



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 3115/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: **Hamersley Iron Pty Ltd**

### 1.3. Property details

Property: *Iron Ore (Hamersley Range) Agreement Act 1963, Mineral Lease 246SA (AML 70/246)*  
Local Government Area: Shire Of Ashburton  
Colloquial name: 4 East Structural Drilling

### 1.4. Application

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

## 2. Site Information

### 2.1. Existing environment and information

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

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>Vegetation within the application area has been mapped at a 1:250,000 scale as Beard Vegetation Associations (Rio Tinto, 2009; Payne et al., 1988):</p> <p>82: Hummock grasslands, low tree steppe; snappygum over <i>Triodia wiseana</i>; and</p> <p>181: Shrublands; mulga &amp; snakewood scrub.</p> <p>A flora and vegetation survey of the application area was undertaken by botanists from Pilbara Iron during November 2008. The following vegetation types were recorded within the application area (Rio Tinto, 2009):</p> <p>1) Slopes on Banded Ironstone. Scattered Shrubs: <i>Acacia tetragonophylla</i>, <i>Acacia pruinocarpa</i>, <i>Acacia marramamba</i> scattered shrubs over <i>Eremophila cuneifolia</i> (<i>Senna spp.</i>) scattered shrubs to open shrubland over scattered low chenopod shrubs over <i>Triodia epactia</i> very open hummock grassland; and</p> <p>2) Upper Slope on Banded Ironstone. Tall Open Shrubland: <i>Acacia aneura</i> var. <i>tenuis</i>, <i>Acacia tetragonophylla</i> tall open shrubland over <i>Eremophila cuneifolia</i>, <i>Senna glutinosa</i> subsp. <i>x leurossenii</i>, <i>Senna artemisioides</i> subsp. <i>artemisioides</i> shrubland over <i>Sclerolaena eriacantha</i>, <i>Maireana georgei</i> low open chenopod shrubland with <i>Triodia epactia</i> open hummock grassland; and</p> <p>3) Drainage Line. Tall Shrubland: <i>Acacia citrinoviridis</i>, <i>Acacia aneura</i> var. <i>tenuis</i>, <i>Acacia wanyu</i> tall shrubland over <i>Ptilotus obovatus</i>, <i>Senna artemisioides</i> subsp. <i>oligophylla</i> open shrubland over mixed scattered low shrubs over <i>Cenchrus ciliaris</i> open tussock grassland to scattered tussock grasses with scattered <i>Triodia epactia</i> hummock grasses; and</p> <p>4) Disturbed Ground: Areas currently cleared of native vegetation or where floristic and structural composition of the vegetation has been severely altered (these areas may support a small number of early successional native species.</p>	<p>Hamersley Iron has applied to clear up to 1.53 hectares of native vegetation for the 4 East Structural Drilling project. The proposal is to be situated at the Paraburdoo mine site, which is approximately eight kilometres south west of the township of Paraburdoo in the central southern part of the Pilbara region (GIS Database). Clearing will be required for the construction of five drill holes, each within a 30 metres x 30 metres area containing the drill pad and sumps. Clearing will also be required for vehicle tracks, but where possible existing tracks will be used. All topsoil from cleared areas is to be collected and stockpiled for use in later rehabilitation (Rio Tinto, 2009).</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994)</p> <p>To</p> <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994)</p>	<p>The vegetation condition was derived from descriptions by Rio Tinto (2009).</p>

### 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 clearing permit application area is located within the Hamersley subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara bioregion (GIS Database). The vegetation of the application area consists of two vegetation associations (Beard Vegetation Associations 82 and 181), both of which are common and widespread throughout this region (Rio Tinto, 2009; Shepherd et al., 2007).

The application area is located within close proximity to existing mine operations and is also adjacent to existing roads (GIS Database). A disused vehicle track, which is in otherwise good condition, traverses the southern area of the application area (Rio Tinto, 2009). Due to the above, the vegetation has suffered varying degrees of disturbance, with the state of the vegetation varying from excellent to degraded.

Rio Tinto (2009) conducted flora and fauna surveys of the application area in November 2008. The surveys concluded that all vegetation types and habitats encountered were typical of the Paraburdoo area and were well represented in the region (Rio Tinto, 2009).

No flora or fauna species of conservation significance, restricted vegetation types or significant fauna habitat features were recorded within the application areas (Rio Tinto, 2009). A total of 47 vascular plant species from 26 plant genera belonging to 17 plant families were recorded within the application area. The area did not contain a particularly high diversity of native plant species with family and genus diversity and composition typical of the Pilbara and Gascoyne bioregions (Rio Tinto, 2009). Two species of introduced flora were also recorded within the application area. These being Buffel Grass (*Cenchrus ciliaris*) and Ruby Dock (*Acetosa vesicaria*).

The small size of the proposed clearing, adjacent to existing disturbed areas, is unlikely to have any significant impact on the biological diversity of the region.

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

##### Methodology

Rio Tinto (2009).  
Shepherd et al. (2007)  
GIS Database:  
-Interim Biogeographic Regionalisation of Australia  
-Interim Biogeographic Regionalisation of Australia (Subregions)  
-Paraburdoo 50cm Orthomosaic - Landgate 2004  
-Pre-European Vegetation

#### (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**

No targeted fauna surveys were undertaken within the application area, although incidental sightings of fauna were recorded and available fauna habitats noted during the flora survey. A rare and priority fauna search through databases maintained by the Western Australian Department of Environment and Conservation (DEC), Western Australian Herbarium, Western Australian Museum and the *Environmental Protection and Biodiversity Conservation (EPBC) Act, 1999* was conducted in November 2008 (Rio Tinto, 2009). Spatial data maintained and held by Pilbara Iron was also used as part of the desk top study (Rio Tinto, 2009).

Three fauna species of conservation significance were identified as having the potential to occur within the vicinity of the study area: the Northern Quoll (*Dasyurus hallucatus*), Schedule 1 (Wildlife Conservation [Specially Protected Fauna] Notice 2008) and endangered (EPBC Act) fauna species; Pilbara Orange Leaf-nosed Bat (*Rhinocterus aurantius*), Schedule 1 (Wildlife Conservation [Specially Protected Fauna] Notice 2008) and vulnerable (EPBC Act) fauna species; and the Pilbara Olive Python (*Liasis olivaceus barroni*), Schedule 1 (Wildlife Conservation [Specially Protected Fauna] Notice 2008) and vulnerable (EPBC Act) fauna species (Rio Tinto, 2009). None of these species were recorded during the survey and it is unlikely the proposed clearing would have a significant impact on these species due to: availability of similar or better foraging habitat outside the study area; no suitable roost habitat; and no permanent water sources available within the study area (Rio Tinto, 2009).

Fauna habitat within the application area is dominated by rocky slopes and ridges of sparse Acacia shrubs over hummock grassland (GIS Database; Rio Tinto, 2009). An assessment of the species identified as having potential to exist in the area found that habitat within the application area was largely restricted to marginal foraging habitat and was well represented throughout the region (ANRA, 2007; Rio Tinto, 2009). In the northern section of the proposed clearing, colluvial slopes formed below eroding banded ironstone ridges dominate (Rio Tinto, 2009). Small overhangs and large crevices exist within the eroding ridges which may provide habitat for reptiles, insects, macropods and other mammal species including some bat species, although not the Pilbara Orange Leaf-nosed Bat as there is no suitable roost habitat (Rio Tinto, 2009). A minor ephemeral creek line also drains the study area and provides narrow bands of tall shrubland often with increased large woody debris

and leaf litter below (GIS Database; Rio Tinto, 2009). No other significant fauna habitats such as caves, waterholes, large tree hollows or termite mounds were observed within the study area (Rio Tinto, 2009).

Numerous shallow caves and large rock crevices have been identified as existing along the eroding ridge adjacent to the application area, however given the disturbed nature of the ridge and surrounding area, it is considered unlikely any priority fauna would be using the available habitat (Rio Tinto, 2009).

The proposed clearing is in close proximity to existing mine operations which have suffered varying levels of degradation and fragmentation in the past due to mine and infrastructure development (GIS Database; Rio Tinto, 2009). An assessment of the fauna found in the area, identified that habitat within the application area is largely restricted to foraging habitat (Rio Tinto, 2009). The study area did not contain 'core habitat' for any of the listed fauna species. The vegetation of the application area is typical of vegetation in the greater Paraburdoo area and the proposed clearing of 1.53 hectares is unlikely to have any significant impact on the available fauna habitat in the area (Rio Tinto, 2009).

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

**Methodology** ANRA (2007)  
Rio Tinto (2009)  
GIS Database:  
-Hydrography, Linear  
-Paraburdoo 50cm Orthomosaic - Landgate 2004  
-Threatened Fauna

**(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 datasets there are no known records of Declared Rare Flora (DRF) or Priority flora species within the clearing application area (GIS Database).

Two Pilbara Iron botanists traversed the entire study area on the 18th November, 2008. No DRF or Priority flora were observed within the study area (Rio Tinto, 2009). Previous surveys across the proposed clearing also failed to detect any DRF or Priority species within the study area (Rio Tinto, 2009). Two DRF species; *Lepidium catapycnon* and *Thryptomene wittweri* occur within the Pilbara region however have not been recorded in the greater Paraburdoo area (Rio Tinto, 2009).

*Lepidium catapycnon* habitat occurs within the application area (steep stony slopes and stony plains), although the closest known records occur approximately 60 kilometres to the north in the Tom Price area (Rio Tinto, 2009). *Thryptomene wittweri* inhabits steep slopes, breakaways and rock screes of high mountain summits in the Pilbara so it is therefore unlikely to occur within the application area as it does not contain suitable habitat (GIS Database; Rio Tinto, 2009). The closest known records for *Thryptomene wittweri* are approximately 100 kilometres east north-east of the application area (GIS Database).

During a desktop study, 15 species of Priority flora were identified as occurring within a 50 kilometre radius of the study area (Rio Tinto, 2009). Of these 15 species, six appear suited to the habitat of the study area, although none of these were recorded during the current or previous surveys (GIS Database; Rio Tinto, 2009).

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

**Methodology** Rio Tinto (2009)  
GIS Database:  
-Clearing Regulations - Schedule One  
-Declared Rare and Priority Flora List  
-Pre-European Vegetation  
-Topographic Contours, Statewide

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

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

There are no known Threatened Ecological Communities (TEC) within, or in the vicinity of the application area (GIS Database; Rio Tinto, 2009). The nearest known TEC is located approximately 90 kilometres north-east of the application area (GIS Database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is not likely to impact on the conservation of the TEC.

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

**Methodology** Rio Tinto (2009)  
GIS Database:

**(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 is located within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Shepherd et al. (2007) report that approximately 99.95% of the pre-European vegetation still exists in the Pilbara bioregion. The vegetation in the application area is broadly mapped as Beard Vegetation Associations 181: Shrublands; mulga & snakewood scrub; and 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database). According to Shepherd et al., (2007) there is approximately 100% of these vegetation types remaining (see table below).

According to the Bioregional Conservation Status of Ecological Vegetation Classes the conservation status for the Pilbara Bioregion and Beard vegetation associations 181 and 82 is of "Least Concern" (Department of Natural Resources and Environment, 2002).

Although several large scale mining operations are located within a 50 kilometres radius of the application area, the Pilbara bioregion remains largely uncleared (GIS database). As a result, the conservation of the vegetation associations within the bioregion are not likely to be impacted upon by the proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,188	17,794,647	~99.95	Least Concern	~6.32
Beard veg assoc. - State					
82	2,565,901	2,565,901	~100	Least Concern	~10.2
181	1,697,291	1,697,291	~100	Least Concern	~2.4
Beard veg assoc. - Bioregion					
82	2,563,583	2,563,583	~100	Least Concern	~10.2
181	65,091	65,091	~100	Least Concern	~4.9

\* Shepherd et al. (2007)

\*\* 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. (2007)  
 GIS Database:  
 -Interim Biogeographic Regionalisation of Australia  
 -Paraburdoo 50 cm Orthomosaic - Landgate 2004  
 -Pre-European Vegetation

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

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

There are no permanent wetlands or watercourses within the area applied to be cleared (GIS Database; Rio Tinto, 2009). One minor ephemeral drainage line occurs within the application area, which may result in the loss of vegetation associated with a watercourse (GIS Database). However the potential loss of vegetation is not likely to significantly increase runoff or sediment transport to any watercourses nor is the removal of riparian vegetation likely to destabilise creek banks (Rio Tinto, 2009).

All vegetation types encountered in the survey area are typical of the Paraburdoo area and well represented in the region. The vegetation types in the proposed clearing area are already suffering from varying degrees of degradation associated with altered hydrology caused by mining activities, weed infestations and the creation of vehicle tracks (GIS Database; Rio Tinto, 2009). The proposed clearing of 1.53 hectares is unlikely to have any significant additional impact on the vegetation communities growing in association with the watercourse (GIS Database; Rio Tinto, 2009).

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

**Methodology** Rio Tinto (2009)  
GIS Database:  
-Hydrography, Lakes (Course Scale, 1m GA)  
-Hydrography, Linear  
-Paraburdoo 50 cm Orthomosaic - Landgate 2004  
-Rivers

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

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

The application area is situated in the Newman Land System (GIS Database). According to the Department of Agriculture in Technical Bulletin no 62 "An inventory and condition survey of the rangelands in the Ashburton River catchment, Western Australia" (Payne et al., 1988), the proposed clearing area consists of lower slopes with stony soils and some red, stony, loamy earths; narrow drainage floors with red sandy soils, often shallow and stony and channels with bedloads ranging from sand to boulders; and plateaux ridges, mountains and hills made up of rocky outcrops with dense stony mantles and little soil development (Payne et al., 1988).

The removal of vegetation has the potential to increase erosion within the application area. However, the stony soils of the Newman Land System are generally quite stable and not prone to degradation through erosion (Rio Tinto, 2009; Payne et al., 1988).

Groundwater salinities in the area have been measured in a range from 500 to 1000 milligrams per litre Total Dissolved Solids (TDS) (GIS Database). The mean average rainfall in the area is approximately 280 millimetres per year with an average annual pan evaporation rate of between 3200-4000 millimetres (Eberhard et al., 2004). Given the small size of the proposed clearing and considering the low rainfall to high evaporation rate in the area, it is unlikely that land salinisation will be increased on or off site.

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

**Methodology** Eberhard et al. (2004)  
Payne et al. (1988)  
Rio Tinto (2009)  
GIS Database:  
-Groundwater Salinity, Satewide

**(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 is not situated within a Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation estate is Karijini National Park, which is situated approximately 40 kilometres east of the application area (GIS Database). Based on the distance between the proposal and the nearest conservation area, the proposed clearing is not likely to impact on the conservation values of Karijini National Park.

Based on the above information, the proposed clearing is not likely to be 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**

The application area is located in a semi-desert-tropical region, with an average annual rainfall of 280 millimetres (Bureau of Meteorology, 2009) falling mainly during the summer months, although rainfall may vary widely from year to year (ANRA, 2007). With an average annual pan evaporation rate of 3200-4000 millimetres (Eberhard et al., 2004) the presence of surface water resulting from significant rain events is relatively short lived.

There are no permanent watercourses or wetlands associated within the application area (GIS Database). Several ephemeral creeks are located within close proximity to the application area, with one traversing the site from north to south. The closest watercourses of significance are Seven Mile Creek which is located approximately 1.2 kilometres north-west and Pirraburdu Creek located 3 kilometres west (GIS Database). The ephemeral creek that traverses the site converges with Seven Mile Creek, which eventually meets with Pirraburdu Creek (GIS Database). Neither of these water courses are perennial (GIS Database).

Pirraburdu Creek and Seven Mile Creek are the primary sources for recharging groundwater levels in the area (Rio Tinto, 2009). Ground water levels fluctuate primarily due to mine operations and seasonal recharge variations. Given the small size of the proposed clearing, it is unlikely the proposal would have an impact on ground water quality or groundwater recharge.

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

**Methodology** ANRA (2007)  
Bureau of Meteorology (2009)  
Eberhard et al. (2004)  
Rio Tinto (2009)  
GIS Database:  
-Hydrography, Lakes (Course Scale, 1m GA)  
-Hydrography, Linear  
-Rivers  
-Topographic Contours, Statewide

**(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**

There are no permanent wetlands or watercourses within the application area (GIS Database; Rio Tinto 2009). One minor ephemeral drainage line crosses the application area running from north of the application area to the south (GIS database). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall (ANRA, 2007; Rio Tinto, 2009).

The average annual rainfall is approximately 280 millimetres per annum in the Paraburdoo area (Bureau of Meteorology, 2009). Most rainfall is received during the wet season (December to March), but falls can be variable (ANRA, 2007). Rain can either be sporadic (local thunderstorms) or heavy and intense (cyclonic events). Due to the pindan soils found in the area, soil saturation occurs quickly in heavy rainfall, which results in overland sheet flow (Burnside et al., 2007). With average annual evaporation ranging from 3200-4000 millimetres, compared to average annual rainfall of 280 millimetres, any flooding or overland flow is likely to be of a short duration (ANRA, 2007; Eberhard et al., 2004). Given the relatively small area that is proposed to be cleared (1.53 hectares), it is unlikely that the proposal will alter the frequency or intensity of flooding (GIS database).

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

**Methodology** ANRA (2007)  
Bureau of Meteorology (2009)  
Burnside et al. (2007)  
Eberhard (2004)  
Rio Tinto (2009)  
GIS Database:  
-Hydrography, Linear

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

**Comments**

There are two native title claims over the area under application; WC98/069, and WC97/043. These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups. 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 (ie. 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 vicinity of the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

One direct interest submission was received, raising no objection to this proposal.

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.

**Methodology** GIS Database:  
-Aboriginal Sites of Significance  
-Native Title Claims

## 4. Assessor's comments

### Comment

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

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, record keeping and permit reporting.

## 5. References

- ANRA (2007) Australian Natural Resources Atlas: Rangelands overview; Pilbara. Available online from: <http://www.anra.gov.au/tropics/rangelands/overview/wa/ibra-pil.html> Accessed 25 June, 2009.
- Bureau of Meteorology (2009) Climate Statistics for Australian Locations - Paraburdoo. Available online from: [http://www.bom.gov.au/climate/averages/tables/cw\\_007178.shtml](http://www.bom.gov.au/climate/averages/tables/cw_007178.shtml) Accessed 25 June, 2009.
- Burnside, D., Yu, W., Brunner, I and Pracilio, G. (2007) Assessing the Cumulative Effects of Water Management by the Mining Industry in Rangeland Environments. Available online from: [http://www.southwestnrm.org.au/information/downloads/Burnside\\_paper.pdf](http://www.southwestnrm.org.au/information/downloads/Burnside_paper.pdf) Accessed 25 June, 2009.
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- Eberhard, S.M., Halse, S.A., Scanlon, M.D., Cocking, J.S. and Barron H.J. (2004) Assessment and conservation of aquatic life in the subsurface of the Pilbara region, Western Australia. Available online from: [http://www.subterraneanecology.com.au/file%20downloads/Pascalis\\_proceedings\\_CALM.pdf](http://www.subterraneanecology.com.au/file%20downloads/Pascalis_proceedings_CALM.pdf) Accessed 25 June, 2009.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Payne, A.L., Mitchell, A.A. and Holman, W.F. (1988) Technical Bulletin; An inventory and condition survey of rangelands in the Ashburton River catchment, Western Australia. Department of Agriculture, Western Australia.
- Rio Tinto (2009) 4 East Structural Drilling, Paraburdoo. Native Vegetation Clearing Permit Report (Purpose Permit). Rio Tinto, Western Australia.
- Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2007) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

## 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, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DoIR</b>	Department of Industry and Resources, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environment Protection Act 1986, Western Australia.
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System.
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia.
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>RIWI</b>	Rights in Water and Irrigation Act 1914, Western Australia.
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia.
<b>TECs</b>	Threatened Ecological Communities.

## **Definitions:**

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

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

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

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

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

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

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

- EX Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W) Extinct in the wild:** A native species which:  
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past



range; or

- (b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

**CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

**EN** **Endangered:** A native species which:

- (a) is not critically endangered; and
- (b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

**VU** **Vulnerable:** A native species which:

- (a) is not critically endangered or endangered; and
- (b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

**CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.