Government of **Western Australia**
Department of **Mines and Petroleum**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2845/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: **BHP Billiton Nickel West Pty Ltd**

1.3. Property details

Property: Mining Lease 36/4
Local Government Area: Shire Of Leonora
Colloquial name: Koonoonooka Sand Quarry Operation

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
92.1		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 area applied to clear has been broadly mapped at a scale of 1:250,000 as: Beard Vegetation Association 18: low woodland; mulga (*Acacia aneura*) (Shepherd et al, 2001). Western Botanical (2008) undertook a flora and vegetation survey of the application area during the period 19 May 2008 to the 22 May 2008. The survey area was traversed on foot, whilst comprehensively describing and mapping the vegetation present (Western Botanical, 2008). Western Botanical (2008) has identified four vegetation units within the application area: **1) Sandplain Spinifex and Myrtaceae Heath (SAMH)** This vegetation unit is characterised by *Homalocalyx thryptomenoides* that dominates the mid stratum. Occasional emergent *Acacia effusifolia*, *A. aneura*, *A. pachyacra*, *Eucalyptus youngiana*, *Grevillea eriostachya* and *Eremophila forrestii* are typical of the upper stratum over *Triodia basedowii* that dominates the lower strata. Associated species include *Enekbatus eremaeus*, *Leptosema chambersii*, *Micromyrtus flaviflora*, *Prostanthera* sp. Bullimore Sandplain, *Hakea minima* and the Priority one taxon *Euryomyrtus inflata*. This vegetation unit was typically long unburnt. **2) Sandplain Spinifex and *Eucalyptus gongylocarpa* Shrubland (SAGS)** These communities are characterised by *Eucalyptus gongylocarpa*, over a mid-stratum of *Acacia aneura* (2 forms), *A. effusifolia*, *A. jamesiana*, *A. ligulata*, *Grevillea eriostachya* and other eucalypts including *Eucalyptus leptopoda* ssp., *E. trivalvis* and *E. youngiana*. The low shrub stratum is dominated by *Triodia basedowii*. Associated species include *Acacia aneura*, *Dodonaea adenophora*, *Eremophila forrestii*, *E. latrobei*, *E. platythamnos*, *Keraudrenia velutina*, *Micromyrtus flaviflora*, *Pittosporum angustifolia*, *Rhyncharrhena linearis*, *Scaevola spinescens*, *Senna artemisioides* ssp. *sturtii* and *S. glutinosa* ssp. *chatelainiana*. Soils in this vegetation type are typically level and fine, red silty sand. **3) Sandplain Spinifex and Acacia effusifolia Shrubland (SAWS)** This vegetation unit is characterised by *Acacia effusifolia* over scattered sclerophyll shrubs including *Dodonaea adenophora*, *Leptosema chambersii*, *Homalocalyx thryptomenoides* and *Senna pleurocarpa* ssp. *angustifolia*. *Triodia basedowii* dominates the lower stratum. This community is also characterised by the absence of Mulga (*Acacia aneura*) due to the more frequent fire regime in this vegetation unit.	BHP Billiton Nickel West Pty Ltd (BHP Billiton) has applied to clear up to 92.1ha of native vegetation (GIS Database). The proposed clearing is located on Mining Lease 36/4, approximately 20km north-east of Leinster (GIS Database). The purpose of the proposed clearing is for sand quarrying and proposed pit expansions (BHP Billiton, 2008). Clearing will consist of the removal of all trees, brushes, shrubs and low lying vegetation using earthmoving equipment (BHP Billiton, 2008). Topsoil, cleared vegetation and subsoil will be stockpiled for rehabilitation purposes (BHP Billiton, 2008).	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).	The vegetation condition rating is based on a flora and vegetation survey conducted by Western Botanical in May 2008. The vegetation of the application area is reported as being in excellent condition having been long unburnt, resulting in Spinifex in a climax state community (BHP Billiton, 2008).

4) Sandplain Spinifex and *Acacia effusifolia* Shrubland with Mallee (SAWS-M)

This community is similar to Vegetation Unit 3 but with the addition of emergent mallees including occasional *Eucalyptus gongylocarpa*, *E. youngiana* and *E. leptopoda* spp. *elevata*. Other species in the upper storey included *Grevillea juncifolia* and *Acacia effusifolia*. The mid strata was relatively diverse with *Acacia aneura* (twisted leaf), *Eremophila spuria*, *Acacia longispinea*, *Eremophila forrestii*, *Prostanthera* sp. Bullimore Sandplain, *Philotheca tomentella*, *Brachychiton gregorii*, *Lachnostachys* sp., *Spartothamnella teucriiflora*, *Keraudrenia velutina*, *Scaevola spinescens* (narrow leaf form), *Senna artemisioides* ssp. *artemisioides* and *Psydrax attenuate*. The lower strata was dominated by *Triodia basedowii* with *Rulingia loxophylla*, *Leptosema chambersii* and *Prostanthera* sp. Bullimore Sandplain. ?*Paspalidum basicladum* (dead grass) and *Eragrostis* sp. also present. There was also evidence of the fire ephemeral *Codonocarpus cotinifolius* that had died prior to the survey.

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 is located within the East Murchison subregion of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This region is characterised by internal drainage, and extensive areas of elevated red desert sandplains with minimal dune development (CALM, 2002). The vegetation is dominated by Mulga woodlands often rich in ephemerals; hummock grasslands, saltbush and *Halosarcia* shrublands (CALM, 2002). The region experiences an arid climate with primarily winter rainfall (CALM, 2002).

Western Botanical (2008) described four vegetation units within the application area during a flora and vegetation survey that complies with the Environmental Protection Authority (EPA) Guidance Statement 51: 'Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia' (EPA, 2004). A total of 56 flora species were found within the application area, with one Priority one species recorded within the application area (Western Botanical, 2008).

Western Botanical (2008), have not reported any weed species as occurring within the application area. The presence of introduced flora species would lower the biodiversity value of the application area and therefore, care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

Coffey Environments undertook a desktop fauna survey of the application area in September 2008. Coffey Environments (2008) assessment of the area is that the intact fauna habitats within the application area will have high small terrestrial vertebrate diversity but low avian diversity. This conclusion was supported by a search conducted by the assessing officer of the Western Australian (WA) Museum Fauna Database for fauna species that may occur within a 50km radius of the application area. This search identified up to 31 reptile species, 18 birds species, 9 mammals and 1 amphibian that could potentially occur within the application area (WA Museum, 2009).

The landforms, vegetation and habitat types occurring within the application area are well represented within the surrounding region (Western Botanical, 2008) and therefore, the proposed clearing is unlikely to have any significant impact on the biological diversity of the region.

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

Methodology

CALM (2002)
Coffey Environments (2008)
EPA (2004)
WA Museum (2009)
Western Botanical (2008)
GIS Database
- Interim Biogeographic Regionalisation of Australia (subregions)

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposal is not likely to be at variance to this Principle

Coffey Environments conducted a Level 1 fauna assessment of the application area in September 2008 that complies with the EPA Position Statement No. 3 Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA, 2002), and the EPA Guidance for Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, No. 56 (EPA, 2004). Coffey Environments (2008) undertook a reconnaissance visit to the application area, which included a grid search of the area, and reviewed the available published and unpublished literature available for the area.

Coffey Environments (2008) report that fauna assemblages in the eastern Goldfields are significantly influenced by the substrate (e.g. sandy, stony, breakaways), vegetation and decaying vegetation on or near ground level (e.g. grasses, annuals, low shrubs, logs), density of low shrubs (e.g. *Eremophila* and *Cassia* spp.), and the density and height of the tree canopy (e.g. Acacia and Eucalyptus spp.). Based on these variables, Coffey Environments (2008) report that there are two major terrestrial fauna habitat types in the study area:

1) flat red sand plain vegetated with shrubs and occasional trees over spinifex; and
2) mulga woodland groves.

Habitat type 1 is the dominant habitat type within the application area (BHP Billiton, 2008).

Within the application area several fauna species of conservation significance have the potential to occur. The conservation significant fauna most likely to occur within the application area are:

- Australian Bustard (*Ardeotis australis*) – Priority 4 on the Department of Environment and Conservation's (DEC) Threatened and Priority Fauna list;
- Rainbow Bee-eater (*Merops ornatus*) – Marine and Migratory (*EPBC Act 1999* and Japan-Australia Migratory Bird Agreement);
- Princess Parrot (*Polytelis alexandrae*) – Priority 4 on the DEC's Threatened and Priority Fauna list.

The Australian Bustard is a dispersive species with widespread movements over long distances (DECC, 2005). The Australian Bustard is known to inhabit grasslands, low shrublands, grassy woodlands, as well as altered environments such as croplands and airfields (DECC, 2005). The species usually breeds on bare ground, on low sandy ridges or stony rises (DECC, 2005).

The Rainbow Bee-eater is a widespread species and common migrant to many parts of Australia (DEWHA, 2008). The Rainbow Bee-eater is often recorded in disturbed habitats including roadside vegetation and in quarries, mines and gravel pits, where they often breed (DEWHA, 2008). The species breeds from August to January and often nests on flat or sloping ground, in embankments and often in the walls of quarries or pits (DEWHA, 2008).

The Princess Parrots' preferred habitat consists of swales between sand dunes and nests have been recorded in hollows of River Red Gum (*Eucalyptus camaldulensis*) and Desert Oak (*Allocasuarina decaisneana*) (Higgins, 1999). Coffey Environments (2008) have reported recently seeing this species in the Wanjarri Nature Reserve located approximately 30km north of the application area.

The above three fauna species of conservation significance may potentially occur within the application area. However, all three species are relatively widespread and mobile and therefore, would not be confined to the application area. In addition, the habitats and landforms within the application area are widespread locally and throughout the eastern Goldfields region (Coffey Environments, 2008). Hence, the vegetation within the application area is not likely to represent significant habitat for any fauna species, including any fauna species of conservation significance.

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

Methodology
BHP Billiton (2008)
Coffee Environments (2008)
DECC (2005)
DEWHA (2008)
EPA (2002)
EPA (2004)
Higgins (1999)

(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

Western Botanical (2008) undertook a flora and vegetation survey of the application area which consisted of a field assessment performed during the period 19 May 2008 to the 22 May 2008 (Western Botanical, 2008).

According to available databases and the flora and vegetation survey, there are no known species of Declared Rare Flora (DRF) within the proposed clearing area (GIS Database; Western Botanical, 2008). Western Botanical (2008) identified a Priority 1 species as occurring within the application area: *Euryomyrtus inflata*. Within the region this species typically occurs in Sandplain Spinifex *Myrtaceae* Heath dominated by *Acacia effusifolia*, *A. aneura*, *A. pachyacra*, *Eucalyptus youngiana*, *Grevillea eriostachya* and *Eremophila forrestii* on a fine red sandy loam (Western Botanical, 2008).

The survey identified one population with a minimum of 151 plants located within the north-eastern corner of the project area (Western Botanical, 2008). An additional 36 or more plants were recorded just outside of the

proposed application area boundary (Western Botanical, 2008). Western Botanical (2008) report that the WA Herbarium are aware of two other populations of this species within the Murchison Bioregion, whilst Western Botanical are aware of a third population of over 1000 plants. In addition, *Euryomyrtus inflata* is reportedly not easily recognised from a distance, even when in flower, as its habitat preference and associated species including dense Spinifex grasslands make it difficult to distinguish from the surrounding vegetation (Western Botanical, 2008). Hence, this species is probably far more common than current records suggest (Western Botanical, 2008).

BHP Billiton (2008) has excised 5.03ha of the north-eastern corner to avoid impacts on the Priority 1 taxon *Euryomyrtus inflata*.

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

Methodology BHP Billiton (2008)
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**
There are no known Threatened Ecological Communities (TECs) within the area applied to clear (GIS Database). The nearest known TEC is the Depot Springs Stygofauna community located approximately 70km west of the application area.

Western Botanical (2008), report that no TECs were identified during the flora and vegetation 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 (TECs)

(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 Murchison Bioregion (GIS Database). Shepherd et al. (2001) report that approximately 100% of the pre-European vegetation still exists in this Bioregion (see table). The vegetation in the application area is recorded as Beard Vegetation Association 18: low woodland; mulga (*Acacia aneura*) (Shepherd et al., 2001). According to Shepherd et al. (2001) approximately 100% of this vegetation association remains within the Bioregion (see table below).

Therefore, the vegetation within the application area is not a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Murchison	28,120,558	28,120,558	~100	Least Concern	1.1
Beard veg assoc. – State					
18	19,892,437	19,890,348	~100	Least Concern	2.1
Beard veg assoc. – Bioregion					
18	12,403,248	12,403,248	~100	Least Concern	0.4

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

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd et al. (2001)

GIS Database
- Interim Biogeographic Regionalisation of Australia (IBRA)

(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 available GIS Databases, there are no permanent or ephemeral watercourses within the proposed clearing area (GIS Database). A minor, non-perennial watercourse is located approximately 8km south-east of the application area (GIS Database).

The application area is located within a semi-arid to arid climate with variable rainfall (BOM, 2008). Much of the rainfall predominantly occurs between November to March and is derived from summer storms (BOM, 2008).It is only during and after such heavy rainfall events that the ephemeral watercourse near the application area is likely to flow.

Given the distance of the application area from any watercourses, it is unlikely that the proposed clearing will have an impact on any watercourse or wetland.

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

Methodology

BOM (2008)
GIS Database
- Hydrography - linear

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is mapped as occurring within the Bullimore Land System (GIS Database).

The Bullimore Land System consists of gently undulating sandplain with occasional linear dunes and stripped surfaces supporting tall shrublands and hard spinifex (Van Vreeswyk et al. 2004). The vegetation of this land system is reported as being primarily in Good condition with 90% of the vegetation surveyed falling into this category with the remaining 10% being reported as being in Fair condition (Van Vreeswyk et al. 2004). In addition, the Bullimore Land System is not normally susceptible to erosion with 100% of areas surveyed having Nil erosion (Van Vreeswyk et al. 2004).

The application area is most likely to consist of the Sand Sheet landform which makes up approximately 85% of the Bullimore Land System (Van Vreeswyk et al. 2004). This landform consists of almost flat plains with isolated low dunes (Van Vreeswyk et al. 2004). Soils are deep, dark red earthy sands and clayey sands with an acid reaction trend (Van Vreeswyk et al. 2004). The vegetation of this landform generally consists of Spinifex (*Triodia basedowii*) hummock grasslands with scattered low trees and shrubs (Van Vreeswyk et al. 2004).

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

Methodology

Van Vreeswyk et al. (2004)
GIS Database
- Rangeland Land System Mapping

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

Comments

Proposal is not likely to be at variance to this Principle

The nearest conservation area is the Wanjarri Nature Reserve located approximately 30km north of the application area (GIS Database). Given the distance of the application area from any conservation areas, the proposed clearing of native vegetation is not expected to have an impact on the environmental values of any conservation areas.

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

Methodology

GIS Database
- CALM managed Land 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

There are no permanent or ephemeral water features in the proposed clearing area (GIS Database) and

therefore, following rainfall, overland sheet wash may occur. However, due to the high porosity and permeability of the soil profile, in addition to the high annual evaporation rate and low annual rainfall, any surface water or ponding is likely to be short-lived (BHP Billiton, 2008). Therefore, it is considered unlikely that the proposed clearing would impact upon surface water quality.

The hydrogeology of the north-east Goldfield (including Leinster) can be divided into the following three main aquifer types (BHP Billiton, 2008):

- weathered and fractured bedrock, including siliceous cap rock;
- palaeochannels; and
- shallow, but widespread alluvial aquifers.

In general the hydrogeology of the area is variable with relatively low recharge rates (BHP Billiton, 2008). Most groundwater in the region is brackish or saline, with potable groundwater occurring in small elevated areas where recharge conditions are favourable (BHP Billiton, 2008). Groundwater within the application area is quite deep as evidenced by resource drilling which was carried out within the application area to a maximum depth of 14m, without reaching groundwater (BHP Billiton, 2008). Therefore, it is unlikely that the 92.1ha of proposed clearing would have any significant impacts to groundwater level or quality.

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

Methodology BHP Billiton (2008)
GIS Database
- Hydrography, linear

(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

There are no permanent or ephemeral surface water features within the proposed clearing area (GIS Database), hence, it is expected that sheet flow will dominate during periods of high rainfall (BHP Billiton, 2008). However, due to the high porosity and permeability of the local soil profile, water would be expected to infiltrate rapidly and lead to minimal ponding (BHP Billiton, 2008).

In addition, given the high annual rates of evaporation (3,600mm) compared to the average annual rainfall (274.4mm), any surface water resulting from rainfall is likely to be short-lived (BHP Billiton, 2008).

In consideration of the above, the clearing of 92.1ha of native vegetation in comparison to the size of the Lake Carey catchment area (11,378,200ha; GIS Database), is not likely to lead to an increase in the incidence or intensity of flooding.

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

Methodology BHP Billiton (2008)
GIS Database
- Hydrographic catchments - catchments

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

Comments

There are no native title claims over the area under application (GIS Database).

There are no known Aboriginal Sites of Significance within the application area (GIS Database). However, 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 DEC and 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.

There were no public submissions received during the public comments period.

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

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

5. References

BHP Billiton (2008) EP Act - BHP Billiton Nickel West - Clearing Permit 2845/1. BHP Billiton Nickel West, Western Australia.

BOM (2008) Leinster Western Australia. Available online from: http://www.bom.gov.au/. Accessed 30 December, 2008.

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Western Botanical (2008) Flora and Vegetation of the Proposed Clearing within the Koonoonooka Sand Quarry May 2008. Western Botanical, Western Australia.

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DMP	Department of Mines and Petroleum, 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.