



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6232/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Evolution Mining Limited**

1.3. Property details

Property: General Purpose Lease 77/122
Mining Lease 77/110
Mining Lease 77/124
Local Government Area: Shire of Westonia
Colloquial name: Edna May Operations

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 9 October 2014

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	<p>Beard vegetation associations have been mapped for the whole of Western Australia. The following Beard vegetation associations are located within the application area (GIS Database):</p> <p>536: Medium woodland; morrell & rough fruited mallee (<i>Eucalyptus corrugata</i>).</p> <p>1057: Shrublands; Medium woodland; Salmon gum & gimlet / York gum & <i>Eucalyptus sheathiana</i> mallee scrub,</p> <p>A level two flora and vegetation assessment was conducted by Outback Ecology over the Edna May Operations (EMO), including the application area, in 2013 (Outback Ecology, 2014a). The flora and vegetation assessment identified one vegetation unit within the application area:</p> <p>Gimlet Woodland: Low Woodland of <i>Eucalyptus salubris</i> (with patches of <i>E. salmonophloia</i>) over patches of Tall Open Shrubland of <i>Melaleuca sheathiana</i> or <i>Melaleuca pauperiflora</i> subsp. <i>fastigiata</i> over an Open Shrubland of <i>Exocarpos aphyllus</i>, <i>Templetonia ceracea</i>, <i>Acacia merrallii</i>, <i>Acacia erinacea</i> and <i>Maireana</i> spp. over Very Open Tussock Grassland of <i>Austrostipa eremophila</i> on red loam plains.</p>
Clearing Description	<p>Edna May Operations.</p> <p>Evolution Mining Ltd (Evolution Mining) has applied to clear 5.1 hectares of native vegetation within a total boundary of approximately 84.2 hectares for the purpose of mining infrastructure. The project is located approximately 1.7 kilometres north of Westonia, in the Shire of Westonia.</p>
Vegetation Condition	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994);</p> <p>To</p> <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).</p>
Comment	<p>Vegetation condition was assessed by botanists from Outback Ecology.</p> <p>The application area covers two very distinctive land use areas. Approximately 1.1 hectares of the application area covers Crown Reserve 14983, commonly referred to as the Westonia Town Common Reserve, or the Reserve. The Reserve contains native vegetation in "good" condition, which represents Beard vegetation association 536 (Outback Ecology, 2014a). Evolution Mining proposes to construct two diversion levees and a diversion drain in this area (Outback Ecology, 2014d).</p>

The remaining 82.9 hectares of the application area covers previously cleared agricultural land, which is adjacent to existing EMO infrastructure (GIS Database). Evolution Mining proposes to clear four hectares of native vegetation within this area for the purpose of a waste rock landform (Outback Ecology, 2014a). Native vegetation within this area, which represents Beard vegetation association 1057, has been assessed as 'degraded' (Outback Ecology, 2014a).

A flora and fauna survey was undertaken over the Westonia Town Common Reserve by World Wildlife Fund on 15 and 16 September 2007. This survey is referred to as the Westonia BioBlitz (McLellan, 2008).

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 is located within the Merredin subregion of the Avon Wheatbelt (AW1) Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Avon Wheatbelt bioregion is characterised by a gently undulating landscape of low relief (CALM, 2002). Proteaceous scrub-heaths, rich in endemics, are found on residual lateritic uplands and derived sandplains and mixed eucalypt, *Allocasuarina huegeliana* and Jam-York Gum woodlands on Quaternary alluvials and eluvials (CALM, 2002).

The application area partially covers Crown Reserve 14983, which is referred to as Westonia Town Common Reserve (the Reserve). The Reserve is approximately 4000 hectares of principally gimlet, red morel and salmon gum woodlands (McLellan, 2008). It contains one of the largest 'reserved' red morrell woodlands within the intensive land use zone (McLellan, 2008). The large size, good condition and eucalypt vegetation associations present means that the Reserve is considered biologically significant (McLellan, 2008). Evolution Mining proposes to clear 1.1 hectares of native vegetation within the Reserve for the purposes of constructing diversion levees and a diversion drain (Outback Ecology, 2014d). The proposal is not likely to have a significant impact on the biodiversity of the Reserve, as the proposed clearing within the Reserve represents less than 0.03% of the reserve area and is located in close proximity to the Edna May Operations area.

A vegetation survey was undertaken over the Evolution Mining tenements associated with the Edna May Operations (EMO) area by Outback Ecology (2014a). A total of 193 plant taxa from 112 genera and 44 families were recorded within the study area. It is important to note that the study area predominantly covers the Reserve, which is a biologically diverse remnant of native vegetation (Outback Ecology, 2014a; McLellan, 2008). The majority of the application area covers cleared agricultural land, which consists of degraded native vegetation and pasture (Outback Ecology, 2014d; GIS Database). Therefore, the application area is not likely to contain the same level of plant taxa as recorded in the wider study area.

One Threatened flora species; *Eremophila resinosa*, and one Priority flora species; *Austrostipa blackii* were recorded within the study area (Outback Ecology, 2014a). Neither of these species was recorded within the application area (Outback Ecology, 2014a).

According to available databases, there are no Threatened or Priority Ecological Communities located within the application area (GIS Database). Outback Ecology (2014a) advises that Gimlet Eucalypt woodland may potentially represent a Priority Ecological Community. Gimlet Eucalypt woodland occurs exclusively within the Reserve and accounts for 1.1 hectares of the application area. Gimlet Eucalypt woodland has been identified as occurring throughout the Reserve (McLellan, 2008) and the proposed clearing of 1.1 hectares of this vegetation type for diversion levees and a diversion drain is not likely to cause a significant impact.

The flora survey undertaken by Outback Ecology recorded 22 weed species within the study area (Outback Ecology, 2014a). The Bioblitz recorded 28 weed species within the Reserve (McLellan, 2008). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

A fauna survey was undertaken over the EMO area by Outback Ecology (2014b). The survey recorded a total of 36 species, comprising 22 bird, eight mammal, three reptile and three introduces species (Outback Ecology, 2014b). This is considered to represent high fauna diversity. However the study area predominantly covers the Reserve, which is a biologically diverse remnant of native vegetation (Outback Ecology, 2014a; McLellan, 2008). The majority of the application area covers cleared agricultural land, which consists of degraded native vegetation and pasture (Outback Ecology, 2014; GIS Database). Therefore, the application area is not likely to contain the same level of fauna diversity as recorded in the wider study area.

The application area mostly covers cleared agricultural land that contains low biological diversity. Approximately 1.1 hectares of clearing is proposed to be undertaken in the Reserve. Although the Reserve has been described as a biologically diverse remnant of vegetation (McLellan, 2008), the potential impact of the proposed clearing for diversion levees and a diversion drain is considered minimal given the Reserve is 4000 hectares in size (GIS Database).

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

Methodology CALM (2002)
McLellan (2008)

Outback Ecology (2014a)
Outback Ecology (2014b)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- 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 is not likely to be at variance to this Principle

The application area mostly covers previously cleared agricultural land that contains native vegetation described as 'Degraded' (Outback Ecology, 2014a; GIS Database). It is considered unlikely that these areas contain significant habitat or support significant fauna species.

Approximately 1.1 hectares of native vegetation is proposed to be cleared within the Reserve. The fauna survey undertaken by Outback Ecology (2014b) identified one broad habitat type within the Reserve; mixed woodland dominated by Gimlet (*Eucalyptus salubris*). This habitat generally consists of a gimlet (*E. salubris*) woodland over a sparse shrubland dominated by *Acacia* spp. over very open grassland dominated by *Atriplex* species (Outback Ecology, 2014b). Fauna of conservation significance known to occupy habitats such as this include Short-billed Black Cockatoo (Carnaby's Black Cockatoo), Chuditch and Carpet Python (Outback Ecology, 2014b). The Westonia Bioblitz also noted the presence of nesting and breeding habitat for birds, including active breeding hollows in some of the older, larger trees (McLellan, 2008).

A desktop study undertaken over the EMO project area (which includes the application area) identified seven Threatened species that could potentially occur, including Carnaby's Black Cockatoo, Malleefowl, Chuditch, Red-tailed Phascogale, Western Spiny-tailed Skink, Shield-Backed Trapdoor Spider and Carpet Python (Outback Ecology, 2014b). The field component of the fauna survey did not record any of these species within the study area (Outback Ecology, 2014b).

The application area lies within the known distribution for Carnaby's Black Cockatoo (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), 2012). The fauna survey found that the woodlands present within the application area lacked large hollow-bearing trees required for breeding (Outback Ecology, 2014b). The survey concluded that it was unlikely Carnaby's Black Cockatoo utilise the vegetation within the application area (Outback Ecology, 2014b).

Malleefowl and Shield-backed Trapdoor Spider were initially considered likely to occur within the application area based on their known distributions and the vegetation type present (Outback Ecology, 2014b). However it was found that the habitat was largely unsuitable due to the clayey substrate, which is not conducive to mound construction or burrowing (Outback Ecology, 2014b). These species are therefore considered unlikely to occur within the application area.

The Western Spiny-tailed Skink is known to inhabit woodland patches surrounded by agricultural land (Outback Ecology, 2014b), so therefore this species could potentially occur within the application area. The targeted survey searched all suitable habitats for the Western Spiny-tailed Skink and failed to find any individuals, latrines or other evidence of this species (Outback Ecology, 2014b). The proposed clearing is not likely to impact on this species.

There is potential for the Chuditch, Carpet Python and Red-tailed Phascogale to occur within the application area (Outback Ecology, 2014b). The targeted survey did not find any individuals of these species. Although parts of the application area may provide suitable habitat, the proposed clearing of 1.1 hectares for diversion levees and a diversion drain is not expected to have a significant impact on these species given the availability of similar vegetation directly adjacent to the application area.

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

Methodology DSEWPaC (2012)
McLellan (2008)
Outback Ecology (2014b)

(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 known Threatened flora species within the application area (GIS Database).

The Threatened species *Eremophila resinosa* is known to occur within the Edna May Operations area (Outback Ecology, 2014c). Targeted searches have identified 317 individuals of the species within six populations (Outback Ecology, 2014c). The targeted survey for *Eremophila resinosa* did not record any occurrences within the application area (Outback Ecology, 2014c).

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

Methodology Outback Ecology (2014c)
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 200 kilometres south-west of the application area (GIS Database).

No TECs were recorded during the vegetation survey (Outback Ecology, 2014a).

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

Methodology Outback Ecology (2014a)
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 at variance to this Principle**
The application area falls within the Avon Wheatbelt Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 18.69% of the pre-European vegetation remains (see table) (GIS Database; Government of Western Australia, 2013). According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002), this value gives the region a Conservation Status of 'Vulnerable'.

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

536: Medium woodland; morrell & rough fruited mallee (*Eucalyptus corrugata*).

1057: Mosaic: Shrublands; Medium woodland; salmon gum & gible / York gum & *Eucalyptus sheathiana* mallee scrub.

Vegetation association 536 retains approximately 41% of its pre-European extent at a state level and 36% at the bioregion level (Government of Western Australia, 2013). Vegetation association 1057 retains approximately 12% of its pre-European extent at both the state and bioregion scale (Government of Western Australia, 2013). This is below the 30% threshold level recommended in the National Objectives Targets for Biodiversity Conservation below which, species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Land
IBRA Bioregion - Avon Wheatbelt	9,517,109	1,778,407	~19	Vulnerable	2.37
IBRA Subregion - Merredin	6,524,181	1,368,789	~21	Vulnerable	2.50
Local Government - Westonia	331,938	130,984	~39	Depleted	8.10
Beard vegetation associations - State					
536	13,178	5,433	~41	Depleted	9.82
1057	145,311	17,637	~12	Vulnerable	1.98
Beard vegetation associations - Bioregion					
536	11,171	3,970	~36	Depleted	11.58
1057	145,311	17,637	~12	Vulnerable	1.98
Beard vegetation associations - subregion					

536	11,171	3,970	~36	Depleted	11.58
1057	145,311	17,637	~12	Vulnerable	1.98

* Government of Western Australia (2013)

** Department of Natural Resources and Environment (2002)

Approximately four hectares of native vegetation is proposed to be cleared within the mapped area for Beard vegetation association 1057 (Outback Ecology, 2014d). The proposed clearing will occur on agricultural land and the vegetation proposed to be cleared consists of degraded vegetation and regrowth which is no longer representative of Beard vegetation association 1057 (Outback Ecology, 2014). In light of this, the proposed clearing is not likely to have a significant impact on the remaining representation of Beard vegetation association 1057.

Evolution Mining proposes to clear 1.1 hectares of native vegetation (Beard vegetation association 536) located within the Reserve, which is considered a regionally significant remnant of native vegetation (McLellan, 2008).

Based on the above, the proposed clearing is at variance to this principle. Given the size of the proposed clearing (1.1 hectares) compared to the size of the remnant (4000 hectares), the proposed clearing for diversion levees and a diversion drain is not anticipated to have a significant impact on this remnant.

Methodology Department of Natural Resources and Environment (2002)
EPA (2000)
Government of Western Australia (2013)
McLellan (2008)
Outback Ecology (2014a)
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 not likely to be at variance to this Principle

Available databases show there are no watercourses within the application area (GIS Database). However, according to Outback Ecology, there is one small ephemeral drainage line located within the Westonia Town Common that may be impacted by the proposed clearing (Rockwater, 2013).

Flows in this drainage line are intermittent and very infrequent (Outback Ecology, 2014d). This drainage line has been previously modified as part of the Edna May Operations (Outback Ecology, 2014d). Vegetation within the application area has not been identified as riparian or growing in association with a watercourse (Outback Ecology, 2014a).

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

Methodology Outback Ecology (2014a)
Outback Ecology (2014d)
Rockwater (2013)
GIS Database:
- Hydrography, linear

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

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

The area under application has been mapped as soil type Oc33 (GIS Database) which Northcote et al (1960-68) describes as:

Undulating plains with some low gilgais: chief soils seem to be hard alkaline red soils in intimate and complex association with calcareous earths.

These soil types are said to be slowly permeable and have low wind erodability (Schoknecht, 2002). Therefore, the likelihood of erosion occurring during normal rainfall events is low.

The proposed clearing of 5.1 hectares of native vegetation is not likely to cause appreciable land degradation.

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

Methodology Northcote et al (1960-68)
Schoknecht (2002)

GIS Database:
- Soils, Statewide

(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 (GIS Database). The nearest conservation area is the Sandford Rocks Nature Reserve, located approximately six kilometres north-east of the application area (GIS Database). Aerial photography indicates that vegetation within the application area does not form part of an ecological linkage between Westonia Town Common Reserve and Sandford Rocks Nature Reserve (GIS Database). Aerial photography shows that vegetated road reserves located to the east of the application area may provide ecological linkages between Westonia Town Common Reserve and Sandford Rocks Nature Reserve. These road reserves are outside of the application area and will not be impacted by the proposed clearing.

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

Methodology GIS Database:
- DEC Tenure
- Westonia 2635 Aug Sep 2010 Mosaic

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

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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent water bodies or watercourses within the application area; however there is one small ephemeral drainage line that occurs along the southern boundary of the application area (GIS Database; Rockwater, 2013). This drainage line flows intermittently and has been modified as part of the Edna May Operations.

Rainfall in the area largely occurs during the winter months with some rainfall coming from occasional summer thunderstorms brought about by decaying tropical cyclones from the north of the state (McLellan, 2008). The annual average rainfall for Merredin is 325.3 millimetres and the average annual evaporation rate for the application area is approximately 2,400 - 2,600 millimetres (BoM, 2014; GIS Database). Based on this, surface water is likely to evaporate quickly with surface sheet flow and higher sediment levels predominantly occurring during larger rainfall events. Therefore, during normal rainfall events, the proposed clearing would not likely lead to an increase in sedimentation of watercourses within the application area.

According to available databases, groundwater salinity within the application area is between 14,000 and 35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be saline. Given the high TDS and depth to groundwater (28 to 40 metres below the surface), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

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

Methodology BoM (2014)
McLellan (2008)
Rockwater (2013)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

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

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

The application area experiences a Mediterranean climate with some semi-arid climatic characteristics (McLellan, 2008). It receives an annual average rainfall of approximately 325.3 millimetres, most of which falls during the winter months (BoM, 2014). Given the size of the proposed clearing and the low average annual rainfall, it is considered unlikely that the proposed clearing will cause or exacerbate the incidence or intensity of flooding.

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

Methodology BoM (2014)
McLellan (2008)

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

Comments

There is one Native Title Claims (WC2013/009) over the area under application (GIS Database). This claim has been filed at the Federal Court of Australia. 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*.

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 Regulation, the Department of Water, and the Department of Parks and Wildlife, 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 1 September 2014 by the Department of Mines and Petroleum inviting submissions from the public. No submissions have been received in relation to the application.

Methodology GIS Database:

- Aboriginal Sites of Significance
- Native Title Claims - Filed at the Federal Court

4. References

- BoM (2014) Climate Statistics for Australian Locations. A Search for Climate Statistics for Merredin, Australian Government Bureau of Meteorology, viewed 2 October 2014, <http://www.bom.gov.au/climate/averages/tables/cw_010092.shtml>.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions - Coolgardie 2 (COO2 - Southern Cross Subregion). Department of Conservation and Land Management, Western Australia.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DSEWPaC (2012) EPBC Act Referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo, Baudin's cockatoo and Forest red-tailed black cockatoo. EPBC Act Policy Statement. Canberra, Australia.
- EPA (2000) Environmental Protection of Native Vegetation in Western Australia. Clearing of Native Vegetation, with Particular Reference to the Agricultural Area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.
- Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- McLellan (2008) Westonia BioBlitz Report 2007. Unpublished report by Richard McLellan for Worldwide Fund Australia dated May 2008.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- Outback Ecology (2014a) Edna May and Greenfinch Projects - Level 2 Flora and Vegetation Assessment. Unpublished report prepared for Evolution Mining Ltd.
- Outback Ecology (2014b) Edna May and Greenfinch Projects - Level 1 Fauna Assessment. Unpublished report prepared for Evolution Mining Ltd.
- Outback Ecology (2014c) Edna May and Greenfinch Projects - Annual Survey of *Eremophila resinosa*. Unpublished report prepared for Evolution Mining Ltd.
- Outback Ecology (2014d) Edna May Gold Project Clearing Permit (Purpose Permit) Application G77/122, M77/110, M77/124 Native Vegetation Supporting Documentation.
- Rockwater (2013) Edna May Mine Re-design of Drainage System Around IWL. Unpublished report prepared for Evolution Resources Ltd.
- Schoknecht (2002) Soil Groups of Western Australia. A simple guide to the main soils of Western Australia. Resource Management Technical Report 246. Edition 3.

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.