



1. Application details

1.1. Permit application details

Permit application No.: 2129/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Pty Ltd

1.3. Property details

Property: State Agreement Act 248SA AML70/248
Local Government Area: Shire Of Ashburton
Colloquial name: Mesa F - Exploration

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
11		Mechanical Removal	State Agreement

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 at a 1:250 000 scale for the whole of Western Australia and are useful to look at vegetation extent in a regional context. One Beard vegetation association is located within the application area:

583 - Hummock grasslands, sparse shrub steppe; kanji & *Acacia bivenosa* over hard spinifex *Triodia basedowii* & *T. wiseana*. According to the Shared Land Information Platform (SLIP, 2007), Beard vegetation association 583 is composed of a sparse shrub layer of *Acacia bivenosa* & *A. pyrifolia* over a hummock grass layer of *Triodia basedowii* and *T. wiseana*.

The application area was subject to a vegetation survey in August 2007 during which a total of 10 dominant vegetation communities were identified (Robe, 2007). They are:

A. Stony undulating hills: *Acacia arida* shrubland over *Triodia wiseana* hummock grassland.

B. Mesa Valley: *Corymbia hamersleyensis* scattered low trees over *Acacia arida* open shrubland over *Triodia wiseana* open hummock grassland.

C. Mesa Top: *Acacia atkinsiana*, *A. arida* open shrubland, over *Triodia wiseana* hummock grassland.

D. Mesa Cliff Edge: *Eucalyptus leucophloia* scattered low trees, *Acacia atkinsiana*, *A. tumida* open shrubland over *Triodia wiseana* very open hummock grassland.

E. Gully/Drainage: *Eucalyptus leucophloia* scattered low trees over *Acacia arida* open heath over *Triodia pungens*, *T. epactia* and *T. sp.* Nov very open hummock grassland over *Eriachne mucronata* scattered bunch grass.

F. Drainage/Flow Line: *Corymbia hamersleyensis* scattered low trees over *Acacia tumida*, *Grevillea wickhamii* and *Gossypium robinsonii* high open shrubland over *A. arida* open shrubland over *Triodia wiseana* very open hummock grassland.

G. Slight Gentle Rocky Slopes: *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland.

H. Drainage/Flow Line: *Eucalyptus leucophloia* scattered low trees over *Acacia tumida* high open shrubland over *A. atkinsiana*, *A. arida* open shrubland over *T. wiseana* scattered hummock grassland.

I. Mesa Top: *Acacia atkinsiana* high open shrubland over *A. arida* scattered shrubland over *T. wiseana* hummock grassland.

J. Gorge: *Eucalyptus leucophloia* scattered low trees over *Acacia citrinoviridis* high open shrubland over *Triodia epactia*, *T. pungens* and *T. sp.* Nov scattered hummock grassland over *Eriachne mucronata* scattered

bunch/tussock grasses.

Clearing Description	Robe River Pty Ltd (Robe) has applied to clear up to 11 hectares of native vegetation within an application area of 144 hectares for the purpose of mineral exploration. Access will be by existing tracks where possible and any new access will be as per DoIR guidelines. Earthmoving equipment will use 'raised blade' techniques or scrub rake in level terrain. A total of 65 drill pads measuring 20m x 20m will be cleared to ground level for safety and fire prevention (Robe, 2007).
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)
Comment	The vegetation condition was measured by Robe using a scale devised by Trudgen, 1988 (Robe, 2007). Photographs and descriptions provided by Robe (2007) suggest the vegetation condition could be considered excellent according to the Keighery vegetation condition scale (Keighery, 1994) considering the absence of weed species, the lack of cattle grazing, the only disturbance being previous exploration activities, which do not significantly alter the vegetation structure.

3. Assessment of application against clearing principles

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

Comments	<p>Proposal may be at variance to this Principle</p> <p>The application area occurs within the Hamersley (PIL3) IBRA Sub-Bioregion (GIS Database). This sub-bioregion is characterised by Mulga low woodland over bunch grasses on fine textured soils in valley floors, and <i>Eucalyptus leucophloia</i> over <i>Triodia brizoides</i> on skeletal soils of the ranges (CALM, 2002). The vegetation within the application area is typical of the bioregion.</p> <p>A vegetation survey of the application area located 90 flora species from 30 Families (Robe, 2007). This is considered to be moderately biologically diverse. Poaceae, Amaranthaceae, Mimosaceae and Malvaceae families are particularly diverse within the application area.</p> <p>The area search of the Western Australian Museum's Faunabase conducted by the assessing officer suggests that the area is diverse in reptile species with 65 species from 8 Families, being particularly diverse in skinks, geckos and dragons (WAM, 2007).</p> <p>Therefore, the application area may be an area that is biologically diverse. However, the vegetation types are well represented in the surrounding area and throughout the region. There is no information to suggest that it is of greater diversity than similar vegetation within the local area or the sub-Bioregion.</p> <p>Based on the above the proposed clearing may be at variance to this Principle. The assessing officer recommends that a condition be placed on any permit granted, to rehabilitate the areas cleared post-exploration.</p>
Methodology	CALM (2002) Robe (2007) WAM (2007) GIS Database: - Interim Biogeographic Regionalisation of Australia – EA 18/10/00

(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	<p>Proposal is not likely to be at variance to this Principle</p> <p>According to the Western Australian Museum Fauna Database (WAM, 2007), the following conservation significant fauna have been recorded within 50 km radius of the application area: Orange Leaf-nosed Bat (<i>Rhinoctictis aurantius</i>), Western Pebble-mound mouse (<i>Pseudomys chapmani</i>) and Star Finch (<i>Neochmia ruficauda clarescens</i>).</p> <p>In addition, Robe requested a search of the DEC Threatened Fauna Database over an area covering the application area and a 40km buffer. As a result, the following threatened species have been recorded within the search area in addition to the species listed above: Night Parrot (<i>Pezoporus occidentalis</i>) and Lakeland Downs Mouse (<i>Leggadina lakedownensis</i>).</p> <p>Based on preferred habitat type, the application area may also provide habitat for the Long-tailed Dunnart (<i>Sminthopsis longicaudata</i>).</p> <p>The Orange Leaf-nosed Bat (Schedule 1 - Fauna that is rare or likely to become extinct, <i>Wildlife Conservation (Specially Protected Fauna) Notice, 2006</i>) is described as preferring warm humid caves for roosting, although some have been found in tree hollows (Australian Museum Online, 2007a). They are known to hunt flying prey close to roosts, and glean from foliage and the ground in riparian vegetation in gorges, and in open hummock grasslands and sparse tree and shrub savannah. (Department of Environment and Water Resources, 2007a). Known colonies in the Pilbara occupy abandoned, deep and partially flooded mines that trap pockets of warm, humid air in the mine's constant temperature zone. For at least part of the year, the species is thought to also</p>
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occupy smaller, less complex mines nearby. There are no known natural roosting sites in the Pilbara (Department of Environment and Water Resources, 2007a). It is not known if there are any abandoned mines within the application area or nearby, however, the type of clearing proposed (exploration drilling) is unlikely to disturb Orange Leaf-nosed Bat colonies if present in the vicinity of the application area.

The Night Parrot (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) is a very seldom seen bird that occupies dense, low vegetation, which provides them shelter during the day (Australian Museum Online, 2007b). Most records come from hummock grasslands with spinifex (*Triodia sp.*) or from areas dominated by samphire. It has been suggested that birds move into the grasslands when *Triodia* is seeding (Australian Museum Online, 2007b). They have also been reported in low chenopod shrublands with saltbush and bluebush, and from areas of Mitchell grass, *Astrelba sp.* with scattered chenopods (Australian Museum Online, 2007b). Many records have come from waterholes, and almost all reports from areas of *Triodia* have noted the presence of nearby water (Australian Museum Online, 2007b). As this species is very rare, and little is known of its distribution, it is difficult for the assessing officer to determine what impact if any the proposed clearing will have on this species. However, given the lack of permanent water in the area, the possibility of the species occurring within the application area is unlikely.

The Western Pebble-mound Mouse (DEC - Priority 4) is described as constructing pebble mounds on slopes composed of stony soils, near sharply incised drainage lines (Start et al, 2000). Mounds are built in vegetation dominated by hard spinifex (*Triodia basedowii* or *T. wiseana*) (Start et al, 2000). No pebble mounds were observed by Robe River staff during a vegetation survey over the application area (Robe, 2007). It is not considered that the species occurs within the application area.

The Star Finch (DEC Priority 4) has a patchy distribution within the Pilbara and at low densities where it occurs (Garnett et al, 2000). There are occasional concentrations at Exmouth and Millstream (Garnett et al, 2000). Star Finch inhabit grasslands and eucalypt woodland close to water, where they feed on seeds (Hall, 1974, Immelmann, 1982, M. Todd in Garnett et al, 2000). Birds tend to be resident in large flocks during the dry season, and disperse to breed during the wet season (Garnett et al, 2000). There is no permanent water source within the application area, although some ephemeral drainage lines and minor creeks located within the drainage line may flow during the wet season. As a result the Star Finch may occur within the application area in season. However, the habitat within the application area is not essential for the continued existence of this species in the local area.

The Lakeland Downs Mouse (DEC - Priority 4) is known to occur on sandy soils and cracking clays in Western Australia that support native grasses (DEC, 2006). It is known that this species experiences great fluctuations in population size depending on seasonal factors, reaching plague proportions in good years (DEC, 2006). The soil types located within the application area appear to be gravelly stony soils and therefore the area may not be ideal habitat for this species. However, the habitat within the application area is not essential for the continued existence of this species in the local area.

The Long-tailed Dunnart (DEC Priority 4) occur in rugged rocky landscapes that support a low open woodland or shrubland of *Acacia* (especially Mulga) with an understorey of spinifex hummocks, and (occasionally) also perennial grasses and cassias from the Pilbara and upper Gascoyne region in the West (DNREA, 2007). They have also more recently been recorded from plateaus near breakaways and screes and rugged boulder strewn screes in the Goldfields region. The habitat types found within the application area may support populations of Long-tailed Dunnart. However, the habitat within the application area is not essential for the continued existence of this species in the local area.

Robe (2007) have surveyed the vegetation habitat types within the application area and do not consider there to be any unique, restricted or fauna specific habitat types within the application area. Robe (2007) have also stated that there are no habitat isolates or geographic barriers that would prevent the flow of genetic information between invertebrate populations.

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

Methodology Australian Museum Online (2007a)
Australian Musuem Online (2007b)
DEC (2006)
DNREA (2007)
Department of Environment and Water Resources (2007a)
Garnett et al (2000)
Robe (2007)
Start et al (2000)
WAM (2007)

(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 (GIS Database), no populations of Declared Rare Flora or DEC listed Priority Flora species have been located within the application area.

A rare flora search was conducted over the application area in September 2006 by Pilbara Iron staff and consultants. A vegetation community survey was conducted over the application area in August 2007 by Pilbara Iron staff and consultants. The results of these two surveys were submitted by Robe River Pty Ltd in support of its clearing permit application (Robe, 2007).

As a result of the rare flora search, one population of *Abutilon trudgenii* (P3) totalling three individual plants was located within the application area. *A. trudgenii* has been located many times within the Pilbara over a wide distribution. There is also known records of healthy populations of this species in the local area. Therefore, it cannot be said that the native vegetation to be cleared is necessary for the continued in situ existence of significant habitat for DEC listed priority flora species. Furthermore, advice has been received from Robe that the population is unlikely to be affected by the clearing.

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

Methodology Robe (2007)
GIS Database:
- Declared Rare and Priority Flora List – CALM 01/07/05

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no known Threatened Ecological Communities (TEC) located within the application area (GIS Database). The nearest TEC is located approximately 113 km to the east. At this remote distance there is little likelihood of any impact to this TEC from the proposed clearing.

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

Methodology GIS Database:
- Threatened Ecological Communities - CALM

(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**
According to available databases, the application area falls within the Pilbara IBRA Bioregion. This bioregion's vegetation extent remains at approximately 100% of its Pre-european extent. Beard Vegetation Association 583 occurs within the application area. This vegetation association remains at 100% of its Pre-european extent. Furthermore, this vegetation association is well represented in conservation estate.

	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	100	Least Concern	6.3
Beard veg assoc. – State					
583	243,119	243,119	100	Least Concern	35.3
Beard veg assoc. – Bioregion					
583	243,119	243,119	100	Least Concern	35.3

* Shepherd et al. (2001) updated 2005

** Department of Natural Resources and Environment (2002)

Therefore, the application area is not part of a remnant of native 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)
Shepherd et al (2001)
GIS Database:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00

(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 (GIS Database) there are no watercourses, wetlands or groundwater dependent ecological communities within the application area. However, analysis of aerial photography suggests that there are many small ephemeral drainage lines that intersect with the application area.

A botanical survey conducted by Pilbara Iron staff in August 2007 identified several vegetation types that occur within gullies or drainage lines (Robe, 2007). The species described as occurring within these drainage lines do not suggest they are riparian in nature, although they are in association with a watercourse.

Based on the above, the proposed clearing is at variance to this principle. However, clearing is not likely to significantly impact on watercourses or wetlands that have significant environmental values, buffer areas for watercourses or wetlands or groundwater dependant communities.

Methodology Robe (2007)
GIS Database:
- Hydrography, linear - DoE 1/2/04
- Potential Groundwater Dependant Ecosystems - DoE 2004

(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 surveyed by the Department of Agriculture and Food (Van Vreeswyk et al 2004).

The application area is composed of the following land systems (GIS Database):

Robe Land System.

The Robe land system is described as low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands (Van Vreeswyk et al, 2004). The system is not generally susceptible to vegetation degradation or erosion. The Robe land system is composed of four land units: Low plateaux, mesas and buttes; Lower slopes; Gravelly plains and Drainage floors and channels. An analysis of aerial photography for the application area reveals the application area crosses all four land units due to the grid-like nature of the clearing. The vegetation described by Van Vreeswyk et al (2004) accurately reflects the vegetation types described in a vegetation survey conducted by Pilbara Iron staff in August 2007 (Robe, 2007).

Therefore potential for land degradation is very low. The method of clearing in this instance is low impact (driving over vegetation, blade up clearing) and is not likely to lead to a permanent loss of vegetation.

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

Methodology Robe (2007)
Van Vreeswyk et al (2004)
GIS Database:
- Rangeland Land System Mapping - DA

(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 at variance to this Principle

The nearest conservation reserve to the application area is Karijini National Park, located over 100 km to the east (GIS Database). It is not anticipated that the proposed clearing will impact on the conservation values of Karijini at this remote distance.

The vegetation within the application area does not provide a buffer to a conservation area, nor provide ecological linkage to a conservation area. The Beard vegetation type occurring within the application area is very well represented in conservation estate (~35%, Shepherd et al, 2001).

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

Methodology Shepherd et al (2001)
GIS Database:
- CALM Managed Lands and Waters - CALM 1/7/05

(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 Supply Area (PDWSA) (GIS Database). The area is located within a Rights in Water Irrigation Act (RIWI Act) surface water area. The proponent is required to obtain a beds and banks permit in order to disturb any water course (DoW, 2007). The area is located in a RIWI Act Groundwater area. The proponent is required to obtain permits to construct and extract groundwater in this area (DoW, 2007).

There are no permanent waterbodies or watercourses within, or in association with, the application area. Rainfall in this area is mainly restricted to a wet summer season, where precipitation can be variable. Rain can be either intense falls associated with cyclonic events or scattered falls associated with local thunderstorms. The application area receives approximately 300 mm rain/year (BOM, 2007) and experiences a pan evaporation rate of approximately 3400 mm/year (Luke et al, 1987). Therefore, rainfall falling within the application area is likely to evaporate quickly. Substantial rainfall events are likely to create sheetflow which is likely to be high in sediments.

Therefore, the proposed clearing is not likely to result in increased sedimentation of waterbodies on or off site.

The groundwater salinity within the application area is approximately 500-1000 mg/L Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. The area to be cleared and the nature of the clearing is not likely to cause salinity levels within the application area to alter significantly.

There are no known Groundwater Dependant Ecosystems within the application area.

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

Methodology BOM (2007)
DoW (2007)
Luke et al (1987)
GIS Databases:
- Groundwater, Statewide - DoW
- Public Drinking Water Source Areas (PDWSA's) - DoW

(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 experiences an arid tropical climate with a wet summer season and a dry winter season (BOM, 2007). Most rainfall is received during the wet season, but falls can be variable (BOM, 2007). Rain can either be sporadic (local thunderstorms) or heavy and intense (cyclonic events). It is likely that during times of intense rainfall there may be some localised flooding in this area. However, the method of clearing and the small area to be cleared are not likely to lead to an increase in flood height or duration.

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

Methodology (BOM, 2007)

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

Comments

There is a native title claim over the area under application (GIS Database). The claim has been registered with the National Native Title Tribunal. However, the mining tenement has been granted in accordance with the future act regime of the Native Title Act, 1993 and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the Native Title Act, 1993.

The following Aboriginal Sites of Significance fall within a two kilometre radius of the application area: 6915, 6421, 6410, 6913, 6914, 6469, 6960, 6961, 6962 and 6963 (GIS Database). It is the proponent's responsibility to comply with the Aboriginal Heritage Act 1972 and ensure that no sites of aboriginal significance are damaged though the clearing process. Robe have altered their disturbance footprint to avoid these sites.

Methodology

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
State Agreement	Mechanical Removal	11	<p>The proposal has been assessed against the Clearing Principles and the proposal has been found to be at variance to Principle f, may be at variance to Principle a, is not likely to be at variance to Principle b, c, d, g, h, i and j and is not at variance to Principle e.</p> <p>It is recommended that should a permit be granted, conditions be endorsed on the permit with regards to rehabilitation of cleared areas.</p>

5. References

- Australian Museum Online (2007a). Bats in Australia, Orange Leaf-nosed Bat. <http://www.amonline.net.au/bats/records/bat22.htm> Accessed 8/6/07.
- Australian Museum Online (2007b). Night Parrot. http://www.austmus.gov.au/birds/research/night_parrot.htm Accessed 9/8/07.
- BOM (2007). Climate averages - Paraburdoo. http://www.bom.gov.au/climate/averages/tables/cw_007185.shtml. Accessed 7/11/05. Bureau of Meteorology.
- DEC (2006). Lakeland Downs Short-tailed Mouse, *Leggadina lakedownensis* (Watts, 1976). http://www.naturebase.net/component/option,com_docman/task,doc_download/gid,145/Itemid,1288/mode,view/ Accessed 9/8/07. Department of Environment and Conservation, Perth, Western Australia.
- Department of Conservation and Land Management (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions.
- Department of Environment and Water Resources (2007). The Action Plan for Australian Bats, Orange Leaf-nosed Bat. <http://www.environment.gov.au/biodiversity/threatened/publications/action/bats/14.html> Accessed 8/6/07
- 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.
- DNREA (2007). THREATENED SPECIES OF THE NORTHERN TERRITORY LONG-TAILED DUNNART *Sminthopsis longicaudata*. http://nt.gov.au/nreta/wildlife/animals/threatened/pdf/mammals/longtailed_dunnart_vu.pdf Accessed 16/10/07. Department of Natural Resources, Environment and the Arts, Northern Territory.
- Garnett ST & Crowley GM (2000) Action Plan for Australian Birds 2000. Environment Australia, Canberra.
- Keighery BJ (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Robe (2007). Supporting documentation supplied within clearing permit application for Mesa F evaluation drilling program. Robe River Pty Ltd.
- Shepherd DP, Beeston GR and Hopkins AJM (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Start AN, Anstee SD & Endersby M, (2000). A review of the biology and conservation status of the Ngadji, *Pseudomys chapmani* Kitchener 1980 (Rodentia: Muridae). CALMScience, Vol 2, No 2, p 125-147.
- Van Vreeswyk AME, Payne AL, Leighton KA & Hennig P, (2004). Technical Bulletin NO. 92: An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, Western Australia.

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.

EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005. Department of Conservation and Land Management, Como, Western Australia* }:-

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna. Department of Conservation and Land Management, Como, Western Australia* }:-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a

specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.