



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 4342/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: **Robe River Mining Co. Pty Ltd**

### 1.3. Property details

Property: *Iron Ore (Hamersley Range) Agreement Act 1963*;  
Special Lease for Mining Operations 3116/4984 (Document I 195323L);  
Lot 9 on Deposited Plan 47815;  
Miscellaneous Licence 47/128; and  
Miscellaneous Licence 47/280.

Local Government Area: Shire of Ashburton

Colloquial name: Rail Capacity Enhancement Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
35		Mechanical Removal	Borrow pits, rail and infrastructure maintenance and associated activities.

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 14 July 2011

## 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>Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation in a regional context.</p> <p>The following Beard vegetation associations have been mapped within the application area:</p> <p>82: Hummock grasslands, low tree steppe; Snappy Gum over <i>Triodia wiseana</i>; and</p> <p>175: Short bunch grassland - savanna/grass plain (Pilbara) (GIS Database).</p> <p>Two flora and vegetation surveys have been conducted of the application area and the surrounds by both Biota Environmental Sciences Pty Ltd (Biota) and Rio Tinto in 2010 (Biota, 2010; Rio Tinto, 2011). The most recent and relevant flora and vegetation survey for the application area was conducted by Rio Tinto in October 2010 (Robe River, 2011). This established that the following vegetation communities exist within the application area:</p> <p>1. <i>Eucalyptus leucophloia</i> low open woodland, over scattered <i>Eucalyptus gamophylla</i> low mallee, over <i>Hakea chordophylla</i> and <i>Acacia atkinsiana</i> tall open shrubland, over <i>Senna glutinosa</i> subsp. <i>glutinosa</i>, <i>Senna glutinosa</i> subsp. <i>pruinosa</i>, <i>Acacia atkinsiana</i>, and <i>Acacia ancistrocarpa</i> open shrubland, over <i>Triodia wiseana</i> open hummock grassland;</p> <p>2. <i>Eucalyptus leucophloia</i> low open woodland with scattered tall trees, over <i>Eucalyptus gamophylla</i> scattered low mallee, over <i>Acacia monticola</i> tall shrubland, over <i>Rulingia luteiflora</i>, and <i>Acacia monticola</i> shrubland / low open shrubland, over <i>Themeda triandra</i> very open tussock grassland, over <i>Triodia epactia</i> open hummock grassland;</p>	<p>Robe River Mining Co. Pty Ltd (Robe River) has applied to clear up to 35 hectares of native vegetation within an application area of approximately 93.8 hectares. The application area is located approximately 39 kilometres north-west of the town of Tom Price within the Pilbara region of Western Australia (GIS Database).</p> <p>The clearing is required for rail maintenance and construction purposes associated with Robe River's Tom Price main line railway (Robe River, 2011). The proposed clearing will be for borrow pits, laydown areas, access tracks, topsoil stockpiles, water bores and other associated activities (Robe River, 2011).</p>	<p>Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).</p> <p>To</p> <p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).</p>	<p>The vegetation condition is based on the flora and vegetation surveys carried out by Rio Tinto and Biota in 2010 (Biota, 2010; Rio Tinto, 2011). This was assessed utilising the vegetation condition scale used for the Pilbara and was converted to the Keighery scale for consistency.</p>

3. *Eucalyptus leucophloia* low open woodland (with scattered *Corymbia hamersleyana*), over *Eucalyptus gamophylla* scattered low mallee (to low open mallee), over *Acacia* spp. tall open shrubland, over *Acacia* spp. and *Senna artemisioides* subsp. *oligophylla* / *helmsii* shrubland / low open shrubland, over *Themeda triandra* very open tussock grassland, over *Triodia epactia* and *Triodia wiseana* very open hummock grassland;

4. *Acacia aneura* var. *pilbarana* tall open scrub over *Triodia epactia* open hummock grassland;

5. *Acacia xiphophylla* tall shrubland / shrubland, over *Eremophila cuneifolia* low open shrubland, over *Triodia wiseana* very open hummock grassland;

6. *Acacia aneura*, *Eucalyptus leucophloia*, and *Corymbia deserticola* scattered low trees, over *Acacia aneura* tall open shrubland (to tall shrubland), over *Acacia bivenosa* open shrubland (to shrubland), over *Triodia epactia* open hummock grassland, over very open mixed tussock grassland; and

7. *Acacia aneura*, *Acacia pruinocarpa*, *Corymbia deserticola* and *Eucalyptus leucophloia* scattered low trees, over *Acacia aneura* tall shrubland / open shrubland, over *Triodia epactia* open hummock grassland, over very open mixed tussock grassland (Rio Tinto, 2011).

### 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 lies within the Hamersley sub-region of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The vegetation within this sub-region is characterised 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 Rio Tinto 2010 flora and vegetation survey of the application area and the surrounds recorded 302 flora taxa from 116 genera and 36 families (Rio Tinto, 2011). Of these no Declared Rare Flora (DRF) listed under the *Wildlife Conservation Act 1950*, or Threatened species under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* were recorded (Rio Tinto, 2011). During the flora and vegetation survey, seven vegetation communities were recorded within the application area, and a significant portion of the application area was classed as “Degraded” to “Completely Degraded” (Rio Tinto, 2011).

The application area falls within the Department of Environment and Conservation mapped “Themeda Grasslands” Threatened Ecological Community (TEC) (GIS Database). The dominance of the Priority 3 species *Themeda* sp. Hamersley Station denotes the presence of this habitat. This species was recorded by Biota within the cracking clay habitat located adjacent to the south-eastern corner of the application area during historical flora and vegetation surveys of the area (Rio Tinto, 2011).

The “Themeda Grasslands” TEC was not detected during both the Biota and Rio Tinto 2010 flora and vegetation surveys, however in the same location, the Priority 1 “Brockman Cracking Clays” Priority Ecological Community (PEC) was deemed to potentially occur, as the tussock grass *Astrelba* sp. was recorded as the dominant species. If *Astrelba* sp. is confirmed to be the Priority 3 flora species, *Astrelba lappacea* then this habitat will also be confirmed as the Priority 1 PEC (Biota, 2010; Rio Tinto, 2011). Robe River has stated that this cracking clay habitat and a 50 metre buffer are excluded from the application area (Rio Tinto, 2011).

The desktop search conducted by Rio Tinto highlighted that 29 conservation significant flora species have the potential to occur within a 30 kilometre radius of the application area (Rio Tinto, 2011). Of these, based on habitat assessment, five conservation significant species could occur within the application area (Rio Tinto, 2011). The majority of these species are widespread, however the Priority 1 species, *Bothriochloa decipiens* var. *cloncurrrens* has a restricted distribution (Rio Tinto, 2011; Western Australian Herbarium, 1998). This species is known to occur within floodplains, clays and seasonally wet grasslands (Rio Tinto, 2011). Given the majority of the application area is already disturbed and the flora and vegetation surveys did not record this species, the proposed clearing is not likely to impact this species. Also, the habitat in which this species has potential of occurring, cracking clays, is to be excluded from the application area.

The application area contains a vegetation community within the south-western section, described as “*Acacia aneura* var. *pilbarana* tall open scrub over *Triodia epactia* open hummock grassland” which resembles a Department of Environment and Conservation “Ecosystem at Risk” (Rio Tinto, 2011). The “Lower-slope Mulga” Ecosystem at Risk, is characterised as “Mulga (*Acacia aneura*) tall shrublands and woodlands occurring over a

significant cover of Spinifex” (Rio Tinto, 2011). This ecosystem is at risk due to too frequent fires which may prevent regeneration (Rio Tinto, 2011). The proposed clearing is not likely to impact on the biological diversity of this vegetation community as the majority of it falls outside of the application area. This vegetation community was also significantly disturbed due to grazing and associated activities, so the small amount of clearing proposed within the potential “Lower-slope Mulga” ecosystem is unlikely to cause further degradation much beyond the immediate clearing envelope (Rio Tinto, 2011).

Two introduced species, *Cenchrus ciliaris* (Buffel Grass) and *Vachellia farnesiana* (Mimosa Bush) were recorded during the flora and vegetation surveys within the application area and seven more species in the surrounding area (Rio Tinto, 2011). None of these species are listed as “Declared Plant” species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food. Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This in turn can lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. Potential impacts from the spread of weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

From the fauna desktop assessments of the application area, based on distribution alone, six amphibians, 105 reptiles, 132 birds and 32 mammals have the potential to occur within the application area (Rio Tinto, 2011). Several Short Range Endemic (SRE) fauna species have also been recorded during previous surveys conducted for the main rail line (Rio Tinto, 2011). The main rail line is partly located in the western section of the application area; however the results of this survey did not identify any conservation significant SRE taxa (Rio Tinto, 2011).

Given the vegetation communities within the application area are common and widely represented both locally and regionally, and the area is already significantly disturbed (Rio Tinto, 2011) the application area is not likely to comprise greater biological diversity than other nearby areas.

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

**Methodology** Biota (2010)  
CALM (2002)  
Rio Tinto (2011)  
Western Australian Herbarium (1998)  
GIS Database:  
- IBRA WA (Regions - Sub-regions)  
- Threatened Ecological Sites Buffered

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

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

The flora and vegetation survey established that the following four broad fauna habitats occur within the application area:

Tree steppe or low open woodland of Acacia and Eucalyptus / Acacia shrubland / hummock grassland on:

- Open plains (often with a stony mantle);
- Undulating plains;
- Minor stony slopes / low hills; and
- Low to moderate stony / rocky slopes and hills (Rio Tinto, 2011).

In addition, a habitat comprising “tussock grasslands with scattered shrubs on open plains with cracking clay substrates” occurs adjacent to the application area and has been deemed significant habitat for native fauna. This habitat and a 50 metre buffer will not be impacted by the proposed clearing as it has been designated an “Exclusion Zone” by Robe River (Rio Tinto, 2011).

Rio Tinto (2011) conducted a fauna desktop assessment of the application area and the surrounds. Based on species distributions and database searches, sixteen threatened fauna species could potentially occur within the application area (Rio Tinto, 2011). In addition, five potential Short Range Endemic species were recorded within the vicinity of the application area (Biota, 2010).

While fauna species may utilise the habitats within the application area, neither the landforms nor vegetation types represent core habitat for any indigenous fauna as both the habitats and the fauna species are widespread (Biota, 2010; Rio Tinto, 2011). Also, the probability of any of these species frequenting the application area is greatly reduced as a result of the close proximity of the application area to the rail infrastructure, the associated human and mechanical activity, and the relatively high levels of vegetation disturbance (Rio Tinto, 2011).

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

**Methodology** Biota (2010)  
Rio Tinto (2011)

**(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**

Two flora and vegetation surveys were conducted over the application area by Biota and Rio Tinto in 2010 (Rio Tinto, 2011). This established that no Declared Rare Flora (DRF) as listed under the *Wildlife Conservation Act 1950* or species listed under the *Environment Protection and Biodiversity Conservation Act 1999* were recorded within the application area (Biota, 2010; Rio Tinto, 2011).

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

**Methodology** Biota (2010)  
Rio Tinto (2011)

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

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

According to available databases, the application area falls within the "Themeda Grasslands" Threatened Ecological Community (TEC) (GIS Database). The Themeda Grasslands TEC is characterised as "Grassland plains dominated by the perennial *Themeda* sp. Hamersley Station (M. E. Trudgen 11431) and includes many annual herbs and grasses on cracking clays" (Biota, 2010).

The flora and vegetation surveys conducted by both Biota and Rio Tinto in May and October 2010 respectively did not reflect that this TEC exists within the application area (Rio Tinto, 2011). In previous surveys by Biota, only small amounts of the Priority 3 flora species, *Themeda* sp. Hamersley Station (M. E. Trudgen 11431) have been recorded outside of the application area within a cracking clay habitat (Biota, 2010; Rio Tinto 2011).

The flora and vegetation surveys highlighted that the vegetation communities recorded within the application area are well represented in the Hamersley sub-region of the Pilbara (Biota, 2010; Rio Tinto, 2011). Given this, it is not likely that the vegetation types within the application area represent any TECs.

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

**Methodology** Biota (2010)  
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 application area falls within the Hamersley sub-region of the Pilbara Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). According to Shepherd (2009), approximately 99.89% of the Pre-European vegetation remains within the Pilbara bioregion (see table).

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

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; and  
175: Short bunch grassland - savanna/grass plain (Pilbara) (GIS database).

According to Shepherd (2009) approximately 100% of these Beard vegetation associations remain at both a state and bioregional level. Therefore the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193	17,785,000	~99.89	Least Concern	6.32
Beard vegetation associations - State					
82	2,565,901	2,565,901	~100	Least Concern	10.24
175	526,206	524,861	~99.74	Least Concern	4.22
Beard vegetation associations - Bioregion					
82	2,563,583	2,563,583	~100	Least Concern	10.25
175	507,035	507,006	~99.99	Least Concern	4.38

\* Shepherd (2009)

\*\* 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 (2009)  
GIS Database:  
- IBRA WA (Regions - Sub Regions)  
- Pre-European Vegetation

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

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

There are seven minor, ephemeral drainage lines located within the application area (GIS Database). It is expected that these watercourses will only flow during significant rainfall. The flora and vegetation survey identified the following two vegetation communities associated with minor drainage lines within the application area:

-*Eucalyptus leucophloia* low open woodland with scattered tall trees, over *Eucalyptus gamophylla* scattered low mallee, over *Acacia monticola* tall shrubland, over *Rulingia luteiflora*, and *Acacia monticola* shrubland/low open shrubland, over *Themeda triandra* very open tussock grassland, over *Triodia epactia* open hummock grassland; and

-*Eucalyptus leucophloia* low open woodland (with scattered *Corymbia hamersleyana*), over *Eucalyptus gamophylla* scattered low mallee (to low open mallee), over *Acacia* spp. tall open shrubland, over *Acacia* spp. and *Senna artemisioides* subsp. *oligophylla/helmsii* shrubland / low open shrubland, over *Themeda triandra* very open tussock grassland, over *Triodia epactia* and *Triodia wiseana* very open hummock grassland (Rio Tinto, 2011).

These vegetation communities were recorded within small areas in the north-eastern section and on the boundary of the northern centre of the application area (Rio Tinto, 2011). Given the minor nature of the drainage lines and the small area that these vegetation communities occupy within the application area, it is not likely that that the proposed clearing will impact these habitats.

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

**(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 falls within the Boolgeeda, Brockman and Newman land systems (GIS Database). The Boolgeeda and Newman land systems account for the majority of the application area (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 Newman land

system consists of rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk *et al.*, 2004). Both land systems are generally not prone to degradation or erosion (Van Vreeswyk *et al.*, 2004).

The Brockman land system consists of alluvial plains with cracking clay soils supporting tussock grasslands (Van Vreeswyk *et al.*, 2004). Van Vreeswyk *et al.*, (2004) reported that soil erosion could occur within the Brockman land system if the vegetation is cleared. The area corresponding to the Brockman land system occurs within a small section in the north-west of the application area within mostly degraded vegetation (GIS Database; Rio Tinto, 2011). This small amount of clearing within the Brockman land system is unlikely to cause any further appreciable increase in degradation or erosion much beyond the immediate clearing envelope.

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

**Methodology** Rio Tinto (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 application area is not located within any conservation areas or Department of Environment and Conservation (DEC) managed lands (GIS Database). The closest conservation area, the Karijini National Park, is located approximately 28 kilometres north-east of the application area (GIS Database). At this distance, it is not likely that the vegetation within the application area would act as a buffer or be important as an ecological linkage to this conservation area.

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

**Methodology** GIS Database:  
- DEC Tenure

**(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 has low salinity levels of between 500 to 1,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Salinity within this range is considered acceptable for most uses with acceptable drinking water between 500 to 750 milligrams per litre TDS and acceptable irrigation water between 500 to 1,200 milligrams per litre TDS. The application area is not located within a Public Drinking Water Source Area (GIS Database).

There are seven minor, ephemeral drainage lines located within the application area (GIS Database). With an average annual rainfall of approximately 405 millimetres (BoM, 2011) and an annual evaporation rate of 3,400 millimetres (GIS Database), it is expected that there would be little surface flow during normal seasonal rains. Given the magnitude of the Hamersley Groundwater Province (approximately 101,000,000 square kilometres) (GIS Database), it is unlikely that the proposed clearing of 35 hectares of native vegetation will have any significant impact on the quality of the regional groundwater.

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

**Methodology** BoM (2011)  
GIS Database:  
- Evaporation Isopleths  
- Groundwater Provinces  
- Groundwater Salinity, Statewide  
- Hydrography, linear  
- Public Drinking Water Source Areas

**(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 falls within the Ashburton River subcatchment which comprises approximately 109,816 hectares (GIS Database). There are seven minor, ephemeral drainage lines located within the application area (GIS Database). Local flooding occurs seasonally in the Pilbara region as a result of cyclonic activity and sporadic thunderstorm activity. It is not anticipated that the proposed clearing of the application area will lead to an increase in flood height or duration.

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

**Methodology** GIS Database:  
- Hydrographic Catchments-Subcatchments  
- Hydrography, linear

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

##### **Comments**

There is one registered Aboriginal Site of Significance recorded as occurring partly within the application area, and two other sites within close proximity to 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. Robe River (2011) advised that these sites will be avoided during the clearing process and stated that they will comply with the *Aboriginal Heritage Act 1972* by completing a Section 18 permit should this be required.

There is one Native Title Claim (WC97/89) over the area under application (GIS Database). This claim has been determined by the Federal Court 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*.

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 30 May 2011 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to this application.

**Methodology** Robe River (2011)  
GIS Database:  
- Native Title Claims  
- Aboriginal Sites of Significance

#### **4. References**

- Biota (2010) Biota Environmental Sciences Pty Ltd. Galah, Gull, Ibis-Koala and Rosella Rail Sidings Native Vegetation Clearing Permit Report. Prepared for Rio Tinto Iron Ore, August 2010.
- BoM (2011) Bureau Of Meteorology Website - Climate averages by number, averages for Tom Price [http://reg.bom.gov.au/climate/averages/tables/cw\\_007178.shtml](http://reg.bom.gov.au/climate/averages/tables/cw_007178.shtml) (Accessed 20 June 2011).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions (Pilbara 3 (PIL 3 - Hamersley sub-region). Department of Conservation and Land Management, Bentley.
- 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.
- 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 (2011) Flora and Vegetation Assessment of 13 Borrow Pits Along the Dampier to Tom Price Main Rail Line, March 2011.
- Robe River (2011) Robe River Mining Company Pty Ltd. Letter of application for a clearing permit (Purpose Permit) - Rail Maintenance and Construction Activities.
- 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.
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture, Western Australia.
- Western Australian Herbarium (1998) Florabase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 4 July 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>	Environmental 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.