



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 6689/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Robe River Limited

### 1.3. Property details

Property: Mineral Lease 248SA (AML 70/248)  
Local Government Area: Shire of East Pilbara  
Colloquial name: Mesa A, Mesa G Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
500		Mechanical Removal	Mineral exploration, hydrogeological and geotechnical investigations and associated activities

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 1 October 2015

## 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. Six Beard vegetation associations are located within the application area (GIS Database):

**Beard vegetation association 82:** Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;

**Beard vegetation association 93:** Hummock grasslands, shrub steppe; kanji over soft spinifex;

**Beard vegetation association 583:** Hummock grasslands, sparse shrub steppe; kanji & *Acacia bivenosa* over hard spinifex *Triodia basedowii* & *T. wiseana*;

**Beard vegetation association 600:** Sedgeland; sedges with open low tree sananna; *Eucalyptus* sp. aff *aspera* over various sedges;

**Beard vegetation association 605:** Hummock grasslands, shrub steppe; *Acacia pachycarpa* & waterwood over soft spinifex

**Beard vegetation association 620:** Hummock grasslands, shrub steppe; snakewood over soft spinifex

**Note:** The majority (~77.5%) of the application area falls within Beard vegetation association 583 (GIS Database; Rio Tinto, 2015).

The following vegetation types are considered to best represent the vegetation types present the application area:

#### Vegetation of Hills and Slopes

**H1** - *Acacia acradenia* scattered shrubs to open heath over *Triodia wiseana* hummock grassland;

**H2** - *Acacia arida* scattered shrubs to open heath over *Triodia wiseana* hummock grassland;

**H3** - *Acacia atkinsiana* tall shrubland over *Tephrosia uniovulata* open shrubland over *Triodia wiseana* mid-dense hummock grassland;

**H4** - *Acacia tumida* var. *pilbarensis* (*Petalostylis labicheoides*) tall closed scrub over *Acacia acradenia* low open shrubland over *Triodia wiseana* (*Triodia* sp. Robe River (M.E. Trudgen et al. MET 12367)) very open hummock grassland;

**H5** - *Corymbia hamersleyana* scattered low trees over *Acacia acradenia* open heath over *Triodia wiseana* hummock grassland; and

**H6** - *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia wiseana*, *Triodia* sp. Robe River (M.E. Trudgen et al. MET 12367) very open to open hummock grassland.

#### Vegetation of Plains

**P1** - *Acacia atkinsiana* tall open shrubland over *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland;

**P2** - *Acacia inaequilatera* scattered tall shrubs over *Acacia ancistrocarpa*, *A. bivenosa* open shrubland to shrubland over *Triodia wiseana* hummock grassland;

- P3** - *Acacia inaequilatera* scattered tall shrubs over *Acacia ancistrocarpa* and *Acacia bivenosa* shrubland over *Acacia atkinsiana* low open shrubland over *Triodia wiseana* hummock grassland;
- P4** - *Acacia synchronicia*, *A. bivenosa*, *A. ancistrocarpa* open shrubland over *Triodia wiseana* open hummock grassland;
- P5** - *Eucalyptus leucophloia* scattered low trees over *Acacia trachycarpa*, *A. atkinsiana*, *A. arida* tall shrubland over *Triodia wiseana* hummock grassland;
- P6** - *Acacia xiphophylla* low woodland to tall shrubland over *Triodia wiseana*, *Triodia epactia* open hummock grassland;
- P7** - *Corymbia candida* scattered low trees to low open woodland over *Acacia ancistrocarpa* open shrubland over *Triodia epactia* hummock grassland; and
- P8** - *Corymbia zygophylla* scattered low trees over *Acacia trachycarpa*, *Acacia ancistrocarpa* shrubland over *Triodia epactia*, *Triodia wiseana* hummock grassland.

#### Vegetation of Flowlines

- F1** - *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis* tall open shrubland over *Triodia wiseana* open hummock grassland.

<b>Clearing Description</b>	Mesa A, Mesa G Project Robe River Limited proposes to clear up to 500 hectares of native vegetation within a total boundary of approximately 3,723 hectares, for the purpose of mineral exploration, hydrogeological and geotechnical investigations and associated activities. The project is located approximately 20 kilometres south of Pannawonica in the Shire of East Pilbara.
<b>Vegetation Condition</b>	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).  To:  Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).
<b>Comment</b>	A number of flora and vegetation surveys have been conducted within and surrounding the application area (Rio Tinto, 2015). Given the large size of the application area, a vegetation consolidation exercise was undertaken by Rio Tinto and Eco Logical Australia (Rio Tinto, 2015). Vegetation types identified as occurring within the application area have been based on the results of selected surveys that were deemed to provide the best overall coverage of the application area (Rio Tinto, 2015).

### **3. Assessment of application against Clearing Principles**

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

<b>Comments</b>	<p><b>Proposal may be at variance to this Principle</b></p> <p>The application area is located within the Hamersley and Roebourne subregions of the Pilbara Interim Biogeographic Regionalisation for Australia bioregion (GIS Database). At a broad scale, vegetation of the Hamersley subregion can be described as Mulga low woodlands over bunch grasses on fine textured soils in valley floors and <i>Eucalyptus leucophloia</i> over <i>Triodia brizoides</i> on skeletal soils of the ranges (CALM, 2002). The Roebourne subregion is comprised of coastal and sub-coastal plains with grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of <i>Acacia stellaticeps</i> or <i>A. pyrifolia</i> and <i>A. inaequilatera</i>. Uplands are dominated by <i>Triodia</i> hummock grasslands and drainage lines support <i>Eucalyptus victrix</i> or <i>Corymbia Hamersleyana</i> woodlands (CALM, 2002).</p> <p>The objective of this application is to consolidate 11 existing clearing permits held by Robe River Limited. Existing live permits are to be surrendered and future clearing is to be conducted under CPS 6689/1. Based on reported annual clearing for existing live permits within the application area, a total of 36 hectares of native vegetation has been cleared out of a possible 269 hectares approved to be cleared. While this does not take into consideration areas cleared under Part IV approvals, the current application to clear up to 500 hectares within a clearing permit boundary of 3,723 hectares will result in an increase in the amount of native vegetation proposed to be cleared within the already approved clearing permit boundaries by approximately 231 hectares.</p> <p>An assessment against the 10 clearing Principles has been conducted for the existing 11 clearing permits to be consolidated into CPS 6689/1. The clearing permit boundaries for the already approved areas remain unchanged, however some areas have been merged and the application area now consists of nine distinctly separate sections.</p> <p>The majority of the vegetation within the application area (~94%) is considered to be in a 'Very Good' condition (Rio Tinto, 2015). The remaining vegetation is considered 'Completely Degraded' due to clearing associated with tracks and mining activities. Within the clearing permit boundary, approximately 210 hectares of cleared/disturbed areas have been identified (Rio Tinto, 2015).</p> <p>No Threatened Ecological Communities (TECs) are known within the application area (Rio Tinto, 2015; GIS Database). However, sections of the clearing permit boundary intersect two Priority 1 Priority Ecological Communities (PECs) and one Priority 3 PEC:</p> <ul style="list-style-type: none"> <li>• Subterranean invertebrate community of pisolitic hills in the Pilbara (P1)</li> <li>• Subterranean invertebrate communities of mesas in the Robe Valley (P1)</li> <li>• Sand Sheet vegetation (Robe Valley) (P3)</li> </ul>
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While the root material of vegetation may assist in maintaining a humid subterranean environment, subterranean invertebrate communities are unlikely to be significantly impacted by the proposed clearing of native vegetation for tracks, hydrogeological and geotechnical investigations and associated activities. Direct impacts to subterranean fauna species occur through the excavation of habitat (i.e. pit excavation). Mineral

exploration does have the potential to disturb subterranean fauna habitat, but not on the same scale as mining operations. Potential impacts to subterranean invertebrate communities (occurring within the clearing permit boundary) as a result of the proposed clearing may be minimised by the implementation of a restricted clearing condition.

A section of the application area intersects the buffer to the Sand Sheet vegetation PEC. This section of the proposed clearing permit boundary is approximately 34 hectares. None of the vegetation communities mapped within surveyed areas of the clearing permit boundary are considered to be representative of this PEC. Given that the proposed clearing of 500 hectares of native vegetation is spread over a permit boundary of 3,723 hectares, the amount of clearing likely to occur within this section of application area is unlikely to result in any significant impacts to the Sand Sheet PEC.

Vegetation type H4, mapped within sections of the application area is considered to be representative of the Priority 3 PEC 'Triodia sp. Robe River assemblages of mesas of the West Pilbara.' (Rio Tinto, 2015). Vegetation type H6 is likely to be locally significant, due to the presence of the Priority 3 listed flora species *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 1267) (Rio Tinto, 2015). All other vegetation types are considered to be widely distributed both locally and throughout the Hamersley subregion (Rio Tinto, 2015).

A number of Priority listed flora species are known within the vicinity of the application area and/or prospective habitat is known to occur within parts of the application area for *Abutilon* sp. Onslow (F. Smith s.n. 10/09/61) (P1), *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) (P3), *Goodenia nuda* (P4), and *Rhynchosia Bungarensis* (P4) (Rio Tinto 2015; DPaW, 2014). The only Priority flora species previously recorded within the application area is *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12367) (P3). The proponent will implement environmental controls and management procedures and all Priority listed flora will be avoided where possible. The proposed clearing is unlikely to impact on the conservation status of Priority flora known to occur in the area.

Four introduced flora (weed) species have been recorded within the local area, none of which are declared weed species. Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

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

**Methodology** CALM (2002)  
DPaW (2015)  
Rio Tinto (2015)  
GIS Database:  
- IBRA WA (Regions - Sub Regions)  
- 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 may be at variance to this Principle**

A number of fauna surveys have been undertaken over the surrounding area and approximately 82% of the application area has been previously surveyed (Rio Tinto, 2015). A review and consolidation of fauna survey information that provided the best overall coverage of the application area resulted in six broad fauna habitat types being identified across the application area; Plains, Hills and Slope, Mesa Plateau, Mesa Breakaway, Drainage and Gullies (Rio Tinto, 2015).

Five species of conservation significance listed as either threatened species under the *Environment Protection and Biodiversity Conservation Act* (EPBC) 1999 or protected under Western Australian legislation (*Wildlife Conservation Act 1950* (WC)) have been recorded or have been identified as likely to occur within the application area and/or surrounding area (DPaW 2015; Rio Tinto, 2015):

- Rainbow Bee-eater (*Merops ornatus* - EPBC Act Marine; Migratory) - Recorded;
- Northern Quoll (*Dasyurus hallucatus* - EPBC Act and WC Act Endangered) - Recorded;
- Pilbara Leaf-nosed Bat (*Rhynonictis aurantia* - EPBC Act Vulnerable, WC Act Vulnerable) - Likely;
- Pilbara Olive Python (*Liasis olivaceus barroni* - EPBC Act Vulnerable, WC Act Vulnerable) - Likely;
- Great Egret (*Ardea modesta* - EPBC Act Migratory) - Likely; and
- Oriental Pratincole (*Glareola maldivarum* - EPBC Act Migratory) - Likely.

Wide ranging migratory species such as the Great Egret, Oriental Pratincole and Rainbow Bee-eater are unlikely to be impacted by the proposed clearing.

Priority listed fauna species, recognised by the Department of Parks and Wildlife as being of conservation significance, recorded within the application area include the Ghost Bat (*Macroderma gigas* - P4) and the Western Pebble-mound Mouse (*Pseudomys chapmani* - P4). The Soil-lined crevice skink (*Notoscincus butleri* - P4) was considered likely to occur (Rio Tinto, 2015). The proposed clearing is not expected to impact on the conservation status of these species and any cave locations within or adjacent to the application area will be

protected to reduce impacts to the Ghost Bat and Pilbara Leaf-nosed Bat (Rio Tinto, 2015).

Two troglofauna species listed as vulnerable under the WC Act are known from sections of the application related to mesas and pisolitic hills; *Paradraculooides bythius* (Mesa B *Paradraculooides*) and *Paradraculooides gnophicola* (Mesa G *Paradraculooides*). A third species (also listed as vulnerable under the WC Act), *Paradraculooides anachoretus* (Mesa A *Paradraculooides*), was considered likely to occur. The proposed clearing of native vegetation is not expected to negatively impact habitat supporting or likely to support these species (Rio Tinto, 2015).

The Mesa Breakaway and Gullies habitat are considered to be of elevated significance, as they provide prospective habitat for conservation significant species, including the Northern Quoll, Pilbara Leaf-nosed Bat, Pilbara Olive Python and the Ghost Bat (Rio Tinto, 2015).

Potential impacts to significant fauna habitat, bat caves and troglofauna species as a result of the proposed clearing may be minimised by the implementation of restricted clearing conditions.

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

**Methodology** DPaW (2015)  
Rio Tinto (2015)

**(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 species of Threatened flora known to occur within the application area (GIS Database; DPaW, 2015). A number of flora and vegetation surveys have been conducted over the application area and surrounding area and no Threatened flora have been recorded (Rio Tinto, 2015).

Three Threatened flora species; *Lepidium catapycnon*, *Thryptomene wittweri* and *Aluta quadrata* are known from the region. The application area is situated outside the known distribution for these species (Rio Tinto, 2015).

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

**Methodology** DPaW (2015)  
Rio Tinto (2015)  
GIS Database  
- Threatened 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 at variance to this Principle**

According to available datasets, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). None of the vegetation types identified within the application area or surrounding area correspond to any ecosystems listed as TECs (Rio Tinto, 2015).

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

**Methodology** Rio Tinto (2015)  
GIS Database:  
- Threatened Ecological Sites Buffered  
- Threatened and Priority Ecological Communities Buffers  
- Threatened and Priority Ecological Communities Boundaries

**(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 occurs within the Pilbara Interim Biogeographic Regionalisation of Australia bioregion, in which approximately 99.6% of the pre-European vegetation remains (see table below) (GIS Database; Government of Western Australia, 2014).

Six Beard vegetation associations have been mapped within the application area (GIS Database). As the below table illustrates, all are well represented, retaining over 99% of pre-European vegetation within the state and bioregion (Government of Western Australia, 2014). Given the amount of vegetation remaining in the local area and bioregion, the vegetation proposed to be cleared is not considered to represent a remnant within an extensively cleared area.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Lands
IBRA Bioregion – Pilbara	17,808,657	17,733,584	~ 99.6	Least Concern	~ 8.4
Beard veg assoc. - State					
82	2,563,583	2,550,899	~ 99.5	Least Concern	~ 10.53
93	3,044,293	3,040,639	~ 99.9	Least Concern	~ 1.96
583	243,112	243,112	~ 100	Least Concern	~ 40.85
600	67,036	66,955	~ 99.9	Least Concern	~ 0.00
605	114,116	114,116	~ 100	Least Concern	~ 0.36
620	15,539	15,539	~ 100	Least Concern	~ 0.00
Beard veg assoc. - Bioregion					
82	2,563,583	2,550,899	~ 99.5	Least Concern	~ 10.53
93	3,042,114	3,038,471	~ 99.9	Least Concern	~ 1.96
583	243,112	243,112	~ 100	Least Concern	~ 40.85
600	67,036	66,955	~ 99.9	Least Concern	~ 0.00
605	114,116	114,116	~ 100	Least Concern	~ 0.36
620	15,539	15,539	~ 100	Least Concern	~ 0.00

\* Government of Western Australia (2014)

\*\* 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)  
Government of Western Australia (2014)  
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 may be at variance to this Principle**

Sections of the application area lie adjacent to the Robe River and Red Hill Creek/Mungarathoona Creek. Several small, minor ephemeral drainage lines, likely to flow after significant rainfall, are located within the application area (Rio Tinto, 2015)

Potential impacts to watercourses as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.

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

**Methodology** Rio Tinto (2015)  
GIS Database:  
- Hydrography, linear

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

**Comments Proposal may be at variance to this Principle**

Three land systems have been mapped within the application area; Capricorn, Robe and Newman (DAFWA, 2015). The majority of the application area is not recognised as being vulnerable to erosion (DAFWA, 2015), although the central and eastern parts of the application area, located on the Robe and Newman land systems, contain drainage floors and channels with red loamy earth soils and river bed soils that are potentially prone to erosion (DAFWA, 2015.)

The proponent will implement ground disturbance procedures, which includes the avoidance of clearing after excessive rainfall and during windy conditions. Potential land degradation as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition, in conjunction with internal management procedures.

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

Methodology DAFWA (2015)

**(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 or adjacent to any conservation areas (GIS Database; Rio Tinto, 2015). The closest conservation area is situated approximately 90 kilometres east-north-east (GIS Database; Rio Tinto, 2015).

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

Methodology Rio Tinto (2015)  
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 is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The minor drainage lines present within parts of the application area, are likely to flow after significant rainfall events (Rio Tinto, 2015), which usually occur between December to April (BoM, 2015) and minor localised altered flow regimes and increased sedimentation may result from the proposed clearing activities. Potential impacts to surface water quality as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.

The application area has a groundwater salinity that is marginal (500 – 1000 milligrams/Litre Total Dissolved solids) (GIS Database). The proposed clearing of 500 hectares of native vegetation (at various locations) within an application area of approximately 3,723 hectares that has extensive amounts of vegetation remaining, is unlikely to result in any significant impacts to groundwater quality.

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

Methodology BoM (2015)  
Rio Tinto (2015)  
GIS Database:  
- Groundwater Salinity, Satewide  
- Hydrography, linear  
- Public Drinking Water Source Areas (PDWSAs)  
- RIWI Act, Groundwater 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 Pilbara region has an arid climate, with rainfall events occurring throughout the summer months (Dec – April) and cyclonic rains are common (BOM, 2015). The minor drainage lines present within the application area are likely to flow following such events (Rio Tinto, 2015).

The proposed clearing is located within the Robe River Catchment and the Coastal Catchment of the Onslow Coast Basin. These catchments have a combined area of approximately 1,179,622 hectares and vast amounts of native vegetation remains.

Extensive clearing of native vegetation may increase the potential for localised and/or wide scale flooding. However, given that the proposed clearing of 500 hectares of native vegetation is to be undertaken at various locations within an application area of approximately 3,723 hectares, stretching across two catchments, the proposed clearing is not likely to increase the potential for flooding (GIS Database).

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

Methodology BoM (2015)  
Rio Tinto (2015)  
GIS Database:  
- Hydrographic Catchments – Catchments

## Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

### Comments

There is one native title claim over the application area (WC1999/012) (GIS Database; DAA, 2015). 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 Sites of Aboriginal Significance located in the area applied to clear (GIS Database; DAA, 2015). 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.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, the Department of Parks and Wildlife 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 17 August 2015 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

**Methodology** DAA (2015)  
GIS Database:  
- Aboriginal Sites of Significance

## 4. References

- BoM (2015) Climate Statistics for Australian Locations. A Search for Climate Statistics, Australian Government Bureau of Meteorology. <<http://www.bom.gov.au>>.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management.
- DAA (2015) Aboriginal Heritage Inquiry System, Department of Aboriginal Affairs, Perth, Western Australia <<http://maps.dia.wa.gov.au>>.
- DAFWA (2015) Land degradation advice for CPS 6689/1. Department of Agriculture and Food Western Australia, South Perth, 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.
- DPaW (2015) NatureMap, Department of Parks and Wildlife <<http://naturemap.dec.wa.gov.au>>.
- Government of Western Australia (2014) 2014 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2014. WA Department of Environment and Conservation, Perth.
- 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 (2015) Desktop Flora, Vegetation and Fauna Habitat Assessment at Robe Valley: Native Vegetation Clearing Permit – Supporting Report. Rio Tinto Iron Ore, Perth, Western Australia.

## 5. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia
<b>DEC</b>	Department of Environment and Conservation, Western Australia (now DPaW and DER)
<b>DER</b>	Department of Environment Regulation, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia
<b>DRF</b>	Declared Rare Flora
<b>DotE</b>	Department of the Environment, Australian Government
<b>DoW</b>	Department of Water, Western Australia
<b>DPaW</b>	Department of Parks and Wildlife, Western Australia
<b>DSEWPaC</b>	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
<b>EPA</b>	Environmental Protection Authority, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPBC Act</b>	<i>Environmental Protection and Biodiversity Conservation Act 1999</i> (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>PEC</b>	Priority Ecological Community, Western Australia
<b>RIWI Act</b>	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia

**Definitions:**

{DPaW (2013) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

- T**      **Threatened species:**  
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna or the Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).  
Threatened Fauna and Flora are further recognised by the Department according to their level of threat using IUCN Red List criteria. For example Carnaby's Cockatoo *Calyptorhynchus latirostris* is specially protected under the *Wildlife Conservation Act 1950* as a threatened species with a ranking of Endangered.  
Rankings:  
CR: Critically Endangered - considered to be facing an extremely high risk of extinction in the wild.  
EN: Endangered - considered to be facing a very high risk of extinction in the wild.  
VU: Vulnerable - considered to be facing a high risk of extinction in the wild.
- X**      **Presumed Extinct species:**  
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora (which may also be referred to as Declared Rare Flora).
- IA**     **Migratory birds protected under an international agreement:**  
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice.  
Birds that are subject to an agreement between governments of Australia and Japan, China and The Republic of Korea relating to the protection of migratory birds and birds in danger of extinction.
- S**      **Other specially protected fauna:**  
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P1**     **Priority One - Poorly-known species:**  
Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, rail reserves and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.
- P2**     **Priority Two - Poorly-known species:**  
Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.
- P3**     **Priority Three - Poorly-known species:**  
Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.
- P4**     **Priority Four - Rare, Near Threatened and other species in need of monitoring:**  
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.  
(b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.  
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
- P5**     **Priority Five - Conservation Dependent species:**  
Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.