



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4794/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Onslow Resources Ltd

1.3. Property details

Property: Mining Lease 08/456
Local Government Area: Shire of Ashburton
Colloquial name: Duck Creek Shingle Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 16 February 2012

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 for the whole of Western Australia and are useful to look at vegetation in a regional context. The following Beard vegetation association is located within the application area (GIS Database):</p> <p>103: Hummock grasslands, shrub steppe; snakewood over soft spinifex and <i>Triodia wiseana</i>.</p> <p>A Level 2 flora and vegetation survey of the application area was undertaken by Pilbara Flora as part of a larger survey of five different project areas occurring over 13 mining tenements in the Ashburton Onslow region (Duck Creek Shingle Project being one project). The application area was surveyed between 29 October to 8 November 2009 and 23 to 25 March 2010. The survey identified the following five vegetation types in the application area (Pilbara Flora, 2010):</p> <p>1. Vegetation type 20: Low open woodland to low woodland of <i>Acacia citrinoviridis</i> (10 metres by 5-20%) over high shrubland of <i>Acacia synchronicia</i> (3 metres by 20%) over very open grassland to open grassland of <i>Cenchrus ciliaris</i> (0.3 metres by 5-20%).</p> <p>2. Vegetation type 21: High shrubland of <i>Acacia xiphophylla</i> (3.5 metres by 10-25%) over scattered grasses to open hummock grassland of <i>Eragrostis xerophila</i> and <i>Triodia epactia</i> (0.3-0.75 metres by <2-25%).</p> <p>3. Vegetation type 32: Low woodland to low open forest of <i>Eucalyptus victrix</i>, <i>Eucalyptus camaldulensis</i> var <i>obtusa</i> and <i>Acacia citrinoviridis</i> (10 metres by 10-45%) over very open grassland to open grassland of</p>	<p>Onslow Resources Ltd (Onslow Resources) has applied to clear 12 hectares within an application area of approximately 20.6 hectares (GIS Database). The application area is located approximately 135 kilometres south east of Onslow (GIS Database).</p> <p>The purpose of the application is to develop a sand and shingle mining operation which involves excavation of sand and shingle from the Duck Creek riverbed. The proposed operation includes a riverbed excavation area, a processing and stockpiling area and roads (Newland Environmental, 2011). Clearing will be by mechanical means.</p>	<p>Very Good: Vegetation structure altered; obvious signs of disturbance (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 of each vegetation type was determined by Pilbara Flora using a scale based on Trudgen (1988). These condition ratings were converted to the Keighery (1994) scale by the assessing officer.</p> <p>The application area is located on Mount Stuart Pastoral Station and has been subject to grazing. According to Newland Environmental (2011), there has been minimal clearing of vegetation in the Duck Creek region.</p> <p>Pilbara Flora (2010) notes that poor rainfall conditions in 2009 and 2010 could have affected the growth of annuals and forbs, however any impact on the flora survey would have been minimised to some extent by the pre-survey rainfall that did occur.</p>

**Cenchrus setiger* (0.4 metres by 5-30%).

4. Vegetation type 34: Scattered low trees of *Eucalyptus camaldulensis* var *obtusa* (10 metres by <1%) over mixed species low scattered shrubs and herbs including **Argemone ochroleuca* and *Stemodia grossa* (<0.5 metres by <1%).

5. Vegetation type 35: Woodland to open forest of *Eucalyptus victrix*, *Eucalyptus camaldulensis* var *obtusa* and *Acacia citrinoviridis* (12 metres by 10-40%) over low open woodland of *Melaleuca glomerata* (5 metres by 5%).

Note:

* Introduced species

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 occurs within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is generally described as 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 application area is located within the Duck Creek riverbed, riverbank and adjacent floodplains. According to Newland Environmental (2011), Duck Creek is a major regional river system that only flows after major rainfall events with flows often associated with cyclonic or massive rainfall events.

The application area was surveyed between 29 October to 8 November 2009 and 23 to 25 March 2010 as part of a larger Level 2 flora and vegetation survey (797.22 hectares surveyed in total) in the Ashburton Onslow region. A total of 47 vascular taxa from 38 genera and 25 families were recorded from the application area with the families Poaceae, Mimosaceae, Malvaceae and Myrtaceae dominant in terms of taxa numbers (Newland Environmental, 2011). Pilbara Flora (2010) found that overall the flora within the survey area was not considered as being particularly diverse.

Five introduced species were recorded within the application area including Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*), Kapok (*Aerva javanica*), Mexican Poppy (*Argemone ochroleuca*) and Colocynth (*Citrullus colocynthis*) (Newland Environmental, 2011). Mexican Poppy (*Argemone ochroleuca*) is a 'Declared Plant' under the *Agriculture and Related Resources Protection Act 1976* as the P1 category for the whole of the State, except for the municipal districts of Ashburton, East Pilbara, Port Hedland and Roebourne (DAFWA, 2012). Weeds were identified across the application area ranging from low background levels to severe infestations of Buffel Grass along Duck Creek frontage country (Newland Environmental, 2011). These severe infestations have resulted in reduced levels of species diversity, a lack of native species understorey layer and overgrazing by cattle (Newland Environmental, 2011). Mexican Poppy occurred in low to moderate levels along the Duck Creek main channel. Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

The vegetation survey identified five vegetation types within the application area with the vegetation condition assessed as being in good (vegetation types 21, 34 and 35), poor (vegetation type 20) and very poor (vegetation type 32) condition. The vegetation types identified were considered to be regionally widespread and none were identified as being rare, restricted or unique (Pilbara Flora, 2010). Pilbara flora (2010) notes that regular flooding has affected diversity on the riverbanks and plains by removing soil and seeds before plants can establish.

According to available databases (GIS Database) and Pilbara Flora (2010), no Declared Rare Flora, Priority Flora or Threatened or Priority Ecological Communities are located within the application area.

A search by the assessing officer of the Department of Environment and Conservation's (DEC's) NatureMap within a 20 kilometre radius of the application area returned records of six mammals, 73 birds and 28 reptile species (DEC, 2012). This indicates that the application area has moderate faunal diversity. A fauna habitat assessment conducted in March 2010 did not identify any unique or specialised habitat (Newland Environmental, 2010).

Given vegetation in the application area has been impacted by weeds and grazing and is considered widespread on a regional basis, it is unlikely that the application area comprises a higher level of biological diversity than surrounding areas.

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

DAFWA (2012)
DEC (2012)
Newland Environmental (2010)
Newland Environmental (2011)
Pilbara Flora (2010)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

(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 was conducted by Newland Environmental in 2010. This included a desktop study of previous fauna reports and fauna publications and a reconnaissance survey on 23 to 25 March 2010 (Newland Environmental, 2010).

Three broad habitat types were identified in the application area including Duck Creek riverbed, floodplains and plains. The fauna survey did not record any gorges, rock ledges, sheltered valleys, pisolitic mesas, caves, mine shafts, steep elevated cliffs for raptor nesting sites, waterholes, watering points, tussock grasslands, sand dunes or dunefields, spinifex covered undulating scree slopes (Western Pebble-mound Mouse) or pebble mounds of the Western pebble-mound Mouse within the application area (Newland Environmental, 2010). The fauna survey identified some tall trees in the *Eucalyptus* riparian riverine communities that could act as roosting or nesting sites for bird species, although, few nesting hollows were observed (Newland Environmental, 2010). Habitat within the riparian vegetation types 32, 34 and 35 was also found to be open with no understorey shelter (Newland Environmental, 2010). Newland Environmental (2010) notes that the *Eucalyptus camaldulensis* var. *obtusa* and *Eucalyptus victrix* riverine communities occur extensively throughout the Pilbara Region and are not considered as being unique, rare or geographically restricted. Vegetation mapping across the larger survey area (797.22 hectares) shows that *Eucalyptus victrix* occurs on plains as well as along watercourses whereas *Eucalyptus camaldulensis* var. *obtusa* is generally restricted to watercourse areas (Pilbara Flora, 2010).

The desktop study identified a total of 340 fauna species in the Duck Creek region, with 63 species identified with conservation status. According to Newland Environmental (2010), nine conservation significant species have the potential to occur within the application area, however, the majority of these species are either mobile and able to utilise surrounding vegetation, prefer to be in close proximity to a permanent water source or the application area is outside their recorded distribution. The fauna survey did find that three of these species may utilise the application area as breeding habitat. These include:

- Rainbow Bee-eater (*Merops ornatus*) – Marine; Migratory under EPBC Act; Schedule 3;
- Peregrine Falcon (*Falco peregrinus*) – Schedule 4; and
- Grey Falcon (*Falco hypoleucos*) – Priority 4.

The Peregrine Falcon and Grey Falcon may utilise tall trees within the *Eucalyptus* riparian riverine communities as roosting and nesting sites and the Rainbow Bee-eater may utilise the loamy and sandy soils of the riverbank for burrowing and nesting (Newland Environmental, 2010). According to Newland Environmental (2010), the proposed clearing is unlikely to impact on the conservation status of these species as they have the ability to egress from the area and have national or regional distributions.

Approximately seven hectares of the proposed clearing is for mining development which will primarily target the riverbed area where minimal vegetation is required to be cleared (Newland Environmental, 2011). Newland Environmental (2011) states that the riverbank area will only be utilised for several access tracks linking the riverbed mining areas to the processing areas and riverine vegetation will be avoided wherever practical (in particular the larger tree species occurring in Duck Creek).

The presence of potential breeding habitat within the riparian zone indicates the application area may represent significant habitat. Potential impacts to *Eucalyptus* riparian vegetation as a result of the proposed clearing may be minimised by the implementation of a condition that restricts clearing of *Eucalyptus camaldulensis* var. *obtusa* in the application area.

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

Methodology Newland Environmental (2010)
Newland Environmental (2011)
Pilbara Flora (2010)

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

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

According to available databases, there are no records of Declared Rare Flora (DRF) within the application

area (GIS Database). The nearest record of DRF is located approximately 135 kilometres east of the application area (GIS Database).

No DRF was recorded during the vegetation survey undertaken between 29 October to 8 November 2009 and 23 to 25 March 2010 (Pilbara Flora, 2010).

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

Methodology Pilbara Flora (2010)
GIS Database:
- Threatened and Priority Flora

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

Comments **Proposal is not likely to be at variance to this Principle**
According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is approximately 110 kilometres east of the application area (GIS Database).

The vegetation survey did not record any TECs (Pilbara Flora, 2010).

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

Methodology Pilbara Flora (2010)
GIS Database:
- Threatened Ecological Sites Buffered

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

Comments **Proposal is not at variance to this Principle**
The application area falls within the Pilbara Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 100% of the pre-European vegetation remains (see table) (GIS Database; Shepherd, 2009).

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

103: Hummock grasslands, shrub steppe; snakewood over soft spinifex and *Triodia wiseana*.

According to Shepherd (2009), approximately 100% of this Beard vegetation association remains at both a state and bioregional level. Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves*
IBRA Bioregion – Pilbara	17,804,193	17,785,001	~100	Least Concern	6.3
Beard veg assoc. – State					
103	614,596	614,596	100	Least Concern	2.0
Beard veg assoc. – Bioregion					
103	614,056	614,056	100	Least Concern	2.0

* Shepherd (2009)

** 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 (2009)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- Pre-European Vegetation

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

Comments Proposal is at variance to this Principle

There is one major non-perennial watercourse within the application area (GIS Database) known as Duck Creek (approximately 100 metres wide within the application area). According to Newland Environmental (2011), Duck Creek is a medium sized tributary of the Ashburton River and is approximately 240 kilometres in length with its upper reaches extending into the central Hamersley Ranges. The application area occurs in the lower portion of Duck Creek, approximately 25 kilometres upstream from the confluence with the Ashburton River. Duck Creek flows only after major rainfall events and remains dry for most of the year with river flows often associated with cyclonic or massive rainfall events that can result in broad flood plains extending well past the riverbed (Newland Environmental, 2011).

Three vegetation types were identified along the banks (vegetation type 32) or in the riverbed (vegetation types 34 and 35) of Duck Creek and consisted of either one or two *Eucalyptus species* (*Eucalyptus camaldulensis* var. *obtusa* and *Eucalyptus victrix*). According to Newland Environmental (2011), *Eucalyptus camaldulensis* var. *obtusa* and *Eucalyptus victrix* riverine communities occur extensively throughout the Pilbara Region and are not considered as being unique, rare or geographically restricted. Vegetation mapping of the larger survey area (797.22 hectares in the Ashburton Onslow region) shows that *Eucalyptus victrix* occurs on plains as well as along watercourses whereas *Eucalyptus camaldulensis* var. *obtusa* is generally restricted to watercourse areas (Pilbara Flora, 2010).

Approximately seven hectares of the proposed clearing will primarily target the riverbed area which has extensive areas with minimal to negligible vegetation (Newland Environmental, 2011). The riverbank area will only be utilised for access tracks with the proposed processing and stockpiling area located on Buffel Grass infested embankment areas and the floodplains (Newland Environmental, 2011). Newland Environmental (2011) states that the riverine vegetation will be avoided wherever practical (in particular the larger tree species occurring in Duck Creek). Potential impacts to Duck Creek and riparian vegetation may be minimised by the implementation of a condition that restricts clearing of *Eucalyptus camaldulensis* var. *obtusa* in the application area.

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

Methodology Newland Environmental (2011)
Pilbara Flora (2010)
GIS Database:
- Hydrography, linear
- Rivers

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

Comments Proposal may be at variance to this Principle

The application area has been mapped as occurring on the Ashburton land system (GIS Database). The Ashburton land system is described as active floodplains and backplains with deep silty loam and clayey soils, shrublands and tussock grasslands (Payne et al., 1988). Pilbara Flora (2010) identified three landforms in the application area including floodplains, riverbanks and riverbeds. According to Payne et al. (1988) floodplains in the Ashburton land system are susceptible to wind erosion but are partially stabilised by buffel grass. Potential impacts from wind erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

According to Newland Environmental (2011), flows in Duck Creek are often associated with cyclonic or massive rainfall events that can result in broad flood plains extending well past the riverbed. These flood events cause soil erosion and scalding in the surrounding plains and create continual relocation and re-assortment of alluvial material (Newland Environmental, 2011). Based on this, the application area is subject to regular erosion and the proposed clearing of 12 hectares is unlikely to result in a significant increase in soil erosion.

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

Methodology Newland Environmental (2011)
Payne et al. (1988)
Pilbara Flora (2010)
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 application area does not lie within any conservation areas or Department of Environment and Conservation (DEC) managed lands (GIS Database). The nearest conservation area is the Cane River

Conservation Park, located approximately 37 kilometres north west of the application area (GIS Database). Based on the distance between the application area and the conservation park, the proposed clearing is not likely to impact the environmental values of any conservation area.

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

Methodology GIS Database:
- DEC Tenure

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

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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There is one major non-perennial watercourse within the application area (GIS Database) known as Duck Creek. River flows in Duck Creek are often associated with cyclonic or massive rainfall events that cause soil erosion and scalding and create continual relocation and re-assortment of alluvial material (Newland Environmental, 2011). An annual average rainfall of 400 millimetres and average annual evaporation rate of 3,400 millimetres (GIS Database) indicates that during normal rainfall events surface water within the application area is likely to evaporate quickly. Based on the above and given the small scale of clearing, it is unlikely the proposed clearing will significantly increase erosion and subsequent sedimentation within Duck Creek.

The groundwater within the application area is between 500 and 1,000 milligrams per litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the relatively small scale of the proposed clearing, it is not likely to cause salinity levels within the application area to alter significantly.

According to Newland Environmental (2011), very little vegetation is required to be cleared in the riverbed areas and it is likely that excavations will be refilled and landscaped by river flow events that will result in natural rehabilitation of the riverbed mining disturbances. Several access tracks will be required to link the riverbed mining areas to the processing areas and apart from these tracks the riverbank area will not be utilised (Newland Environmental, 2011). Newland Environmental (2011) states the proposed clearing will not alter the Duck Creek watercourse direction or the flow rate and riverine vegetation will be avoided wherever practical (in particular the larger tree species occurring in Duck Creek).

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

Methodology Newland Environmental (2011)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- Rainfall, mean annual

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

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

The application area is located within the Ashburton River catchment area (GIS Database). Given the size of the area to be cleared (12 hectares) in relation to the size of the catchment area (7,877,743 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of 400 millimetres and an average annual evaporation rate of 3,400 millimetres there is likely to be little surface flow during normal seasonal rains (GIS Database). Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments – Catchments
- Rainfall, mean annual

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

Comments

There are two native title claims over the area under application: WC01/5 and WC05/4 (GIS Database). These claims have been registered with the Native Title Tribunal on behalf of the claimant groups. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of

the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

According to available databases, there are no registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 16 January 2012 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received from a direct interest party advising they have no objection to the proposed clearing.

Methodology GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Registered with the NNTT

4. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 - Hamersley subregion) Department of Conservation and Land Management, Western Australia.
- DAFWA (2012) Declared Plants Search. Department of Agriculture and Food.
http://agspsrv95.agric.wa.gov.au/dps/version02/01_plantsearch.asp, viewed 7 February 2012.
- DEC (2012) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation.
<http://naturemap.dec.wa.gov.au/default.aspx>, viewed 7 February 2012.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Newland Environmental Pty Ltd (2010) Habitat Assessment for Vertebrate Fauna at Proposed Mining Areas on M08/456, M08/468 and L08/44, Duck Creek Sand and Shingle Project. Unpublished report for Onslow Resources Ltd dated April 2010.
- Newland Environmental Pty Ltd (2011) Supporting Documentation for a Native Vegetation Clearing Permit Application Purpose Permit Duck Creek Shingle Project on M08/456. Unpublished report for Onslow Resources Ltd dated December 2011.
- Payne, A. L., Mitchell A. A. and Holman, W.F. (1988). An inventory and condition survey of the rangelands in the Ashburton River Catchment, Western Australia. Department of Agriculture, Western Australia, Technical Bulletin 62, revised edition 1988.
- Pilbara Flora (2010) Flora and Vegetation Survey for the Onslow Tenement Project. Unpublished report for Onslow Resources Ltd dated March 2010.
- Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Trudgen, M.E. (1988) A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished Report Prepared for Bowman Bishaw and Associates, West Perth.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)

IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

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

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

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

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

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

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

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

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

