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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4112/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **BHP Billiton Iron Ore Pty Ltd**

1.3. Property details

Property: Miscellaneous Licence 45/190
Local Government Area: Town of Port Hedland
Colloquial name: Mooka Marshalling Yards

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 10 February 2011

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
Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation in a regional context. The following Beard vegetation associations have been mapped within the application area (GIS Database): 93: Hummock grasslands, shrub stepe; kanji over soft spinifex; and 647: Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex. A Level 1 flora and vegetation survey of the application area was conducted by Maia Environmental Consultancy in August 2010. The following three vegetation communities were identified within the application area: 1. Hummock Grassland of *Triodia epactia* and *Triodia lanigera* with an Open Shrubland of *Acacia inaequilatera, Acacia ancistrocarpa* and *Acacia stellaticeps* and +/- Scattered Low Trees of *Corymbia hamersleyana* on Plains; 2. Hummock Grassland of *Triodia secunda* on Low Lying Seasonally Inundated Areas; and 3. High Shrubland of *Acacia tumida* var. *pilbarensis* and *Acacia colei* var. *colei,* with a Low Open Shrubland of *Hybanthus aurantiacus* with Very Open Hummock Grassland of *Triodia epactia* on Flood Plains and at the base of Granite Domes and Tors. There were also areas that were mapped as being 'cleared for infrastructure'.	BHP Billiton Iron Ore Pty Ltd has applied to clear up to 221 hectares within an application area of 568 hectares (GIS Database). The application area is located approximately 22 kilometres south of Port Hedland (GIS Database). The proposed clearing is for the construction of the Mooka marshalling yards. The proposed work includes the construction of rail infrastructure, borrow pits, drainage construction, geotechnical investigations, laydown areas and access tracks.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994). to Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).	The vegetation condition was assessed by botanists from Maia Environmental Consultancy. Parts of the application area have been previously cleared for rail infrastructure and a quarry.

3. Assessment of application against clearing principles

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

Comments

Proposal may be at variance to this Principle

The flora and vegetation survey of the application area recorded three different vegetation communities (Maia Environmental Consultancy, 2010). The vegetation condition of the application area ranged from 'very good' to 'degraded' with the majority of the application area considered to be in 'very good' condition (Maia Environmental Consultancy, 2010). There has been no Threatened or Priority Ecological Communities recorded within the application area (GIS Database; Maia Environmental Consultancy, 2010).

A total of 170 flora taxa from 37 families and 92 genera were recorded from the flora survey which covered the application area and additional areas east of the existing rail line and south of Bore Creek (Maia Environmental Consultancy, 2010). This is comparable with results from similar surveys undertaken in the region (Maia Environmental Consultancy, 2010). Of the taxa recorded there were eight flora introduced species (Maia Environmental Consultancy, 2010).

There were no Declared Rare Flora species recorded within the application area. The Priority 1 species *Heliotropium muticum* was recorded at one location within the application area and from 12 other locations during the flora survey (Maia Environmental Consultancy, 2010). This species is known from seven records all within 100 kilometres of Port Hedland (Western Australian Herbarium, 2011). As there are only seven records, the local population is considered highly conservation significant (Maia Environmental Consultancy, 2010). However, recent flora surveys on the Abydos Plain have recorded this species suggesting that it may be more common than the current records suggest (Maia Environmental Consultancy, 2010). BHP Billiton Iron Ore Pty Ltd (2010) has indicated that this species will be avoided during the clearing. Potential impacts to this species may be mitigated by the implementation of a flora management condition.

A Level 1 fauna survey of the same area covered by the flora survey recorded 16 mammal, 35 bird and 10 reptile species (Biologic, 2010). Four of the mammals recorded were introduced species. Within the application area there were three species of conservation significant fauna recorded, including the *Environment Protection and Biodiversity Conservation Act 1999* listed Northern Quoll (*Dasyurus hallucatus*) (Biologic, 2010). There were six fauna habitats identified within the application area, two of which were considered to be of 'high significance' due to their ability to support a number of conservation significant fauna (Biologic, 2010). All of the habitats within the application area are well represented across the Pilbara bioregion, however, the presence of the Northern Quoll represents an important biodiversity value.

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

Methodology

BHP Billiton Iron Ore Pty Ltd (2010)
Biologic (2010)
Maia Environmental Consultancy (2010)
Western Australian Herbarium (2011)
GIS Database:
- Threatened Ecological Sites Buffered

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

Comments

Proposal may be at variance to this Principle

A Level 1 fauna survey was conducted over the application area and other adjacent areas by Biologic from 20 – 26 July 2010. Previous fauna assessments have been carried out in the area and these were reviewed as part of this survey. There were six fauna habitats identified within the application area (Biologic, 2010):

- Sandy Plains with spinifex hummock grasslands and mixed *Acacia* shrublands;
- Stony Plains with open shrubland of *Acacia inaequilatera* and spinifex hummock grasslands;
- Granite Outcrops: containing boulder piles, seasonal gnamma holes, moist depressions and fringing mixed *Acacia* thickets;
- Rocky Ridges: a series of linear Quartz ridges extend north to south on the eastern and western margins of the survey area;
- Low Lying Drainage Depressions: supporting spinifex grassland with seasonal small water holes on sandy clay loam; and
- Occasional Minor Rocky Outcrops (including Quartz, Calrete, Silcrete) occurring within the sandy and stony plains.

The Granite Outcrops, Rocky Ridges, and Occasional Minor Rock Outcrops were all considered to be of high habitat significance (Biologic, 2010). The Granite Outcrops habitat occurs in the north of the application area near the existing quarry. Vegetation is sparse on the outcrop itself however it supports the Endangered Northern Quoll (*Dasyurus hallucatus*) and is likely to support invertebrate species with restricted ranges including recorded pseudoscorpions that may be Short Range Endemic species (Biologic, 2010). Northern Quoll den sites are very likely to occur within this habitat (Biologic, 2010). It also contains seasonal water (gnamma holes) and moisture that supports local fauna (Biologic, 2010).

The Rocky Ridges habitat occurs in areas on the very west of the application area. The outcropping contains

large boulder piles with extensive rock crevices and the lower slopes contain an extensive covering of pebbles (Biologic, 2010). This habitat is likely to support Northern Quoll as rock piles and crevices suitable for den sites are present (Biologic, 2010). The lower slopes of the ridges are known to support the Priority 4 Western Pebble-mound Mouse (*Pseudomys chapmani*) (Biologic, 2010). This habitat will not be disturbed by the proposed clearing (BHP Billiton Iron Ore Pty Ltd, 2010).

The Occasional Minor Rocky outcrops occurred throughout the survey area. Some of the outcrops contained rock piles and boulders (Biologic, 2010). This habitat was rated a high significance for its potential to contain den sites for the Northern Quoll and support invertebrate species with restricted ranges (Biologic, 2010).

The Sandy Plains habitat is widespread and covers the majority of the application area (Biologic, 2010). It is not likely to support species that are restricted to this habitat type. The Stony Plains and Low Lying Drainage Depressions are more restricted but were not considered to be of high significance due to degradation from fire and not supporting restricted species respectively (Biologic, 2010).

As previously mentioned the Northern Quoll and the Western Pebble-mound Mouse have both been recorded within the application area. Two other conservation significant species were also recorded within the application area (Biologic, 2010):

- Australian Bustard (*Ardeotis australis*) – Priority 4; and
- Bush Stone-curlew (*Burhinus grallarius*) – Priority 4.

The Northern Quoll was recorded from three locations within the application area and another four locations within the larger survey area (Biologic, 2010). They were recorded from the presence of scats and the use of motion sensitive cameras. The Northern Quoll was found within the Granite Outcrop, Rocky Ridges and Occasional Minor Rock Outcrops habitats (Biologic, 2010). All of these habitats have the potential or are likely to contain Northern Quoll den sites (Biologic, 2010). Within the application area it is known from an abandoned quarry in the north of the application area and an artificial rock pile adjacent to the rail access road (Biologic, 2010). BHP Billiton Iron Ore Pty Ltd (2010) has indicated that the quarry will not be disturbed during the construction of the Mooka Marshalling Yards. There will also be a 50 metre buffer placed around the isolated rock pile (BHP Billiton Iron Ore Pty Ltd, 2010). Potential impacts on the Northern Quoll will be managed under BHP Billiton's Northern Quoll Management Plan developed for their rail expansion project in consultation with DEC. Should this management plan be adhered to then impacts on the Northern Quoll are not expected to be significant.

The Western Pebble-mound Mouse was recorded on the stony lower slopes of the Rocky Ridges habitat (Biologic, 2010). There were six inactive mounds and one active mound recorded during the fauna survey (Biologic, 2010). This habitat will not be disturbed during the proposed clearing and therefore, the Western Pebble-mound Mouse is not likely to be impacted. The Australian Bustard and Bush Stone-curlew have a large distribution across Western Australia and are found in a variety of habitats. Given their ecology and the amount of available habitat outside the application area, the proposed clearing is also not likely to represent significant habitat for these two species (Biologic, 2010).

Whilst not recorded during the survey, there are a number of other conservation significant species that are considered likely to occur within the application area based on local records and the habitats present (Biologic, 2010). Most of the species may utilise the application area for foraging or dispersal but it is not likely to represent core habitat for any of those species (Biologic, 2010). The Pilbara Olive Python (*Liasis olivaceus barroni* – Vulnerable) and Long-tailed Dunnart (*Sminthopsis longicaudata* – Priority 4) may be present within the Rocky Ridges and Granite Outcrop habitats, however, as these habitats will not be disturbed the proposed clearing is not likely to have a significant impact on these species (Biologic, 2010). The Brush-tailed Mulgara (*Dasyurus blythi* – Priority 4) and Lakeland Downs Mouse (*Leggadina lakedownensis* – Priority 4) both may occur within the Sandy Plains habitat (Biologic, 2010). This habitat covers the majority of the application area and is widespread throughout the bioregion (Biologic, 2010). Given the wide distribution of potential habitat and these species, the application area is not likely to represent significant habitat.

The proposed clearing is not likely to have significant impacts on habitats of high significance such as the Granite Outcrops and Rocky Ridges. The Sandy Plains habitat covers the majority of the application area and is widespread throughout the bioregion (Biologic, 2010). Therefore, the proposed clearing is not likely to have a significant impact on habitat for other indigenous fauna.

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

Methodology BHP Billiton Iron Ore Pty Ltd (2010)
Biologic (2010)

(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 Declared Rare Flora (DRF) within the application area (GIS Database). A Level 1 flora survey was conducted by Maia Environmental Consultancy between 24 and 28 August 2010. This flora survey did not record any DRF (Maia Environmental Consultancy, 2010).

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

Methodology Maia Environmental Consultancy (2010)
GIS Database:
- Declared Rare and Prioirty 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

According to available databases, there are no records of Threatened Ecological Communities (TECs) within the application area (GIS Database). A vegetation survey of the application area was conducted by Maia Environmental Consultancy between 24 and 28 August 2010. No vegetation communities were identified as being a TEC (Maia Environmental Consultancy, 2010).

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

Methodology Maia Environmental Consultancy (2010)
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 Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.9% of the Pre-European vegetation remains (see table) (GIS Database, Shepherd, 2009).

The vegetation of the application area has been mapped as the following Beard vegetation associations (GIS Database):

93: Hummock grasslands, shrub steppe; kanji over soft spinifex; and
647: Hummock grasslands, dwarf shrub steppe: *Acacia translucens* over soft spinifex.

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

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,193	17,785,000	~99.9	Least Concern	6.3
Beard veg assoc. – State					
93	3,044,308	3,044,249	~100	Least Concern	0.4
647	196,372	196,372	~100	Least Concern	No data available
Beard veg assoc. – Bioregion					
93	3,042,113	3,042,064	~100	Least Concern	0.4
647	196,371	196,371	~100	Least Concern	No data available

* Shepherd (2009)
** Department of Natural Resources and Environment (2002)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct	Probably no longer present in the bioregion
Endangered	<10% of pre-European extent remains
Vulnerable	10-30% of pre-European extent exists
Depleted	>30% and up to 50% of pre-European extent exists
Least concern	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

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

Methodology Department of Natural Resources and Environment (2002)

Shepherd (2009)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- 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

There is one minor non-perennial watercourse within the application area (GIS Database). The vegetation survey did not identify any vegetation associated with a watercourse (Maia Environmental Consultancy, 2010). The vegetation unit mapped over this watercourse was recorded at a number of locations from the survey and is not dependant on or associated with watercourses (Maia Environmental Consultancy, 2010).

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

Methodology

Maia Environmental Consultancy (2010)
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 has been mapped as occurring on the Macroy and Uaroo land systems (GIS Database). Both of these land systems are generally not prone to erosion (Van Vreeswyk et al., 2004). The application area is relatively flat apart from some quartz ridges and granite outcrops (Biologic, 2010; GIS Database). BHP Billiton Iron Ore Pty Ltd (2010) has indicated that these areas will not be disturbed by the proposed clearing.

At a broad scale the surface soil pH of the application area is 5.5 to 6.5 and there is a low probability of acid sulphate soils (CSIRO, 2009). The average annual evaporation rate is over 11 times the annual average rainfall so there is a low probably of the proposed clearing causing increased groundwater recharge resulting in rising saline water tables (BoM, 2011; GIS database).

BHP Billiton Iron Ore Pty Ltd (2010) has indicated that if there are areas where the potential for erosion is high, appropriate erosion control measures such as gabions, rip rap rock protection and reno mattresses will be implemented. Potential impacts from erosion may be minimised by the implementation of a staged clearing condition.

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

Methodology

BHP Billiton Iron Ore Pty Ltd (2010)
Biologic (2010)
BoM (2011)
CSIRO (2009)
Van Vreeswyk (2004)
GIS Database:
- Evaporation Isopleths
- Rangeland Land System Mapping
- Topographic Contours, Statewide

(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 does not lie within any conservation areas or DEC managed tenure (GIS Database). The nearest onshore conservation reserve is the Mungaroona Range Nature Reserve approximately 95 kilometres south-west of the application area (GIS Database). Based on the distance between the application area and the nature reserve, the proposed clearing is not likely to impact 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:
- 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).

There is one minor non-perennial watercourse that extends into the application area (GIS Database). The majority of the surface water within the application area is likely to occur as sheet flow following heavy rains. With an annual evaporation rate over 11 times the average annual rainfall any surface water is likely to evaporate quickly (BoM; 2011; GIS Database). The proposed clearing is not likely to have an impact on surface water quality in the local area. If required, culverts will be constructed over drainage lines (BHP Billiton Iron Ore Pty Ltd, 2010).

The groundwater within the application area is between 1,000 – 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). This is considered to be brackish. The proposed clearing is not likely to cause salinity levels within the application area to alter.

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

Methodology

BHP Billiton Iron Ore Pty Ltd (2010)
BoM (2011)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Satewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

(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

With an average annual rainfall of 308.9 millimetres and an average annual evaporation rate of 3,400 – 3,600 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2011; GIS Database). Whilst large rainfall events may result in the flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology

BoM (2011)
GIS Database:
- Evaporation Isopleths

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

Comments

There is one native title claim over the area under application (GIS Database). This claim (WC99/3) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). 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*.

According to available databases, there is one registered Aboriginal Site 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.

It is noted that the proposed clearing may impact on a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) for environmental impact assessment under the EPBC Act. The proponent is advised to contact the SEWPAC for further information regarding notification and referral responsibilities under the EPBC Act.

The clearing permit application was advertised on 20 December 2010 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

Methodology

GIS Database:
- Aboriginal Sites of Significance
- Native Title NNTT

4. References

BHP Billiton Iron Ore Pty Ltd (2010) Application to Clear Native Vegetation (Purpose Permit) Under the Environmental Protection Act 1986. Supporting documentation for clearing permit application CPS 4112/1.

Biologic (2010) Mooka Siding, Level 1/Targeted Fauna Survey. Unpublished document prepared for FAST JV, Decemeber 2010.

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Commonwealth Scientific and Industrial Research Organisation (2009) Australian Soil Resource Information System. Available online at: http://www.asris.csiro.au/index_ie.html Accessed on 17 January 2011.

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Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.

Van Vreeswyk, A.M, Payne, A.L, Leighton, K.A & Hennig, P (2004) Technical Bulletin No. 92: An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, South Perth, Western Australia.

Western Australian Herbarium (1998 - 2011) Florabase - The Western Australian Flora. Department of Environment and Conservation. Available online at http://florabase.dec.wa.gov.au/ Accessed on 17 January 2011.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	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.