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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6019/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Hinckley Range Pty Ltd**

1.3. Property details

Property: Miscellaneous Licence 69/19
Local Government Area: Shire of Ngaanyatjarraku
Colloquial name: Wingellina Nickel Groundwater Exploration Drilling Program

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 24 April 2014

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation in a regional context. The following Beard vegetation associations are located within the application area (GIS Database):

18: Low woodland; mulga (*Acacia aneura*); and
230: Mosaic: Medium sparse woodland; desert oak between sand dunes / Hummock grasslands, grass steppe; hard spinifex *Triodia basedowii*.

A Level 1 flora and vegetation survey has been undertaken over part of the application area by Outback Ecology (2013a). Field work was undertaken from 26 to 30 March 2013. Although the survey did not cover the entire application area a review of aerial imagery indicates vegetation within the surveyed part is consistent with that occurring in the unsurveyed portion of the application area. The following four vegetation associations have been identified within the application area (Outback Ecology, 2013a):

Dune fields
1. AmOH: Scattered Tall Shrubs over *Aluta maisonneuvei* Heath on Dune Mid and Lower Slopes.

2. ATOSTHG: Open *Acacia* Shrubland/Woodland over Hummock Grassland on flats between Sand dunes.

3. GsTOS: Tall Open Shrubland dominated by *Grevillea* over a tussock grassland on dune crests.

Mulga Woodlands
4. Mulga: Mulga Woodland or Tall Shrubland of variable species.

Clearing Description

Wingellina Nickel Groundwater Exploration Drilling Program.

Hinckley Range Pty Ltd proposes to clear up to 25 hectares of native vegetation within a total boundary of approximately 24,324 hectares, for the purpose of groundwater exploration drilling. The project is located approximately 690 kilometres north of Eucla, in the Shire of Ngaanyatjarraku.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment

The purpose of the application is to conduct groundwater exploration drilling to test the groundwater. This will involve the drilling of up to 25 bores and pump-testing them to ascertain the yield, quality, and long-term sustainability of the water supplies (Metals X, 2014). Each bore will require a drill pad area of approximately 40 metres by 40 metres. Up to 50 kilometers of track (up to four metres wide) may be necessary as no tracks exist in the area away from the Giles – Mulga Park Road (Metals X, 2014).

Vegetation condition is based on the flora and vegetation survey undertaken (Outback Ecology, 2013a) and aerial imagery.

Outback Ecology (2013a) notes that the timing of the field survey was appropriate to identify a large proportion of species present within the survey area, however seasonal condition (i.e. lack of rain prior to field survey) meant that a number of annual and/or ephemeral species likely to be present in the study area were not visible at the time of survey, or were at a juvenile stage and unable to be identified.

3. Assessment of application against clearing principles

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

Comments

Proposal may be at variance to this Principle

The application area occurs within the Mann-Musgrave Block subregion of the Central Ranges Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The subregion is comprised of a high proportion of Proterozoic ranges including both volcanic and quartzites and derived soil plains, interspersed with red Quaternary sandplains with some permian exposure (CALM, 2002). The sandplains support low open woodlands of either Desert Oak or Mulga over *Triodia basedowii* hummock grasslands. Low open woodlands of Ironwood (*Acacia estrophiolata*) and Corkwoods (*Hakea* spp.) over tussock and hummock grasses often fringe the ranges. The ranges support mixed wattle scrub or *Callitris glaucophylla* woodlands over hummock and tussock grasslands (CALM, 2002).

Vegetation mapping shows that dune fields and mulga woodland occur within the application area (Outback Ecology, 2013a). Aerial imagery indicates these extend into the unsurveyed portion of the application area and that the majority of the application area comprises dune fields. According to Outback Ecology (2013a), the dune fields consist of large tracts of dune fields where vegetation association GsTOS occurs at the crests of the dunes, vegetation association AmOH occurs on the mid-lower slopes and vegetation association ATOSTHG occurs on the flats between the sand dunes. Outback Ecology (2013a) notes that vegetation assemblages of the survey area have been greatly influenced by the spatial and temporal distribution of fire in the landscape and there is a mosiac of vegetation in different stages of recovery from fire. Three vegetation associations were considered to be locally significant, however, these did not occur in the application area. Outback Ecology (2013a) considered mulga vegetation to be regionally significant due to its role as a resource (water, nutrients) hot spot within arid landscapes. However, all vegetation associations in the survey area are considered to fall within the broad vegetation types that are widespread across the bioregion (Outback Ecology, 2013a).

A total of 126 flora species (including subspecies and variants) from 69 genera and 30 families were recorded in the survey area (Outback Ecology, 2013a). One weed species, Buffel Grass (*Cenchrus ciliaris*) was recorded in the mulga woodland vegetation association. The presence of introduced weed species lowers the biodiversity values of the proposed clearing areas. Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Available databases show no Threatened or Priority Flora or Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) are known to occur within the application area (GIS Database). No Threatened Flora or PECs or TECs were recorded by Outback Ecology (2013a). One Priority 3 Flora species, *Calotis latiuscula*, was recorded during the Outback Ecology (2013a) survey, however, this was recorded outside the application area approximately 30 kilometres to the south.

Outback Ecology (2013a) also identified nine Priority Flora species that may occur within the survey area. Over half the application area was outside the survey area, therefore, there is the potential for these species to occur within the application area. Potential impacts to these flora species may be minimised by the implementation of a flora management condition.

A Level 1 fauna survey covering part of the application area recorded 46 fauna species comprising 12 mammal, 30 bird and four reptile species (Outback Ecology, 2013b). Based on this survey and aerial imagery, two broad fauna habitat types (dune field and dense mulga woodland) are likely to occur within the application area. These habitat types are considered widespread in the vicinity and wider region (Outback Ecology, 2013b).

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

Methodology

CALM (2002)
Outback Ecology (2013a)
Outback Ecology (2013b)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- Threatened Ecological Sites Buffered
- Threatened and Priority Flora

(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 has been undertaken over part of the application area by Outback Ecology (2013b). Fieldwork was conducted between 25 and 31 March 2013 (Outback Ecology, 2013b).

Two broad habitat types were identified in the application area. Aerial imagery indicates these habitat types are

consistent with the unsurveyed portion of the application area. These habitat types are described by Outback Ecology (2013b) as follows:

- Dune Field: Predominantly red sandy soils, although some red loams present, with good drainage due to sandy substrate. Land form consists of extensive flat plains interspersed with linear sand dunes approximately 5 to 15 metres in height. Habitat is in excellent condition. A complex fire history is present, and individual patches of this habitat type vary in their time since fire.
- Dense mulga woodland: Red sandy-loam soils, with winter-wet drainage (moisture may accumulate on surface following heavy rain). Land form typically flat to slightly undulating plain, but habitat type also occurs interspersed among dune swales. Habitat is in good condition and patches are often limited in extent and have been subject to grazing by camels. A complex fire history is present, and individual patches of this habitat type vary in their time since fire.

Outback Ecology (2013b) notes that the heterogeneity of habitats is important for mammalian fauna, given that it offers close proximity of foraging habitat (amongst the stands of dense mulga woodland) to diurnal shelter (amongst the dune vegetation and associated hummock grasslands found in the dune field habitat type). Both habitat types are considered to be locally significant. The dune field habitat type is considered locally significant due to its potential to host the burrowing fauna of conservation significance that are associated with arid-zone sandplains vegetated by old-growth spinifex (Outback Ecology, 2013b). Dense mulga woodland is considered locally significant as it supports a more favourable microclimate for fauna, provides substantial shade, often produces thick leaf litter and is more likely to support short range endemic (SRE) species (Outback Ecology, 2013b). Both habitat types are considered widespread in the vicinity and wider region (Outback Ecology, 2013b).

A total of 46 fauna species comprising 12 mammal, 30 bird and four reptile species were recorded during the Outback Ecology (2013b) survey. Outback Ecology (2013b) notes that the relatively low number of reptiles observed was due to the cool and wet conditions that were unexpectedly encountered during the field survey. Three conservation significant species, Major Mitchell's Cockatoo (*Cacatua leadbeateri*) (Schedule 4), Mulgara (most likely the Brush-tailed Mulgara (*Dasycercus blythi*) (Priority 4)) and Australian Bustard (*Ardeotis australis*) (Priority 4), were recorded during the survey. Outback Ecology (2013b) considered it unlikely that the Mulgara was the other species of Mulgara (Crest-tailed Mulgara (*Dasycercus cristicauda*) (Vulnerable; Schedule 1)) as the survey area does not lie within the currently estimated range of this species. Current knowledge suggests that the vast majority of Mulgara captured in Western Australia are the Brush-tailed Mulgara (Ric How, WA Museum, pers comm) (cited in Outback Ecology, 2013b). However, the current distribution of both species of Mulgara is uncertain and can only be confirmed following the correct identification and analysis of museum specimens (Pavey et al. 2012) (cited in Outback Ecology, 2013b).

The Mulgara was recorded at six locations by either motion-sensor cameras or systematic searches (Outback Ecology, 2013b). One location occurred within the application area and comprised nine burrows. The Mulgara inhabits arid sandy regions that support spinifex grasslands (DEC, 2011). The dune field habitat, which is extensive in the survey area, is considered suitable habitat for the Mulgara (Outback Ecology, 2013b). Given there is suitable habitat present and only a small portion of the application area has been surveyed, it is possible other occurrences of the Mulgara may occur. Potential impacts to the Mulgara may be minimised by the implementation of fauna management conditions.

Major Mitchell's Cockatoo and the Australian Bustard were recorded outside the application area. The application area may contain suitable feeding habitat for Major Mitchell's Cockatoo and may provide suitable habitat for the Australian Bustard (Outback Ecology, 2013b). However, given the habitat types are widespread in the vicinity and the mobile nature of these species, it is unlikely the application area comprises significant habitat for these species.

The Greater Bilby (*Macrotis lagotis*) (Vulnerable, Schedule 1) and Great Desert Skink (*Liopholis kintorei*) (Vulnerable, Schedule 1) may also occur within the application area (Outback Ecology, 2013b). These are ground-dwelling Threatened fauna with limited dispersal abilities and are more likely to be impacted on by any development. These species construct burrows that the animals live in during the day (Pavey, 2006; DEC, 2012). Therefore any core habitat, such as burrows, could be considered significant and should be avoided. Potential impacts to these species may be minimised by the implementation of a fauna management condition.

Outback Ecology (2013b) also considered several other conservation significant species as likely or possibly occurring in the application area. Some of these species are considered highly mobile, have a wide distribution and/or are able to utilise a wide range of habitat types so the clearing is unlikely to significantly impact on the species. For other species the application area is outside the known distribution or does not represent their core habitat type.

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

Methodology DEC (2011)
DEC (2012)
Outback Ecology (2013b)
Pavey (2006)

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

Comments

Proposal may be at variance to this Principle

According to available databases, there are no Threatened Flora species within the application area (GIS Database).

According to Outback Ecology (2013a), no Threatened Flora species were recorded in the application area. However, the application area is large (24,324 hectares) and over half of the application area is outside the survey area. Potential impacts to any Threatened Flora may be minimised by the implementation of a flora management condition.

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

Methodology

Outback Ecology (2013a)
GIS Database:
- Threatened and Priority Flora

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, there are no known Threatened Ecological Communities within the application area or within 800 kilometres 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

The clearing application area falls within the Central Ranges Interim Biogeographic Regionalisation for Australia (IBRA) bioregion in which approximately 99.97% of the pre-European vegetation remains (see table) (Government of Western Australia, 2013; GIS Database). This gives it a conservation status of 'Least Concern' according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

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

18: Low woodland; mulga (*Acacia aneura*); and
230: Mosaic: Medium sparse woodland; desert oak between sand dunes / Hummock grasslands, shrub steppe; hard spinifex, *Triodia basedowii*.

Over 99.7% of these Beard vegetation associations remain at a state and bioregional level (see table) (Government of Western Australia, 2013). These vegetation associations would be given a conservation status of 'Least Concern' at both a state and bioregional level (Department of Natural Resources and Environment, 2002).

	Pre-European Area (ha)*	Current Extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DEC Managed Lands
IBRA Bioregion – Central Ranges	4,701,519	4,700,206	~99.97	Least Concern	0
Beard Veg Assoc. – State					
18	19,892,305	19,843,727	~99.76	Least Concern	~6.30
230	1,453,288	1,451,250	~99.86	Least Concern	0
Beard Veg Assoc. – Bioregion					
18	1,075,926	1,075,161	~99.93	Least Concern	0
230	1,180,954	1,180,954	~100	Least Concern	0

* Government of Western Australia (2013)

** Department of Natural Resources and Environment (2002)

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

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

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2013)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments **Proposal is at variance to this Principle**
There are no permanent watercourses or wetlands within the application area, however, there are two non-perennial lakes (GIS Database). One of these lakes occurs within a cultural exclusion zone and will not be impacted (Outback Ecology, 2013a). Available databases show that similar lakes occur outside the application area (GIS Database).

Aerial imagery indicates vegetation associated with these lakes is likely to be sparse. Based on this and the exclusion zone over one of these lakes, it is unlikely the proposed clearing will have significant impacts on watercourses or wetlands.

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

Methodology Outback Ecology (2013a)
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**
Based on the Level 1 fauna survey the landforms in the application area are likely to comprise extensive flat to slightly undulating plains interspersed with linear sand dunes approximately 5 to 15 metres in height (Outback Ecology, 2013b). Soils are predominantly red sandy soils with some red loams and red sandy-loam soils present (Outback Ecology, 2013b). Dune fields have good drainage due to the sandy substrate and areas of dense mulga woodland have winter wet drainage (moisture may accumulate on surface following heavy rain) (Outback Ecology, 2013b). There are no permanent or ephemeral watercourses or wetlands within the application area, however, there are two non-perennial lakes (GIS Database).

Metals X (2014) states there are very few trees in the area and tracks will be diverted around any stands of trees or shrubs. Sumps will be backfilled and the topsoil respread (Metals X, 2014).

Considering the above and given the proposed clearing will be for exploration purposes over a 24,324 hectare area, it is unlikely the proposed clearing will result in appreciable land degradation.

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

Methodology Metals X (2014)
Outback Ecology (2013b)
GIS Database:
- Hydrography, linear

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments **Proposal is not likely to be at variance to this Principle**
The application area does not lie within any conservation areas or Department of Parks and Wildlife managed lands (GIS Database). The nearest conservation reserve is Gibson Desert Nature Reserve, located approximately 220 kilometres west of the application area (GIS Database). Based on the distance between the application area and the Gibson Desert Nature Reserve, the proposed clearing is not likely to impact the environmental values of any conservation area.

The application area occurs within the Ranges of the Western Desert Register of National Estate (GIS Database). According to the Australian Heritage Database (2014), the Ranges of the Western Desert cover approximately 8,016,568 hectares and are a system of ranges with many gorges and valleys. Despite the area being on the Register of National Estate for natural values, it is considered that the proposed clearing is low impact and will not significantly impact on the environmental values of the area.

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

Methodology Australian Heritage Database (2014)
GIS Database:
- DEC Tenure
- Register of National Estate

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments

Proposal is not likely to be at variance to this Principle

There are no permanent watercourses or wetlands within the application area, however, there are two non-perennial lakes (GIS Database). The Central Ranges bioregion has an arid climate with an average annual rainfall of 200 millimetres from both summer and winter rain (CALM, 2002) so any surface water within the application area is likely to remain for only short periods following rainfall events. The proposed clearing is not likely to cause deterioration in the quality of surface water in the local area.

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

Groundwater salinity within the application area is between 1,000 and 3,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered brackish. The proposed clearing is not likely to cause salinity levels within the application area to alter.

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

Methodology CALM (2002)
GIS Database:
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Warburton Basin catchment area (GIS Database). Given the size of the area to be cleared (25 hectares) in relation to the size of the catchment area (17,195,990 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

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

Methodology GIS Database:
- Hydrographic Catchments - Catchments

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

Comments

There is one native title claim over the area under application: WC2004/003 (GIS Database). This claim has been determined by the Federal Court. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993.*

According to available databases, there 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 Regulation, the Department of Parks and Wildlife 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 17 March 2014 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 – Determined by the Federal Court

4. References

Australian Heritage Database (2014) Department of the Environment. http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name%3Dranges%2520of%2520the%2520western%2520desert%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=9861 (Accessed April 2014).

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Central Ranges 1 (CR1 - Mann-Musgrave Block Subregion). Department of Conservation and Land Management, Western Australia.

DEC (2011) Department of Environment and Conservation: Fauna Species Profile - Mulgara. Department of Environment and Conservation, Western Australia. http://www.dec.wa.gov.au/publications/cat_view/365-fauna-management/370-fauna-species-profiles/372-marsupials.html (Accessed April 2014).

DEC (2012) Department of Environment and Conservation: Fauna Species Profile - Bilby. Department of Environment and Conservation, Western Australia. http://www.dec.wa.gov.au/publications/cat_view/365-fauna-management/370-fauna-species-profiles/372-marsupials.html (Accessed April 2014).

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.

Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.

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

Metals X (2014) Application for a Clearing (Purpose) Permit L69/19 by Hinckley Range Pty Ltd. Unpublished report prepared by Metals X. Dated 24 February 2014.

Outback Ecology (2013a) Metals X Limited Wingellina Nickel Project Level 1 Flora and Vegetation Survey of the Cobb Depression Borefield and Pipeline Route. Unpublished draft report prepared by Outback Ecology (MWH Australia Pty Ltd) for Metals X Limited. Dated May 2013.

Outback Ecology (2013b) Metals X Limited Wingellina Nickel Project Level 1 Terrestrial Fauna Assessment of the Cobb Depression Borefield and Pipeline Route. Unpublished report prepared by Outback Ecology for Metals X Limited. Dated May 2013.

Pavey, C. (2006) Great Desert Skink (Tjakura) *Egernia kintorei*. Northern Territory Government, Department of Natural Resources, Environment and the Arts.

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.