



1. Application details

1.1. Permit application details

Permit application No.: 2950/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Co PL

1.3. Property details

Property: Iron Ore (Cleveland-Cliffs) Agreement Act 1964, Special Lease for Mining Operations 3116/4623, Document I 123396 L, Lot 65 on Deposited Plan 194355

Local Government Area: Shire Of Roebourne

Colloquial name: Landfill Extraction and Sorting Project

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia. One Beard Vegetation Association is located within the application area; 157: Hummock grasslands, grass steppe; hard spinifex <i>Triodia wiseana</i> (Shepherd et al., 2001).</p> <p>Biota Environmental Sciences (Biota) was commissioned by Robe River Mining Company Pty Ltd (Robe River) to undertake a flora and vegetation assessment for the application area (Biota, 2008). Biota (2008) has identified and described the following four vegetation types that occur within the application area:</p> <p>1) Flat Coastal Plain (CP): <i>Acacia stellaticeps</i> or <i>A. bivenosa</i> open shrubland over <i>Scaevola spinescens</i>, <i>Rhagodia eremaea</i> scattered low shrubs over <i>Triodia epactia</i> hummock grassland and <i>Cenchrus ciliaris</i> tussock grassland.</p> <p>2) Secondary Dunes (SDu): <i>Acacia coriacea</i> subsp. <i>coriacea</i> tall shrubland over <i>Crotalaria cunninghamii</i>, <i>Rhagodia eremaea</i>, <i>Scaevola sericophylla</i>, <i>S. spinescens</i> low open shrubland over <i>Triodia epactia</i> hummock grassland and <i>Cenchrus ciliaris</i> tussock to open tussock grassland.</p> <p>3) Saline Interzone (SIZ): <i>Acacia ampliceps</i> tall shrubland, with <i>Sesbania cannabina</i> tall open herbland over <i>Sporobolus virginicus</i> tussock to closed tussock grassland.</p> <p>4) Rocky Hills and Outcrops (RH): <i>Triodia wiseana</i> and/or <i>T. epactia</i> hummock grassland on rocky hills and outcrops.</p>	<p>Robe River (2008) has applied to clear up to 10.1 hectares of native vegetation for excavation and sorting of an existing landfill that lies adjacent to the application area. The application area is located approximately 4.5 kilometres west of Point Samson (GIS Database).</p> <p>Vegetation will be cleared by a bulldozer with its blade down. All vegetative material and topsoil from cleared areas will be collected and stockpiled and used for future rehabilitation purposes (Robe River, 2008).</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).</p> <p>To</p> <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).</p>	<p>The vegetation condition was assessed by Biota (2008). Biota (2008) made comments in relation to the vegetation condition within each of the vegetation types:</p> <p>1) Flat Coastal Plain (CP): There was a high level of disturbance within CP as a result of the infestation with <i>Cenchrus ciliaris</i>. The vegetation condition of this vegetation type was 'Good to Poor'.</p> <p>2) Secondary Dunes (SDu): There was a high level of disturbance within SDu as a result of infestation with <i>Cenchrus ciliaris</i>. The vegetation condition of this vegetation type was 'Poor' or 'Good to Poor'.</p> <p>3) Saline Interzone (SIZ) These areas are tolerant of mildly saline soils. The vegetation condition for this vegetation type was 'Very Good to Excellent'.</p> <p>4) Rocky Hills and Outcrops (RH): The soil of this vegetation type is extremely shallow, usually allowing only moderate colonisation by shallow rooted species. The summit of these areas is usually dominated by large rock piles. Areas below rock piles have been colonised by <i>Cenchrus ciliaris</i>. The vegetation condition is described as 'Good'.</p>

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Chichester Interim Biogeographic Regionalisation for Australia (IBRA) subregion (GIS Database). The plains of the Chichester subregion primarily consist of a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands (CALM, 2002). The region is relatively high in biodiversity as it incorporates the Millstream-Chichester National Park. This Park has numerous permanent waterholes which support a variety of species, including up to 108 bird species, nine fish species and 29 species of dragon and damselflies (DEWHA, 2008).

A number of areas within and adjacent to the proposed clearing area have been previously cleared of native vegetation or are in such a disturbed condition that only introduced flora species are present (Biota, 2008). Aerial photos of the site support the previous statement as they show areas that have been cleared and disturbed within the application area.

A flora and vegetation assessment of the Cape Lambert area was conducted by Biota in 2008. The flora assessment identified a total of 157 taxa of native vascular flora from 87 genera belonging to 39 families within the wider Cape Lambert survey area (Biota, 2008). The most notable families consisted of the Grass family (*Poaceae*), the Pea family (*Papilionaceae*), the Wattle family (*Mimosaceae*) and the Hibiscus family (*Malvaceae*) (Biota, 2008).

According to Biota (2008) two weed species were recorded from within the application area: Buffel Grass (*Cenchrus ciliaris*) and Kapok Bush (*Aerva javanica*). The presence of introduced flora species lowers the biodiversity of the application area. Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

Biota (2008) performed a desktop fauna review for an area representing a 50 kilometre radius around Cape Lambert. Biota (2008) reviewed previous fauna surveys for the Cape Lambert area and also searched the Western Australian (WA) Museum and Department of Environment and Conservation (DEC) databases. In addition, the assessing officer has performed a search of the WA Museum Fauna Database for fauna that could occur within a 50 kilometre radius of the application area. This search identified a total of 84 fauna species that could potentially occur from 33 families (WA Museum, 2009). This total figure included 43 reptiles from nine families, 29 birds from 20 families and 12 mammals from 4 families (WA Museum, 2009).

The landforms, vegetation types and fauna habitats in the application area are well represented locally and within the Pilbara region generally (Biota, 2008). In addition, the application area is reported to be significantly degraded from previous mining activities, in particular due to Buffel Grass invasion (Biota, 2008). Based on this, the application area is not expected to represent a high level of diversity.

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

Methodology

Biota (2008)
CALM (2002)
DEWHA (2008)
WA Museum (2009)
GIS Database
- Interim Biogeographic Regionalisation for Australia

(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 fauna habitat assessment of the application area was undertaken in conjunction with the flora and vegetation survey by Biota (2008). In order to identify species habitat that may potentially occur within the application area, Biota (2008) carried out a search of the WA Museum and Department of Environment and Conservation (DEC) databases to identify Schedule and Priority listed fauna that may occur within a 50 kilometre radius from Cape Lambert. A search of the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* database was also conducted (Biota, 2008).

Biota (2008) identified three habitat types that exist within the application area:

- 1) **Secondary Dune:** *Acacia coriacea* over Buffel Grass.
- 2) **Flat Coastal Plain:** Buffel Grass tussock grassland; and
- 3) **Rocky Hills and Outcrops:** *Triodia wiseana* and *T. epactia* hummock grassland.

Biota (2008) report that the dominant habitat type within the application area is the Secondary Dune habitat type. The vegetation and habitat types that have been identified and described for the application area appear typical of the Cape Lambert coastal area (Biota, 2008). Vegetation mapping confirms that all the habitat types

that have been identified within the application area are well represented and distributed throughout the Cape Lambert project area (Biota, 2008).

Biota (2008) have indicated that the application area as well as the surrounding areas have been significantly disturbed as a result of the port operation activities as well as from the infestation of Buffel Grass. It is likely that these disturbances have adversely impacted on the presence of native flora species and the habitat values for the area.

Approximately 20 specimens of the skink, *Lerista neviniae*, were recorded from the Primary Dune and Secondary Dune vegetation types in the Cape Lambert area (Biota, 2008). The skink, although not being listed as having any special conservation status at either State or Federal level, currently has only been recorded from the coastal dune habitats of the Cape Lambert area (Biota, 2008). As a result, the Primary Dune and Secondary Dune vegetation types that have been identified by Biota (2008) are likely to represent significant habitat for *Lerista neviniae*.

Biota (2008) has assessed and mapped the vegetation types of the application area and surrounding Cape Lambert project area. A total of 55.7 hectares and 91.6 hectares of the Primary Dune and Secondary Dune vegetation type has been recorded within the Cape Lambert project area respectively (Biota, 2008).

Biota (2008) has indicated that the proposed clearing for the landfill sorting activities will have a maximum impact of approximately 1.98 hectares on the Secondary Dune vegetation type that has been identified within the Cape Lambert project area. Vegetation mapping indicates that the proposed clearing activities will have no impact on the Primary Dune habitat type that has been identified within the Cape Lambert project area (Biota, 2008).

The vegetation and habitat types that have been identified and described for the application areas are typical of the Cape Lambert project area (Biota, 2008). Given that the proposed clearing for the landfill sorting activities will impact on a maximum of approximately 2.2% of the Secondary Dune habitat type that has been identified for the Cape Lambert project area (Biota, 2008), the 10.1 hectares of vegetation proposed to be cleared under this proposal is not likely necessary for the maintenance of significant habitat for any fauna species.

Based on the above, the proposal may be at variance to this Principle. However, due to the small amount of Secondary Dune habitat present within the application area, it is unlikely that the proposed clearing will have a major impact upon any significant fauna habitat.

Methodology Biota (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

The assessing officer performed a search of the Department of Environment and Conservation (DEC) NatureMap database for Declared Rare Flora (DRF) and Priority flora for the Cape Lambert area. According to this database, there are no records of Declared Rare or Priority flora within the application area (DEC, 2009). One Priority species known as *Helichrysum oligochaetum* (P1) has been recorded as occurring in the Cape Lambert area (DEC, 2009). This species is not known to occur within the application area, however it has been recorded in areas adjacent to the proposed clearing area (DEC, 2009).

A flora and vegetation survey of the application area was undertaken by botanists from Biota during October 2007 and March 2008. Prior to conducting the field surveys, Biota (2008) carried out a search of the DEC Threatened Flora Database for the proposed clearing areas which included a search within a buffer area of approximately 50 kilometres from the application area.

There are no known DRF or Priority flora species records for the application area (Biota, 2008). In addition, no DRF or Priority flora species were recorded within the application area during the field survey (Biota, 2008). As a result, the proposed clearing is unlikely to impact on any DRF or Priority flora species.

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

Methodology Biota (2008)
DEC (2009)

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

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

There are no known Threatened Ecological Communities (TECs) within the application area (GIS Database; Biota, 2008). The nearest known TEC is located approximately 110 kilometres south of the application area (GIS Database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is not likely to impact on the conservation of that TEC.

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

Methodology Biota (2008)
GIS Database
- Threatened Ecological Communities

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

Comments Proposal is not at variance to this Principle

The application area falls within the IBRA Pilbara Bioregion. Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists within this Bioregion (see table below). The vegetation in the application area is recorded as Beard Vegetation Association 157: hummock grassland, grass steppe; hard spinifex *Triodia wiseana* (Shepherd et al., 2001). According to Shepherd et al. (2001) approximately 99.8% of this vegetation association remains within the Bioregion (see table below). Furthermore, the vegetation association is well represented in conservation estate within the Bioregion (Shepherd et al., 2001).

Therefore, the vegetation within the application area is not a significant remnant of 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 – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
157	198,636	198,522	~99.9	Least Concern	5.7
Beard veg assoc. – Bioregion					
157	502,737	501,522	~99.8	Least Concern	17.2

* 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 Database
- Interim Biogeographic Regionalisation of Australia (subregions)

(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 permanently inundated wetlands or watercourses within the application area (GIS Database).

The application area partly includes the following vegetation unit (Biota, 2008):

- 1) Saline Interzone (SIZ):** Between the low-lying saline drainage areas and the flat coastal plain areas, are interzone areas, which are likely to be subject to seasonal and/or tidal inundation. The vegetation typically recorded in this habitat type was *Acacia ampliceps* tall shrubland, with *Sesbania cannabina* tall open herbland over *Sporobolus virginicus* tussock to closed tussock grassland.

A total of 50.9 hectares of Saline Interzone Areas has been mapped within the wider Cape Lambert project area with 0.40 hectares of this vegetation unit occurring within the application area (Biota, 2008). This saline interzone area occupies a relatively low position in the landscape and is seasonally damp due to tidal movements and cyclonic rainfall events (Biota, 2008). Biota (2008) reports that this vegetation unit appears relatively common and widespread throughout the Cape Lambert project area. Biota (2008) has not listed the Saline Interzone area as a significant wetland community, and in addition the area is not listed on the Directory of Important Wetlands in Australia (Environment Australia, 2001).

Based on the above, the proposed clearing is at variance to this Principle. However, as there is only 0.40 hectares of the Saline Interzone Area within the application area, the proposed clearing is unlikely to significantly impact any watercourse or wetland.

Methodology Biota (2008)
Environment Australia (2001)
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

According to the Department of Agriculture in Technical Bulletin No 92 'An inventory and condition survey of the rangelands of the Pilbara Region, Western Australia', the application area is characterised by the Ruth Land System (Van Vreeswyk et al., 2004; GIS Database). Van Vreeswyk et al. (2004) describe the landform unit that has been identified within the application area.

The Ruth Land System consists of hills and ridges of volcanic and other rocks supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). Aerial imagery and vegetation mapping indicates that the application area is most likely located within the 'Lower slopes and stony plains' and Sandplains land units (Biota, 2008; Van Vreeswyk et al., 2004). Van Vreeswyk et al. (2004) state that the Ruth Land System is not susceptible to erosion, and this is likely due to surface mantles that comprise mainly of pebbles and cobbles interspersed with sandy earths (Van Vreeswyk et al., 2004).

There is a small area of Saline Interzone Area (0.40 hectares) within the application area which is subject to inundation during tidal movements and seasonal cyclonic rainfall events (Biota, 2008). The minor clearing activity associated with this vegetation type is unlikely to lead to an increase in the risk of water-logging occurring within or adjacent to this area.

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

Methodology Biota (2008)
Van Vreeswyk et al. (2004)
GIS Database
- 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 closest conservation areas are a series of (mostly unnamed) A and C class reserves in islands located approximately 20 kilometres north of the application area (GIS Database). The nearest onshore conservation area is the Millstream-Chichester National Park, located approximately 60 kilometres south of the application area (GIS Database).

Given the distance of the application area from any conservation areas, the removal of 10.1 hectares of native vegetation is not expected to have an impact on the environmental values of these conservation areas.

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

Methodology GIS Database
- CALM Managed Landa and Waters

(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 permanently inundated wetlands or watercourses within the application area (GIS Database; Biota, 2008). The application area partly includes the vegetation unit which has been described by Biota (2008) as Saline Interzone area, this unit occupies a lower position in the landscape and is a seasonally damp area due to tidal movements and cyclonic rainfall events (Biota, 2008). This vegetation unit is generally vegetated by flora species that are tolerant of mildly saline soils (Biota, 2008). Due to the coastal location, the soils of these saline drainage areas are also likely to contain sediments of sand, salt and quaternary mudflat deposits (Van Vreeswyk et al, 2004). This saline drainage area is likely to be inundated by surface water for a short period of time (following cyclonic rainfall events or during significant tidal movements), as any surface water will quickly evaporate, drain or infiltrate from the saline drainage areas.

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Roebourne Water Reserve which is located approximately 15 kilometres south, south-east from the application area (GIS Database). Given the distance separating the application area and the nearest water supply, the proposed clearing is unlikely to impact on the quality of the Roebourne Water Reserve.

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

Methodology Biota (2008)
Van Vreeswyk et al. (2004)
GIS Database
- 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 annual average rainfall for Cossack which is situated approximately 10 kilometres south-east of the application area is 316.3 millimetres (BOM, 2009). BOM (2009) indicates that the Cossack and surrounding locality receives the majority of the rainfall between December and March. As a result, local flooding can be expected to occur seasonally in the Pilbara region as a result of heavy rainfall triggered by cyclonic activity and sporadic thunderstorms.

There are no permanently inundated wetlands or watercourses within the application area (GIS Database; Biota, 2008). The application area partly intercepts the vegetation unit described by Biota (2008) as Saline Interzone areas (SIZ). This saline drainage area is likely to be inundated by surface water for only short periods of time following cyclonic rainfall events or during significant tidal movements, and as a result surface water will quickly evaporate, drain or infiltrate from these areas.

Biota (2008) vegetation mapping indicates that a total of approximately 0.40 hectares of Saline Interzone area occurs within the 14 hectares application area. Given the small amount of clearing of this vegetation unit to be conducted the proposed clearing is not likely to cause or increase the incidence or intensity of flooding.

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

Methodology Biota (2008)
BOM (2009)
GIS Database:
- Hydrography, linear

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

Comments

There is one Native Title claim (WC99/014) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

According to available databases there is an Aboriginal Site of Significance within the application area (site ID: 8950) (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 (DEC) and 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 application area is located immediately adjacent to the Boat Beach Access Road (GIS Database). A submission was received recommending that a vegetation buffer be maintained along this track for aesthetic purposes and dust suppression. Robe River (2009) have agreed to leave a 20 metre buffer, however, state that two haul roads going through the buffer zone may be required. It is recommended that Robe River Pty Ltd liaise with the Shire of Roebourne in regards to Traffic Management before any clearing occurs within the 20 metre buffer zone.

Methodology Robe River (2009)
GIS Database
- Aboriginal Sites of Significance
- Native Title Claims

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles and is at variance to Principle (f), is not likely to be at variance to Principles (a), (b), (c), (d), (g), (h), (i) and (j), and is not at variance to Principle (e).

It is recommended that should a clearing permit be granted, conditions be imposed on the permit with regards to weed management, rehabilitation, record keeping and permit reporting.

5. References

- Biota (2008) Cape Lambert Landfill Excavation and Material Sorting Area: Native Vegetation Clearing Permit Report. Prepared for Pilbara Iron Pty Ltd. Prepared by Biota Environmental Sciences, November 2008.
- BOM (2009) Climate Statistics for Australian Locations. A Search for Climate Statistics for Cossack, Australia Government Bureau of Meteorology, viewed 3 March 2009. http://www.bom.gov.au/climate/averages/tables/cw_004054.shtml.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DEC (2009) NatureMap. Department of Environment and Conservation. Available online from: <http://naturemap.dec.wa.gov.au/Login.aspx?ReturnUrl=%2fnaturemap%2fdefault.aspx>. Accessed 3 March 2009.
- 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.
- DEWHA (2008) Chichester Range National Park (1977 boundary), Roebourne - Wittenoorn Rd, Millstream, WA, Australia. Viewed 3 March 2009. <http://www.environment.gov.au/cgi-bin/ahdb/search.pl>.
- Environment Australia (2001) A Directory of Important Wetlands in Australia, Third Edition. Environment Australia, Canberra.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Robe River (2009) Documentation Accompanying Clearing Permit Application for CPS 2950/1. Prepared by Robe River Pty Ltd, January 2009.
- 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.
- Van Vreeswyk A.M.E., Payne A.L., Leighton K.A. and Hennig P. (2004) Technical Bulletin - An inventory and condition survey of rangelands in Pilbara Region, Western Australia, No92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- WA Museum (2009) Faunabase. Western Australian Museum. Viewed 3 March 2009. <http://www.museum.wa.gov.au/faunabase/prod/index.htm>.

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.
DMP	Department of Mines and Petroleum, 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.