



1. Application details

1.1. Permit application details

Permit application No.: 2505/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: BHP Billiton Pty Ltd

1.3. Property details

Property: L74/43
Local Government Area: Shire of Ravensthorpe
Colloquial name: Tamarine Bore

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.06		Mechanical Removal	Bore construction

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
<p>The vegetation of the application area is broadly mapped as Beard Vegetation Association 516: Scrublands; mallee scrub, black marlock (GIS Database, Shepherd et al., 2001).</p> <p>Craig, (2008) conducted a Declared Rare and Priority flora survey of the application area in April, 2008. The survey included traversing on foot an area that extended 50m north of the proposed bore and south to Burlabup Creek, located approximately 70m from the application area (Craig, 2008).</p> <p>The following two vegetation types were identified within the application area:</p> <ol style="list-style-type: none"> 1) Rock Sheoak (<i>Allocasuarina huegeliana</i>) woodland to the north. 2) Swamp Yate (<i>Eucalyptus occidentalis</i>) low forest to the south. (Craig, 2008). 	<p>BHP Billiton - Ravensthorpe Nickel (BHP Billiton) has applied to clear up to 0.06ha of native vegetation, for the purposes of constructing a bore. The proposal includes the installation of a standpipe and small spillage pond. The site is located on the east side of Tamarine Road, 600m south of the intersection with Jerdacuttup Road and approximately 30km north-west of Ravensthorpe (GIS Database; Craig, 2008).</p> <p>The proposed location of the bore is adjacent to an existing monitoring bore (BHP Billiton, 2008), and the land proposed for clearing includes areas which have been previously disturbed due to; installation of the pre-existing bore, road work and, formation of a spur drain (Craig, 2008).</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)</p> <p>To</p> <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)</p>	<p>The vegetation condition was derived from a declared rare and priority flora survey conducted by Craig, (2008).</p>

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 Fitzgerald sub-region of the Esperance Plains Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). The Fitzgerald sub-region primarily consists of dry sclerophyllous woodland, coastal woodlands and heath (Department of Environment, Water, Heritage and the Arts, 2008b). The area has a rich diversity of flora and fauna species, with the Fitzgerald Biosphere Reserve containing over 250 rare and geographically restricted plant and animal species (Department of Environment, Water, Heritage and the Arts, 2008b). Of the 2000 vascular plant species native to the area, approximately 75% are endemic (Department of Environment, Water, Heritage and the Arts, 2008b).

Orchid surveys have been carried out by Matt Jones, an orchid specialist, and a Declared Rare and Priority flora survey was conducted by Craig in 2008. These studies have identified two primary vegetation units within the application area; Swamp Yate low forest, and Rock Sheoak woodland. In addition, 57 flora species from 25 families have been identified within the application area (Craig, 2008). In particular, the area has a high diversity of the *Orchidaceae* family, with 16 species having been recorded from the Tamarine bore area (Craig, 2008).

The Swamp Yate low forest was found to be in poor condition, having been invaded by numerous weed species. These species include; Wild Oat (*Avena fatua*), Black Berry Nightshade (*Solanum nigrum*), Blowfly Grass (*Briza maxima*), Perennial Veldt Grass (*Ehrharta calycina*), Annual Veldt Grass (*Ehrharta longiflora*) and Ursinia (*Ursinia anthemoides*) (Craig, 2008). The flora survey also found that thickets of Swamp Paperbark (*Melaleuca raphiophylla*) growing along the creekline are in places overgrown by Bridal Creeper (*Asparagus asparagoides*), a Weed of National Significance (Craig, 2008).

In addition, new weed species to the area were recorded growing along the roadside, which have colonised following the introduction of gravel during a recent bitumen upgrade (Craig, 2008). These species include: Pimpernel (*Anagallis arvensis*), Spear Thistle (*Cirsium vulgare*), Flaxleaf Fleabane (*Conyza bonariensis*), Tall Fleabane (*Conyza sumatrensis*), Stinkgrass (*Eragrostis cilianensis*), African Lovegrass (*Eragrostis curvula*) and Flatweed (*Hypochaeris radicata*). These new weed species provide a threat to the vegetation communities surrounding the bore (Craig, 2008).

The flora survey found the Rock Sheoak woodland to be in excellent condition. It is dominated by *Allocasuarina huegeliana* and has a sparse shrub layer (0.5-2m tall) and a mid to dense rush/sedge understorey (Craig, 2008). The Rock Sheoak woodland currently has minimal weed species and therefore one of the largest threats to this vegetation layer is the invasion of exotic species from the Swamp Yate low forest and Tamarine roadside (Craig, 2008).

The vegetation survey did not record any Declared Rare or Priority flora, however, the orchid *Caladenia longifimbriata* (Priority 1), has previously been recorded in the Rock Sheoak Woodland, on the west side of Tamarine Road, opposite the Tamarine Bore (Craig, 2008). As Rock Sheoak Woodland is also a vegetation unit within the application area, this species has the potential to occur within the clearing site (Craig, 2008). Additionally, the bore site is known for its diversity of orchids during spring, however, previous orchid surveys in the bore area have not recorded this species (Craig, 2008). The vegetation units of the application area are well represented in surrounding areas and therefore the clearing of 0.06ha of native vegetation is not expected to significantly affect any rare or Priority flora habitats.

A fauna survey of an area located approximately 10km north of the clearing application site, was performed by Biota Environmental Sciences in October 2005. This survey was carried out as part of an ongoing trapping program operating since 1998 (Biota Environmental Sciences, 2005). These surveys have recorded 19 mammal species from 12 families, 69 bird species from 29 families, 40 species of herpetofauna, and 60 invertebrate taxa within the survey area (Biota Environmental Sciences, 2005). A search of the Western Australian Museum's Fauna Database has identified up to 46 mammal species, 138 bird species, 85 reptile species and 16 amphibian species, as potentially occurring in the area under application (Western Australian Museum, 2008). These results indicate that the area is potentially high in bird diversity, however, as the application area has suffered from previous disturbance and weed invasion, the clearing of 0.06ha of native vegetation is not likely to have a significant effect upon habitat for birds or other fauna species.

Although the application area is located within a region that is high in floral diversity and endemic species, past disturbance and encroaching weeds have impacted on the biodiversity of the application area.

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

Methodology

BHP Billiton (2008)
Biota Environmental Sciences (2005)
Department of Environment, Water, Heritage and the Arts (2008b)
Craig (2008)
Western Australia Museum (2008)
GIS Database
- Interim Biogeographic Regionalisation of Australia

- Interim Biogeographic Regionalisation of Australia (subregions)
- Pre-European Vegetation

(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

Biota Environmental Sciences have been assisting BHP Billiton - Ravensthorpe Nickel, to undertake a fauna trapping program that has been ongoing since 1998 (Biota Environmental Sciences, 2005). Surveys have been performed in an area located approximately 10 km north of the application area, and have recorded up to 19 mammal species, 69 bird species, 40 species of herpetofauna, and 60 invertebrate taxa (Biota Environmental Sciences, 2005). A search of the Western Australian Museum's online fauna database has indicated that up to 46 mammal species, 138 bird species, 85 reptile species and 16 amphibian species, have the potential to occur in the application area (Western Australian Museum, 2008)

Since 1998 several fauna species of conservation significance which have the potential to occur in the application area, have been recorded by Biota Environmental Sciences; the Heath Rat (*Pseudomys shortridgei*), Malleefowl (*Leipoa ocellata*), Western Whipbird (*Psophodes nigrogularis nigrogularis*), Western Mouse (*Pseudomys occidentalis*) and the Western Brush Wallaby (*Macropus irma*) (Biota Environmental Sciences, 2005).

The Western Australian Museum's Fauna Database indicates that a further 14 fauna species of conservation significance have the potential to occur in the application area; the Chuditch (*Dasyurus geoffroi*), Dibbler (*Parantechinus apicalis*), Red-tailed Phascogale (*Phascogale calura*), Quokka (*Setonix brachyurus*), Recherche Cape Barren Goose (*Ceropsis novaehollandiae grisea*), Western Bristlebird (*Dasyornis longirostris*), Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Western Ground Parrot (*Pezoporus wallicus flaviventris*), Tammar Wallaby (*Macropus eugenii derbianus*), Quenda (*Isodon obesulus fusciventer*), Woylie (*Bettongia pencillata ogilbyi*), Brush Bronzewing (*Phaps elegans*), Carpet Python (*Morelia spilota imbricata*) and a skink (*Ctenotus gummula*) (Western Australian Museum, 2008).

The Western Whipbird (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) has been identified as occurring in the survey area by its calls (Biota Environmental Sciences, 2005). The species spends most of its time near the ground and is usually found in thicket around 2 to 3 metres high (Garnett and Crowley, 2000). All nests have so far been found in dense heath adjacent to areas of thicket (Garnett and Crowley, 2000). The vegetation within the application area may be suitable habitat for this species. However, given the large amounts of suitable habitat within surrounding areas, the vegetation within the application area is not likely to be significant habitat for this species.

The Malleefowl (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) is known to inhabit coastal heathlands, shrublands and woodlands. The breeding habitat is often characterised by light soil and abundant leaf litter (Benshemesh, 2000). The vegetation within the application area may be suitable habitat for this species. However, given the large amounts of suitable habitat within surrounding areas, the vegetation within the application area is not likely to be significant habitat for this species.

The preferred habitat of the Heath Rat (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) generally consists of scrub mallee and mixed scrub on loamy soils (Department of Environment, Water, Heritage and the Arts, 2008a). However, given the large amounts of suitable habitat within surrounding areas, the vegetation within the application area is not likely to be significant habitat for this species.

The Western Brush Wallaby (DEC - Priority 4) is known to inhabit open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open, scrubby thickets. The species is also often found in areas of mallee and heathland (Department Environment and Conservation, 2006). The vegetation within the application area may be suitable habitat for this species. However, given the large amounts of suitable habitat within surrounding areas, the vegetation within the application area is not likely to be significant habitat for this species.

The Western Mouse (DEC - Priority 4) is usually found in dense vegetation at about 0.5-2.5m high (Van Dyck and Strahan, 2008). The dominant upper-storey species of the mice habitat usually include Eucalyptus, Isopogon, Acacia, Casuarina and Melaleuca (Van Dyck and Strahan, 2008). The preferred vegetation types range from sparse low shrublands through to mid-dense woodlands and granite-associated vegetation on sandy clay loam or sandy loam, frequently with a matrix of gravel (Van Dyck, and Strahan, 2008). The application area has suffered from previous disturbance and in places the vegetation is fairly sparse. Therefore, the vegetation within the application area is not likely to be significant habitat for this species.

None of the abovementioned fauna species are likely to be specifically dependant on habitats found within the application area. The fauna habitats occurring within the application area are well represented in the surrounding areas and on a regional scale. In addition, the site is located close to a road and has suffered from previous disturbance due to the construction of a spur drain and existing bore (Craig, 2008).

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

Methodology Benshemesh (2000)
Biota Environmental Sciences (2005)
Craig (2008)
Department of Environment and Conservation (2006)
Department of Environment, Water, Heritage and the Arts (2008a)
Garnett and Crowley (2000)
Van Dyck and Strahan (2008)
Western Australia Museum (2008)
GIS Database
- Threatened fauna

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

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

According to available databases, no Declared Rare or Priority flora species occur within the application area (GIS Database). The nearest known Declared Rare Flora are two populations of *Marianthus villosus*, which occur approximately 10km north-west of the application area (GIS Database). In addition there are numerous populations of Priority flora surrounding the application area, the nearest (*Microcorys pimeleoides*, Priority 1) being 2.4km north-east of the site.

During the flora survey no Declared Rare or Priority flora were found within the application area (Craig, 2008). A Priority 1 species, *Caladenia longifimbriata*, has previously been collected from the Rock Sheoak Woodland on the west side of Tamarine Road, opposite the Tamarine Bore (Craig, 2008). As the Rock Sheoak Woodland is a vegetation unit within the application area, this species has the potential to occur within the area under application (Craig, 2008). In addition, the area surrounding the bore is known to have a high diversity of orchids during spring, however, previous orchid surveys in the bore area have not recorded the *Caladenia longifimbriata* species (Craig, 2008). The removal of 0.06ha of native vegetation is not expected to significantly impact on any Rare or Priority flora habitat.

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

Methodology Craig (2008)
GIS Database
- Declared rare and priority flora
- Threatened plant communities

(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 application area (GIS Database; Craig, 2008). The nearest known TEC's are located approximately 10km north-west of the application area, and 12km north east. At these remote distances, these ecosystems are unlikely to be affected by the proposed clearing.

Craig (2008) reported that no threatened ecological communities were identified during the flora survey of the application area.

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

Methodology Craig (2008)
GIS Database
- Threatened Ecological Communities

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

Comments Proposal is not at variance to this Principle

The application area falls within the IBRA Esperance Plains Bioregion (GIS Database). Shepherd et al. (2001,) report that approximately 51.1% of the pre-European vegetation still exists in this Bioregion. The vegetation in the application area is recorded as Beard Vegetation Association 516: Scrublands; mallee scrub, black marlock (GIS Database; Shepherd et al., 2001). According to Shepherd et al., (2001) there is approximately 71.6% of this vegetation type remaining within the Esperance Plains 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 – Esperance Plains	2,899,944	1,483,240	~51.1	Least Concern	28.4 (54)
IBRA Subregion – Fitzgerald	1,570,670	844,885	~53.8	Least Concern	27.7 (50.5)
Local Government – Ravensthorpe	1,355,762	865,382	~59.3	Least Concern	n/a
Beard veg assoc. – State					
516	607,436	343,303	~56.5	Least Concern	24.1 (42.3)
Beard veg assoc. – Bioregion					
516	318,745	228,377	~71.6	Least Concern	28.4 (39.5)
Beard veg assoc. – subregion					
516	219,039	182,839	~83.5	Least Concern	38 (45.4)

* 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 Shepherd et al. (2001) updated 2005
 Department of Natural Resources and Environment (2002)
 GIS Database:
 - Interim Biogeographic Regionalisation of 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

There are no permanent watercourses or wetlands within the area to be cleared (GIS Database). Burlabup Creek is located approximately 70m south of the application area, and joins up to the Jerdacuttup River 2.5km away (GIS Database).

The Jerdacuttup Lakes Nature Reserve is located approximately 14km south of the application area (GIS Database). Jerdacuttup Lake is a semi-permanent and hypersaline system that is fed intermittently by the Jerdacuttup River (South Coast Rivercare, 1997). Due to the small amount of clearing applied for, and the distance of the application area from the Nature Reserve, it is unlikely that there will be any significant impact from the clearing on the Jerdacuttup Lakes.

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

Methodology Craig (2008)
 South Coast Rivercare (1997)
 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 located within the Jerdacuttup catchment, which is dominated by shallow to moderately deep, gravely duplex soils, with areas of deep sand (Moore et al., 2001). The major landforms are a level to gently undulating sandplain, with extensive areas subject to waterlogging (Moore et al., 2001). The Jerdacuttup catchment area is known to be susceptible to various forms of land degradation (Moore et al., 2001).

There is secondary salinity within the Jerdacuttup catchment area and a potential for it to spread due to the low relief; this puts large tracts of land at risk to becoming saline (Moore et al., 2001; GIS Database). In addition the sandy surfaced soils, dominant throughout the catchment, are highly susceptible to wind erosion (Moore et al., 2001).

Due to the small size of the application area, the clearing of 0.06ha of native vegetation is not likely to increase the risk of salinity or land degradation. In addition, an aerial photograph of the application area illustrates that the application area has already suffered previous disturbance, with parts of the application area having sparse vegetation due to the adjacent road, existing bore and spur drain (Craig, 2008; GIS Database).

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

Methodology Craig (2008)
Moore et al. (2001)
GIS Database
- 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 Fitzgerald region is an area of high plant and animal diversity, in particular, the Fitzgerald River National Park located approximately 14km south-west of the application area which contains many rare and endemic species (Department of Environment and Conservation, 2008; GIS Database). The nearest DEC managed land is the Kundip Nature Reserve, approximately 2.8km west of the application area (GIS Database). In addition, there is an unnamed reserve approximately 5km east of the application area and the Jerdacuttup Lakes Nature Reserve approximately 14km south (GIS Database).

Given the distance of the application area from any conservation areas, the removal of 0.06ha of native vegetation is not expected to have an 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 Department of Environment and Conservation (2008)
GIS Database
- CALM Managed Land and Waters
- Threatened Fauna
- Declared Rare and Priority Flora List

(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 lies within the Jerdacuttup catchment with the Jerdacuttup River lying approximately 1.5km north-west of the clearing site (GIS Database). The proposed bore will be used to extract saline water for the use of dust suppression at BHP Billiton's Tamarine Quarry, and by the Shire of Ravensthorpe as a Bushfire Control watering point (Craig, 2008).

The proposed clearing is for the erection of a standpipe and small spillage pond (Craig, 2008). The application area has suffered previous disturbance from road work, formation of a spur drain, and installation of a pre-existing bore (Craig, 2008). Given the above disturbances, it is unlikely that the clearing associated with this proposal will impact on groundwater levels or the quality of surface or underground water.

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

Methodology Craig (2008)
GIS Database
- Hydrographic Catchments - Catchments
- Hydrography, linear
- Topographic Contours - statewide

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

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

The application area lies within the Jerdacuttup catchment area which is dominated by a gently undulating sandplain with extensive areas subject to waterlogging (Moore et al., 2001). The application area is relatively flat (GIS Database), and the proposed clearing is therefore unlikely to result in significant changes to surface water flows.

The application area is of low relief (GIS Database,) however the small area to be cleared (0.06ha) in relation to the size of the catchment area (173,928ha) is not expected to increase the incidence or intensity of flooding.

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

Methodology Moore et al. (2001)
GIS Database
- Hydrography, catchments
- Topographical Contours

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

Comments

There are two native title claims (WC96/109 and WC98/070) over the area under application. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There is one Aboriginal Site of Significance that overlaps with the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

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

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.

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

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

5. References

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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.