Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2293/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Redstone Resources Ltd**

1.3. Property details

Property: E69/2109
Local Government Area: Shire Of Ngaanyatjarraku
Colloquial name: Exploration Licence 69/2109

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard vegetation associations have been mapped at a 1:250,000 scale for the whole of Western Australia, and are a useful tool to examine the vegetation extent in a regional context. One Beard vegetation association was located within the proposed area to be cleared, this was; 252 (GIS Database): Hummock grasslands, low tree steppe; *Eucalyptus dongarraensis & E. foecunda* over *Triodia plurinervata.* EnviroWorks Consulting (2008) conducted a desktop vegetation study of the proposed clearing area in January 2008. With the use of a Department of Environment and Conservation's Database search and photographs, EnviroWorks Consulting propose the vegetation of the applied clearing envelope is most likely tussock grassland (*Enneapongon spp. ; Poaceae spp.*) with occasional emergent trees (*Acacia aneura, Casuarina pauper,* or *Hakea lorea*) interspersed with some isolated occurrences of mid level shrubs *including Acacia spp., A. coriacea, A. tetragonophylla* and *Senna artemisioides.*	The Redstone Resources Ltd tenement is located along the eastern border of Western Australia near the Northern Territory and South Australia borders (tenement 69/2109). Redstone Resources Ltd has applied to clear up to 2.16 hectares of native vegetation, within a total application area of approximately 479 hectares. The proposed clearing is for the purpose of mineral exploration called the 'Halley's Prospect'. Clearing will include approximately 48 drill pads, and associated sumps. Each drill pad will be 15 metres x 15 metres. No tracks will be cleared for this project. Drill pads and sumps will be mechanically cleared using earth moving equipment with a lowered blade. Clearing will be restricted to grasses and (all trees, shrubs and plants other than grasses will be avoided). The first 30 centimetres of topsoil will be stripped and stockpiled separately from other excavated material. Vehicles will be prevented from driving over stockpiled soil to preserve the viability of seeds and organic matter, and it will be respread over the cleared area no later than one month after the completion of each drill hole. Drill holes will be capped and sumps filled immediately after drilling is completed (EnviroWorks, 2008). A non-perennial drainage line running through the centre of the application area is to be avoided and will have a 150 metre buffer zone placed on it.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	Redstone Resources Ltd commissioned a desktop survey of the application area in January 2008. There was no on ground assessment of flora and fauna. Some landscape and soil characteristics were provided from Redstone Resources on ground geologists. In order to minimise vegetation clearing, the proponent agreed to halve the size of the drill pads required for this operation. This will reduce the clearing of land by 50%, minimising environmental impacts associated with this proposal.

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 proposed clearing area is situated approximately 140 kilometres east of Warburton in the Great Victoria Desert 2 (GVD 2) Interim Biogeographic Regionalisation for Australian (IBRA) bioregion (GIS Database). The Australian Natural Resource Atlas (ANRA) (2008) state that, "no systematic biological survey has been undertaken for the region, although there has been some assessment of biota on proposed and current reserves and a number of localized studies have occurred". On the Continental Landscape Stress Class issued by the Australian Natural Resource Atlas, the GVD 2 bioregion is classed as 5, where 1 is most stressed and 6 is least (ANRA, 2008).

"Vegetation is primarily a tree steppe of *Eucalyptus gongylocarpa, Spinifex* (*Triodia spp*.) and mallee (*Eucalyptus kingsmilli, E. youngiana*) over hummock grassland dominated by *Triodia basedowii* on the aeolian sands, *Acacia* and mulga occur on the colluvial soils with *Eremophila* and *Santalum spp*." (ANRA, 2008).

EnviroWorks Consulting (2008) were commissioned in January 2008 to conduct a desktop flora and fauna study of the land surrounding the project area. Based on a Department of Environment and Conservation Database search requested by EnviroWorks Consulting (2008) there are 53 weed species already known in the GVD bioregion and of these, six are considered widespread and significant. These include; African Boxthorn (Lycium ferocissimum), Blackberry Night Shade (Solanum nigrum), Caltrop (Tribulus terrestris), Common Sowthistle (Sonchus oleraceus), Fountain Grass (Pennisetum setaceum) and Kikuyu Grass (Pennisetum clandestinum).

Feral animals are reported to pose a major threat to the biodiversity of the GVD 2 bioregion (EnviroWorks Consulting, 2008) although the impacts are largely unknown (ANRA, 2008). Feral herbivores such as rabbits and camels have been reported to be widespread. Rabbits appear to be of significant concern with many warrens found in the application area. Photos provided by Redstone Resources show vegetation damage from rabbits and camels in the application area (EnviroWorks Consulting, 2008).

The ecological impacts and extent of feral carnivores such as foxes and cats is largely unknown, however they appear to have taken a large toll on mammal species within the bioregion. Fifty two mammal species have been registered in the bioregion; however 21 of those are now reported to be extinct (ANRA, 2008).

Changes to fire regimes are a major threat to the biodiversity within the GVD 2 bioregion (ANRA 2008). Aerial photography of the project area indicates that trees are sparsely scattered and much of the landscape has been affected by fire (EnviroWorks Consulting, 2008). It appears the area has been burnt consistently over the past 5-10 years, which is indicated by the presence of dead trees, and is confirmed by Redstone Resources field geologists (EnviroWorks Consulting, 2008).

The vegetation habitat types occurring within the application area are well represented in the region (GIS Database), and the application area is unlikely to be of higher biodiversity value than the surrounding areas. The region has a medium priority for reserve consolidation with 9.4% in IUCN I-IV reserves, and minimal sub-regional bias (ANRA, 2008).

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

Methodology

ANRA (2008)
EnviroWorks Consulting (2008)
GIS Database:
- Interim Biogeographic Regionalisation for Australia (Subregions)

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

Comments

Proposal is not likely to be at variance to this Principle

No detailed vertebrate or invertebrate fauna surveys have been conducted over the area applied to clear, however in January 2008, a search of the Department of Environment and Conservation's Threatened and Priority Fauna Database was conducted on behalf of the proponent. This revealed ten species of conservation significant fauna within a 6.25 million hectare area surrounding the project site. Six mammals, two birds and two reptile species were identified; however two of the six mammals identified are presumed extinct (EnviroWorks Consulting, 2008). These are shown below, including their conservation status in accordance with the *Western Australian Wildlife Conservation Act 1950* and DEC's priority list.

Egernia kintorei (Great Desert Skink) Schedule 1
Aspidites ramsayi (Woma Python) Schedule 4
Leipoa ocellata (Malleefowl) Schedule 1
Charadrius veredus (Oriental Plover) Schedule 1
Merops ornatus (Rainbow Bee Eater) Schedule 1
Burhinus grallarius (Bush Stone Curlew) Priority 4

Dasycercus crsticauda (Mulgara) Schedule 1
Macrotis lagotis (Bilby) Schedule 1
Notoryctes spp. (Marsupial Mole) Schedule 1
Peterogale lateralis spp. (McDonnell Range Rock Wallaby) Schedule 1
Onychogalea lunata (Crescent Nailtail Wallaby) Schedule 1 presumed extinct
Leporillus conditor (Greater Stick-nest Rat) Schedule 1 presumed extinct

Based on habitat preferences, it is unlikely all of these species would occur in the area proposed to clear. The species which most likely to occur in the project site are discussed below.

The Great Desert Skink is a burrowing species of skink found in a variety of desert habitats on sandy, clay and loamy soils (Department of Environment and Heritage, 2008). The Great Desert Skink is listed as Schedule 1 (rare or likely to become extinct) under the *Wildlife Conservation (Specially Protected Fauna) Notice 2006* and is sparsely distributed over the Greater Sandy Desert, the Gibson Desert, the Great Victoria Desert and across the Northern Territory. The main threat to this species is changes to fire patterns and feral animals such as foxes and cats (Department of Environment and Heritage, 2008). Based on habitat preferences it is possible the Great Desert Skink would exist in the proposed clearance area. Considering the large range of the lizard and the small disturbance footprint of 2.16 hectares fragmented over an application area of approximately 479 hectares, it is unlikely the proposed clearing area represents significant habitat for this species.

The Woma Python is a nocturnal, terrestrial python, sheltering in hollow logs, animal burrows or thick vegetation (EnviroWorks Consulting, 2008). The Woma Python is listed as schedule 4 (Specially Protected Fauna). Its distribution extends from the Pilbara coast of Western Australia, north to the Eightymile Beach area, and south-west Western Australia, from Cape Peron south and east to the eastern Goldfields. It also extends into northern South Australia and the south-west edge of Queensland. The Woma favours open myrtaceous heath on sandplains, and dunefields dominated by *Spinifex* (Naturebase 2008). Due to the extensive range of the Woma across arid regions of Australia, it is unlikely the proposed land to be cleared represents significant habitat for this species.

Marsupial Moles spend most of their time underground, coming to the surface only occasionally, and are thus rarely recorded or observed. Marsupial Moles prefer sandy desert regions in Western Australia and occur through the Pilbara south towards Warburton (Naturebase, 2008). It is possible that the Marsupial Mole would be present within the clearing envelope, however, it is unlikely that the vegetation within the application area would provide significant habitat for this species.

The Mulgara is a carnivorous marsupial occurring in arid and semi arid regions of Australia. The preferred habitat of the Mulgara is open mulga woodlands (Acacia aneura) over mature hummock grasslands (*Triodia besedowii*). Burrows are made in sandplains and dune systems with sandy loam soils (EnviroWorks Consulting, 2008). It is possible that the Mulgara will occur in the project site, however it is unlikely that the proposed clearing area represents significant habitat for this species.

The proposed project may exert a negative impact on the local fauna to this area. However given the fragmented nature and small size of the proposed clearing (2.16 hectares) it is unlikely that significant habitat for indigenous fauna will be impacted by this proposal. Moreover, the commitment of Redstone Resources to move their drill locations to areas free of trees and shrubs and to keep a 150 metre buffer zone from a creek line present will further reduce the risk of imposing on significant habitat for indigenous fauna.

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

Methodology Department of Environment and Heritage (2008)
EnviroWorks Consulting (2008)
Naturebase (2008)

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

Comments

Proposal is not likely to be at variance to this Principle

There are no known records of Declared Rare Flora (DRF) or Priority Flora within the proposed clearing area according to available databases (GIS Database).

EnviroWorks Consulting (2008) conducted a flora survey and vegetation assessment over the application area and surrounding areas. This involved a desktop study using available databases for threatened flora. Within this survey, seven species of Priority flora were recorded within a 100 kilometre radius of the project area. These species include: *Acacia calcicola* (Priority 4), *Calotis latiuscula* (Priority 3), *Eucalyptus sparsa* (Priority 3), *Lythrum paradoxum* (Priority 3), *Menkea lutea* (Priority 1), *Microcorys macredieana* (Priority 3) and *Teucrium grandiusculum sub spp. grandiusculum* (Priority 2).

Although there is potential for all the above species to occur in the project area, the two species with the highest likelihood are *Calotis latiuscula* and *Menkea lutea*. These species have previously been recorded approximately 20 kilometres from the project site. *Acacia calcicola* also has potential to occur in the project area due to the

presence of other Acacia spp. (EnviroWorks Consulting, 2008).

Whilst the proposed clearing area provides habitat for a range of flora species, it is unlikely that the proposed clearing will result in the loss of significant habitat necessary for the continued existence of DRF or Priority Flora species. Notwithstanding this, it is acknowledged that no on site flora study has been conducted over the proposed clearing area. However due to the commitment or Redstone Resources to ensure that no trees or shrubs are cleared the impact on DRF and Priority Flora will be reduced.

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

Methodology EnviroWorks Consulting (2008)
GIS Database:
-Declared Rare and Priority Flora list - 2008-02-20

(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 Great Victoria Desert Central subregion (Barton and Cowan 2001). The nearest known TEC is located approximately 800 kilometres away to the south west (GIS Database).

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

Methodology Barton and Cowan (2001)
GIS Database
-Threatened Ecological Communities- 2008-02-20

(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 area applied to clear is within the Interim Biogeographic Regionalisation for Australia (IBRA) Great Victoria Desert Bioregion (GIS Database). According to Shepherd et al (2001) there is approximately 100% of the pre-European vegetation remaining in the Great Victoria Desert bioregion. The vegetation of the application area is classified as Beard Vegetation Association 252: Hummock grasslands, shrub steppe; mulga and mallee over soft *Spinifex* (GIS Database). There is approximately 100% of the pre-European vegetation remaining of Beard Vegetation Association 252 in the Great Victoria Desert bioregion (Shepherd et al, 2001).

Whilst Beard Vegetation Association 252 is not represented in conservation reserves, the area proposed to clear does not represent a significant remnant of vegetation in the wider regional area. The proposed clearing is unlikely to reduce the extent of Beard Vegetation Association 252 below current recognised threshold levels, below which species loss increases significantly.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Great Victoria Desert Bioregion	21,794,203	21,784,884	~ 100	Least Concern	8.5
Beard veg assoc. – State					
252	141,311	141,311	100	Least Concern	0
Beard veg assoc. – Bioregion					
252	109,254	109,254	100	Least Concern	0

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

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

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

- Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
- Pre-European Vegetation - DA 01/01.

(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 at variance to this Principle

The proposed clearing area is located in a low lying, floodplain between Blackstone and Cavanaugh Ranges (EnviroWorks Consulting, 2008). The ANRA (2008) report that within the Great Victoria Desert bioregion riparian vegetation is of limited extent and confined to major Creek systems which flow intermittently. Within the application area there is one non-perennial creek (GIS Database), which according to Redstone field geologists, has had no water flow in the past two years (EnviroWorks Consulting, 2008).

As there is a watercourse within the application area, the proposal is at variance to this Principle. Therefore it is recommended that if the permit is granted a condition be put in place to ensure that no vegetation is cleared within 150 metres of any non-perennial watercourse within the application area.

Methodology

ANRA (2008)
EnviroWorks Consulting (2008)
GIS Database:
-Hydrography, Linear - 2008-02-22

(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

EnviroWorks Consulting (2008) report the geology of the project area reflects a typical floodplain consisting of interbedded thin sandy pistolic layers, which overlay a thick red loam clay layer that intermittently has thin calcrete caps (between 1-2 metres). Over the north west of the project area Ironstone outcrops (<1-2 metres) are reported to occur which are sited over buried gabbroic rocks.

The low gradient and relief of the land in the project site and the presence of red clay loam soils reduces the likelihood of appreciable land degradation (ANRA, 2008). Moreover Redstone Resources Ltd (2008) has committed to halve the size of their drill pads from 30 metres x 30 metres to 15 metres x 15 metres. This has reduced the likelihood of land degradation significantly. The revised project size of 2.16 hectares spread across an application area of approximately 479 hectares and the sporadic pattern of clearing reduces the likelihood of land degradation.

Drill pads may disturb the natural surface sheet flow of water in the area (EnviroWorks Consulting, 2008). This may put this land at higher risk of water logging and soil erosion (ANRA, 2008). Should the permit be granted it is recommended the following conditions be placed on it;

- Topsoil (which is to be stockpiled separately from other cleared material) be re-spread over the disturbed area within one month of the completion of each drill hole; and
- No vehicle tracks be cleared.

The low lag time between clearing and rehabilitation is likely to reduce the risk of land degradation (EnviroWorks Consulting, 2008).

A small creek line runs through the centre of the project area which may be prone to land degradation (GIS Database). Due to the commitment of Redstone Resources Ltd to not clear land within 150 metres of the creek line, land degradation is unlikely.

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

Methodology

ANRA (2008)
EnviroWorks Consulting (2008)
GIS Database:
- Hydrology, linear 2008-02-21

(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 project area falls within an Environmentally Sensitive Area (ESA) called the Ranges of the Western Desert (GIS Database). The ESA was registered in 1978 and covers an area of 8,019,568 ha (Australian Heritage Database, 2008). The Australian Heritage Commission deemed that this area has indigenous values of National Estate significance (Australia Heritage Database, 2008). The proposed clearing is not likely to impact upon environmental values of the area, and is therefore not likely to be at variance to this Principle.

Methodology Australian Heritage Database (2008)
GIS Database:
- Environmentally Sensitive Areas, 2008-02-21

(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 proposed clearing is not situated within a Public Drinking Water Source Area (PDSWA) (GIS Database).

Groundwater within the project area is fresh to brackish, between 1,000 - 3,000 milligrams per litre of dissolved solids (GIS Database). Given the large size of the Musgrave Groundwater Province (32,404 kilometres squared) and the relatively small size of the proposed clearance area (2.16 hectares) it is unlikely that the clearing project will impact on the quality of the groundwater (GIS Database).

The project area is relatively flat and is not associated with any permanent watercourses or water bodies (GIS Database). A minor non-perennial drainage line runs through the middle of the application area (GIS Database) however due to the commitment of Redstone Resources to avoid the creek, the proposed clearing is unlikely to exacerbate sedimentation of watercourses outside the application area.

There are no known Groundwater Dependant Ecosystems within 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:
- Groundwater Salinity, Statewide - 2008-02-22
- Hydrography, linear 2008-02-22
- Potential Groundwater Dependant Ecosystems 2008-02-22
- Public Drinking Water Source Area (PDSWA)

(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 Project area lies in a floodplain between Blackstone and Cavanaugh Ranges, and has a summer predominant rainfall pattern averaging between 150 millimetres to 180 millimetres (Barton and Cowan, 2001). Average annual evaporation rates range between 2800 millimetres to 3200 millimetres (GIS Database), hence drainage channels in the area are seasonal; only flowing occasionally following significant rainfall events. During events of rainfall, Redstone Resource geologists have reported significant pooling of water and sheet flow towards the east (EnviroWorks Consulting, 2008).

Given that the proposed clearing of 2.16 hectares is spread over a total area of approximately 479 hectares, it is not likely to cause or exacerbated the incidence or intensity of flooding.

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

Methodology Barton and Cowan (2001)
EnviroWorks (2008)
GIS Database:
- Evaporation Isopleths - 2008-02-22

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 (WC04/003) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining 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 are no registered Sites of Aboriginal Significance within the area applied to clear (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.

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, 2008-02-22

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Mineral Exploration	Mechanical Removal	2.16	The proposal has been assessed against the 10 Clearing Principles. The proposal has been found to not at variance to Principle (e) and is not likely to be at variance to Principle (a), (b), (c), (d), (g), (i), (j), and at variance to Principle (f). Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of land degradation management, watercourse management, habitat preservation, record keeping and permit reporting.

5. References

Australian Heritage Database (2008) Ranges of the Western Desert, Laverton-Warburton Rd, Warburton via Laverton, WA, Australia. Http://www.environment.gov.au/cgi-bin/ahdb/search.pl

Australian Natural Resource Atlas (ANRA) (2008), Biodiversity Assessment Great Victoria Desert www.anra.gov.au/topics/vegetation/assessment/wa/ibra-great-victoria-desert.html. Published by the Department of the Environment and Water Resources.

Barton, B & Cowan, M. (2001) Great Victoria Desert 2 (GVD2 Great Victoria Desert central) subregion In a Biodiversity Audit of Western Australia's 53 Biogeographic subregions. Department of Conservation and Land Management, Perth, Western Australia.

Department of Environment and Heritage (2008) Threatened Species and Ecological Communities. http://www.environment.gov.au/biodiversity/- threatened/species.html

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.

EnviroWorks Consulting Pty Ltd (2008) Flora and Fauna Desktop study for Halley Prospect of Lease 69/2109. Prepared for Redstone Resources Ltd. January 2008.

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

Naturebase (2008) Nature & Biodiversity, Fauna Species Profile. www.naturebase.net/content/view/840/1288/

Redstone Resources Ltd (2008) Application for a Native Vegetation Clearing Purpose Permit for Halley Prospect Mineral Exploration. February 2008. Redstone Resources Mining Company Ltd, Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

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.