Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2792/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Robe River Iron Ltd**

1.3. Property details

Property: *Iron Ore (Cleveland-Cliffs) Agreement Act 1964*, Special Lease for Mining Operations 3116/4623, Lease I 123396 L, Lot 65 on Deposited Plan 241547, Lot 404 on Deposited Plan 194355 and Lot 405 on Deposited Plan 194355

Local Government Area: Shire of Roebourne

Colloquial name: Cape Lambert Quarry Expansion

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
The vegetation of the area is broadly mapped as Beard Vegetation Association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (GIS Database, 2008; Shepherd et al., 2001). Western Botanical conducted a flora survey in June 2008, representing all the main vegetation associations within the application area (Western Botanical, 2008). The following two vegetation types were identified within the application area, broadly associated with topographic features; **1. *Cenchrus ciliaris* tussock grassland on a coastal plain:** This vegetation type was composed of 10% *Cenchrus ciliaris*, but also included the grasses *Eriachne mucronata* and *Triodia epactia*, as well as the introduced *Aerva javanica*, and the presence of the occasional *Acacia ampliceps* and *Acacia bivenosa*. **2. Mixed Chenopod very open herbs on saline scald:** This herb land was dominated by four species of *Halosarcia* (*H. halocnemoides, H. halocnemoides* ssp. *tenuis, H. indica* ssp. leiostachya and *H. pruinosa*). Two species of introduced flora were recorded within the application area: Buffel Grass (*Cenchrus ciliaris*) and Kapok Bush (*Aerva javanica*) (Western Botanical, 2008).	Robe River Iron Ltd (Robe River) have applied to clear 0.3 hectares (ha) of native vegetation for the purpose of expanding an existing quarry in the Cape Lambert Operation Area. The area cleared will be used as a haul road to facilitate safe truck movements in and out of the quarry, but may also be drilled and blasted to maintain suitable road elevation as the quarry is excavated (Robe River, 2008). The application area is immediately adjacent to the existing quarry (Robe River, 2008).	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).	The vegetation condition was derived from a vegetation survey by Western Botanical (2008).

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area occurs within the Chichester (PIL1) sub-region of the Pilbara Bioregion of the Interim Biogeographic Regionalisation of Australia (IBRA) (GIS Database). This sub-region is characterised by plains supporting a shrub steppe of *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002). The vegetation described within the application area is typical of the bioregion (Western Botanical, 2008).

A vegetation survey of the application area identified 14 taxa of native vascular flora from 10 genera and 7 families (Western Botanical, 2008). The family Chenopodiaceae (4) and the genera Halosarcia (4) represented the majority of the flora within the application area (Western Botanical, 2008).

Two introduced flora species were recorded during the survey, Buffel Grass (*Cenchrus ciliaris*) and Kapok Bush (*Aerva javanica*) (Western Botanical, 2008). Neither of these species are listed as a 'Declared Plant' under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food Western Australia, however, Buffel Grass is a highly invasive species and a serious environmental weed (Western Botanical, 2008). Buffel Grass is prominent across much of the study area and the *Cenchrus ciliaris* vegetation type is significantly infested, therefore, the presence of such introduced flora species is likely to reduce the biological diversity of the application area (Western Botanical, 2008). Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

An area search of the Western Australian Museum's Faunabase conducted by the assessing officer suggests the application area is diverse in reptile species, particularly Skinks (25) and Geckos (16) (Western Australian Museum, 2008). The database search found a total of 87 reptile species from 10 families as potentially occurring within the application area, or within a 50 km radius of the application area. The application area is also diverse in avian species, with a total of 52 species from 33 families found as potentially occurring within the application area, or within a 50 km radius of the application area.

Although the application area is high in faunal diversity, it is not likely to have a greater diversity than similar areas within the region, particularly as parts of the application area have been degraded by previous disturbance from the existing quarry. The landforms and vegetation types in the application area are well represented in the Pilbara Region (Western Botanical, 2008; GIS Database). Given the high level of disturbance and vegetation degradation due to infestation with introduced (weed) species and previous clearing activities, the application area is not likely to comprise a higher level of biological diversity than other undisturbed areas (Western Botanical, 2008).

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

Methodology

CALM (2002)
Western Botanical (2008)
Western Australian Museum (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 Western Australian Museum's online fauna database between the coordinates 116.65°E, 21.09°S and 117.62°E, 20.18°S, representing a 50 km radius around the application area.

This search identified 5 Amphibian, 32 Mammalian, 52 Avian and 87 Reptilian species that may occur within the application area (Western Australian Museum, 2008). Of these the following species of conservation significance have previously been recorded within the search area: White-Browed Babbler (*Pomatostomus superciliosus*); and the Dugong (*Dugong dugon*).

Western Botanical (2008) conducted a desktop search of available databases to identify species of conservation significance that have been recorded within the area specified. The following fauna species of conservation significance were identified through this database search: Northern Quoll (*Dasyurus hallucatus*), Mulgara (*Dasycercus cristicauda*), Banded-Hare Wallaby (*Lagostophus fasciatus fasciatus*), Pilbara Orange Leafnosed Bat (*Rhinonicteris aurantius*), Pilbara Olive Python (*Liasis olivaceus barroni*), Peregrine Falcon (*Falco peregrinus*), Little North-western Mastiff Bat (*Mormopterus loriae cobourgiana*), *Lerista quadrivincula*, Spectacled Hare-Wallaby (*Lagorchestes conspicillatus leichardtii*), Short-tailed Mouse (*Leggadina lakedownensis*), Ghost Bat (*Macroderma gigas*), Western Pebble-mound Mouse (*Pseudomys chapmani*), Eastern Curlew (*Numenius madagascariensis*), Australian Bustard (*Ardeotis australis*), Bush Stone-curlew (*Burhinus grallarius*), Star Finch (*Neochmia ruficauda subclarescens*), *Notoscincus butleri* and the Rainbow Bee-eater (*Merops ornatus*).

Based on habitat requirements, the following species are most likely to occur within the application area:

The Peregrine Falcon (Schedule 4 - Other specially protected fauna, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) is a wide ranging species that has little habitat specificity apart from an affinity with cliffs, tall trees for nesting and water (Pizzey & Knight, 1997). The vegetation within the application area provides suitable habitat for this species, however given that the vegetation types are well represented throughout the bioregion, its preference for riverine and breakaway habitats within the Pilbara and the small area proposed to clear 0.3 hectares) in relation to the size of the sub-region (9,044, 560 hectares) it is unlikely that the application area contains significant habitat for this species.

The Australian Bustard (DEC Priority 4) prefers tussock grassland, Triodia hummock grassland, grassy woodland and low shrub lands (Garnett & Crowley, 2000). This species has previously been recorded within the bioregion and so it is likely that the application area contains suitable habitat for this species, particularly within the plains vegetation type. Given that the vegetation types are well represented throughout the bioregion and the small area proposed to clear (20 hectares) in relation to the size of the sub-region (9,044,560 hectares) it is unlikely that the application area contains significant habitat for this species.

The Bush Stone-curlew (DEC - Priority 4) is known to frequent lightly timbered open woodlands. There is a single record of this species from the Burrup Peninsula and so the vegetation within the application area could provide suitable habitat for this species, however it is considered too open to offer sufficient cover for this species (Pilbara Flora, 2008). It is unlikely that the application area provides significant habitat for this species.

The Star Finch (P4 - DEC Priority Fauna List) is endemic to Australia and has a preference for dense reed beds and adjacent vegetation communities along permanent waterways (Western Botanical, 2008). A single Star Finch was recorded from a secondary dune supporting an *Acacia coriacea* shrubland over *Triodia epactia* hummock grasses and *Cenchrus ciliaris* tussock grasses within the Cape Lambert Port B Development area (Biota, 2008). This species is likely to occur within the application area, however given the widespread distribution and mobile nature of this species and the vegetation types that comprise its habitat being well represented throughout the bioregion it is unlikely that the application area contains significant habitat for this species.

The Rainbow Bee-Eater (migratory - JAMBA International Agreement) occurs mainly in open forests, woodlands and shrub lands but also occurs in inland and coastal sand dune systems and mangroves in Northern Australia (Western Australian Museum, 2008). This species is an opportunist and is known to inhabit a wide range of habitats (Pizzey & Knight, 1997). A single individual was observed perched on the Horizon Power powerlines within the Cape Lambert substation and infrastructure area, in the vicinity of the Cape Lambert rock quarry extension study area. This species is likely to occur within the application area, however given that this species does not have a restricted range and the vegetation types that comprise its habitat are well represented throughout the bioregion it is unlikely that the application area contains significant habitat for this species.

The vegetation communities present in a large part of the application area have a significant level of degradation due to infestation with Buffel grass (*Cenchrus ciliaris*) and compared to intact native vegetation communities, this introduced grass species does not provide a significant habitat to local fauna species (Western Botanical, 2008).

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

Methodology

Biota (2008)
Garnett & Crowley (2000)
Pilbara Flora (2008)
Pizzey & Knight (1997)
Western Australian Museum (2008)
Western Botanical (2008)

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, no Declared Rare Flora (DRF) species have been recorded within the application area. Six populations of *Terminalia supranitifolia* (P1) occur approximately 36-41 km west of the application area on the Burrup Peninsula (GIS Database).

Western Botanical conducted a flora and vegetation field survey of the application area in June 2008 (Western Botanical, 2008). This survey involved the area being traversed on foot by two botanists. Different vegetation groups encountered during the survey were described and the vegetation associations were examined for the presence or absence of any DRF and Priority Flora species (Western Botanical, 2008). No species of DRF or Priority Flora were recorded within the application area during the flora survey (Western Botanical, 2008).

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

Methodology Western Botanical (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 (TECs) within the application area (GIS Database). The nearest known endorsed TEC's are the Themeda Grassland communities located approximately 185 km south of the application area (GIS Database). The nearest known ecosystem of conservation significance is the Millstream Stygofauna community (a non-endorsed TEC), located approximately 105 km to the south of the application area. Due to the distance from the application area, these ecosystems are unlikely to be affected by the proposed clearing.

Western Botanical (2008) reported that no Threatened Ecological Communities were identified during the flora survey of the application area.

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

Methodology Western Botanical (2008)
GIS Database
- Threatened Ecological Communities

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

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

The application area falls within the IBRA Pilbara Bioregion. Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in this Bioregion. The vegetation in the application area is recorded as Beard Vegetation Association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (GIS Database; Shepherd et al., 2001). According to Shepherd et al. (2001) there is approximately 99.9% of this vegetation type remaining (see table below).

The vegetation within the application area is not a significant remnant of native vegetation and is 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	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
157	502,737	501,522	~99.8	Least Concern	17.2
Beard veg assoc. – Bioregion					
157	198,636	198,522	~99.9	Least Concern	5.7

* Shepherd et al. (2001) updated 2005
** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd et al (2001)
GIS Database
- 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 not likely to be at variance to this Principle**

According to known GIS datasets, there are no known watercourses or water bodies within the application area. There are few minor, non-perennial watercourses in proximity to the application area; however it is unlikely that

the drainage lines would carry water under normal rainfall events, due to high evaporation rates and low rainfall (GIS Database).

Mangroves occur approximately 0.7 km west-south-west of the application area (GIS Database).

The application area experiences a rainfall of approximately 300 mm /year and a pan evaporation rate of approximately 2,500 mm/year (CALM, 2002; Luke et al., 1987).

Therefore, the proposed clearing is unlikely to have any significant impact on any watercourses or wetlands.

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

Methodology
CALM (2002)
Luke et al. (1987)
GIS Database
- Hydrography - Linear
- Geodata - Lakes

(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), and is comprised of the Ruth Land System (GIS Database).

The Ruth Land System is described as hills and ridges of volcanic and other rocks supporting hard spinifex (and occasionally soft spinifex) grasslands (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 'Sand plains' land unit. This land system is not susceptible to erosion. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Western Botanical, 2008).

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

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

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments

Proposal is not likely to be at variance to this Principle

The application area is located approximately 60 km to the north of Millstream-Chichester 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 an important ecological linkage to a conservation area. The vegetation types within the application area are well replicated in other land systems within the Pilbara region. Consequently, their conservation status is under no threat.

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 has suffered previous disturbance, and the small area of clearing is unlikely to have any significant impact on the quality or quantity of groundwater (DoW, 2008).

There are no permanent water bodies or watercourses within the application area (GIS Database). The application area is located in a semi-desert-tropical region, with an average annual rainfall of approximately 300 mm falling mainly during the summer months, and an average annual evaporation rate of approximately 2,500 mm (CALM, 2002). Therefore, during normal rainfall events, surface water within the application area is likely to evaporate or be utilised by vegetation quickly.

The application area is relatively flat and the proposed clearing is unlikely to result in significant changes to surface water flows, particularly given that no watercourses are present within the application area (GIS Database).

The application area is located within the Pilbara Groundwater Province (GIS Database). The groundwater salinity within the application area is approximately 1000-3000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). Given the size of the area to be cleared (0.3 hectares) compared to the size of the Pilbara Groundwater Province (5,557,665 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).

The proposed clearing of disturbed and degraded vegetation is unlikely to have a significant impact on the quality or quantity of groundwater (DoW, 2008).

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

Methodology CALM (2002)
DoW (2008)
GIS Database
- Hydrography - Linear
- Topographic Contours - Statewide
- Public drinking water Source Areas (PDWSA)
- Groundwater Provinces
- Groundwater Salinity - Statewide (TDS_MG_L)
- 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 drains into the Coastal Catchment area (GIS Database). The relatively small area to be cleared (0.3 hectares) in relation to the size of the catchment area (744,301 hectares) is unlikely to cause or exacerbate the incidence or intensity of flooding (GIS Database).

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 (WC99_014) over the area under application. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are several known Aboriginal Sites of Significance within the vicinity of the application area (GIS Database). It is the Proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

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 regarding this application.

Methodology 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 proposal is not at variance to Principle (e), and is not likely to be at variance to Principles (a), (b), (c), (d), (f), (g), (h), (i) and (j) .

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

5. References

Biota (2008) Cape Lambert Quarry Expansion: Native Vegetation Clearing Permit Report. Biota Environmental Sciences Pty Ltd, Western Australia.

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.

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). Water Quality Advice. Advice to assessing officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR), received (12 June). Department of Water, Western Australia. Trim Ref: AH000009

Garnett, S.T., and Crowley, G.M. (2000) Action Plan for Australian Birds 2000. Environment Australia, Canberra.

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

Luke, G.J., Burke, K.L. and O'Brien, T.M. (1987) Evaporation Data for Western Australia. Resource Management Technical Report No. 65. Department of Agriculture, Western Australia.

Pilbara Flora (2008) Flora and Vegetation Survey Supporting Documentation for a Native Vegetation Clearing Permit Application: Murray Camp Siding, Deepdale Railway Stage 3 Development, Rio Tinto Iron Ore. Pilbara Flora, Western Australia.

Pizzey, G. and Knight, F. (1997) Field Guide to the Birds of Australia. Angus & Robertson, Sydney.

Robe River Iron Limited (2008) Application for a Purpose Clearing Permit for Quarry Expansion at Cape Lambert. Supporting Documentation. Robe River Iron Associates, 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.

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 Museum (2008). Faunabase - Western Australian Museum, Queensland Museum and Museum and Art Gallery of NT Collections Databases. http://www.museum.wa.gov.au/faunabase/prod/index.htm (accessed 30 October 2008). Western Australian Museum.

Western Botanical (2008) Cape Lambert Quarry Extension: Native Vegetation Clearing Permit Report. Unpublished report prepared for Pilbara Iron Pty Limited. August 2008.

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.
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.