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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4359/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: PMR Quarries Pty Ltd

1.3. Property details

Property: Mining Lease 70/733
Local Government Authority: Shire of Kalamunda
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
20.65		Mechanical Removal	Gravel Extraction

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 4 August 2011

2. Background

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. One Beard vegetation association is located within the application area (Shepherd, 2009): **Beard vegetation association 3**: Medium Forest; Jarrah - Marri. Ecologia (1997) conducted a botanical assessment over the whole of Mining Lease 70/733 which includes the area under application. This assessment has been reviewed and updated by Landform Research (2011). Ecologia (1997) identified one broad vegetation type within the application area: **Open *Eucalyptus marginata* I *Corymbia calophylla* woodland.** In addition Ecologia (1997) surveyed 10, 10x10 metre quadrats. One detailed quadrat site was located within close proximity to the current application area: **Open *Eucalyptus marginata* woodland over *Macrozamia riedlei* and *Xanthorrhoea preissii* dominated understorey.** *Eucalyptus marginata* dominates throughout this association with *Banksia grandis* and *Allocasuarina fraseriana* as sub-dominant tree species. *Corymbia calophylla* is also present in relatively minor numbers. Within the understorey the most dominant species are *Xanthorrhoea preissii* and *Macrozamia riedlei* which cover approximately 40 % of the area. The low shrub component of the unit is characterised by a combination of *Hibbertia* species, *Banksia dallanneyi, Adenanthos barbiger* and *Phyllanthus calycinus. Caladenia*	PMR Quarries Pty Ltd proposes to clear 20.65 hectares of native vegetation for the expansion of an existing gravel quarry. The proposed clearing is located approximately 17 kilometres north-east of Armadale (GIS Database).	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994); To Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	The vegetation condition rating is derived from aerial imagery and the results of botanical and fauna surveys conducted over Mining Lease 70/733 (GIS Database; Ecologia, 1997 and Western Wildlife, 2011). The application area covers previously cleared and revegetated areas which form part of an existing quarry approved under a Notice of Intention to Mine dated from 1988. Parts of the application area also include areas previously authorised for clearing under expired clearing permit CPS 1056/1. This permit was granted in January 2007 and authorised the clearing of 12.4 hectares within mining lease 70/733.

and *Stylidium* species were common in the herb layer. The density of the sedges in the ground layer varied from moderately dense areas dominated by *Lomandra preissii* and *Lepidosperma* sp. to sparser areas of *Lomandra preissii, L. integra* and *Lepidosperma leptostachyum* (Ecologia, 1997; Landform Research, 2011).

3. Assessment of application against Clearing Principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Northern Jarrah Forest subregion of the Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). One Beard vegetation association is located within the application area (Shepherd, 2009): Beard vegetation association 3: Medium Forest; Jarrah - Marri.

CALM (2002) reports that the vegetation of the Northern Jarrah Forest comprises Jarrah - Marri forest in the west with Bullich and Blackbutt in the valleys grading to Wandoo and Marri woodlands in the east with Powder bark on breakaways. The majority of the diversity in the communities occurs on the lower slopes or near granite soils where there are rapid changes in site conditions.

Ecologia (1997) conducted a botanical assessment over the whole of Mining Lease 70/733. A total of 152 species of vascular flora were collected from the project area from 39 families, 18 of which were represented by a single taxon. The most frequently represented genera were *Acacia* (10 taxa), *Hibbertia* (8 taxa), *Stylidium* (6 taxa) and *Caladenia, Drosera, Leucopogon* and *Lomandra* (5 taxa each).

Ecologia (1997) identified one broad vegetation type: Open *Eucalyptus marginata I Corymbia calophylla* woodland. Parts of the application area have been subject to previous clearing and as such the vegetation condition is considered to range from 'degraded' to 'very good' (Keighery, 1994). Beard vegetation association 3 retains approximately 82% of its pre-European vegetation extent within the Northern Jarrah Forest subregion (Shepherd, 2009) and the vegetation within the application area is considered to be common and widespread within the bioregion. Species richness is considered to be slightly low over the site with an average of 28 taxa recorded in the quadrats sampled (Ecologia, 1997).

There are a number of Priority Flora species recorded in the local area (10 kilometre radius) which occur in similar vegetation and soil types to those found within the application area (GIS Database). However, given that the local area retains approximately 90% of its pre-European vegetation the proposed clearing is unlikely to represent a significant habitat for these species (GIS Database). One DRF species *Diuris purdiei* has been recorded approximately 700 metres east of the area proposed to be cleared however this taxa is restricted to wetlands and wet areas of the Swan Coastal Plain (Landform Research, 2011). There are no wetlands or watercourses mapped within the application area and as such it is unlikely that the application area would provide habitat for this species. A survey of the application area by Ecologia (1997) did not identify any DRF or Priority Flora species within the application area.

Western Wildlife (2011) identified two main fauna habitats; Jarrah / Marri Forest and areas which have been previously disturbed and re-vegetated. A history of logging has resulted in only a few larger trees being present in the application area, however the vegetation to be cleared is likely to support a similar community of native fauna species as the surrounding forest (Western Wildlife, 2011). The vertebrate fauna that potentially occurs in the study area includes up to 11 amphibian, 51 reptile, 98 bird and 30 mammal species (Western Wildlife, 2011). However, although the quarry extension will result in a loss of fauna habitats from the application area, it is not likely to isolate other areas of native vegetation (Western Wildlife, 2011) and the fauna habitats identified are common and widespread.

There are no Threatened or Priority Ecological Communities within the local area and given that the habitat represented within the application area is considered to be common and widespread it is not likely that the vegetation to be cleared comprises a higher level of biological diversity than surrounding areas.

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

Methodology

CALM (2002)
Ecologia (1997)
Keighery (1994)
Landform Research (2011)
Shepherd (2009)
Western Wildlife (2011)
GIS Database:
- Declared Rare and Priority Flora List
- IBRA WA (Regions - Sub Regions)
- Jarrahdale 50cm Orthomosaic - Landgate 2006

- Pre-European Vegetation
- Soils, Statewide
- 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 of the application area has been undertaken by Western Wildlife (2011) including a field survey on 22 March 2011. Two main fauna habitats were identified in the study area:

Jarrah / Marri Forest - This habitat consists of a canopy of Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) over a mid-storey of scattered Sheoak (*Allocasuarina fraseriana*) and Bull Banksia (*Banksia grandis*). The understorey is generally sparse and dominated by *Xanthorrhoea preisii* and *Hibbertia hypericoides*. Much of the forest shows evidence of past timber felling, and consists of dense stands of young trees. There are a few tree hollows present, and though these are mainly small, they are likely to provide roosting or breeding sites for fauna; and

Revegetation Area - This habitat consists mainly of dense stands of Glowing Wattle (*Acacia celastrifolia*) and Waterbush (*Bossiaea aquifolium*), with patches of sparse Bull Banksia and Sheoak. Though this habitat is likely to support less fauna species due to its disturbed nature, the denseness of the vegetation is likely to provide shelter and nesting sites for some species.

Western Wildlife (2011) identified 11 amphibian, 51 reptile, 98 bird and 30 mammal species that may potentially occur within the study area (Mining Lease 70/733). Western Wildlife (2011) identified the following 19 vertebrate species of conservation significance which may utilise the application area:

Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso)* - Schedule 1, Vulnerable;
Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris)* - Schedule 1, Vulnerable;
Baudin's Black-Cockatoo (*Calyptorhynchus baudinii)* - Schedule 1, Vulnerable;
Peregrine Falcon (*Falco peregrines)* - Other Specially Protected Fauna;
Rainbow Bee-eater (*Merops ornatus)* - Schedule 3, Migratory;
Fork-tailed Swift (*Apus pacificus)* - Schedule 3, Migratory;
Chuditch (*Dasyurus geoffroii)* - Schedule 1, Vulnerable;
Brush-tailed Phascogale (*Phascogale tapoatafa* ssp.) - Schedule 1;
Quokka (*Setonix brachyurus)* - Schedule 1, Vulnerable;
Woylie (*Bettongia penicillata ogilbyi)* - Schedule 1, Endangered;
Carpet Python (*Morelia spilota imbricata)* - Schedule 4;
Southern Death Adder (Acanthophis antarcticus) - Priority 3;
Dell's Skink (*Ctenotus delli)* - Priority 4;
Barking Owl (*Ninox connivens)* - Priority 2;
Masked Owl (*Tyto novaehollandiae novaehollandiae)* - Priority 3;
Crested Shrike-Tit (*Falcunculus frontatus)* - Priority 4;
Quenda (Southern Brown Bandicoot) (*Isoodon obesulus)* - Priority 5;
Western Brush Wallaby (*Macropus Irma)* - Priority 4; and
Western False Pipistrelle (*Falsistrellus mackenziei)* - Priority 4.

Of these, the three Black-Cockatoo species are highly likely to forage in the study area, but are relatively unlikely to breed (Western Wildlife, 2011). The Carpet Python, Chuditch and Brush-tailed Phascogale are all known from records in the surrounding area, and may potentially occur in the study area (Western Wildlife, 2011). The Quokka is unlikely to occur, as it prefers dense wetland vegetation and the Woylie is unlikely to occur as it is probably locally extinct. The study area is unlikely to be significant for the Rainbow Bee-eater or Fork-tailed Swift, and it is only likely to be important to the Peregrine Falcon if this species was found to be nesting (Western Wildlife, 2011). The Barking Owl, Masked Owl and Crested Shrike-Tit have a very low likelihood of occurring, as these species are very uncommon in the area close to Perth (Western Wildlife, 2011). The Quenda was recorded in the study area and the Western Brush Wallaby is highly likely to occur. The Southern Death Adder and Dell's Skink are known from records in the surrounding area, and may also potentially occur in the study area (Western Wildlife, 2011).

The development of the application area as a quarry is likely to have some impact on fauna habitat. For the majority of fauna species the impact is unlikely to be significant in a regional context, as the application area is small and it is within an area of continuous native vegetation (Western Wildlife, 2011; GIS Database). The application area is adjacent to an active quarry and will provide for a continuation of extraction activities that are already being undertaken. Approximately 50% of the application area has been previously cleared and consists of rehabilitated and regenerating native vegetation (GIS Database). The clearing of native vegetation for the quarry extension will result in the loss of the fauna habitats in the study area, but is not likely to isolate other areas of native vegetation in the local area.

Beard vegetation association 3 retains approximately 82% of its pre-European vegetation extent within the Northern Jarrah Forest subregion (Shepherd, 2009) and the fauna habitat identified within the application area is considered to be common and widespread within the bioregion. However, considering that the area applied to be cleared is predominantly Jarrah – Marri forest which has the potential to contain larger hollow forming

habitat trees the area proposed to be cleared may provide suitable habitat for some conservation significant species. The implementation of a fauna relocation condition will reduce the impact of the clearing upon individual species that may be utilising these hollows.

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

Methodology Shepherd (2009)
Western Wildlife (2011)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- Jarrahdale 50cm Orthomosaic - Landgate 2006
- Pre-European Vegetation

(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**
There are three records of Declared Rare Flora (DRF) located within a 10 kilometre radius of the proposed clearing (GIS Database):

Diuris purdiei - Located 750 metres east;
Diuris drummondii - Located 5 kilometres west; and
Acacia anomala - Located 5 kilometres west.

The two Orchid species are known to occur within low lying depressions, swamps and areas with wet conditions (DEC, 2011a). The closest record of DRF (*Diuris purdiei)* is located within a minor perennial watercourse (GIS Database). Given that these conditions do not occur within the application area it is unlikely that the area to be cleared contains habitat for these species.

Acacia anomala is known from 13 populations on the western slopes of the Darling Range. This species was identified by Ecologia (1997) as having potential to occur within Mining Tenement 70/733 however no DRF species were identified during this survey.

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

Methodology DEC (2011a)
Ecologia (1997)
GIS Database:
- Declared Rare and Priority Flora List

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no known Threatened Ecological Communities (TECs) within the area under application and the closest known TEC is located approximately 10.5 kilometres west of the application area (GIS Database).

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

Methodology GIS Database:
- Threatened Ecological Sites Buffered

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

Comments **Proposal is not at variance to this Principle**
Beard Vegetation Association 3 retains approximately 82% of its pre-European vegetation extent within the Northern Jarrah Forest subregion (Shepherd, 2009) (see table below).

The application area is adjacent to an active quarry and will provide for the continuation of extraction activities that are already being undertaken. Approximately 50% of the application area has been previously cleared and consists of rehabilitated and regenerating native vegetation (GIS Database).

Given that the vegetation is well represented locally and regionally the vegetation within the proposed area is not likely to be significant as a remnant in a highly cleared landscape and is unlikely to provide a significant ecological linkage or corridor.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and post clearing %)
IBRA Bioregion - Jarrah Forest	4,506,656	2,514,549.90	~56	Least Concern	14 (25)
IBRA Subregion - Northern Jarrah Forest	1,898,780	1,157,898	~61	Least Concern	10 (16)
Local Government – Shire of Kalamunda	170,787	90,549	~53	Least Concern	3 (3)
Beard vegetation association - State					
3	2,661,405	1,862,966	~70	Least Concern	18 (26)
Beard vegetation association - Bioregion					
3	2,390,591	1,657,963	~69	Least Concern	16 (23)
Beard vegetation association - Subregion					
3	908,099	745,157	~82	Least Concern	12 (15)

*Shepherd (2009)
** 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 (2009)
GIS Database
- IBRA WA (Regions - Sub Regions)

(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 at variance to this Principle

There are no watercourses or significant wetlands mapped within the area under application (GIS Database). A survey conducted by Ecologia (1997) did not identify any vegetation growing in association with a watercourse or wetland.

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

Methodology Ecologia (1997)
GIS Database:
- ANCA, Wetlands
- Hydrography, linear
- RAMSAR, Wetland
- Geomorphic Wetlands

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

Comments

Proposal may be at variance to this Principle

The landforms of the application area have been broadly mapped by King and Wells (1990) as 'Dwellingup 2 Phase'. This landform is described as well drained to gently undulating terrain (<10%) with shallow to moderately deep gravelly brownish sands, pale brown sands and earthy sands overlying lateritic duricrust.

This landform has a moderate risk of water logging and a potentially high risk of wind and water erosion when vegetative cover is removed (King and Wells, 1990), however, given that the area is not associated with any watercourses or drainage lines the main land degradation risk is likely to be in the form of wind erosion.

The application area is located adjacent to an active quarry and will provide for a continuation of extraction

activities that are already being undertaken. Approximately 50% of the application area has been previously cleared and consists of rehabilitated and regenerating native vegetation in an area of gentle relief (GIS Database).

Considering the above any erosion is likely to be short term following initial clearing and it is unlikely that the proposed activities in this location will cause significant additional land degradation risks to an already highly disturbed environment.

The implementation of a staged clearing condition will minimise the risk of land degradation in the form of wind erosion.

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

Methodology King and Wells (1990)
GIS Database
- Hydrography, linear
- 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 may be at variance to this Principle

The proposed clearing is located wholly within the Jarrahdale State Forest and the northern extent of the existing gravel quarry is adjacent to the Korung National Park (GIS Database).

The vegetation proposed for clearing is located adjacent to an active quarry and will provide for the continuation of extraction activities that are already being undertaken. These areas have undergone a high level of disturbance due to present and historic clearing activities associated with the operation of the gravel quarry (GIS Database).

The vegetation proposed for clearing is contiguous with that of the surrounding forest and National Park and the removal of this vegetation is not likely to isolate these conservation areas and is unlikely to act as a significant ecological linkage or buffer.

The area under application lies within a region that is subject to moderate levels of rainfall and there may be increased potential for the spread of dieback (*Phytophthora cinnamomi*) or weed species through the movement of topsoil, however, the implementation of a weed and dieback condition will reduce the risk of the spread of weeds or dieback to un-infested areas. Advice provided by the Department of Environment and Conservation (DEC) did not raise any issues with the proposed clearing within DEC managed land (DEC, 2011b).

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

Methodology DEC (2011b)
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 associated with any surface water expression. There are no watercourses or wetlands mapped within the area proposed for clearing (GIS Database).

Advice provided by the Department of Water (DOW) identified that the application area lies within the Canning River Catchment Area which is managed for Priority 1 (P1) source protection. P1 source protection areas are defined to ensure that there is no degradation of the water resource (DOW, 2011a; GIS Database). Mining is an activity that is considered to be 'compatible with conditions' in accordance with Water Quality Protection Note 15 - Land Use Compatibility in Public Drinking Water Source Areas (DOW, 2011a).

The operation of this gravel quarry is currently managed under conditions placed upon Mining Tenement 70/733 and through a previously approved Notice of Intention to Mine (NOIM). Further advice from the Department of Water (DOW, 2011b) identified that DOW is satisfied that the proposed works can be successfully implemented without impacting on this drinking water source if conducted in accordance with the NOIM.

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

Methodology DOW (2011a)
DOW (2011b)

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

The application area is not associated with any surface water expression. There are no watercourses or wetlands mapped within the area proposed for clearing (GIS Database).

The average annual rainfall for the application area is approximately 1,100 millimetres with an average annual evaporation rate of approximately 1,900 millimetres. Given that the area is not associated with any surface water expression and considering that annual evaporation rates greatly exceed annual rainfall, the proposed clearing is unlikely to cause, or exacerbate the incidence or intensity of flooding in this area.

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

Methodology

GIS Database
- Rainfall, Mean Annual
- Evaporation Isopleths

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

There are two Native Title Claims (WC11/2 and WC03/06) over the area under application (GIS Database). These claims have been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

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

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 30 May 2011 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology

GIS Database
- Aboriginal Sites of Significance
- Native Title Claims

4. References

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

Department of Environment and Conservation (2011a) Western Australian Herbarium (1998–). FloraBase — The Western Australian Flora. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/

Department of Environment and Conservation (2011b) DEC Advice for Clearing Permit Application CPS 4359/1. Email to Assessing Officer received 11/07/2011.

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 Water (2011a) DOW Advice for Clearing Permit Application CPS 4359/1. Received 27/06/2011.

Department of Water (2011b) DOW Advice for Clearing Permit Application CPS 4359/1. Email to Assessing Officer received 4/07/2011.

Ecologia (1997) Boral Resources Quarry M70/733. Botanical Assessment. Ecologia Environmental Consultants. January 1997.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

King, P.D. and Wells, M.R. (1990). Darling Range rural land capability study. Land Resources Series No. 3. Western Australian Department of Agriculture.

Landform Research (2011) Notes on Flora Assessments M70/733. June 2011.

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.

Western Wildlife (2011) Level 1 Fauna Survey: Part Tenement M70/733, Kingsmill Rd, Pickering Brook. May 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.