



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 4391/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Hamersley Exploration Pty Ltd

### 1.3. Property details

Property: Exploration Licence 47/584  
Exploration Licence 47/1943  
Local Government Area: Shire of Ashburton  
Colloquial name: Juna Downs Exploration Project

### 1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|--------------------|-----------|--------------------|---------------------|
| 11.5               |           | Mechanical Removal | Mineral Exploration |

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 18 August 2011

## 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 for the whole of Western Australia. Two Beard vegetation associations have been mapped within the application area:

- 18: Low woodland; mulga (*Acacia aneura*); and
- 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database).

A Rio Tinto botanist conducted a flora and vegetation survey over the application area and its surrounds in May 2009, July 2009 and October 2010 (Rio Tinto, 2011). Eleven vegetation types were recorded within the application area (Rio Tinto, 2011).

##### Vegetation from Stony Hill Slopes

###### Vegetation Type 1 E<sub>g</sub>AsEICH<sub>Tb</sub>PmTtCd

*Eucalyptus gamophylla* low open forest over *Acacia steedmanii* open scrub over *Eremophila longifolia* open shrubland over *Corchorus* sp. Hamersley Range low open shrubland over *Triodia basedowii* open hummock grassland over *Paraneurachne muelleri*, *Themeda triandra* open tussock grassland over *Cyperus dichotoma* very open sedges.

###### Vegetation Type 2 E<sub>l</sub>ScSeSsPrTpTbAcAl

*Eucalyptus leucophloia* low open forest over *Sida cardiophylla*, *S. echinocarpa*, *Solanum sturtianum*, *Ptilotus rotundifolius* low open heath over *Triodia pungens*, *T. basedowii* hummock grassland over *Amphipogon caricinus*, *Aristida latifolia* very open tussock grassland over various *Ptilotus* very open herbs.

###### Vegetation Type 3 E<sub>l</sub>SpSfScTpTbPmTtEm

*Eucalyptus leucophloia* low open forest over *Senna pruinoso*, *S. ferraria* open shrubland over *Sida cardiophylla* low shrubland over *Triodia pungens*, *T. basedowii* hummock grassland over *Paraneurachne muelleri*, *Themeda triandra*, *Eriachne mucronata* tussock grassland.

##### Vegetation from Slight Slopes

###### Vegetation Type 4 E<sub>l</sub>EgAiAsApAbPrSoTwTp

*Eucalyptus leucophloia*, *E. gamophylla* low woodland over *Acacia inaequilatera*, *A. steedmanii* high open shrubland over *Acacia pachyactra*, *A. bivenosa* open shrubland over *Ptilotus rotundifolius*, *Senna oligophylla* low open shrubland over *Triodia wiseana*, *T. pungens* hummock grassland

###### Vegetation Type 5 CdEgPrTwTpAc

*Corymbia deserticola*, *Eucalyptus gamophylla* low open forest over *Ptilotus rotundifolius* low open shrubland over *Triodia wiseana*, *T. pungens* hummock grassland over *Amphipogon caricinus* very open tussock grassland.

### Vegetation from Rocky Outcrops

#### Vegetation Type 6 ElSgPrTpTMeTt

*Eucalyptus leucophloia* low open woodland over *Senna glutinosa* open shrubland over *Ptilotus rotundifolius* low open shrubland over *Triodia pungens*, *Triodia* sp. Mt Ella hummock grassland over *Themeda triandra* open tussock grassland.

### Vegetation from Flats and Plains

#### Vegetation Type 7 ChCdEgAtPrSsTbAcAlAhPm

*Corymbia hamersleyana*, *C. deserticola*, *Eucalyptus gamophylla* low open forest over *Acacia trudgeana* open shrubland over *Ptilotus rotundifolius*, *Solanum sturtianum* low open shrubland over *Triodia basedowii* open hummock grassland over *Amphipogon caricinus*, *Aristida latifolia*, *A. holathera*, *Paraneurachne muelleri* tussock grassland.

#### Vegetation Type 8 ChGrSsPrPmTtSf

*Corymbia hamersleyana* low open woodland over *Gossypium robinsonii*, *Stylobasium spathulatum* shrubland over *Ptilotus rotundifolius* low shrubland over *Paraneurachne muelleri*, *Themeda triandra* tussock grassland over *Schizachyrium fragile* open bunch grassland.

#### Vegetation Type 9 CdEgAsScTpPm

*Corymbia deserticola*, *Eucalyptus gamophylla* low woodland over *Acacia steedmanii* shrubland over *Sida cardiophylla* low open heath over *Triodia pungens* very open hummock grassland over *Paraneurachne muelleri* tussock grassland.

### Vegetation from Minor Drainage Lines

#### Vegetation Type 10 ElAsSpSgCHRHsTpTMETt

*Eucalyptus leucophloia* low woodland over *Acacia steedmanii* high open shrubland over *Senna pruinosa*, *S. glutinosa* shrubland over *Corchorus* sp. Hamersley Range, *Hibiscus sturtii* low open heath over *Triodia pungens*, *T. sp.* Mt Ella hummock grassland over *Themeda triandra* tussock grassland.

#### Vegetation Type 11 ElGrAcTwTpTt

*Eucalyptus leucophloia* low open woodland over *Gossypium robinsonii*, *Acacia cowleana* shrubland over *Triodia wiseana*, *T. pungens* open hummock grassland over *Themeda triandra* open tussock grassland.

### Clearing Description

Hamersley Exploration Pty Ltd has applied to clear up to 11.5 hectares of native vegetation within an application area of approximately 168 hectares for the purpose of mineral exploration. Clearing will be for creation of 77 drill pads and sumps, and the establishment of access tracks.

The exploration drilling program is at Juna Downs, located approximately 80 kilometres south-east of Tom Price.

The vegetation will be cleared using dozers, with a raised blade where possible and blade down clearing where necessary. The vegetation and topsoil will be stockpiled and used in rehabilitation activities.

### Vegetation Condition

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994);

To:

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

### Comment

The vegetation condition was assessed by a botanist from Rio Tinto (2011). The vegetation conditions were described using a scale based on Trudgen (1988) and have been converted to the corresponding conditions from the Keighery (1994) scale.

## 3. Assessment of application against clearing principles

### (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

#### Comments

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

The application area occurs within the Hamersley (PIL3) Interim Biogeographic Regionalisation of Australia (IBRA) subregion (GIS Database). This subregion is generally described as Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002).

The vegetation within the application area is broadly mapped as Beard vegetation associations 18 and 82, both of which have approximately 100% of their pre-European vegetation extent remaining in the bioregion (Shepherd, 2009; GIS Database). A flora and vegetation survey of the application area and its surrounds was undertaken by a Rio Tinto botanist in May 2009, July 2009 and October 2010 (Rio Tinto, 2011). Eleven vegetation types were recorded within the application area and all of these are relatively typical of the locality and widely represented throughout the Pilbara bioregion (Rio Tinto, 2011).

A total of 225 native vascular plant species from 97 genera belonging to 35 families were recorded within the study area (Rio Tinto, 2011). The total number of flora species is within the expected range for a study area of this size in the locality (Rio Tinto, 2011). The genera with the highest number of taxa recorded were *Acacia*, *Sida* and *Senna*. This is typical of vegetation in the Pilbara (Rio Tinto, 2011).

No Declared Rare Flora, Threatened Ecological Communities or Priority Ecological Communities were recorded during the botanical survey or have previously been recorded within the application area (Rio Tinto, 2011; GIS Database).

Two Priority Flora species were recorded within the application area during the flora and vegetation survey conducted by Rio Tinto (2011). These species were *Sida* sp. Barlee Range (Priority 3) and *Triodia* sp. Mt Ella (Priority 3) (Rio Tinto, 2011). Only one *Sida* sp. Barlee Range plant was recorded but a large number of *Triodia* sp. Mt Ella plants were recorded within the application area. *Triodia* sp. Mt Ella was recorded 13 times during the survey, with populations ranging from 10 to over 100 individuals, and the total plants within the study area was estimated at 500 to 600 plants (Rio Tinto, 2011). This species is only known from a small area of the Hamersley Range in the vicinity of Mt Ella and is considered to be geographically restricted and uncommon (Rio Tinto, 2011). Potential impacts to Priority Flora as a result of the proposed clearing may be minimised by the implementation of a flora management condition.

Three introduced flora species were recorded from the application area (Rio Tinto, 2011). These weed species were Bipinnate Beggartick (*Bidens bipinnata*), Mimosa Bush (*Vachellia farnesiana*) and Spiked Malvastrum (*Malvastrum americanum*) (Rio Tinto, 2011). Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

The primary fauna habitats within the application area are reasonably widespread and abundant in the Juna Downs locality, similar to the vegetation types recorded (Rio Tinto, 2011). No significant habitat features such as caves, basalt/dolerite rock piles, waterholes, termite mounds, sandy banks, significant riparian vegetation or significant tree hollows were observed within the application area (Rio Tinto, 2011). Therefore fauna diversity is likely to be within expected levels for the area.

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

**Methodology** CALM (2002)  
Rio Tinto (2011)  
Shepherd (2009)  
GIS Database:  
- Declared Rare and Priority Flora List  
- IBRA WA (Regions - Subregions)  
- Pre-European Vegetation  
- Threatened Ecological Sites Buffered

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

**Comments** **Proposal is not likely to be at variance to this Principle**  
No targeted fauna surveys have been conducted over the application area. A desktop search was conducted and fauna habitat observations of the application area were noted by Rio Tinto (2011).  
  
The primary fauna habitats within the application area are reasonably widespread and abundant in the Juna Downs locality, similar to the vegetation types recorded (Rio Tinto, 2011). No significant habitat features such as caves, basalt/dolerite rock piles, waterholes, termite mounds, sandy banks, significant riparian vegetation or significant tree hollows were observed within the application area (Rio Tinto, 2011).  
  
The Western Pebble-mound Mouse (*Pseudomys chamani*) (DEC Priority 4) is known from the area and 34 mounds have been recorded within the application area (Rio Tinto, 2011). The nature of the clearing, for exploration purposes, makes it likely that the impacts will be restricted to a small number of individual animals (Rio Tinto, 2011). This species is widespread within the ranges of the central and southern Pilbara (Van Dyck and Strahan, 2008). Given that similar habitat for the Western Pebble-mound Mouse is available both locally and throughout the Pilbara, the impact on this species is not likely to be significant.  
  
According to Rio Tinto (2011), the fauna habitats available within the application area are not restricted in the Juna Downs locality. Therefore it is considered unlikely that the application area represents significant habitat for fauna indigenous to Western Australia.  
  
Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** Rio Tinto (2011)  
Van Dyck and Strahan (2008)

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

**Comments** **Proposal is not likely to be at variance to this Principle**  
According to available databases there are no known records of Declared Rare Flora (DRF) within the application area (GIS Database). The nearest record of DRF, *Thryptomene wittweri*, is located approximately 5 kilometres south-east of the application area (GIS Database).

A flora and vegetation survey was conducted over the application area by a Rio Tinto botanist in May 2009, July 2009 and October 2010 and no DRF were recorded (Rio Tinto, 2011). *Thryptomene wittweri* occurs on skeletal red stony soils, breakaways and stony creek beds (Western Australian Herbarium, 2011) and the application area does not provide suitable habitat for this species (Rio Tinto, 2011).

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

**Methodology** Rio Tinto (2011)  
Western Australian Herbarium (2011)  
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 revealed there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest recorded TEC, *Themeda* grasslands on cracking clays, is located approximately 78 kilometres north-west of the application area (GIS Database).

No TECs were identified during the flora and vegetation survey conducted by a Rio Tinto botanist (Rio Tinto, 2011).

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

**Methodology** Rio Tinto (2011)  
GIS Database:  
- Threatened Ecological Sites Buffered

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

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

The clearing application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion in which approximately 99.9% of the pre-European vegetation remains (see table) (Shepherd, 2009; GIS Database). This gives it a conservation status of 'Least Concern' according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

The vegetation of the clearing application area has been mapped as Beard vegetation associations:

**18:** Low woodland; mulga (*Acacia aneura*); and  
**82:** Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (Shepherd, 2009; GIS Database).

According to Shepherd (2009), over 99% of both of these vegetation associations remain at a state level and 100% of vegetation remains at a bioregional level (see table). These vegetation associations would be given a conservation status of 'Least Concern' at both a state and bioregional level (Department of Natural Resources and Environment, 2002).

|                              | Pre-European Area (ha)* | Current Extent (ha)* | Remaining %* | Conservation Status** | Pre-European % in IUCN Class I-IV Reserves |
|------------------------------|-------------------------|----------------------|--------------|-----------------------|--|
| IBRA Bioregion – Pilbara     | 17,804,193              | 17,785,001           | ~99.89       | Least Concern         | 6.32                                       |
| Beard Veg Assoc. – State     |                         |                      |              |                       |  |
| 18                           | 19,892,305              | 19,890,275           | ~99.99       | Least Concern         | 2.13                                       |
| 82                           | 2,565,901               | 2,565,901            | ~100         | Least Concern         | 10.24                                      |
| Beard Veg Assoc. – Bioregion |                         |                      |              |                       |  |
| 18                           | 676,557                 | 676,557              | ~100         | Least Concern         | 16.80                                      |
| 82                           | 2,563,583               | 2,563,583            | ~100         | Least Concern         | 10.25                                      |

\* Shepherd (2009)

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

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

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

**Methodology** Department of Natural Resources and Environment (2002)  
Shepherd (2009)  
GIS Database:  
- IBRA WA (Regions - Subregions)  
- 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 watercourses or wetlands within the application area (Rio Tinto, 2011; GIS Database). However, there are a multitude of minor non-perennial watercourses that cross through the application area (GIS Database).

Rio Tinto (2011) described eleven vegetation types within the application area and two of these are associated with minor drainage lines, vegetation types 10 and 11 (Rio Tinto, 2011).

Based on the above, the proposed clearing is at variance to this Principle. However, vegetation associated with minor drainage lines is widespread in the region and due to the minor nature of the proposed clearing for exploration activities there is unlikely to be significant impacts on any watercourse or wetland.

**Methodology** Rio Tinto (2011)  
GIS Database:  
- Hydrography, Linear

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

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

According to available datasets the application area intersects the Boolgeeda and Newman Land Systems (GIS Database).

The Boolgeeda Land System is characterised by stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). The vegetation is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Newman Land System is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). Each of the landforms in the land system have a mantle of abundant pebbles of ironstone and other rocks, which translates to a low soil erosion risk (Van Vreeswyk et al., 2004).

Hamersley Exploration Pty Ltd has applied to clear up to 11.5 hectares within an application area totalling approximately 168 hectares. Disturbance will be for exploration activities using machinery with the blade up where practicable to ensure soil is not removed (Hamersley Exploration Pty Ltd, 2011). The proposed clearing activities are not likely to result in large areas of disturbed or open land. Given the small size of the proposed activities, the clearing is not likely to result in appreciable land degradation.

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

**Methodology** Hamersley Exploration Pty Ltd (2011)  
Van Vreeswyk et al. (2004)  
GIS Database:  
- Rangeland Land System Mapping

**(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

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

The proposed clearing is not located within a conservation reserve (GIS Database). The nearest conservation area is Karijini National Park, which is located adjacent to the application area at its closest point (GIS Database). The application area is within the Register of National Estate site 'Hamersley Range National Park (1977 Boundary)' (GIS Database). Hamersley Range National Park is now known as Karijini National Park and the boundary has changed since 1977, therefore the application area is not within conservation estate. A large proportion of the vegetation in the Pilbara bioregion remains uncleared, approximately 99.89% (Shepherd, 2009), and in the local area there is still a large proportion of the vegetation remaining to provide a buffer for the national park (GIS Database).

The close proximity to Karijini National Park means that the proposed clearing poses a risk of spreading weeds into the national park. The proposed clearing will be conducted under the Resource Geology Evaluation 'Environmental Management Plan - Evaluation and Exploration Within Areas of Conservation Significance' (Hammersley Exploration Pty Ltd, 2011). This EMP was developed in consultation with the Department of Environment and Conservation and includes strict weed hygiene procedures during clearing and drilling activities (Rio Tinto, 2009). Potential impacts to the conservation area may be minimised by the implementation of a weed management condition.

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

**Methodology** Hammersley Exploration Pty Ltd (2011)  
Rio Tinto (2009)  
Shepherd (2009)  
GIS Database:  
- DEC Tenure  
- Munjina 50 cm Orthomosaic - Landgate 2004  
- Register of National Estate

**(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**

There are no permanent watercourses or wetlands within the application area (GIS Database). There are several minor ephemeral drainage lines within the application area that would only flow following substantial rainfall events (Rio Tinto, 2011; GIS Database). The proposed clearing is unlikely to significantly increase the sediment load of the surface water compared to the surrounding areas due to the low impact nature of the ground disturbances for the proposed exploration activities (Rio Tinto, 2011). The proposed clearing is unlikely to cause deterioration in the quality of surface water in the local area.

According to available databases the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is Newman Water Reserve, which is approximately 100 kilometres to the south-east (GIS Database). The proposed clearing is unlikely to affect the water quality of the water reserve due to the large distance between it and the application area.

The small amount (11.5 hectares) of proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.

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

**Methodology** Rio Tinto (2011)  
GIS Database:  
- Hydrography, Linear  
- Public Drinking Water Source Areas (PDWSAs)

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

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

The application area is located within the Ashburton River catchment area (GIS Database). Given the size of the area to be cleared (11.5 hectares) in relation to the size of the catchment area (7,877,743 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

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

**Methodology** GIS Database:  
- Hydrographic Catchments - Catchments

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

**Comments**

There is one Native Title Claim (WC96/61) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance in 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 Aboriginal Sites of Significance are damaged through the clearing process.

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

The clearing permit application was advertised on 13 June 2011 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

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

## 4. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 - Hamersley Subregion). Department of Conservation and Land Management, Western Australia.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Hamersley Exploration Pty Ltd (2011) Documentation Accompanying Clearing Permit Application for CPS 4391/1. Prepared by Rio Tinto, May 2011.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Rio Tinto (2009) Environmental Management Plan - Evaluation and Exploration Within Areas of Conservation Significance Version 1.4. Prepared by Rio Tinto, November 2009.
- Rio Tinto (2011) Botanical Survey for an Exploration Drilling Program at Juna Down South E47/1943 and Supporting Document to a Native Vegetation Clearing Permit Application. Report Prepared by Rio Tinto Iron Ore, January 2011.
- Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Trudgen, M.E. (1988) A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished Report Prepared for Bowman Bishaw and Associates, West Perth.
- Van Dyck, S. and Strahan, R. (2008) The Mammals of Australia, Third Edition. Reed New Holland, Sydney.
- Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) Technical Bulletin - An Inventory and Condition Survey of the Pilbara Region, Western Australia, No. 92. Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- Western Australian Herbarium (2011) FloraBase - The Western Australia Flora. Department of Environment and Conservation. URL: <http://florabase.dec.wa.gov.au> (Accessed 9/8/2011).

## 5. Glossary

### Acronyms:

|                 |   |
|-----------------|---|
| <b>BoM</b>      | Bureau of Meteorology, Australian Government  |
| <b>CALM</b>     | Department of Conservation and Land Management (now DEC), Western Australia   |
| <b>DAFWA</b>    | Department of Agriculture and Food, Western Australia   |
| <b>DEC</b>      | Department of Environment and Conservation, 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 DEC), 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 (now DEC), Western Australia  |
| <b>DoIR</b>     | Department of Industry and Resources (now DMP), Western Australia   |
| <b>DOLA</b>     | Department of Land Administration, Western Australia  |
| <b>DoW</b>      | Department of Water   |
| <b>EP Act</b>   | Environmental 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>ha</b>       | Hectare (10,000 square metres)  |
| <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 Act</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>TEC</b>      | Threatened Ecological Community   |

## Definitions:

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

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

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

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

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

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

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

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

range; or

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

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

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

(a) is not critically endangered; and

(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

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

(a) is not critically endangered or endangered; and

(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

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