



## 1. Application details

### 1.1. Permit application details

Permit application No.: 796/1  
Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: Argyle Diamond Mines Pty Ltd

### 1.3. Property details

Property: AM70/259  
Local Government Area: Shire Of Wyndham-East Kimberley  
Colloquial name: Waste Dump Expansion Argyle Diamonds

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
200		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	Clearing Description	Vegetation Condition	Comment
Beard Vegetation types from Shepherd (2001): 816: Grasslands, short bunch grass savannah, low tree, Mt House Box ( <i>Eucalyptus argilicea</i> ) & Bloodwood over arid short grass ( <i>Enneapogon spp.</i> ). 818: Hummock Grasslands, low tree steppe; snappy gum over <i>Triodia nuttalis</i> . 819: Grasslands, tall bunch grass savannah, low tree, cabbage gum & silver-leaved box over <i>Aristida</i> & ribbon grass on sandy plains. 820: Grasslands, high grass savannah sparse low tree, snappy gum ( <i>E.brevifolia</i> ) over upland tall grass and curly spinifex on granite. 833: Grasslands, short bunch grass savannah sparse low tree, scattered snappy gum ( <i>E. brevifolia</i> ) over arid short grass on plains.	The vegetation is to be cleared to allow for the expansion of the waste dump associated with the existing Argyle Diamond mine. The 200 hectares of clearing is on the perimeter of the current mine area and pit which covers approximately 900 hectares (Argyle Diamonds 2005). A further 400 hectares have been cleared nearby for the process plant (100 hectares) and tailings dam (300 hectares).	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	Mastiske (2004) mapped the vegetation in the southern portion of the permit area at a 1:40 000 scale and described 8 vegetation community types within that area. Dames and Moore (1982) mapped the entire Argyle lease at a broader 1:100000 scale in 1982 and described 5 vegetation complexes within the northern portion of the Permit area. The vegetation within the areas to be cleared has been disturbed and degraded by pastoral activities and the mining operations. The vegetation condition is derived from information contained in Mastiske (2004), Argyle Diamonds (2005) and communications between the DoIR Native Vegetation Assessor and Environmental personnel from Argyle Diamonds Mine.

More detailed studies by Dames and Moore (1982) identified 5 vegetation complexes within the northern portion of the areas proposed to be cleared. The remaining southern portion of the areas proposed to be cleared was mapped in

more detail by Mattiske (2005) and identified 8 vegetation community types.

### 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 Argyle Diamond Mine area is situated within the Ord Victoria Plains 1 (OVP1) IBRA (Interim Biogeographic Regionalisation for Australia) subregion (GIS Database). Graham (2001) describes the sub region biodiversity values in relation to landscape, ecosystem, species and genetic values. Features of significant biodiversity values at a regional scale listed include refugia typically associated with rainforest patches as well as centres of endemism which are centred on the Bungle Bungle range and rainforest patches. Graham in the assessment of refugia states that: "Further research is required to define the extent to which various islands of vegetation such as springs function as refuges." The proposed clearing area does not include any rainforest patches or springs and it is unlikely that the vegetation and fauna present within the areas proposed to be cleared are of a significantly higher biodiversity values than in other local areas.

The Department of Conservation and Land Management provided advice on principle (a) and stated that: based on previous vegetation and flora surveys undertaken on the lease; the proponent has determined that there are no plant species or communities in the proposed expansion area that are restricted to these areas or at risk of becoming threatened. The application area is located on land that has been previously disturbed by mining activities and as a consequence the biodiversity values of the area are likely to have been impacted previously (CALM 2005).

**Methodology** CALM (2005).  
GIS Database-EA IBRA (subregions)- Environment Australia 18/10/2000.  
Graham (2001).

#### (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 area surrounding the Argyle Diamond mine has been the subject of a number of fauna surveys and fauna monitoring studies on rehabilitated sites since the original wildlife survey undertaken by Dames and Moore in 1982. This information was collated and summarised in a report by Biostat in 2003. One bird species scheduled under the Wildlife Conservation (Specially Protected Fauna) Notice 2005 has been recorded on the Argyle lease in the past. The Gouldian Finch *Erythrura gouldiae* (Schedule 1, fauna that is rare or likely to become extinct) has been recorded near the accommodation village on the mine site. It is possible that the species has benefited from the reticulated vegetation, large trees and plentiful water supply associated with the village (Biostat 2003). There is also another record from the original Dames and Moore (1982) survey. Graham (2001) and Garnett and Crowley (2000) list the main threat to the Gouldian Finch as vegetation change due to pastoralism. Lewis in Garnett and Crowley (2000) states that mining may also adversely affect birds at a local scale. At present there is not enough information to determine if Gouldian Finches are resident within the Argyle lease (Biostat 2003) and if mining is having an impact on that species. Other areas of suitable habitat are listed as existing within the Argyle lease (Biostat 2003). Given the relatively small area being cleared in comparison with the extent of remaining habitat available on the lease it is unlikely that the proposed clearing will have a detrimental effect on the population of that species as a whole.

Three species listed by the Department of Conservation and Land management on their own "Priority Fauna List" that are typically associated with the riverine vegetation of permanent fresh water systems in the Kimberley have been recorded from previous fauna surveys and monitoring on the Argyle lease (Watts and Aslin 1981, Biostat 2003, Garnett and Crowley 2000). They are the Purple-Crowned Fairy-Wren *Malurus coronatus coronatus* (Priority 4, Taxa in need of monitoring), Water Rat *Hydromys chrisogaster* (Priority 4) and Fresh Water Crocodile *Crocodylus johnstoni* (Priority 4). No permanent freshwater habitats occur within the areas to be cleared (GIS Database 2000) and as a result the clearing is unlikely to affect the three species mentioned above.

The Lakeland Downs Mouse *Leggadina lakedownensis* (Priority 4) has also been recorded within the Argyle lease area (Biostat 2003). That species prefers hummock grasslands and is regarded as locally common by Biostat (2003). Its population and range can increase dramatically during plague episodes. The Lakeland Downs Mouse is neither vulnerable nor endangered on the mainland. However the unique form of that species found on Thevenard Island warrants special consideration and is responsible for its listing as Priority 4. The proposed clearing is unlikely to be detrimental to that species in the local area given its relative abundance and the large areas of suitable habitat that remain on the lease.

CALM's advice in relation to principle b states that: taking into account the findings of previous fauna studies conducted on the lease area from 1980 to 2005 the application area is likely to support fauna habitats typical of the Argyle lease area. In addition, considering the previously disturbed nature of the vegetation and its location

in close proximity to the existing waste dump facility, the proposal is unlikely to result in the impact of significant habitat to native fauna (CALM 2005).

**Methodology** Biostat (2003).  
 CALM (2005).  
 GIS Database-Hydrography linear-DoE (2000).  
 Garnett and Crowley (2000).  
 Graham (2001).  
 Watts and Aslin (1981).

**(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**

The closest known Declared Rare Flora in the area (*Echinochloa kimberleyensis*) is located approximately 130 kilometres to the north of the Argyle mine (GIS Database).

As part of the planned expansion of the waste dumps a vegetation survey of the areas to the south and east of the mine was undertaken by Mattiske Consulting in 2004 (Mattiske 2004) and vegetation communities were mapped at a scale of 1:40 000. The survey covered approximately half (99.2 hectares) of the area proposed to be cleared under this application and encompasses areas in the vicinity of the southern waste dump. The Mattiske 2004 survey covers the areas in the vicinity of the southern waste dump. No Declared Rare Flora was located within the survey area.

The previously recorded Priority 1 species *Goodenia lunata* was recorded within vegetation types that occur in the areas to be cleared (Mattiske 2004). However that species now appears to be *Goodenia coronopitifolia* which is not listed (Mattiske 2004).

The Department of Conservation and Land Management in its advice to DoIR received on the 8th December 2005, indicated that the proponent had demonstrated from previous vegetation and flora studies that the proposal was unlikely to impact on Declared Rare or Priority Flora (CALM 2005).

Given the above information it is unlikely that the proposal will be at variance with this principle.

**Methodology** GIS Database-Declared Rare and Priority Flora list-CALM 1/7/05.  
 CALM (2005).  
 Mattiske (2004).

**(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**

The closest non endorsed Threatened Ecological Community (TEC) to the clearing proposal is located approximately 70 kilometres to the North West (GIS Database). No known TEC's have so far been located within the Argyle lease area during the various vegetation surveys undertaken for Argyle Diamonds Pty Ltd (Argyle Diamonds 2005). Graham (2001) stated that there are no TEC's in the Ord Victoria Plain 1 IBRA Bioregion.

**Methodology** Argyle Diamonds (2005).  
 Graham (2001).  
 GIS Database-Threatened Ecological Communities-CALM 12/04/2005.

**(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 State Government is committed to the National Objectives Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-European settlement (Department of Natural Resources and Environment, 2002; EPA, 2000). The vegetation of the site is a component of five Beard Vegetation Associations (Hopkins et al. 2001) all of which have 100 % of the pre-European extent remaining (Shepherd et al. 2001). While the benchmark of 15% representation in conservation reserves (JANIS Forests Criteria, 1997) has not been met for any of the Beard vegetation associations represented within the clearing permit area, the majority of their pre European extent remains and it is therefore of 'least concern' for biodiversity conservation (Department of Natural Resources and Environment 2002).

Pre-European	Current area (ha)	Remaining extent (ha)	Conservation %*	% in Status**	reserves/CALM-managed land
IBRA Subregion y Ord Victoria Plains		2,282,600#	2,282,600#	~100%*	Least concern
	15.39%#				

Shire of Wyndham						
East Kimberley	No information available					
Beard vegetation associations *						
- 816	140,554	140,554	~100%	Least concern	0%	
- 818	34,880	34,880	~100%	Least concern	0%	
- 819	61,644	61,644	~100%	Least concern	0%	
- 820	62,437	62,437	~100%	Least concern	0%	
- 833	40,472	40,472	~100%	Least concern	0%	

\* Shepherd et al. (2001)

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

\*\*\* Area within the Intensive Landuse Zone

# Graham (2001)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct Probably no longer present in the bioregion

Endangered\* <10% of pre-European extent remains

Vulnerable\* 10-30% of pre-European extent exists

Depleted\* >30% and up to 50% of pre-European extent exists

Least concern >50% pre-European extent exists and subject to little or no degradation over a majority of this area

\* or a combination of depletion, loss of quality, current threats and rarity gives a comparable status

**Methodology** Department of Natural Resources and Environment (2002).  
EPA (2000).  
Hopkins et al. (2001).  
Graham (2001).  
JANIS Forests Criteria, (1997).  
Shepherd (2001).

**(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 may be at variance to this Principle**

None of the vegetation types proposed to be cleared within the southern areas surveyed by Mattiske (2004) are associated with wetlands or watercourses.

The vegetation within the northern part of the proposed clearing area was mapped by Dames and Moore (1982) at a larger scale than the Mattiske survey. The Devil Devil Spring area is a registered Aboriginal Site of Significance (GIS Database) situated to the North West of the existing northern waste dumps and approximately 100 metres downhill from the proposed clearing area.

The vegetation type mapped in 1982 by Dames and Moore within the creekline associated with Devil Devil Spring is called: Riverine Complex: River gum fringing forest. Following a site visit in March 2006 by the DoIR Native Vegetation Assessor it appears that no riparian vegetation will be cleared directly as a result of the proposal. The vegetation within the spring area is not listed as being environmentally significant by the state or Commonwealth government and has been degraded from extra water supplied from dewatering operations (Katrina Carter pers comm.).

The EPA Position Statement No 2 states that "from a biodiversity perspective, stream reserves should generally be in the order of at least 200 metres wide", being 100 metres either side of the creekline. (EPA 2000). The proposed clearing may be at variance because the buffer of native vegetation on the south east side of the Devil Devil creekline will not be at least 100 metres wide if the clearing is carried out to the extent applied for.

**Methodology** Dames and Moore (1982).  
EPA (2000).  
GIS Database-Aboriginal Sites of Significance-DIA (04/07/2002).  
WRC (2001).  
Mattiske (2004).

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

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

An assessment of the clearing permit application was undertaken by the Commissioner for Soil and Land Conservation. Based on the soil erosion measures expected to be put in place and the strict conditions already in place for the operation of the mine with respect to soil erosion and water quality, the commissioner judges that it is unlikely that the proposed clearing will be at variance this principle.

**Methodology** DAWA (2005).

**(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 closest CALM conservation reserve is the C class Purnululu Conservation Reserve situated approximately 50 kilometres to the south of the purpose permit area (GIS Database). All of the Purnululu Conservation Reserve lies within a larger area that is on the register of the National Estate that is approximately 36 kilometres south of the clearing proposal at its closest point (GIS Database).

The RAMSAR listed and nationally significant listed Lake Argyle is situated approximately 18 kilometres to the north east of the clearing proposal (GIS Database 2005). The area surrounding Argyle lake adjacent to the Argyle Diamonds lease is itself listed on the register of the National Estate (GIS Database 2005).

Because of the distance between the proposal and the conservation areas listed above the proposal is not considered to be at variance to this principle (CALM 2005).

**Methodology** CALM (2005).  
GIS Database-CALM Managed Land and Waters-CALM 1/7/05.  
GIS Database-Clearing Regulations Schedule One areas-DoE 10/03/05.  
GIS Database-Clearing Regulations Environmentally Sensitive Areas-DoE 30/05/2005.

**(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 may be at variance to this Principle**

The whole of the Argyle lease is located within the Ord River and Tributaries Rights in Water and Irrigation (RIWI) Act area (GIS Database). This area is gazetted as a groundwater area under the RIWI Act 1914 (GIS Database 13/3/2002). The whole of that gazetted groundwater area covers more than 70 million hectares and the clearing of 200 hectares is unlikely to reduce the quality of the underground water in that gazetted area.

Given the position in the landscape of the proposed clearing areas and the scale of the clearing that has already taken place nearby for the mine and associated infrastructure, it is unlikely that an additional 200 hectares of clearing will significantly alter water tables and lead to soil salinity or soil pH changes. The excavation of the pit has led to a lowering of the water tables in the vicinity of the pit and those changes are more significant than the changes that will result from the clearing.

The water quality within the creeks found within the Argyle Diamonds lease area is generally good with Total Dissolved Solids typically being less than 100mg/l (Argyle Diamonds 2005). There is a possibility that the clearing will lead to increased sedimentation of water bodies on and off the site unless measures are undertaken to manage those impacts.

Concerns have been raised about sediments expected from the erosion of the waste dumps subsequent to the clearing when the Argyle mine closes. In response to such concerns final mine closure sediment retention bunds up to 10 metres high will be built at the toe of the waste rock dumps (Botje pers comm.2005).

The waste rock dump themselves will be engineered to include quartzite lined soakwells and subsurface drains to manage surface and subsurface waterflows. The design work has used the Siberia erosional modelling package to model the erosion from the dumps over the long term (1000 years) and the best way to manage erosion issues.

**Methodology** Argyle Diamonds (2005).  
Botje (pers comm. 13/12/2005).  
GIS Database-RIWI Act Irrigation District-WRC (13/3/2002).  
GIS Database-RIWI Act areas-WRC (5/4/2002).  
GIS Database-PDWSA protection zone areas-DoE (07/01/2004).  
GIS Database-PDWSA areas-DoE (09/08/2005).

**(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 climate in the Argyle Diamonds Mine region is characterised by a mean annual rainfall of 800 mm (GIS Database 2001) and an evaporation rate of approximately 3000 mm per year (GIS Database 1998). All of the watercourses within the areas proposed to be cleared are ephemeral with flows largely restricted to the wet season when rainfall allows rapid flows in these areas (Argyle Diamonds 2005). There are no natural swamps within the permit area and the area surrounding the mine site is well drained (Argyle Diamonds 2005). Considering the ephemeral nature of the watercourses, the lack of low lying flood prone areas within the permit area and the proposed building of a trench and bund at the bottom of the waste rock dump and associated drainage and surface flow management (Katrina Carter pers comm) it is unlikely that the proposal will lead to an incremental increase in peak flood height or duration.

**Methodology** Argyle Diamonds (2005).  
 GIS Database-Evaporation Isoleths-BoM (1998).  
 GIS Database-Mean Annual Rainfall-BoM (30/09/01).

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

**Comments**

The proposed clearing occurs in an area that is covered by the following Registered Indigenous Heritage sites: Devil Devil Spring, Kilkaynim/Daywul and Tjamingdum/Nanbum (GIS Database 04/07/2002). It is the proponent's responsibility to comply with the Aboriginal Act 1972 and ensure that no site of Aboriginal Significance is damaged through the clearing process.

Argyle Diamonds Pty ltd has four current water licences however no additional water will be required for the waste dump expansion (Simmons Grimmes pers comm) and therefore no new water licences or amendments to existing licences are required under the Rights in Water and Irrigation Act 1914 (DoE Advice 19/09/05).

The proposal for the underground diamond mine has been assessed by the EPA at the level of EPS and a bulletin released. The expansion of the waste rock dump was not considered under the EPS assessment although the amount of waste produced was (Jaclyn Goad pers comm.).

Argyle Diamonds Pty ltd has Environmental Protection licence 4459. Argyle Diamonds will not need any amendments for the extension of the waste rock dump (under the Environmental Protection Act 1986 (DoE Advice 19/09/05).

**Methodology** DoE Advice 19/09/05.  
 EPA (2005).  
 GIS Database-Aboriginal Sites of Significance-DIA (04/07/02).

**4. Assessor's recommendations**

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Production	Mechanical Removal	200	Grant	<p>The proposal is judged not at variance to principle e and unlikely to be at variance to principles a,b,c,d,g,h &amp; j.</p> <p>The proposal may be at variance to principles i (Native vegetation should not be cleared if sedimentation, erosion, turbidity or eutrophication of water bodies on or off the site is likely to be caused or increased). Argyle Diamonds has undertaken to construct a trench and bund around the perimeter of the waste rock dump to manage erosion products entering drainage lines downstream from the proposed clearing areas (Katrina Carter pers comm). To further minimise the potential of adverse impacts resulting from the clearing the assessor has set a condition to request that no clearing be undertaken when it is raining at the site.</p> <p>The proposal may be at variance to principle f (Native vegetation should not be cleared if it provides a buffer area for watercourses and wetlands). The proposed clearing areas are situated approximately 100 metres from the Devil Devil Spring gazetted area but will leave a minimal buffer zone (i.e less than 100 metres wide) along the Devil Devil creekline downstream from the gazetted site. The Devil Devil spring site and associated creekline have been degraded due to the dewatering of the open pit as well as from the artificial input of dewatering water which has now ceased (Katrina Carter pers comm). The area was mapped in 1982 by Dames and Moore (1982) as River Gum fringing forest. Whilst it is unlikely that any riverine vegetation will be cleared directly as a result of the proposed clearing, erosion products following the clearing may lead to vegetation death unless appropriate surface water management measures are put in place and maintained following the clearing of vegetation.</p> <p>To address the potential impacts of the clearing near the Devil Devil creekline the assessor has set a condition to request the construction of a bund within the clearing permit area adjacent to the Devil Devil creekline. This bund will eventually become part of the larger mine closure bund that will be built to control the erosion products that could potentially occur from the final waste dumps.</p>

## 5. References

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- DAWA (02/12/2005) Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture Western Australia.
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- EPA (2005) Argyle Diamond Mine-Underground Project 110 kms south of Kununurra, East Kimberley, Argyle Diamond Mines Pty Ltd. Report and Recommendations of the Environmental Protection Authority. Bulletin 1205, November 2005. Perth Western Australia.
- Garnett S. and Crowley G. (2000) The Action Plan for Australian Birds 2000. Purple Crown Fairy Wren (Western) pp 409-410 and Gouldian Finch pp 602-604. Published report by the Department of Environment and Heritage Canberra.
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- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
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- WRC (2001) Water and Rivers Commission Position Statement: Wetlands. Position statement dated 6/6/2001.

## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAWA</b>	Department of Agriculture, Western Australia.
<b>DA</b>	Department of Agriculture, Western Australia.
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DoE), Western Australia.
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DoIR</b>	Department of Industry and Resources, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>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.