the West Pilbara however are thought to be geographically restricted and insufficient data has been collected to assign conservation status (Biota, 2011). Three records of *Solanum* aff. *gabrielae* and two records of *Solanum* aff. *phlomoides* were located outside of the application area (Robe River, 2011). The closest record was *Solanum* aff. *phlomoides* which was located 30 metres south of the southern boundary of the application area (Robe River, 2011). It is unlikely that the proposed clearing will impact these species.

The application area is located three kilometres south east of the Priority Ecological Communities (PEC): 'Subterranean invertebrate communities of mesas in the Robe Valley' and "Subterranean invertebrate community of pisolitic hills in the Pilbara" (GIS, Database). Given that the proposed clearing will be low impact and dewatering will not be required, the proposed clearing is not likely to impact upon these communities.

The Biota (2011) flora and vegetation survey established that the application area lies adjacent to two vegetation types which are inferred to represent the PEC: "*Triodia* sp. Robe River assemblages of mesas in the Robe Valley". This community has been mapped 28 kilometres south west of the application area and is not known from any conservation reserves (Biota 2011). The inferred PEC covers 839 hectares, and the proposed clearing will impact eleven hectares of this (Robe River, 2011). Given that low impact clearing is proposed and rehabilitation will be conducted within six months of completion of clearing, it is unlikely that the proposed clearing will impact upon the biological diversity of this habitat.

A number of vegetation types located within the vicinity of the application area are associated with creeklines, soaks and peat soils and are considered to have moderate to high conservation significance as they are unique within the Pilbara and have groundwater dependent ecosystems (Biota, 2011). Robe River (2011) has designed the exploration program to avoid clearing the native riparian vegetation associated with the soak area and its associated wetland in the south east of the application area. The nearest boundary of this vegetation unit to the application area is approximately 25 metres. The proposed clearing is therefore unlikely to impact upon the biological diversity of this community.

The proposed clearing will impact the edge of the 'wetland mosaic' located in the centre of the application and sections of the Jimmawurrada and Bungaroo creeks located in the north western section of the application area. A significant portion of the 'wetland mosaic' will be undisturbed and Robe River will be required to rehabilitate the cleared sections within six months of clearing. The success of the vegetation rehabilitation will determine whether the proposed clearing is likely to have an impact upon the biological diversity of the 'wetland mosaic.'

Seventeen introduced species or Declared Plants as listed by the Agricultural Protection Board pursuant to the *Agriculture and Related Resources Protection Act 1976* were recorded during the flora and vegetation surveys conducted across the application area (Biota, 2011). Potential impacts from the spread of weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

From the fauna desktop assessments of the application area, based on distribution alone, three amphibians, 85 reptiles, 123 birds, 33 native mammals and four introduced mammals have the potential to occur within the application area (Biota, 2011). Several Short Range Endemic fauna species have also been recorded within the vicinity of the application area (Biota, 2011).

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

Methodology CALM (2002)
Biota (2011)
Robe River (2011)
Western Australian Herbarium (1998)

- GIS Database:
- IBRA WA (Regions - Sub-regions)
- Threatened Ecological Sites Buffered

(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 may be at variance to this Principle

Nine fauna habitats were inferred from the eighteen vegetation types mapped within the application area (Biota, 2011). The majority of the vegetation communities mapped within the application area were deemed to be well represented throughout the Pilbara region, however the areas mapped as creeklines, soaks and a habitat called 'wetland mosaic' were considered to be potentially significant habitat for fauna and were classified as being in 'Very Good' to 'Excellent' condition (Biota, 2011).

Biota (2011) conducted a fauna desktop assessment of the application using a 40 kilometre radial search of the application area. Searches were conducted of both the NatureMap database and the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Protected Matters database (Biota, 2011). Additionally, the Biota internal database was searched for records of fauna occurring in the vicinity of the application area (Biota, 2011). The results of these searches showed that a diversity of species may potentially occur within the application area (Biota, 2011). Of these, fifteen fauna species of conservation significance, ten EPBC Act Migratory listed species and nine Short Range Endemic (SRE) species have the potential to occur within the application area (Biota, 2011).

The 'wetland mosaic', creeks and soaks over peaty soils provide an important water source for fauna which potentially occur within the application area. The 'wetland mosaic' vegetation unit is thought to be unusual in the bioregion, as a result of its status as groundwater-dependent wetland vegetation over an unusual substrate (black peat soil) and no similar vegetation types have been identified in recent floristic analysis of the vegetation communities of the area (Biota, 2011). The importance of this vegetation community in the context of the wider locality and bioregion has not been assessed (Biota, 2011).

The habitats that the SRE species have been collected from include: under *Corymbia* sp. bark, under large *Triodia* spp. hummocks and on stony plains (Biota, 2011). These habitats are all widespread and ubiquitous throughout the Pilbara bioregion and similar representative SRE taxa and morphotypes have been recorded at other locations outside of the application area (Biota, 2011). However, the black peat soil underlying the wetland, creek and soak habitats could represent an unusual and poorly sampled habitat for SRE fauna species (Biota, 2011).

Robe River (2011) has designed the exploration program to avoid clearing the native riparian vegetation associated with the soak area and its associated wetland in the south east of the application area. However the proposed clearing will impact the edge of the 'wetland mosaic' located in the centre of the application and sections of the Jimmawurrada and Bungaroo creeks in the northern section of the application area. A significant portion of the 'wetland mosaic' will be undisturbed and Robe River will be required to rehabilitate the cleared sections within six months of clearing. The success of the vegetation rehabilitation will determine whether the proposed clearing is likely to have an impact upon these significant fauna habitats.

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

Methodology Biota (2011)
Robe River (2011)

(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

The Department of Environment and Conservation's NatureMap databases have been interrogated to determine if any Declared Rare Flora (DRF) species occur within a 40 kilometre radius of the application area (Biota, 2011).

The database search of the application area showed that no Declared Rare Flora (DRF) as listed under the *Wildlife Conservation Act 1950* were recorded within 40 kilometres of the application area (GIS Database; Biota, 2011). In addition, no DRF listed pursuant to the *Wildlife Conservation Act 1950* were recorded during the 2009 survey (Biota, 2011).

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

Methodology Biota (2011)
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

There are no records of Threatened Ecological Communities (TECs) located within the application area (GIS Database), or within 40 kilometres of the survey area (Robe River, 2011). Biota (2011) reported that no TECs are known from the application area. The nearest known occurrence of a TEC is the 'Themeda Grasslands' TEC, 98 kilometres to the south-east of the closest point of the application area (GIS Database). Clearing within the application area would not be expected to impact on this TEC.

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

Methodology Biota (2011)
Robe River (2011)
GIS Database:
- Threatened Ecological Sites Buffered

(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 Hamersley sub-region of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). According to Shepherd (2009) ~99.89% of the Pre-European vegetation remains within the Pilbara bioregion (see table).

The vegetation of the application area has been broadly mapped as Beard vegetation associations:
-82: Hummock grasslands, low tree steppe; Snappy gum over *Triodia wiseana*; and
-609: Mosaic: Hummock grasslands, open low tree steppe; Bloodwood with sparse Kanji shrubs over soft Spinifex / Hummock grasslands, open low tree steppe; Snappy gum over *Triodia wiseana* on a lateritic crust (GIS Database).

According to Shepherd (2009) approximately 100% of these Beard vegetation associations remain at both a state and bioregional level. Therefore the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion Pilbara	17,804,193	17,785,000	~99.89	Least Concern	6.32
Beard vegetation associations - WA					
82	2,565,901	2,565,901	~100	Least Concern	10.24
609	74,186	74,186	~100	Least Concern	0
Beard vegetation associations - Pilbara Bioregion					
82	2,563,583	2,563,583	~100	Least Concern	10.24
609	74,186	74,186	~100	Least Concern	0

* Shepherd (2009)

** 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 (2009)
GIS Database:
- Pre-European Vegetation
- IBRA WA (Regions - Sub-regions)

(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 may be at variance to this Principle

The application area falls within the Bungaroo and Jimmawurrada Creeks which are known to flood periodically

(GIS Database). The last major flood event was in 2008. Despite the scale of these episodic events, the creeks are not considered to be permanent wetlands and would only qualify as seasonal watercourses (Biota, 2011). In addition to this, there are four minor ephemeral watercourses that pass through the application area (GIS Database). It is expected that these watercourses will only flow during significant rainfall.

A unit described as the “wetland mosaic” consists of various combinations of open and closed *Eucalyptus victrix/camaldulensis* forest, *Melaleuca glomerata/bracteata* tall shrubland and *Triodia longiceps* hummock grasslands. This vegetation unit has extensive areas of ponding, where a large spring reaches the surface. Although the ponding appears to be localised in some areas, the entire unit features highly saturated black peat soil and wet clays that are normally associated with permanent wetlands.

The creekline vegetation in the north-west of the application area comprised: *Eucalyptus camaldulensis*, *Eucalyptus victrix* open forest over *Melaleuca glomerata* tall open scrub over *Cyperus vaginatus* open sedgeland over *Cenchrus ciliaris* open tussock grassland.

The permanent water source (soak) is associated with *Eucalyptus victrix*, *Eucalyptus camaldulensis* scattered trees over low open shrubland over *Tephrosia rosea*, *Cyperus vaginatus* very open sedgeland and is surrounded by a wetland consisting of *Eucalyptus xerothermica* open woodland over *Acacia sclerosperma* tall open scrub over *Cyperus vaginatus* very open sedgeland over *Cenchrus ciliaris* open tussock grassland over *Triodia epactia* very open hummock grassland (Biota, 2011).

The soak and its associated wetland will not be impacted by the proposed clearing as the nearest boundary of the wetland to the application area is approximately 25 metres, however at present the proposed clearing will intercept a small portion of the “wetland mosaic,” and crosses the Jimmawurrada and Bungaroo Creeks in the north-west and south-east of the application area.

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

Methodology Biota (2011)
Robe River (2011)
GIS Database:
- Hydrography, linear
- Hydrography, linear (Hierarchy)
- Rivers

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

Comments Proposal may be at variance to this Principle

The application area falls within the Urandy, Newman, Boolgeeda, River and Robe land systems of the Pilbara region (GIS Database; Van Vreeswyk *et al.*, 2004). These systems occupy approximately 0.7%, 8%, 4.3%, 2.3% and 0.5% of the Pilbara region respectively (Van Vreeswyk *et al.*, 2004).

The Urandy land system is described as stony plains, alluvial plains and drainage lines supporting shrubby soft Spinifex grasslands (Van Vreeswyk *et al.*, 2004). This land system is mostly resistant to vegetation degradation or erosion (Van Vreeswyk *et al.*, 2004).

The Newman land system is described as rugged jaspilite plateaux, ridges and mountains supporting hard Spinifex grasslands. This land system is generally not susceptible to erosion (Van Vreeswyk *et al.*, 2004).

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). This land system is generally not susceptible to erosion (Van Vreeswyk *et al.*, 2004).

The River land system is described as active flood plains and major rivers supporting grassy Eucalypt woodlands, tussock grasslands and soft Spinifex grasslands. This land system has a high to very high susceptibility to erosion if the vegetation cover is removed.

The Robe land system is described as low limonite mesas and buttes supporting soft Spinifex (and occasionally hard Spinifex) grasslands (Van Vreeswyk *et al.*, 2004). This land system is generally not susceptible to vegetation degradation or erosion (Van Vreeswyk *et al.*, 2004).

The River land system corresponds to areas within the Bungaroo and Jimmawurrada Creeks which cross through the the north-western corner and south-eastern corner of the application area (GIS Database). This small amount of low impact clearing within the River land system is unlikely to cause any appreciable increase in degradation or erosion much beyond the immediate clearing envelope. Robe River (2011) have stated that clearing within the River land system will be minimised.

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

Methodology Robe River (2011)
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 not located within any conservation areas or Department of Environment and Conservation (DEC) managed lands (GIS Database).

The application area is located approximately 49 kilometres north east of the Cane River Conservation Park (GIS Database). At this distance, it is not likely that the vegetation within the application area would act as a buffer or be important as an ecological linkage to this conservation area.

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

Methodology GIS Database:
- DEC Tenure

(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 may be at variance to this Principle

The application area has low salinity levels of between 500 -1,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Salinity within this range is considered acceptable for most uses with acceptable drinking water between 500 to 750 milligrams per litre TDS and acceptable irrigation water between 500 to 1,200 milligrams per litre TDS. The application area is not located within a Public Drinking Water Source Area (GIS Database).

Two creeks (Bungaroo and Jimmawurrada) are located within the northern section of the application area and there are also four minor, ephemeral drainage lines located within the application area (GIS Database). With an average annual rainfall of approximately 411 millimetres (BoM, 2011) and an annual evaporation rate of 3,400 millimetres (GIS Database) it is expected that there would be little surface flow during normal seasonal rains.

Clearing of vegetation in low-lying areas could cause deterioration in the quality of surface and sub-surface water by increasing the height of the water table (Biota, 2011). Biota (2011) discovered white mineral deposits in the wetland areas which appeared to be some form of mineral salt. Clearing in these areas could cause an increase in the salinity of the wetlands and/or an increase in the area of saline influence (Biota, 2011). This could result in the degradation of vegetation communities downstream of the Bungaroo Valley (western side of the application area) (Biota, 2011). Given that low impact clearing is proposed, and considering the magnitude of the Hamersley Groundwater Province (approximately 101,000,000 square kilometres) (GIS Database), it is unlikely that the proposed clearing of 69 hectares of native vegetation will have any significant impact on the quality of the regional groundwater.

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

Methodology Biota (2011)
BoM (2011)
GIS Database:
- Evaporation Isopleths
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas
- Rivers

(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 Robe River catchment which covers an area of approximately 757,138 hectares (GIS Database).

There are two creeks (Bungaroo and Jimmawurrada) which cross over the northern section of the application area (GIS Database). In addition there are four ephemeral watercourses located within the application area which are expected to be dry throughout the summer months (GIS Database).

Local flooding occurs seasonally in the Pilbara region as a result of cyclonic activity and sporadic thunderstorm activity. The application area is located within the Bungaroo valley area which is naturally prone to major flooding (Biota, 2011), however, it is not anticipated that the proposed clearing of the application area will lead

to an increase in flood height or duration.

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

Methodology Biota (2011)
GIS Database:
- Hydrographic Catchments-Subcatchments
- Hydrography, linear
- Rivers

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

Comments

There are seven registered Aboriginal Sites of Significance within the application area (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. Robe River (2011) advised that these sites will be avoided during the clearing process and stated that they will comply with the *Aboriginal Heritage Act 1972* by completing a Section 18 permit should this be required.

There is one Native Title Claim (WC99/12) over the area under application (GIS Database). This claim has been determined by the Federal Court on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

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.

The clearing permit application was advertised on 18 April 2011 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to this application.

Methodology Robe River (2011)
GIS Database:
- Native Title Claims
- Aboriginal Sites of Significance

4. References

- BoM (2011) Bureau Of Meteorology Website - Climate averages by number, averages for Pannawonica http://www.bom.gov.au/climate/averages/tables/cw_005069.shtml (Accessed 3 June 2011).
- Biota (2011) Biota Environmental Sciences Pty Ltd, Greater Bungaroo and Coastal Water Project Biological Review. Prepared for Rio Tinto Iron Ore, February 2011.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions (Gascoyne 3 (GAS3 – Augustus subregion). Department of Conservation and Land Management, Bentley.
- 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.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Robe River (2011) Robe River Pty Ltd. Statement Addressing the 10 Clearing Principles Jimmawurrada Exploration Drilling, February 2011.
- Shepherd (2009) 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.
- 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.
- Western Australian Herbarium (1998) Florabase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 13 May 2011).

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), 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 (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

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.