



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2899/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Crescent Gold Limited

### 1.3. Property details

Property: Mining Lease 38/270  
Mining Lease 38/345  
Miscellaneous Licence 38/153  
Local Government Area: Shire of Laverton  
Colloquial name: Mary Mac South Project

### 1.4. Application

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

## 2. Site Information

### 2.1. Existing environment and information

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

**Vegetation Description** Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia. One Beard Vegetation Association has been mapped within the application area (GIS Database; Shepherd et al., 2001).

18: Low woodland; mulga (*Acacia aneura*)

The application area was surveyed by Western Botanical staff in July 2007 and J & J Tucker Environmental Solutions staff in June 2008 (MBS Environmental, 2008). The following vegetation types were identified within the application area.

#### Rocky Slopes:

**Banded Ironstone Formation (BIF):** *Acacia aneura*, *Acacia* sp. aff. *quadrimarginea*, *A. tetragonophylla* open scrub over open low scrub of *Eremophila latrobei* subsp. *brucei*, *Hibiscus gardneri* over *Cheilanthes sieberi* subsp. *sieberi*, *Isotoma petraea*, *Ptilotus helipteroides* subsp. *helipteroides* very open herbs and *Eriachne mucronata*, *Erneapogon caeruleus*, *Cymbopogon ambiguus* very open grasses.

**Stony Ironstone Mulga Shrub lands (SIMS):** *Acacia aneura*, *Acacia ramulosa* var. *ramulosa*, *Acacia* spp. aff. *quadrimarginea* scrub over *Eremophila forrestii* subsp. *forrestii*, *Scaevola spinescens* (narrow leaf form), *Senna artemisioides* subsp. *helmsii*, *Senna artemisioides* subsp. *filifolia* low scrub.

#### Plains:

**Lateritic Hardpan Mulga Shrub land (LHMS):** *Acacia aneura*, *Acacia ramulosa* var. *ramulosa* scrub over *Ptilotus obovatus*, *Ptilotus schwartzii* var. *schwartzii*, *Solanum lasiophyllum* open dwarf scrub over *Eragrostis eriopoda* open grass.

#### Drainage Lines:

**Drainage Tract Mulga Shrub land (DRMS):** Vegetation composition is highly variable and is largely composed of species common to surrounding vegetation units. Dominated by *Acacia aneura* low forest over highly variable understorey, reflecting species present in adjacent habitats, consisting of shrubs, grasses and herbs.

Six alien weed species were recorded within the application area (MBS Environmental, 2008). These included: Ruby Dock (*Acetosa vesicaria*), Tumbleweed (*Salsola tragus*), Peppercorn Tree (*Schinus molle*) and Athel Pine (*Tamarix aphylla*) (J & J Tucker Environmental Solutions, 2008).

**Clearing Description** Crescent Gold Limited has proposed to clear up to 43 hectares of native vegetation within an application area of approximately 232.6 hectares (GIS Database). The proposed clearing is located approximately 2 kilometres west of Laverton (GIS Database).

The purpose of the proposed clearing is mineral production. The application area will be cleared for the development of the Mary Mac South pit, haul road, waste rock stockpile, ore stockpile/laydown area and a temporary dewatering pipeline from the existing Craiggie Pit to the West Laverton Pits (MBS Environmental, 2008).

**Vegetation Condition** Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).

**Comment** The vegetation condition was derived from a vegetation survey conducted by Western Botanical (2007) and J & J Tucker Environmental Solutions (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 is not likely to be at variance to this Principle**

The application area occurs within the Eastern Murchison (MUR1) sub-region of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This sub-region is characterised by internal drainage, and extensive areas of elevated red desert sand plains with minimal dune development (CALM, 2001). It contains salt-lake systems associated with the occluded Paleodrainage system (CALM, 2001). This sub-region has broad plains of red-brown soils and breakaway complexes as well as red sand plains (CALM, 2001). The vegetation is dominated by Mulga woodlands often rich in ephemerals, hummock grasslands, saltbush shrub lands and Halosarcia shrub lands (CALM, 2001).

A vegetation survey of the application area and surrounding vegetation identified 109 native flora species belonging to 53 genera from 33 families (MBS Environmental, 2008). This is considered to be biologically diverse. Mimosaaceae (15), Chenopodiaceae (14) and Myoporaceae (13) families were the most diverse within the survey area (MBS Environmental, 2008). This is typical of the floristics of the Murchison IBRA bioregion.

Six alien weed species were recorded within the vegetation survey area (J & J Tucker Environmental Solutions, 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. This in turn can lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. One of these species (*Tamarix aphylla*) is listed as 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food (DAFWA). This species is a Priority 1 species and therefore the movement of this plant or its seeds within the state is prohibited, as is the movement of contaminated machinery and produce including livestock and fodder (DAFWA, 2009). Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

An area search of the Department of Environment and Conservation's online fauna database conducted by the assessing officer suggests that the application area is diverse in reptile species (DEC, 2009). The database search found 47 reptile species as potentially occurring within the application area, or within a 20 kilometre radius of the application area.

Although the application area is high in floral and faunal diversity, it is not likely to have greater diversity than similar areas within the region, particularly as parts of the application area have been degraded by previous disturbance from mining and pastoral activities. The landforms, vegetation types and fauna habitats in the application area are well represented in the Murchison Region (MBS Environmental, 2008; GIS Database). It is not likely that the application area comprises a higher level of biological diversity than other undisturbed areas within the sub-region.

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

**Methodology** DAFWA (2009)  
DEC (2009)  
J & J Tucker Environmental Solutions (2008)  
MBS Environmental (2008)  
CALM (2001)  
GIS Database  
- Interim Biogeographic Regionalisation of Australia

#### (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

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

The assessing officer has conducted a search of the Department of Environment and Conservation's online fauna database between the coordinates 122.6069°E, 28.4449°S and 122.1614°E, 28.8444°S, representing a 20 kilometre radius around the application area.

This search identified 1 invertebrate, 5 amphibian, 9 mammalian, 15 avian and 47 reptilian species that may occur within the search area (DEC, 2009). Of these, the following species of conservation significance have previously been recorded within the search area: *Branchinella apophysata*, Bilby (*Macrotis lagotis*), Numbat (*Myrmecobius fasciatus*), Bernier Is. Banded Hare-wallaby (*Lagostrophus fasciatus* subsp. *fasciatus*) and the Princess Parrot (*Polytelis alexandrae*).

Coffey Environments (2008) conducted a desktop search of the following databases:

- Western Australian Museums online database (26.5° - 28.5°S and 121.5° - 123°E);
- Department of Environment and Conservation's (DEC) Threatened Fauna database (26.5° - 28.5°S and 121.5° - 123°E); and the
- Department of the Environment, Water, Heritage and the Arts *EPBC ACT 1999* online database (26.5° - 28.5°S and 121.5° - 123°E) (Coffey Environments, 2008).

In addition to those species listed above, the following fauna species of conservation significance were identified through the above searches: Mulgara (*Dasycercus cristicauda*), Malleefowl (*Leipoa ocellata*), Giant Desert Skink (*Egernia kintorei*), Peregrine Falcon (*Falco peregrinus*), Australian Bustard (*Ardeotis australis*), Slender Billed Thornbill (*Acanthiza iredalei iredalei*), Rainbow Bee-eater (*Merops ornatus*), Great Egret (*Ardea alba*), Oriental Plover (*Charadrius veredus*) and the Fork Tailed Swift (*Apus pacificus*).

A vegetation survey conducted by Western Botanical (2007) recorded four habitat types as occurring within the application area.

Coffey Environments (2008) conducted a fauna survey of the application area in May 2008. It was observed that mulga woodland on a rocky-clay substrate is the dominant vegetation type within the application area (Coffey Environments, 2008). The vegetation type described by Coffey Environments (2008) is well represented throughout the Laverton region and the application area is extensively disturbed due to historical mining activities (MBS Environmental, 2008).

Given the moderate size of the application area (43 hectares) and that approximately 53% of the application area consists of previously disturbed land, it is unlikely that the proposed clearing will significantly impact on fauna habitat.

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

**Methodology** Coffey Environments (2008)  
DEC (2009)  
Western Botanical (2007)

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

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

According to available databases, no Declared Rare Flora (DRF) or Priority Flora species occur within the application area (GIS Database).

Flora surveys were conducted over the application area by Western Botanical staff between 21 - 23 July 2007 and J & J Tucker Environmental Solutions staff between 9 - 11 April 2008 (Western Botanical, 2007; J & J Tucker Environmental Solutions, 2008). These surveys involved the area being traversed by one team of two people via a four wheel drive and on foot where appropriate. Different vegetation groups encountered during the surveys were described and the vegetation associations were examined for the presence or absence of any Declared Rare Flora and Priority Flora species (Western Botanical, 2007).

Relatively low rainfall in the months prior to the survey meant that most annuals were absent during the survey period. However, a desktop database search of the Department of Environment and Conservation (DEC) known DRF, Priority-Listed Flora and Threatened Ecological Communities (TEC's) indicated that four known annuals of conservation significance may occur within the application area. Namely, these are: *Vittadinia cervicalis* var. *oldfieldii* (P1), *Goodenia lyrata* (P1), *Gunniopsis propinqua* (P3) and *Gunniopsis rubra* (P3) (Western Botanical, 2007).

No species of Declared Rare or Priority flora were recorded during the flora surveys.

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

**Methodology** J & J Tucker Environmental Solutions (2008)  
Western Botanical (2007)  
GIS Database  
- Declared Rare and Priority Flora List

**(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**

A search of available databases reveals that there are no Threatened Ecological Communities (TECs) within the application area (GIS Database). There are no TEC's located within the East Murchison IBRA sub-region (CALM, 2001). MBS Environmental (2008) reported that no Threatened Ecological Communities were identified during the flora survey of the application area.

The application area intersects a 10 kilometre buffer zone around the Mount Jumbo vegetation complex, which is listed as an 'ecosystem at risk' in 'A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002' (CALM, 2001). The Mount Jumbo Range Vegetation Complex has been given a status of vulnerable, with threatening processes being listed as grazing pressure, feral animals (goats and rabbits) and changed fire regimes (CALM, 2001). The vegetation types according to the National Vegetation Inventory System (NVIS), listed as occurring in this area are mixed species arid Acacia woodlands and shrub lands. The Mount Jumbo Range Vegetation Complex is listed as being in good condition although vulnerable (CALM, 2001).

The Banded Ironstone Hills are another 'ecosystem at risk' within close proximity to the application area (ANRA, 2008). There are Banded Ironstone Formation (BIF) communities restricted to three small areas north of the proposed Mary Mac South pit (Western Botanical, 2007). The Banded Ironstone Formation (BIF) communities have been given a status of vulnerable, with threatening processes being listed as grazing pressure, feral animals (goats and rabbits) and changed fire regimes (ANRA, 2008).

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

**Methodology** ANRA (2008)  
CALM (2001)  
MBS Environmental (2008)  
Western Botanical (2008)  
GIS Database  
- Threatened Ecological Communities

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

**Comments Proposal is not at variance to this Principle**

The application area falls within the IBRA Murchison Bioregion (GIS Database). Shepherd et al. (2001) report that approximately 100% of the pre-European vegetation still exists in this Bioregion.

The vegetation in the application area is recorded as Beard Vegetation Association 18: Low woodland; mulga (*Acacia aneura*) (GIS Database; Shepherd et al., 2001).

According to Shepherd et al., (2001) approximately 100% of Beard Vegetation Association 18 remains within the Murchison Bioregion (see table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Murchison	28,120,558	28,120,558	~100.0%	Least Concern	~1.1%
Beard veg assoc. – State					
18	19,892,437	19,890,348	~100.0%	Least Concern	~2.1%
Beard veg assoc. – Bioregion					
18	12,406,248	12,403,248	~100.0%	Least Concern	~0.4%

\* Shepherd et al. (2001) updated 2005

\*\* Department of Natural Resources and Environment (2002)

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

**Methodology** Department of Natural Resources and Environment (2002)  
Shepherd et al. (2001) updated 2005  
GIS Database  
- Pre-European Vegetation  
- Interim Biogeographic Regionalisation for Australia

**(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 GIS Databases, there are no permanent watercourses within the application area, however, there are several minor, non-perennial watercourses within the application area (GIS Database).

Based on vegetation mapping conducted by Western Botanical (2007) and J & J Tucker Environmental Solutions (2008) there would appear to be riparian vegetation present within the application area (GIS Database; MBS Environmental, 2008). The following vegetation community is present within the application area and is indicative of riparian vegetation:

- Drainage Tract Mulga Shrub land (DRMS)

The vegetation associated with the drainage channels is likely to be a fauna refuge and as such disturbance should be kept to a minimum.

The application area experiences a rainfall of approximately 233 millimetres/year according to the nearest recording station at Laverton (BoM, 2009). The application area also experiences a pan evaporation rate of approximately 3,200 millimetres/year (Luke et al., 1987). Based on this, the watercourses within the application area would only be expected to carry water during high rainfall events as during normal rainfall events surface water is either quickly utilised by vegetation or lost to evaporation.

Based on the above, the proposed clearing is at variance to this Principle. However, as the minor watercourse located within the application area is only likely to flow following significant rainfall, the proposed clearing is unlikely to result in any significant impact to any watercourse or wetland provided natural surface water flow patterns are not disturbed.

**Methodology** BoM (2009)  
Luke et al. (1987)  
MBS Environmental (2008)  
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 may be at variance to this Principle**

The application area has been surveyed by the Department of Agriculture and Food (Van Vreeswyk et al., 1994). The application area is comprised of the following land systems (GIS Database; MBS Environmental, 2008);

- Brooking Land System
- Laverton Land System
- Violet Land System

The Brooking Land System is described as prominent ridges of banded iron formation, supporting mulga shrub lands; occasional minor halophytic communities in the south-east (Van Vreeswyk et al., 1994). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'stony plains' land unit of the Brooking Land System. The stone mantle of this land unit provides effective protection against soil erosion but the disturbance or removal of stone mantles may initiate soil erosion (Van Vreeswyk et al., 1994). The vegetation described by Van Vreeswyk et al. (1994) accurately reflects the vegetation types described in the vegetation surveys conducted over the area (Western Botanical, 2007).

The Laverton Land System is described as greenstone hilla nad ridges with Acacia shrublands (Van Vreeswyk et al., 1994). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'narrow drainage tracts' and 'stony plains' land units of the Laverton Land System. The soils of these land units are not susceptible to erosion due to abundant stony mantles except in the narrow drainage tracts land unit which are mildly susceptible to water erosion (Van Vreeswyk et al., 1994). The vegetation described by Van Vreeswyk et al. (1994) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Western Botanical, 2007).

The Violet Land System is described as undulating stony and gravelly plains and low rises, supporting mulga shrub lands (Van Vreeswyk et al., 1994). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'narrow drainage tracts' and 'stony plains' land units of the Violet Land System. The soils of these land units are not susceptible to erosion due to abundant stony mantles except in the narrow drainage tracts land unit which are mildly susceptible to water erosion (Van Vreeswyk et al., 1994). In circumstances where the mantle is removed or disturbed, the soil can become moderately susceptible to water erosion. The vegetation described by Van Vreeswyk et al. (1994) accurately reflects the vegetation

types described in vegetation surveys conducted over the area (Western Botanical, 2007).

Based on the above the proposed clearing may be at variance to this Principle. Should a permit be granted, it is recommended that conditions be imposed on the permit to retain and spread vegetative material and topsoil and require that the purpose for which the clearing has been authorised takes place within six months of the clearing.

**Methodology** MBS Environmental (2008)  
Van Vreeswyk et al. (1994)  
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 at variance to this Principle**

The application area is located more than 150 kilometres to the south of the De La Poer Range Nature Reserve (GIS Database). At this distance it is not likely that the vegetation within the application area provides a buffer to a conservation area, or is important as an ecological linkage to a conservation area. The vegetation types within the application area are well replicated in other land systems within the Murchison region. Consequently, their conservation status is under no threat.

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

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

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

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

According to available databases, the application area is located within the Laverton Water Reserve Public Drinking Water Source Area (PDWSA) (GIS Database). The Department of Water (DoW) considered the proposal and provided no comment (DoW, 2009).

There are no permanent water bodies or watercourses within the application area (GIS Database). The application area is located in an arid region, with mainly winter rainfall (CALM, 2001). With an average rainfall of approximately 233 millimetres/year (BoM, 2009) and an annual pan evaporation rate of 3,200 millimetres/year (Luke et al., 1987), there is little surface flow during normal seasonal rains. The proposed clearing is not likely to cause the quality of surface water to deteriorate.

The application area is located within the Yilgarn Goldfields Groundwater Province (GIS Database). The groundwater salinity within the application area is approximately 1,000 - 3,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). Given the size of the area to be cleared (43 hectares) compared to the size of the Yilgarn Goldfields Groundwater Province (29,644,595 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

Groundwater quality has been measured and found to be alkaline and highly saline (MBS Environmental, 2008). The proposed clearing is not likely to cause groundwater quality to deteriorate.

There are no known groundwater dependent 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 (2009)  
CALM (2001)  
DoW (2009)  
Luke et al. (1987)  
MBS Environmental (2008)  
GIS Database  
- Groundwater Provinces  
- Groundwater Salinity, Statewide  
- Hydrography - Linear  
- Public Drinking Water Source Area  
- Potential Groundwater Dependent Ecosystems

**(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 Lake Carey catchment area (GIS Database). The size of the area to be cleared (43 hectares) in relation to the size of the Lake Carey catchment area (11,378,213 hectares) is not likely to lead to an increase in flood height or duration (GIS Database).

The application area receives low rainfall (approximately 233 millimetres/year), usually experienced during the winter months (CALM, 2001). The water systems located within and in close proximity to the application area are dry for the majority of the year and only flow during and immediately after significant rainfall (MBS Environmental, 2008). It is likely that during times of intense rainfall there may be some localised flooding in adjacent areas.

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

**Methodology** CALM (2001)  
MBS Environmental (2008)  
GIS Database  
- Hydrographic Catchments - Catchments

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

**Comments**

There is one Native Title Claim (WC99-001) over the area under application. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no known Aboriginal sites of significance within the application area (GIS Database). The nearest known Aboriginal site of significance (ID\_16081) is located approximately 1.1 kilometres north-east of 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.

The application area is located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The Department of Water (DoW) considered the proposal and provided no comment (DoW, 2009).

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.

No public submissions were received in regard to this Clearing Permit application.

**Methodology** DoW (2009)  
GIS Database  
- Aboriginal Sites of Significance  
- Native Title Claims  
- Public Drinking Water Source Area (PDWSA)

**4. Assessor's comments**

**Comment**

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

It is recommended that should a permit be granted, conditions be imposed on the permit for the purpose of weed management, retaining vegetative material and topsoil, staged clearing, record keeping and permit reporting.

**5. References**

- ANRA (2008) Australian Natural Resources Atlas - Murchison. <http://www.anra.gov.au/topics/vegetation/assessment/wa/ibra-mur-ecosystem-threats.html> (Accessed September 28 2008)
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- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001a) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia (updated 2005).
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (1994) An Inventory and Condition Survey of Rangelands in the North-eastern Goldfields, Western Australia, Department of Agriculture, Western Australia
- Western Botanical (2007) Flora and Vegetation of the Craiggimore Project Area and Associated Haul Road Alignment. Prepared for MBS Environmental Pty Ltd. Unpublished Report dated November 2007

## 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>DMP</b>	Department of Mines and Petroleum
<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.