



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2130/1  
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 A Exploration

### 1.4. Application

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

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

**Vegetation Description** 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 layer 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*.

A flora survey conducted over the application area identified 13 vegetation types (Robe, 2007). These are:

1. Drainage Line: *Eucalyptus leucophloia*, *Corymbia hamersleyensis* low open woodland over *Acacia tumida*, *Grevillea wickhamii* tall shrubland over *Triodia wiseana* open hummock grassland.
2. Gentle stony slopes: *Eucalyptus leucophloia* scattered low trees over *Acacia atkinsiana*, *Acacia arida* shrubland over *Triodia wiseana* hummock grassland.
3. Stony Flats: *Corymbia candida* scattered low trees over *Acacia inaequilatera*, *A. atkinsiana*, *A. acistrocarpa* tall open shrubland over *Triodia wiseana* hummock grassland.
4. Flats (burnt less than 4 years ago): *Acacia inaequilatera* scattered tall shrubs over *A. acistrocarpa* scattered open shrubland over *Corchorus sidoides* low scattered shrubs over *Triodia wiseana* very open hummock grassland.
5. Flats (south of highway): *Corymbia deserticola*, *C. hamersleyensis* scattered low trees over *Hakea lorea* scattered tall shrubs over *Acacia atkinsiana* low shrubland over *Corchorus sidoides* low open shrubland over *Triodia wiseana* very open hummock grassland.
6. Flats (burnt less than 5 years ago): Groves of *Acacia bivenosa*, *A. acistrocarpa*, *Corchorus sidoides* open/low open shrubland over *Triodia wiseana* very open hummock grassland.
7. Drainage Line: *Corymbia hamersleyensis* scattered low trees over *Acacia tumida*, *Grevillea wickhamii* high shrubland over *Acacia arida* low open shrubland over *Triodia wiseana* hummock grassland.
8. Major Creepline: *Corymbia hamersleyensis* scattered low trees over *Grevillea wickhamii* and *Acacia tumida* tall open shrubland over *Triodia epactial/pungens/wiseana* very open hummock grassland over *Eriachne mucronata* scattered tussock grass.
9. Snakewood country: *Acacia xiphoylla* high open shrubland over *Acacia synchronisa* scattered shrubs over *Triodia wiseana* very open hummock grassland.

10. Flowline/grassy clay plain: *Corymbia hamersleyensis* scattered low trees over *Grevillea wickhamii*, *Acacia tumida* scattered tall shrubs over *Waltheria indica*, *Corchorus siddoides*, *Indigofera colutea* low scattered shrubs over *Triodia pungens/epactica* over a mix of very open tussock grassland over a mixed very open hermland.

11. Gravel flats: *Corymbia hamersleyensis* scattered low trees over *Acacia tumida*, *Cullen lachnostachys* and *Tephrosia uniovulata* open shrubland over *Triodia wiseana* open hummock grassland.

12. Stony flats: *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland.

13. Hill top: *Senna artemisioides*, *Acacia arida* open heath over *Triodia wiseana* hummock grassland.

**Clearing Description** Robe River Pty Ltd (Robe) intends to clear up to 18 hectares of native vegetation for the purpose of Mineral Exploration. Robe will be maintaining and establishing tracks, clearing drill lines (4m x 34 km), creation of approximately 110 drill pads (20m x 20m). Robe are committed to using existing tracks and gridlines where possible, and rehabilitating drill pads and sumps after drilling. Clearing will be blade up or driving over vegetation except on drill pads where vegetation must be cleared to ground level.

**Vegetation Condition** Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)

**Comment** Vegetation condition was obtained from Robe (2007). Robe report overall condition to be very good - excellent, with no weeds. The only disturbance within the application area is in the form of existing tracks. Some of the area has been burnt in the last five years.

### 3. Assessment of application against clearing principles

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

**Comments** **Proposal may be at variance to this Principle**

The application area occurs within the 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 Eucalyptus leucophloia over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002). The vegetation within the application area is typical of the bioregion.

A vegetation survey of the application area located 84 flora species from 21 Families (Robe, 2007). The assessor considers this to be moderately biologically diverse. Amaranthaceae, Malvaceae, and Poaceae families are particularly diverse within the application area. In comparison the Bioregional Summary for the Pilbara states that the Pilbara Bioregion is high in species diversity, although species are not restricted to the region.

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).

Therefore, the application area may be an area that is biologically diverse. There is no information to suggest that it is of greater diversity than similar vegetation within the local area or the sub-bioregion.

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 require the permit holder to rehabilitate areas cleared within 6 months of clearing.

**Methodology** CALM (2002)  
Robe (2007)  
WAM (2007)  
GIS Databases:  
- Interim Biogeographic Regionalisation of Australia (subregions) - 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** **Proposal is not likely to be at variance to this Principle**

According to available databases, there are no records of Declared Rare Fauna, or DEC listed priority fauna, within the application area or surrounds (GIS Database).

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 (*Rhinonictis aurantius*), Western Pebble-mound mouse (*Pseudomys chapmanii*) and Star Finch (*Neochmia ruficauda clarescens*).

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 (*Pezoporus occidentalis*) and Lakeland Downs Mouse (*Leggadina lakedownensis*).

Based on preferred habitat type, the application area may also provide habitat for the Long-tailed Dunnart (*Sminthopsis longicaudata*).

The Orange Leaf-nosed Bat (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) 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, 2007). 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 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. Therefore, the vegetation within the application area could not be considered as significant habitat for this species.

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 (porcupine grass, *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, *Astrelbia 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). Therefore the application area could not be considered as significant habitat for this species.

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. Therefore, 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*'s (especially Mulga) with an understorey of spinifex hummocks, and (occasionally) also perennial grasses and *Cassia*'s 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 and could not be considered as significant habitat.

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)  
Department of Environment and Water Resources, 2007a)  
DNREA (2007)  
Garnett et al (2000)  
Robe (2007)  
Start et al (2000)  
WAM (2007)  
GIS Database:  
- Threatened Fauna - CALM 30/9/05

**(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, no rare or priority flora species occur within the application area (GIS Database).

Biota Environmental Sciences conducted a flora survey over the application area in September 2005 and 2006. Robe conducted their own vegetation survey in August 2007 (Robe, 2007). As a result of these surveys two DEC listed Priority flora species, *Abutilon trudgenii* (P3) and *Sida sp.* Wittenoom (P3) were identified within the application area.

Seventeen populations of *Abutilon trudgenii* containing between 1 and 10 individuals (total 48 plants) were located within the application area (Robe, 2007). This species has been recorded over a widespread area in the Hamersley region by Robe River/Pilbara Iron (5640 recorded sites). It is not known how many individuals may be taken by the proposed clearing but given the extensive populations recorded in the local area outside of the application area, the proposed clearing is unlikely to affect the conservation status of this species.

Fourteen populations of *Sida sp.* Wittenoom containing between 1 and 25 individuals (total 85 plants) were located within the application area (Robe, 2007). This species has been recorded over a widespread area in the Hamersley region by Robe River/Pilbara Iron (9740 recorded sites). It is not known how many individuals may be taken by the proposed clearing but given the extensive populations recorded in the local area outside the application area, the vegetation within the application area is not necessary for the continued existence of this priority flora species.

The Department of Environment and Conservation (DEC) advise that based on the information provided, the potential impacts to the identified taxa are unlikely to be regarded as significant (DEC, 2007).

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

**Methodology** DEC (2007)  
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 126 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 (GIS Database). This bioregion's vegetation extent remains at approximately 100% of its Pre-european extent\*. Beard Vegetation Association 583 occurs within the application area (GIS Database). 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** Shepherd et al (2001)  
 Department of Natural Resources and Environment (2002)  
 GIS Databases:  
 - Interim Biogeographic Regionalisation of Australia – EA  
 - Pre-European Vegetation – DA 01/01

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

**Comments Proposal is at variance to this Principle**

According to available databases, a minor non-perennial drainage line occurs in the application area flowing in a north west direction (GIS Database).

Robe River Pty Ltd (Robe, 2007) have stated that the proposed exploration gridlines intersect a few small ephemeral drainage lines and minor creekbeds.

The vegetation communities described by Robe (2007) do not suggest that the vegetation within the drainage lines could be considered riparian in nature.

Based on the above, the proposed clearing is at variance to this Principle but is not likely to lead to clearing of riparian vegetation.

**Methodology** Robe (2007)  
 GIS Database:  
 - Hydrography, Linear – DoE 1/2/04

**(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):

**Peedamulla**

The Peedamulla land system is described as gravelly plains supporting hard spinifex grasslands and minor snakewood shrublands (Van Vreeswyk et al, 2004). The system prone to vegetation degradation where excessive grazing occurs. The Peedamulla land system is composed of four land units, Rise and low hill, gravelly plain; stony gilgai plain; and Drainage floors. 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, due to the type of clearing (linear, low impact), it is not expected that appreciable land degradation will result.

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)

**(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 (approximately 35% statewide, Shepherd et al, 2001).

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

**Methodology** GIS Database:  
- CALM Managed Lands and Waters - CALM

**(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 1914* (RIWI Act) surface water area. The proponent is required to obtain a Beds and Banks Permit in order to disturb any watercourse (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 sheet flow which is likely to be high in sediments.

During these extreme rainfall events, the proposed clearing would not 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 (GIS Database).

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 Database:  
- Groundwater, Statewide - DoW  
- Public Drinking Water Source Areas (PDWSA's) – DoW  
- Potential Groundwater Dependent Ecosystems – DoE 2004

**(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 are located within the application area: 23834, 23791, 23790, 23789, 23792, 23788 (GIS Database). Advice from the Department of Indigenous Affairs suggests that the application does not need to be referred to the EPA on the grounds of heritage so long as Robe River Pty Ltd comply with the *Aboriginal Heritage Act, 1972* (DIA 2007). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no sites of Aboriginal significance are damaged through the clearing process.

A submission was received from a direct interest party, stating the following matters should be taken into consideration:

- that clearing should not disturb heritage sites;
- that clearing should take into account bush tucker and medicinal species; and
- that the combined effects of other clearing in the local area be considered.

These issues have been addressed within the assessment. Rehabilitation of cleared areas should ensure that bush tucker and medicinal plants will return if cleared.

**Methodology** DIA (2007)  
GIS Databases:  
- Aboriginal Sites of Significance - DIA  
- Native Title Claims - DLI

#### 4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
State Agreement	Mechanical Removal	18	<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), (i) and (j) and is not at variance to Principles (e) and (h).</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](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](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/](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.
- DIA (2007). Advice to assessing officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DOIR)
- 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](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.
- 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.

- 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.
- Luke GJ Burke KL and O'Brien TM (1987). Evaporation Data for Western Australia. Resource Management Technical Report No. 65. Department of Agriculture, 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.
- WAM (2007). Faunabase - Western Australian Museum, Queensland Museum and Museum & Art Gallery of NT Collections Databases. <http://www.museum.wa.gov.au/faunabase/prod/index.htm> Accessed 15/10/07. Western Australian Museum.

## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia.
<b>DA</b>	Department of Agriculture, Western Australia.
<b>DEC</b>	Department of Environment and Conservation
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DoE), Western Australia.
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DoIR</b>	Department of Industry and Resources, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environment Protection Act 1986, Western Australia.
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System.
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia.
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>RIWI</b>	Rights in Water and Irrigation Act 1914, Western Australia.
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia.
<b>TECs</b>	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.

