Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5310/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: **Dampier Salt Limited**

1.3. Property details

Property: *Evaporites (Lake MacLeod) Agreement Act 1967*, Mineral Lease 245SA (AML70/245)
Local Government Area: Shire of Carnarvon
Colloquial name: Lake MacLeod Pits Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
37.07		Mechanical Removal	Borrow Pits

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 22 November 2012

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 association is located within the application area (GIS Database):

328: Succulent steppe with scrub; waterwood and *Acacia sclerosperma* over saltbush and samphire.

A Level 1 vegetation and flora assessment of the application area conducted by Outback Ecology Services (Outback Ecology) on 23 February 2012 identified the following five vegetation associations within the application area (Outback Ecology, 2012):

1. Vegetation Association 1: This association comprised *Acacia synchronicia* Open Shrubland over *Atriplex vesicaria* and *Frankenia setosa* Open Low Heath over **Cenchrus ciliaris* and *Enneapogon caerulescens* Very Open Grassland. This association covered 4.7% of the study area (two hectares) and was recorded on an undulating plain in orange-brown clay over calcrete.

2. Vegetation Association 2: This association comprised *Maireana polypterygia* and *Maireana* aff. *integra* Low Shrubland over *Enneapogon caerulescens* Grassland. This association was the most well represented (37 hectares, 82%) in the study area and was recorded on a plain in orange-brown clay over calcrete.

3. Vegetation Association 3: This association comprised *Tecticornia pterygosperma* subsp. *denticulata* and *T. peltata* Low Shrubland over *Eragrostis dielsii* Open Grassland. This association covered 0.7 hectares (1.5%) of the study area and was recorded on a broad saline depression in light-brown sandy loam over calcrete.

4. Vegetation Association 4: This association comprised *Acacia sclerosperma* and *Alectryon oleifolius* Open Shrubland over *Maireana polypterygia* and *Dissocarpus paradoxus* Low Shrubland. This association was recorded in a relatively small area (0.8 hectares and 1.8% of the study area) in a broad drainage line running into a saline depression.

5. Vegetation Association 5: This association comprises *Alectryon oleifolius*, (*Scaevola spinescens*, *Acacia sclerosperma*, *Exocarpos aphyllus*) Shrubland over *Maireana* sp. and *M. tomentosa* Low Shrubland over **Cenchrus ciliaris* Very Open Grassland. This association was recorded on orange-brown clay loam on plains that lacked rocky outcropping and covered two hectares (4.5%) of the study area.

Note
* = Introduced species

Clearing Description

Dampier Salt Limited has applied to clear 37.07 hectares within an application area of approximately 37.07 hectares (GIS Database). The application area is located approximately 50 kilometres north, north west of Carnarvon (GIS Database).

The purpose of the application is to excavate pits to provide borrow materials (i.e. gravel) for repair to flood-damaged levees, roads and infrastructure on site. The application area consists of three proposed pits (Pits 50 – 53). Clearing will be by mechanical means.

Vegetation Condition Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

Comment Vegetation condition was determined by Outback Ecology (2012).

Outback Ecology (2012) observed some evidence of grazing by stock and goats. An existing pit is located approximately 50 metres south of the application area.

The application area is approximately 500 metres west of Lake Macleod. This area of the lake is used by Dampier Salt Limited for its salt mining operations (Outback Ecology, 2012).

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 Wooramel subregion of the Carnarvon Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). This consists of saline alluvial plains with samphire and saltbush low shrubland in near coastal areas (CALM, 2002). The application area is located approximately 500 metres west of Lake Macleod, a saline lake system with an area of approximately 200,000 hectares (DEC, 2009). Lake Macleod is listed on the Directory of Important Wetlands in Australia and the Register of National Estate (DEC, 2009). It is recognised as an outstanding example of a major coastal lake that is episodically inundated by fresh water, which includes permanent saline wetlands and inland mangrove swamps that are maintained by subterranean waterways; a unique assemblage of wetland types in Australia (DSEWPAC, 2012). The area of permanent water (approximately 6,000 hectares) is located in the north-west of the lake and is fed by a subterranean connection to the ocean (DEC, 2009). It is also a major migration stop-over and drought refuge area for shorebirds and supports Australia's largest inland community of mangroves and associated fauna (DEC, 2009). Lake Macleod and the broader Carnarvon Basin are also considered significant for aquatic invertebrates (NRM, 2012).

The vegetation survey identified five vegetation associations occurring in either a broad drainage line, a broad saline depression or plains. Outback Ecology (2012) noted that these associations extended a significant distance to the west outside the application area and that none were analogous to any “ecosystems at risk” within the Wooramel subregion.

A total of 52 vascular flora species from 37 genera belonging to 19 families were recorded during the vegetation survey (Outback Ecology, 2012). The floristic diversity was considered moderate and as expected given the seasonal conditions during the survey (Outback Ecology, 2012).

Three weed species were recorded including Onion Weed (*Asphodelus fistulosus*), Mediterranean Turnip (*Brassica tournefortii*) and Buffel Grass (*Cenchrus ciliaris*). 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 have been recorded within the application area (GIS Database). The application area is located within the buffer of the four Priority 4 Lake Macleod invertebrate assemblages Priority Ecological Communities (PECs). These PECs are described as saline aquatic community with strong marine affinities with particularly rich copepod elements and is effectively a well developed, very rich birrida community with strong marine and terrestrial components with especially rich hypactacoid community (DEC, 2012b). DEC (2012b) notes these PECs are distinctive but lacks threats. Given the distance to Lake Macleod and that the closest area of the lake has been modified by salt mining operations, it is unlikely the proposed clearing will have a significant impact on these PECs.

No Threatened or Priority Flora were recorded during the vegetation survey (Outback Ecology, 2012). However, Outback Ecology (2012) did note that the survey was not conducted at an optimal time for the detection of annual priority flora species and that the application area may support two such species (*Chthonocephalus spathulatus* and *Chthonocephalus tomentellus*). According to Outback Ecology (2012), the nearest populations of these species are approximately 15 to 25 kilometres east of the application area on the eastern side of Lake Macleod. A review of nearby clearing permits show these species were not recorded during the surveys undertaken. Based on the above, it is unlikely the proposed clearing will have a significant impact on these species.

According to Naturemap, 14 mammal, 85 avian and 53 reptile species have been recorded within a 20 kilometre radius of the application area (DEC, 2012a). Outback Ecology (2012) notes the fauna assemblage within the application area is likely to be present in the contiguous vegetation extending outside the application area to the north, west and south. Based on this, the application area is unlikely to comprise a higher level of faunal diversity than surrounding areas.

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

Methodology

CALM (2002)
DEC (2009)
DEC (2012a)
DEC (2012b)

DSEWPAC (2012)
NRM (2012)
Outback Ecology (2012)
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 is not likely to be at variance to this Principle

A fauna survey was not conducted over the application area. Based on the vegetation survey, the application area consists of shrubland, shrubland over heath over grassland and shrubland over grassland. These occur on either a broad drainage line, a broad saline depression or plains. According to Outback Ecology (2012), the fauna assemblage within the application area is likely to be present in the contiguous vegetation extending outside the application area to the north, west and south.

According to Naturemap, 14 mammal, 85 avian and 53 reptile species have been recorded within a 20 kilometre radius of the application area (DEC, 2012a). Those with conservation significance are avian species including one Schedule 1 species, two Priority 4 species and 27 species protected under international agreement. The majority of these species are likely to be associated with Lake Macleod which has been identified as one of the most important sites for migratory shorebirds in Australia (NRM, 2012). Large aggregations of migratory shorebirds have been counted at Lake Macleod, mainly on the shallows and mudflats associated with the permanent lagoons (DSL et al., 2005). Some species have also been recorded along the coastline, located approximately nine kilometres to the west of the application area (DEC, 2012a). Some of these conservation significant species may utilise the application area, however, given the availability of similar habitat in the surrounding area and the close proximity of Lake Macleod, it is unlikely the application area comprises significant habitat for these species.

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

Methodology

DEC (2012a)
DSL et al. (2005)
NRM (2012)
Outback Ecology (2012)

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

Comments

Proposal is not likely to be at variance to this Principle

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

No Threatened Flora were recorded during the vegetation survey undertaken on 23 February 2012 (Outback Ecology, 2012).

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

Methodology

Outback Ecology (2012)
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 (TECs) within the application area (GIS Database). The nearest known TEC is approximately 450 kilometres north east of the application area (GIS Database).

No TECs were recorded during the vegetation survey undertaken on 23 February 2012 (Outback Ecology, 2012).

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

Methodology

Outback Ecology (2012)
GIS Database:
- Threatened Ecological Sites Buffered

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

Comments

Proposal is not at variance to this Principle

The application area falls within the Carnarvon Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.7% of the Pre-European vegetation remains (see table) (GIS Database, Government of Western Australia, 2011).

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

328: Succulent steppe with scrub; waterwood and *Acacia sclerosperma* over saltbush and samphire.

Approximately 97.2% of Beard vegetation association 328 remains at both a state and bioregional level (Government of Western Australia, 2011). Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Carnarvon	8,382,609	8,360,610	~99.74	Least Concern	3.62
Beard veg assoc. – State					
328	10,237	9,955	~97.24	Least Concern	No data available
Beard veg assoc. – Bioregion					
328	10,237	9,955	~97.24	Least Concern	No data available

* Government of Western Australia (2011)
** 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)
Government of Western Australia (2011)
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

According to available databases there is one small non-perennial lake (approximately 20.7 hectares) that intersects the south western boundary of the application area (approximately 1.4 hectares occurs within the application area) (GIS Database). Observations by Rio Tinto (2012) indicate the saline depression is a natural swathe which does not hold water.

Lake Macleod is located approximately 500 metres east of the application area and occupies an area of approximately 200,000 hectares (DEC, 2009). It is a predominately dry lakebed, episodically flooded by the Lyndon and Minilya rivers, and other tributaries with freshwater inundation generally following heavy rains, particularly during the cyclone season and mid-winter (DEC, 2009). According to Outback Ecology (2012), the southern end of Lake MacLeod tends to remain dry whereas the northern end is permanently inundated with saline water, providing habitat for migratory birds and a large stand of inland mangroves. The application area is located adjacent to the southern portion of the lake and is over 45 kilometres south, south west of the permanent water areas fed by a subterranean connection to the ocean (GIS Database). At its closest point to the application area the lake is described as non-perennial (GIS Database) and is used for salt mining operations (Outback Ecology, 2012).

Vegetation mapping shows that two vegetation associations are associated with the small non-perennial lake intersecting the application area. Vegetation association 3 (approximately 0.7 hectares of the application area) is associated with a broad saline depression and vegetation association 4 (approximately 0.8 hectares of the application area) is associated with a broad drainage line running into the saline depression (Outback Ecology, 2012). Rio Tinto (2012) states it is not expected that planned excavations will be from the depression as the material is saline, closer to the watertable and appears to be unsuitable. Aerial imagery shows clearing has been undertaken adjacent to this saline depression to the south of the application area (GIS Database).

Based on the above and given the vegetation associations extend outside the application area, it is unlikely the proposed clearing will have significant impacts on waterbodies within and surrounding the application area.

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

Methodology DEC (2009)
Outback Ecology (2012)
Rio Tinto (2012)
GIS Database:
- Geodata, Lakes
- Hydrography, linear
- Macleod 1.4m Orthomosaic - Landgate 2002

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

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

The application area has been mapped as occurring on the Warroora land system (GIS Database). The Warroora land system consists of flat to gently sloping saline alluvial plains, with minor areas of sand and limestone, supporting tall acacia shrublands and low shrublands of saltbush, bluebush and samphire (Payne et al., 1987). Drainage is internal into depressions with sluggish tracts (Payne et al., 1987). It has considerable drought durability and is not usually susceptible to erosion (Payne et al., 1987).

The application area experiences a seasonal arid climate trending towards bimodal rainfall (CALM, 2002). The majority of rainfall occurs in winter (between May and July), however, tropical cyclones, decaying cyclones or tropical cloud bands can produce heavy rainfall between January and July (Outback Ecology, 2012). The annual average rainfall for Carnarvon is 230.6 millimetres and the average annual evaporation rate for the application area is approximately 2,600 millimetres (BoM, 2012; GIS Database). The application area is relatively flat with some gradient towards Lake Macleod (Outback Ecology, 2012). Based on the above, the proposed clearing is unlikely to lead to a significant increase in runoff leading to water erosion. Potential impacts of erosion may be minimised by the implementation of a rehabilitation condition.

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

Methodology BoM (2012)
CALM (2002)
Outback Ecology (2012)
Payne et al. (1987)
GIS Database:
- Evaporation Isopleths
- Rangeland Land System Mapping

(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 Environment and Conservation (DEC) managed lands (GIS Database). The nearest conservation area is the ex Boologooro pastoral lease located approximately 25 kilometres north east of the application area (GIS Database). Based on the distance between the application area and the ex pastoral lease, the proposed clearing is not likely to impact the environmental values of this conservation area.

The application area is located in close proximity to Lake MacLeod which is listed on the Directory of Important Wetlands in Australia and on the Register of National Estate (DEC, 2009). The most significant part of the lake is the permanent pools and inland mangroves located over 45 kilometres north, north east of the application area (GIS Database). Given the scale of the proposed clearing (37.07 hectares) in relation to the size of Lake MacLeod (approximately 200,000 hectares), the proposed clearing is not expected to significantly impact on other environmental values such as migratory bird habitat, invertebrate assemblages or periodic flooding.

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

Methodology DEC (2009)
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**

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent waterbodies or watercourses within the application area, however, one small non perennial lake intersects the application area (GIS Database). This is described in the vegetation survey as a saline depression and occupies approximately 1.4 hectares of the application area (Outback Ecology, 2012). Observations by Rio Tinto (2012) indicate the saline depression is a natural

swathe which does not hold water. This depression appears to be unsuitable and is not expected to be excavated (Rio Tinto, 2012).

Lake Macleod, an ephemeral saline lake is located approximately 500 metres east of the application area (GIS Database). The permanent water pools within Lake MacLeod have similar properties to sea water (DEC, 2009). The other major water input into the lake system is from a number of creeks and rivers on the eastern side of the lake (DEC, 2009). As the application area is on the western side of the lake, it is not likely to impact these freshwater sources into the lake system. Outback Ecology (2012) noted that surface water flows in the application area are poorly defined, however, given the close proximity to Lake Macleod it is likely that some surface water flows into the lake. Outback Ecology (2012) adds that the proposed clearing may result in some minor changes in surface water runoff quality, however the receiving environment in Lake Macleod is within the Dampier Salt Operations and thus it is unlikely to affect any native vegetation or other environmental values.

Groundwater within the application area is brackish to saline with salinity levels ranging from 3,000 to 7,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Groundwater salinity within Lake MacLeod itself is over 35,000 milligrams per litre TDS which is hypersaline (GIS Database). Rio Tinto (2012) states that Dampier Salt Limited's borrow pit policy is that 'the distance between the bottom of the void and the watertable will preferably be three metres but will always exceed one metre'.

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

Methodology

DEC (2009)
Outback Ecology (2012)
Rio Tinto (2012)
GIS Database:
- Geodata, Lakes
- 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 Coastal catchment area (GIS Database). Given the size of the area to be cleared (37.07 hectares) in relation to the size of the catchment area (1,478,742 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of 230.6 millimetres and an average annual evaporation rate of 2,600 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2012; GIS Database). Whilst large rainfall events may result in the flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology

BoM (2012)
GIS Database:
- Evaporation Isopleths
- 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: WC97/28 (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant groups. 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 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 29 October 2012 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received advising the submitting party had no comments regarding the application.

Methodology

GIS Database:

- Aboriginal Sites of Significance
- Native Title Claims – Registered with the NNTT

4. References

BoM (2012) Climate Statistics for Australian Locations. A Search for Climate Statistics for Carnarvon Airport, Australian Government Bureau of Meteorology, viewed 2 November 2012, < http://www.bom.gov.au/climate/averages/tables/cw_006011.shtml >.

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Carnarvon 2 (CAR2 Wooramel subregion) Department of Conservation and Land Management, Western Australia.

DEC (2009) Resource Condition Report for a Significant Western Australian Wetland Lake Macleod System. Department of Conservation and Land Management, Western Australia. August 2009.

DEC (2012a) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation. http://naturemap.dec.wa.gov.au/default.aspx, viewed November 2012.

DEC (2012b) Priority Ecological Communities for Western Australia Version 17. Species and Communities Branch, Department of Environment and Conservation 13 April 2012.

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.

DSEWPAC (2012) Directory of Important Wetlands in Australia - Information sheet - Lake Macleod. http://www.environment.gov.au/cgi-bin/wetlands/report.pl, viewed 2 November 2012.

DSL et al. (2005) Lake MacLeod Draft Management Plan

Government of Western Australia (2011) 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). 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.

NRM (2012) Business Plan 2012-2013 Site Investment Guide Protecting Critical Aquatic Ecosystems Priority Site 11: Lake Macleod. Available at: http://www.nrm.gov.au/resources/publications/bp-2012-13/pubs/sig-hevae-lake-macleod.pdf.

Outback Ecology (2012) Dampier Salt Ltd Lake Macleod Pits 50 to 53 Level 1 Vegetation and Flora Assessment. Prepared by Outback Ecology Services for Dampier Salt Limited dated April 2012.

Payne, A.L., Curry, P.J. and Spencer, G.F. (1987) An Inventory and Condition Survey of Rangelands in the Carnarvon Basin, Western Australia. Department of Agriculture, Western Australia.

RTIO (2012) Further Information provided by Rio Tinto in email correspondence dated 13 November 2012.

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.