



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5286/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: **Holcim (Australia) Pty Ltd**

1.3. Property details

Property: Mining Lease 47/3

Local Government Area: Shire of Roebourne

Colloquial name: Mount Regal Quarry

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant

Decision Date: 15 November 2012

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 for the whole of Western Australia and are useful to look at vegetation in a regional context. One Beard vegetation association has been mapped within the application area:

Beard vegetation association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (Government of Western Australia, 2011; GIS Database).

Astron Environmental Services (2011) conducted a vegetation and flora survey of the application area during 15 to 16 December 2010 and on 13 April 2011. The biological review identified and mapped two landform types with two vegetation types associated with each:

Minor creek lines and drainage lines

- **Db:** *Corymbia hamersleyana* low open woodland to open woodland over *Acacia bivenosa* (*Acacia pyrifolia*, *Eremophila longifolia*) high open shrubland over *Triodia wiseana* (*Triodia epactia/pungens*) hummock grassland; and
- **Dc:** *Corymbia hamersleyana* (*Acacia coriacea* subsp. *pendens*) low open woodland to low woodland over *A. pyrifolia*, *A. bivenosa* and *Eremophila longifolia* high open shrubland to high shrubland over *Corchorus* aff. *parviflorus* scattered low shrubs over *Triodia epactia/pungens*) hummock grassland.

Hills and upper slopes

- **Ha:** *Terminalia canescens* and *Brachychiton acuminatus* scattered low trees over *Senna glutinosa* subsp. *chatelainiana* low open shrubland over *Triodia wiseana* and *Triodia epactia/pungens* over hummock grassland with *Cymbopogon ambiguus* scattered tussock grasses; and
- **La:** *Acacia pyrifolia* and *A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland.

Large areas of historically cleared/disturbed vegetation were also observed (Astron Environmental Services, 2011).

Clearing Description

Holcim (Australia) Pty Ltd is proposing to clear up to 55.56 hectares of native vegetation within for the Mount Regal Quarry Project. The clearing of vegetation is required for the purposes of mineral production, to supply crushed aggregate products to the local construction market (and major projects) for concrete manufacture and road construction.

The vegetation will be cleared by mechanical means. The vegetation will be mulched and incorporated into organised surface material stockpiles/bunds to be stored for rehabilitation purposes.

Vegetation Condition

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

To:

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).

Comment

The application area is located in the Roebourne subregion of Western Australia and is situated approximately 15 kilometres south-west of the Karratha town site (GIS Database).

The vegetation condition was derived from a vegetation survey conducted by Astron Environmental Services (2011).

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 Roebourne subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This subregion is characterised by quaternary alluvial and older colluvial coastal and subcoastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera*. Uplands are dominated by *Triodia* hummock grasslands and ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands. Samphire, *Sporobolus* and mangal occur on marine alluvial flats and river deltas (CALM, 2002).

Astron Environmental Services (2011) conducted a flora and vegetation survey over the application area during 15 to 16 December 2010 and on 13 April 2011. The survey identified 119 vascular plant taxa from 74 genera and 32 families within the application area and surrounding region. The application area does not represent native vegetation with a high level of biodiversity and does not support a high diversity of flora or vegetation units which may be important for the locality or the subregion (Astron Environmental Services, 2011; Strategen Environmental Consultants, 2012). The application area has been subject to disturbance over a number of years from onsite and adjacent quarrying operations and historic grazing activities (Strategen Environmental Consultants, 2012). The condition of the vegetation types was classified from 'excellent' to 'completely degraded' (Keighery, 1994; GIS Database).

A search on the Department of Environment and Conservation's Threatened and Priority Flora databases revealed no Threatened Flora species and three Priority Flora species that may potentially occur in the application area; *Trianthema* sp. Python Pool Priority 2 (P2), *Eriochloa fatmensis* Priority 3 (P3) and *Vigna* sp. Rockpiles (P3) (DEC, 2012). There were no Priority Flora species recorded within the application area. Given that the second phase of the flora survey was undertaken following above average rainfall, it is most likely that the potential Priority Flora species would have been visible at the time of the targeted flora survey (Astron Environmental Services, 2011). The clearing of 55.56 hectares of native vegetation is not likely to significantly influence the conservation status of these flora species (Astron Environmental Services, 2012; GIS Database).

There are no Threatened Flora species, Priority Flora species, Threatened Ecological Communities or Priority Ecological Communities recorded within the application area (GIS Database).

There were three species of weeds identified during the survey; *Aerva javanica* (Kapok Bush), *Cenchrus ciliaris* (Buffel Grass) and *Malvastrum americanum* (Spiked Malvastrum) (Astron Environmental Services, 2011). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were two faunal habitats identified within the application area (Astron Environmental Services, 2011). All of the habitats within the application area are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to that found in similar habitat located elsewhere in the region (Astron Environmental Services, 2011). The clearing of 55.56 hectares of native is unlikely to have a significant impact on fauna in a regional or local context.

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

Methodology

Astron Environmental Services (2011)
 CALM (2002)
 DEC (2012)
 Keighery (1994)
 Strategen Environmental Consultants (2012)
 GIS Database:
 - IBRA WA (Regions - Subregions)
 - Pre-European vegetation
 - 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 is not likely to be at variance to this Principle

There were two broad fauna habitat types recorded within the survey area by Astron Environmental Services (2011);

1. Minor creek lines and drainage areas with *Corymbia hamersleyana* woodlands and hummock

- grasslands; and
2. Hills and upper slopes with scattered trees and shrubs.

Astron Environmental Services (2011) identified the vegetation condition to be 'completely degraded' to 'excellent' (Keighery, 1994). The landforms and habitat found within the application area is considered as being well represented in the Pilbara bioregion (Astron Environmental Services, 2011).

Astron Environmental Services (2011) prepared a biological review identifying potentially occurring fauna species in the application area. There were four species of conservation significance identified as potentially occurring within the application area based on habitat type; Australian Bustard (*Ardeotis australis*) (DEC – Priority 4), Peregrine Falcon (*Falco peregrinus*) (WC Act – Schedule 4), White-bellied Sea-eagle (*Haliaeetus leucogaster*) (EPBC – Migratory) and the Pilbara Olive Python (*Liasis olivaceus barroni*) (DEC – Threatened, EPBC – Vulnerable) (Astron Environmental Services, 2011; DEC; 2012). The Peregrine Falcon, White-bellied Sea-eagle and Australian Bustard may use the study area for foraging as part of a larger territory area (Astron Environmental Services, 2011). The habitat present within the application area is not considered significant habitat for these species. There is an ephemeral rock pool surround by rocky ledges and shade trees observed in the north-western section outside the application area (Astron Environmental Services, 2011). This rocky pool has the potential to provide habitat for the Pilbara Olive Python. This species, however, prefers rocky areas adjacent to permanent water and is not likely to be found within the application area (Astron Environmental Services, 2011). The proposed clearing of 55.56 hectares of native vegetation is not likely to impact critical feeding or breeding habitat for any conservation significant fauna species as the application area does not contain significant habitat for the potential species.

A survey conducted by Bennelongia Environmental Consultants (2011) found the risk to short range endemic invertebrates to be low to very low. Extensive similar habitat appears to occur outside the application area in a continuous fashion (Bennelongia Environmental Consultants, 2011). The occurrence of troglifauna in the application area is unlikely because the predominantly basalt substrata in the area does not provide the appropriate habitat spaces (Bennelongia Environmental Consultants, 2011).

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

Methodology Astron Environmental Services (2011)
Bennelongia Environmental Consultants (2011)
DEC (2012)
Keighery (1994)

(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, there are no records of Threatened Flora within the application area (GIS Database). A search of the Department of Environment and Conservation's Threatened and Priority Flora databases identified no Threatened Flora species as occurring within a 20 kilometre radius of the application area (DEC, 2012).

Astron Environmental Services (2011) conducted a vegetation and flora survey of the application area during 15 to 16 December 2010 and on 13 April 2011. No Threatened Flora was recorded within the survey area.

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

Methodology Astron Environmental Services (2011)
DEC (2012)
GIS Database:
- Threatened and Priority Flora

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

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

A search of the available databases shows that there are no Threatened Ecological Communities situated within 100 kilometres of the application area (GIS Database).

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

Methodology 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 Pilbara IBRA bioregion (GIS Database). The vegetation within the application area is recorded as:

Beard vegetation association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (Government of Western Australia, 2011; GIS Database).

Beard vegetation association 157 retains approximately 99% of its pre-European extent respectively, within the bioregion (Government of Western Australia, 2011). The area proposed to be cleared is not a significant remnant of native vegetation.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,427	17,729,352	~99.58	Least Concern	6.32
Beard vegetation associations - State					
157	502,729	498,026	~99.06	Least Concern	17.95
Beard vegetation associations - Bioregion					
157	198,634	197,098	~99.23	Least Concern	5.69

* Government of Western Australia (2011)

** 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)
Government of Western Australia (2011)
GIS Database:
- IBRA WA (regions - subregions)
- Pre-European Vegetation

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

Comments Proposal may be at variance to this Principle

Based on the vegetation mapping by Astron Environmental Services (2011), the vegetation types 'Db' and 'Dc' are associated with drainage lines:

- **Db:** *Corymbia hamersleyana* low open woodland to open woodland over *Acacia bivenosa* (*Acacia pyrifolia*, *Eremophila longifolia*) high open shrubland over *Triodia wiseana* (*Triodia epactia/pungens*) hummock grassland; and
- **Dc:** *Corymbia hamersleyana* (*Acacia coriacea* subsp. *pendens*) low open woodland to low woodland over *A. pyrifolia*, *A. bivenosa* and *Eremophila longifolia* high open shrubland to high shrubland over *Corchorus* aff. *parviflorus* scattered low shrubs over *Triodia epactia/pungens* hummock grassland (Astron Environmental Services, 2011).

The condition of the vegetation types are classified as 'degraded' to 'very good' (Keighery, 1994; GIS Database).

Surface drainage in the application area is through several ephemeral drainage lines (GIS Database), which flow during periods of intense rainfall southeast across the lower ground within the application area and generally demarcated with slightly more vegetated ground (MHW, 2010). The vegetation type associated with the drainage lines are considered to be common and widespread within the subregion (Astron Environmental Services, 2011). The clearing of 55.56 hectares of native vegetation is unlikely to have a significant impact on the drainage associated vegetation types within the local or regional area.

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

Methodology Astron Environmental Services (2011)
Keighery (1994)
MHW (2010)

GIS Database:
- Geodata, Lakes
- Hydrography, Linear

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

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

The application area is broadly mapped as the Rocklea and Ruth land systems (GIS Database).

The Rocklea land system is described as basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. This system has very low erosion hazard (Van Vreeswyk, 2004).

The Ruth land system is described as hills and ridges of volcanic and other rocks supporting hard spinifex (occasionally soft spinifex) grasslands. This system is prone to fairly regular burning but is not susceptible to erosion (Van Vreeswyk, 2004).

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

Methodology Van Vreeswyk (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 (GIS Database). The nearest conservation area is Millstream Chichester National Park, located approximately 50 kilometres south-east of the application area (GIS Database). Given the distance separating Millstream Chichester National Park and the application area, the proposed clearing is not likely to impact the environmental values of the 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 is not likely to be at variance to this Principle

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The application area is located within the proclaimed Pilbara groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purpose other than domestic and/or stock watering is subject to licence by the Department of Water.

Several drainage tracts transect the application area (GIS Database). These drainage tracts are dry for most of the year and only flow and hold surface water for short durations following significant rainfall events. Drainage flows within the application area will be locally concentrated by diversion structures. Sediment traps will reduce sediment loads and velocities in local surface water runoff, and haul roads will not significantly affect surface water quantity or quality in the area as the installation of culverts will maintain the current sheet flow regime (Strategen Environmental Consultants, 2012). The clearing of vegetation as a result of this proposal is therefore unlikely to result in any further deterioration in surface or groundwater quality in the local area.

The application area has a groundwater salinity that ranges from marginal to saline (1,000 - 7,000 milligrams/Litre Total Dissolved solids (TDS) (GIS Database). The proposed clearing of 55.56 hectares of native vegetation is unlikely to further deteriorate the quality of underground water (GIS Database).

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

Methodology Strategen Environmental Consultants (2012)
GIS Database:
- Geodata, Lakes
- Hydrography, Linear
- Public Drinking Water Source Areas
- RIWI Act, Groundwater Areas
- Groundwater Salinity, Statewide

(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 an arid (semi-desert) tropical climate, with an annual average rainfall of approximately 268.9 millimetres per year (CALM, 2002; BoM, 2012). Based on an average annual evaporation rate of 3,200 - 3,600 millimetres (BoM, 2012), any surface water resulting from rainfall events is likely to be relatively short lived.

Given the size of the area to be cleared (55.56 hectares) compared to the size of the Maitland River catchment area (199,380 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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

Methodology BoM (2012)
CALM (2002)
GIS Database:
- Hydrographic Catchments - Catchments

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

Comments

There is one Native Title claim over the area under application. The claim WC99/14 was determined by the Federal Court on 11 May 2005. 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*.

There are no 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.

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 22 October 2012 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received stating no objection in relation to the proposed clearing.

Methodology GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims - Determined by the Federal Court
- Native Title Claims - Registered with the NNTT

4. References

- Astron Environmental Services (2011) Holcim Australia Pty Ltd, Mt Regal Quarry - Vegetation and Flora Survey and Fauna Assessment Phase 1 and 2. Unpublished Report, June 2011.
- Bennelongia Environmental Consultants (2011) Assessment of risk to short range endemic and subterranean fauna from the Mt Regal Quarry Proposal. Prepared for Astron Environmental Services, May 2011.
- BoM (2012) Climate Statistics for Australian Locations. A Search for Climate Statistics for Dampier Salt, Australian Government Bureau of Meteorology, viewed 8 November 2012, <http://reg.bom.gov.au/climate/averages/tables/cw_005061.shtml>.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 4 (PIL3 - Roebourne subregion) Department of Conservation and Land Management, Western Australia.
- DEC (2012) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation, viewed 8 November 2012, <<http://naturemap.dec.wa.gov.au>>.
- 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.
- Government of Western Australia (2011) 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- MHW (2010) Desktop Hydrogeological Study: Proposed Mt Regal Quarry. Unpublished report prepared for Holcim (Australia) Pty Ltd, November 2010.
- Strategen Environmental Consultants (2012) Mt Regal Quarry Clearing Permit Application M47/3. Prepared for Holcim (Australia) Pty Ltd, September 2012.
- 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.

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	Environment 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.