Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2788/1
Permit type: Purpose Permit

1.2. Proponent details

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

1.3. Property details

Property: Exploration Licence 69/2201
Mining Lease 69/74
Mining Lease 69/75
Local Government Area: Shire Of Ngaanyatjarraku
Colloquial name: West Musgrave Project

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	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*); and Beard Vegetation Association 19: low woodland; mulga between sandridges (GIS Database). Western Botanical (2007) undertook a flora and vegetation survey of the West Musgraves project area, for an area that included the application area. The survey was conducted from the 16th to the 24th of May 2007 and included a six day field assessment (Western Botanical, 2007). Western Botanical (2007) have identified thirteen habitat units within the entire survey area: 1) **WABS: Wanderrie Bank Mulga Shrubland.** Scattered Mulga over perennial Wanderrie grasses including *Eragrostis eriopoda*. 2) **HPMS: Hardpan Mulga Shrubland**. Hardpan plains with Mulga, perennial shrubs and annual grasses and herbs. 3) **CPX: Discrete, small, calcrete rises within WABS, SASP or SAMA habitat units.** Vegetation is characterised by *Petalostylis cassioides* shrubs and scattered Spinifex on a stony mantle, often 1 to 1.5m above the surrounding habitat. 4) **SASP-C: Sandplain Spinifex Hummock Grasslands with underlying calcrete.** Extensive sand sheets supporting *Acacia ligulata*, Acacia species and Spinifex with calcrete outcropping and subcropping. 5) **SDAGS: Sand Dune Acacia - Grevillea Shrubland.** Low to moderate Aeolian red sands supporting shrublands of *Grevillea stenobotrya*, *Acacia ligulata* and *Gyrostemon ramulosus* with minor occurrence of Spinifex.	BHP Billiton Nickelwest Pty Ltd (BHP Billiton) has applied to clear up to 50ha of native vegetation within an application area of approximately 9226ha (GIS Database). The proposed clearing is located on Mining Leases 69/74, 69/75 and Exploration Licence 69/2201, approximately 75km south-east of Warburton (GIS Database). The purpose of the proposed clearing is mineral exploration. BHP Billiton (2008) propose to clear for the construction of drill holes, drill pads and sumps, and access tracks. Vegetation clearing will be undertaken by mechanical means and the topsoil and vegetation 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 photographic and vegetation description information provided by Western Botanical (2007). Western Botanical (2007) report that there is minimal weed infestation and minimal effects from camel grazing although there have been some effects from relatively recent fire. Areas that have been relatively recently burnt have shown good regeneration of annuals, perennial grasses and shrubs and resprouter trees (e.g. *Eucalyptus, Corymbia*, *Hakea lorea* ssp. *lorea*), however Mulga regeneration has been limited (Western Botanical, 2007).

6) **SDAGS + Myrtaceae: *Aluta maisonneuvei* shrubland.** Footslopes of moderate dunes supporting thickets of *Aluta maisonneuvei*, long unburnt.

7) **SAEC: Sandplain Acacia - Eucalypt Calcrete Shrubland.** Extensive level to gently undulating sandplains supporting, mallee, Acacia and Spinifex.

8) **MTS: Melaleuca - Acacia - Triodia Shrubland on stony calcrete plain.** *Melaleuca glomerata* shrublands on stony calcrete plains with *Acacia ligulata* and Spinifex.

9) **SAMS: Sandplain Mallee Spinifex.** Spinifex hummock grasslands with emergent mallees. Species of mallee may vary.

10) **SAWS: Sandplain Spinifex and Acacia** (other than Mulga). Extensive sand sheets supporting Acacia shrublands (other than *Acacia aneura*) and Spinifex hummock grasslands.

11) **SAMU: Sandplain Mulga Spinifex.** Sandplains supporting Mulga and Spinifex hummock grasslands.

12) **GRMU: Mulga groves.** Internally drained resource gaining sites supporting dense stands of Mulga and associated Sclerophyll shrubs.

13) **CPN: Clay pan, vegetated.** Internally drained clay pans with perennial grasses and annual herbs and grasses.

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 Mann-Musgrave Block subregion of the Central Ranges Interim Biogeographic Regionalisation for Australia (GIS Database). This region is characterised by Proterozoic ranges and derived soil plains, interspersed with red Quartenary sandplains (CALM, 2002). At a broad scale, vegetation can be described as low open woodlands of either Desert Oak or Mulga over *Triodia basedowii* hummock grasslands on sandplains. Vegetation fringing ranges can be described as low open woodlands of Ironwood (*Acacia estrophiolata*) and Corkwoods (*Hakea* spp.) over tussock and hummock grasslands, and on ranges the vegetation consists of mixed wattle scrub or *Callitris glaucophylla* woodlands over hummock and tussock grasslands (CALM, 2002).

Western Botanical (2007) described 13 habitat units from the application area during a flora and vegetation survey performed in May 2007. A total of 221 vascular flora were recorded from the application area (Western Botanical, 2007). The most notable families consisted of *Asteraceae*, *Boraginaceae*, *Mimosaceae*, *Myrtaceae*, *Malvaceae*, *Myoporaceae*, *Poaceae* and *Stackhousiaceae* (Western Botanical, 2007).

According to Western Botanical (2007) three weed species have been recorded as occurring within the application area: Buffel Grass (*Cenchrus ciliaris*), Puncture Vine (*Tribulus terrestris*) and Spiked Malvastrum (*Malvastrum americanum*). The presence of introduced flora species lowers the biodiversity of the application area. 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.

A desktop fauna search of a 50km radius around the application area was performed by the assessing officer using the Western Australian Museum (WA Museum) Fauna Database. This search indicates that the search area is not particularly high in fauna diversity with 4 bird species, 6 mammal species and 25 reptile species shown as possibly occurring within the search area (WA Museum, 2008).

The landforms, vegetation and habitat types occurring within the application area are well represented within the surrounding region (Western Botanical, 2007). In addition the application area is located adjacent to areas of previous mineral exploration and would be expected to have suffered some disturbance from these activities. Therefore it is unlikely that the application area supports a higher level of diversity than surrounding areas.

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

Methodology

CALM (2002)
WA Museum (2008)
Western Botanical (2007)
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

A search of the Department of Environment and Conservation (DEC) databases conducted by DEC on behalf of the proponent, revealed ten species of conservation significance previously recorded within a 100km radius of the application area (DEC, 2007). The species most likely to occur within the application area based on habitat and range are listed below (DEC, 2007):

- Bilby (*Macrotis lagotis*) – Vulnerable (*Environment Protection and Biodiversity Conservation (EPBC) Act, 1999*).
- Marsupial Mole (*Notoryctes* sp.) – Endangered (*EPBC Act, 1999*).
- Giant Desert Skink (*Egernia kintorei*) – Vulnerable (*EPBC Act, 1999*).

Bilbies require sandy or loamy soil in which to burrow and they are found in areas where foxes are not abundant which include the driest and least fertile parts of Western Australia (DEC, 2008). Within Western Australia they are now found in mulga scrub and hummock grasslands on sandplains or along drainage or salt lake systems (DEC, 2008).

The Marsupial Mole is an enigmatic species, rarely observed or recorded (Naturebase, 2008). The species is an inhabitant of sandy desert areas (DEC, 2008), and in Western Australia inhabits sandy areas from the Pilbara, south to Warburton (WA Museum, 2008).

The Giant Desert Skink is known to occur on red sandplains and sand ridges and in Western Australia sites are generally dominated by *Triodia basedowii* and *T. schinzii* with some *Eremophila leucophylla* shrubs (Department of the Environment, Water, Heritage and the Arts, 2008). Regenerating vegetation appears to be a critical habitat requirement as skinks appear to prefer a mosaic landscape of different aged vegetation and inhabit sites that have been burnt in the previous three to fifteen years (McAlpin 1998, 2001 as cited in Department of Environment, Water, Heritage and the Arts, 2008). Preferred habitat has at least 50% bare ground and reproductive output of burrows is highest in areas burnt in the previous ten years (McAlpin 2001 as cited in Department of Environment, Water, Heritage and the Arts, 2008).

Based on habitat and distribution it is possible that the above species may occur within the application area, however, as all these species have a wide distribution across Western Australia, it is unlikely that the vegetation of the application area represents significant habitat for the Bilby, Marsupial Mole or the Giant Desert Skink. In addition, based on the moderate amount of clearing (50ha within approximately 9227ha), the dispersed nature of clearing (long, narrow tracks) and the temporary nature of clearing (all exploration works must be rehabilitated within 6 months of completion of the drilling program), it is unlikely that the proposed clearing would have a significant impact on the habitat of any fauna species. Previous disturbances from mineral exploration in areas adjacent to the application area would be likely to make the habitats of the application area less appealing to fauna then other, undisturbed habitat nearby.

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

Methodology

DEC (2007)
DEC (2008)
Department of the Environment, Water, Heritage and the Arts (2008)
Naturebase (2008)
WA Museum (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

Western Botanical (2007) undertook a flora and vegetation survey of the proposed clearing area. The survey was conducted from the 16th to the 24th of May 2007 and included a desktop and field survey (Western Botanical, 2007). Western Botanical (2007) conducted the field survey by traversing the proposed drill lines and habitats and sampling the vegetation from within each habitat.

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 (Western Botanical, 2007; GIS Database). Western Botanical (2007) has identified three Priority species within the proposed clearing tenements;

- *Calotis latiuscula* – Priority 3
- *Goodenia lunata* – Priority 1
- *Stackhousia clementii* – Priority 1

BHP Billiton (2008) has recorded the locations of these species and relocated tracks and drill pads so as to

avoid disturbance to these species. Based on this it is unlikely that the proposed clearing will have any significant impact on the existence of any flora 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)
Western Botanical (2007)
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 (TEC's) within the area applied to clear, or within 200km of the application area (GIS Database).

Western Botanical (2007) report that no TEC's 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 (2007)
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 Central Ranges Bioregion (GIS Database). Shepherd et al. (2001) report that approximately 100% of the pre-European vegetation still exists within this Bioregion (see table below). The vegetation in the application area is recorded as Beard Vegetation Association 18: low woodland; mulga (*Acacia aneura*) and Beard Vegetation Association 19: low woodland; mulga between sandridges (GIS Database). According to Shepherd et al. (2001) these vegetation types are not well represented in reserves, however, approximately 100% of these vegetation associations remain 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
IBRA Bioregion – Central Ranges	4,701,518	4,700,202	~100	Least Concern	0.0
Beard veg assoc. – State					
18	19,892,437	19,890,348	~99.9	Least Concern	2.1
19	4,385,296	4,384,255	~100	Least Concern	0.0
Beard veg assoc. – Bioregion					
18	1,075,927	1,075,161	~99.9	Least Concern	0.0
19	902,251	902,170	~100	Least Concern	0.0

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

The West Musgraves project lies in central Australia and has an 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.

Based on the scattered clearing of 50ha within a much larger area and the distance of any watercourse from the application area, 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

Landforms of the application area are dominated by sand sheets, low sand dunes, low calcrete outcrops and clayey hardpan plains (Western Botanical, 2007). Vegetation on the sand sheets is dominated by Spinifex *Triodia basedowii* and *Triodia schinzii* on low dunes (Western Botanical, 2007). Calcrete outcrops usually occur low in the landscape and are variously covered by sand sheet which supports scattered Spinifex and sclerophyllous shrubs including *Petalostylis cassioides* (Western Botanical, 2007).

BHP Billiton (2008) will endeavour to avoid dune systems as these are untrafficable as well as areas that are subject to higher rates of erosion. In addition the land disturbance will be limited to a series of small drill pads and sumps and connecting tracks which will be rehabilitated within 6 months of the drilling programs completion (Western Botanical, 2007). This rehabilitation will include replacement of the topsoil where available (Western Botanical, 2007). Therefore, based on the nature of the land disturbance, it is unlikely that the proposed clearing will result in land degradation, however, it is recommended that should a permit be granted, conditions be imposed on the permit with regard to rehabilitation. This condition should involve the stockpiling of all cleared topsoil and vegetation.

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

Methodology

BHP Billiton (2008)
Western Botanical (2007)

(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 proposed clearing area is located within the Ranges of the Western Desert Register of National Estate and the Ranges of the Western Desert Redbook Area (GIS Database). The Ranges of the Western Desert are a series of mountain ranges that are the western extension of the central Australian range complex (EPA, 1974). The ranges have varied topography and geology and are therefore high in flora diversity (EPA, 1974).

The application area is adjacent to other areas of mining activity and as such would be expected to have suffered from some disturbance. Furthermore the proposed clearing of 50ha of native vegetation, in comparison to the size of the reserves (8,016,568ha; GIS Database), is unlikely to have any significant impact on the environmental values of these conservation areas.

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

Methodology

EPA (1974)
GIS Databasse
- Register of National Estate
- System 1 to 5 and 7 to 12

(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). The proposal will consist of 50ha of clearing scattered over a much larger area (9226ha) and it is therefore considered unlikely that the proposed clearing would impact upon surface water quality.

The groundwater of the application area has a salinity level of between 1000-3000tds (GIS Database). This salinity level is considered to represent fair to poor groundwater quality, however, is suitable for livestock, some domestic and limited industrial uses (Department of Land and Water Conservation, 1999). Mallee scrub land calcrete habitat is present within the survey area, which is an indication of shallow groundwater aquifers (BHP Billiton, 2008). Calcrete aquifers have the potential to be habitat for stygofauna (South Australian Museum, 2008), however, the majority of the application area comprises Spinifex grasslands, Wanderie grassland and Mulga-Wanderie grasslands as opposed to Mallee scrubland calcrete habitat and in addition drill holes and pads will not be located within dune systems (BHP Billiton, 2008). Therefore, it is unlikely that the 50ha of proposed clearing, scattered over an area of approximately 9226ha, would have any significant impacts to groundwater levels or quality.

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

Methodology

Department of Land and Water Conservation (1999)
South Australian Museum (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). The application area is located within a region that has an arid climate with variable rainfall (CALM, 2002). Given the high annual rates of evaporation (3400mm) compared to the average annual rainfall (200-250mm), any surface water resulting from rainfall is likely to be short lived (BHP Billiton, 2008).

In consideration of the above, the clearing of 50ha of native vegetation in comparison to the size of the Warburton catchment area (approximately 17,195,990ha; 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)
CALM (2002)
GIS Database
- Hydrographic catchments - catchments

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

Comments

There is a native title claim (WC04/003) over the area under application (GIS Database). This claim has been registered with the 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 that 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 is an Aboriginal Site of Significance (Site ID: 2888) that overlaps 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.

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 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 for the purposes of weed management, rehabilitation, record keeping and permit reporting.

5. References

BHP Billiton (2008) EP Act - BHP Billiton Nickel West Pty Ltd - Clearing Permit 2788/1. BHP Billiton Nickel West Pty Ltd, Western Australia.

BOM (2008) Warburton Western Australia. Available online from: http://www.bom.gov.au/. Accessed 18 November, 2008.

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

DEC (2007) Threatened and Priority Fauna Database. Department of Environment and Conservation, Western Australia.

DEC (2008) Bilby: Macrotis lagotis (Reid, 1837). Department of Environment and Conservation. Available online from: http://www.dec.wa.gov.au/index2.php?option=com_docman&task=doc_view&gid=120&Itemid=942. Accessed 24 November, 2008.

Department of Land and Water Conservation (1999) Groundwater Quality protection Policy. Available online from: http://www.dnr.nsw.gov.au/water/pdf/nsw_state_groundwater_quality_policy.pdf. Accessed 17 November, 2008.

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.

Department of the Environment, Water, Heritage and the Arts (2008). Egernia kintorei in Species Profile and Threats Database, Department of the Environment, Water, Heritage and the Arts, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed 24 November 2008.

EPA (1974) Conservation Reserves in Western Australia - Report of the Conservation Through Reserves Committee to the Environmental Protection Authority: Section 1, Systems 1-5 "CTRC Green Book". Environmental Protection Authority, 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.

NatureBase (2008) Fauna Species Profile. Available online from: http://www.naturebase.net/content/view/840/1288/. Accessed 18 November, 2008.

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.

South Australian Museum (2008) Underground Animals: Stygofauna. Available online from: http://www.samuseum.sa.gov.au. Accessed 24 November, 2008.

WA Museum (2008) Collections databases. Available online from: http://www.museum.wa.gov.au/faunabase/prod/index.htm. Accessed 24 November, 2008.

Western Botanical (2007) Flora and Vegetation Assessment, West Musgraves Tenements, Gt Victoria Desert, May 2007. 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.
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.