



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7077/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Ltd

1.3. Property details

Property: Iron Ore (Robe River) Agreement Act 1964, Mineral Lease 248SA (AM 70/248)
Local Government Area: Shire of Ashburton
Colloquial name: Mesa C Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
5		Mechanical Removal	Mineral exploration, hydrogeological and geotechnical investigation.

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 14 July 2016

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The application area has been mapped as the following Beard vegetation association:
93: Hummock grasslands, shrub steppe; kanji over soft spinifex
A Level 2 Flora and Vegetation Survey of the application area was undertaken by MWH Pty Ltd (MWH) during the period 8 – 21 June 2015 and 2 – 8 September 2015 (MWH, 2016). The flora survey identified the following three vegetation units in the application area:

1. **AbTw** - *Acacia bivenosa* mid sparse to open shrubland over *Triodia wiseana* hummock grassland.
2. **AarAbTw** - *Acacia arida* and *Acacia bivenosa* mid open shrubland over *Triodia wiseana* hummock grassland.
3. **ChAbAtrTw** - *Corymbia hamersleyana* low isolated trees over *Acacia bivenosa* and *Acacia trachycarpa* mid sparse to open shrubland over *Triodia wiseana* hummock grassland to open hummock grassland.
- 4.

Clearing Description Mesa C Project.
Robe River Ltd (Robe River) proposes to clear 5 hectares within an application area of approximately 15 hectares for the purposes of mineral exploration, hydrogeological and geotechnical investigations. The project is located approximately 37 kilometres west of Pannawonica within the Shire of Ashburton.

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 Clearing will be undertaken with a dozer using a raised blade clearing technique, where possible. Blade down clearing may be required in areas of steep or rough terrain (Rio Tinto, 2016).

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 is located within the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.88% of the pre-European extent of vegetation remains in Western Australia (Government of Western Australia, 2014; GIS Database). This region is described as mountainous, Proterozoic sedimentary ranges and plateaux and dissected by gorges (CALM, 2002). The area also contains Mulga low woodland over bunch grasses and *Eucalyptus leucophloia* over *Triodia brizoides* (CALM, 2002). The vegetation of the Pilbara bioregion is well represented in Western Australia and is considered to be of 'least

concern' with regards to conservation status (Department of Natural Resources and Environment, 2002).

A flora survey of the broader Mesa B-C project (survey area of 4,272 hectares) was undertaken by MWH in 2015. The Mesa B-C Level 2 Flora and Vegetation survey identified a total of 300 taxa, representing 43 families and 129 genera in the Mesa B-C project area (MWH, 2016). However, within the Mesa C application area, a reduced number of taxa would be present. A total of three vegetation units occur within the application area (MWH, 2016; Rio Tinto, 2016). No Threatened flora species were recorded during the flora survey. No Priority Flora species were recorded within the application area during the flora survey (MWH, 2016).

Four introduced flora species (weeds) were recorded within the application area, including *Cenchrus ciliaris* (Buffel Grass), *Cenchrus setiger* (Birdwood Grass), *Malvastrum americanum* (Spiked Malvastrum) and *Setaria verticillata* (Whorled Pigeongrass) (Rio Tinto, 2016). Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No Threatened Ecological Communities (TEC's) occur within the application area (Rio Tinto, 2016; GIS Database). However, the buffer area of the 'Subterranean invertebrate communities of mesas in the Robe Valley region' Priority Ecological Community (PEC) is located over the application area (Rio Tinto, 2016; GIS Database). This PEC boundary covers a large area (approximately 826, 284 hectares) and is associated with subterranean biota occurring in the groundwater aquifer. The proposed clearing is unlikely to impact on groundwater ecosystems or subterranean biota (Rio Tinto, 2016; GIS Database).

A desktop survey of the application area identified 18 fauna species of conservation significance potentially occurring within the area (Rio Tinto, 2016). The majority of these (12 species) were migratory bird species (Rio Tinto, 2016). There are two fauna habitats identified within the application area (Rio Tinto, 2016). The habitat features present are not likely to support a high level of fauna diversity. Given the size of the application area and the low habitat diversity, the application area is not likely to comprise a high level of faunal diversity.

Clearing for the proposal is small, the application area is considered to be low in biodiversity and the vegetation in the surrounding area is well represented (Government of Western Australia, 2014). For these reasons, it is unlikely the proposal will result in the clearing of native vegetation that has higher biodiversity values than the surrounding, undisturbed vegetation.

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

Methodology CALM (2002)
Department of Natural Resources and Environment (2002)
Government of Western Australia (2014)
MWH (2016)
Rio Tinto (2016)

GIS Database:
- Threatened Fauna
- Threatened and Priority Flora
- TEC/PEC – Buffer
- TEC/PEC – Boundaries

(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 following two broad habitat types have been identified in the application area (Rio Tinto, 2016):

1. Stony Plains; and
2. Major River.

The majority of the application area consists of major river habitat (9.95 hectares or 66.7% of the application area) (Rio Tinto, 2016). The major river habitat comprises *Corymbia hamersleyana* low isolated trees over *Acacia bivenosa* and *Acacia trachycarpa* mid sparse to open shrubland over *Triodia wiseana* hummock grassland to open grassland (Rio Tinto, 2016). Major river habitats are considered significant as they contain a complexity of habitats and both permanent and semi-permanent pools. However, the major river habitat within the application area does not contain any surface water pools or large Eucalypt trees (Rio Tinto, 2016).

A search of available biological databases was undertaken and no Threatened fauna were recorded in the application area (GIS Database). A desktop survey of conservation significant fauna species potentially occurring in the region was undertaken prior to the fauna survey (Rio Tinto, 2016). The desktop survey identified five mammal species, 12 bird species and one reptile species potentially occurring within the application area (Rio Tinto, 2016). The majority of these conservation fauna species were migratory bird species (Rio Tinto, 2016). It is unlikely that these migratory species would depend on the area or be impacted by the proposal as the application area contains no permanent water source (Rio Tinto, 2016).

The desktop fauna survey reported the Pilbara Olive Python (*Liasis olivaceus* subsp. *barroni* – Vulnerable) as potentially occurring in the application area (Rio Tinto, 2016). Pilbara Olive Python individuals may utilise the

application for dispersal purposes. However, rocky habitat adjacent to a watercourse which is considered to be core habitat for the species is not recorded in the application area (Rio Tinto, 2016). The Pilbara Olive Python is known from a number of sites in the Pilbara and prefers escarpments, gorges and water holes in the ranges of the Pilbara region (DotE, 2016b). This species also has a large home range, utilises a range of habitat types and it is not likely that the Pilbara Olive Python would rely on the area (Rio Tinto, 2016). Therefore, it is unlikely that the habitat is significant for these fauna species.

Rio Tinto (2016) reported the Pilbara Leaf-nosed Bat (*Rhinonictis aurantia* - Vulnerable) and Ghost Bat (*Macroderma gigas* - Vulnerable) are likely to utilise some of the available habitats for foraging and dispersal. The major river habitat could be used for foraging by the Pilbara Leaf-nosed Bat and Ghost Bat as this habitat type consists of a large portion (66.7%) of the application area (Rio Tinto, 2016). However, Rio Tinto (2016) reported no caves or suitable roost sites for these species in the application area. Core habitat for the Pilbara Leaf-nosed Bat and Ghost Bat including caves, rocky habitat near watercourses does not exist in the application area (Rio Tinto, 2016). No Pilbara Leaf-nosed Bat or Ghost Bat individuals were recorded during the fauna survey (Rio Tinto, 2016). The small amount of clearing required (5 hectares), temporary nature and low impacts associated with the proposal are unlikely to impact Pilbara Leaf-nosed Bat or Ghost Bat habitat.

Rio Tinto (2016) reported the Northern Quoll (*Dasyurus hallucatus* - Endangered) is likely to occur in the application area. Northern Quolls occur in a diversity of habitats in the Pilbara including rocky areas, Eucalypt forest and woodlands, shrubland, grassland, desert, gorge, breakaway and major drainage line habitat (DotE, 2016a; Rio Tinto, 2016). Individuals may use the application area for foraging or dispersal (Rio Tinto, 2016). However, no individuals were recorded during the fauna survey and it is unlikely this species would depend on the application area due to the species' large home range (DotE, 2016a). The application area is not considered to be core habitat for the species and it is unlikely that Northern Quolls would rely on the area (Rio Tinto, 2016).

The fauna survey identified the Rainbow Bee-Eater (*Merops ornatus* - Migratory) is likely to occur in the application area. However, no permanent or semi-permanent water holes were recorded in the application area (Rio Tinto, 2016). It is unlikely Rainbow Bee-eater individuals would rely on the application area as this species require suitable habitat for foraging (shrublands and woodland) and often require close proximity to a permanent water source (DotE, 2016c). Rainbow Bee-Eaters are highly mobile and widely distributed around Australia, therefore the application area is not considered to be significant habitat for the species (DotE, 2016c).

The area proposed to be cleared does not contain significant habitat for fauna species indigenous to Western Australia.

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

Methodology DotE (2016a)
DotE (2016b)
DotE (2016c)
Rio Tinto (2016)

GIS Database:
- Threatened Fauna

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

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

A search of available databases was undertaken and no Threatened flora have been recorded in the application area (GIS Database). A flora survey was also undertaken by MWH in 2015 which did not record species of Threatened flora in the application area (MWH, 2016). The native vegetation proposed to be cleared is not likely to contain or is not necessary for the continued existence of rare flora.

Methodology MWH (2016)

GIS Database:
- Threatened and Priority Flora

(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, there are no Threatened Ecological Communities (TEC's) occurring within or near the application area (GIS Database). MWH (2016) reported no vegetation communities considered to be a TEC within or near the application area as a result of the flora survey.

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

Methodology MWH (2016)

GIS Database:

- TEC/PEC - Buffers
- TEC/PEC - 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 falls within the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.88% of the pre-European extent of vegetation remains in Western Australia (refer to table below) (Government of Western Australia, 2014; GIS Database). As large areas of the pre-European extent of native vegetation remain within the Pilbara IBRA region, the vegetation is considered to be of 'least concern' with regards to conservation status (Department of Natural Resources and Environment, 2002).

The native vegetation located in the application area has been mapped as Beard vegetation association 93: hummock grasslands, shrub steppe; kanji over soft spinifex (GIS Database). This vegetation association has not been extensively cleared as over 99% of the vegetation association remains at the State level and bioregional levels (refer to table below) (Government of Western Australia, 2014).

The clearing of vegetation as part of the proposal is not part of a significant ecological linkage. The area proposed to be cleared is also not considered to be significant as a remnant in an area that has been extensively cleared (Rio Tinto, 2016; GIS Database). The vegetation of the application area is considered to be good to very good in condition and for these reasons the clearing of native vegetation is not at variance to this Principle (Rio Tinto, 2016).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in All DPaW Managed Land
IBRA Bioregion – Pilbara	3,044,293	3,040,639	99.88	Least Concern	1.96
Beard veg assoc. – State					
93	3,044,309	3,040,641	99.88	Least Concern	1.96
Beard veg assoc. – Bioregion					
93	3,042,114	3,038,471	99.88	Least Concern	1.96

* 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)
Rio Tinto (2016)

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 at variance to this Principle**

The application area is located west of the Robe River, a major, ephemeral watercourse in the Robe Valley (Rio Tinto, 2016). A minor, ephemeral watercourse is also located in the south-western portion of the application area and is associated with the Robe River (Rio Tinto, 2016).

The proposal requires the clearing of riparian vegetation within major river habitat for the purpose of mineral exploration, hydrogeological and geotechnical investigations (Rio Tinto, 2016). The vegetation associated with this habitat type is representative of vegetation unit 3 (ChAbAtrTw) *Corymbia hamersleyana* low isolated trees over *Acacia bivenosa* and *Acacia trachycarpa* mid sparse to open shrubland over *Triodia wiseana* hummock grassland to open hummock grassland (Rio Tinto, 2016).

The application area supports riparian vegetation that is growing in, or in association with a watercourse including the flora species; *Acacia ancistrocarpa*, *Acacia pyrifolia* var. *pyrifolia*, *Acacia trachycarpa*, **Cenchrus*

setiger, *Corchorus tectus*, *Corymbia hamersleyana*, *Eragrostis cumingii*, *Eucalyptus victrix*, *Gossypium robinsonii*, *Malvastrum americanum*, *Petalostylis labicheoides*, *Phyllanthus maderaspatensis*, *Senna artemisioides* subsp. *oligophylla*, *Triodia epactia* and *Triodia wiseana* (DPaW, 2016; MWH, 2016). These species occur along creeks, creek banks, river beds, riverine flats, watercourses, seasonally wet areas, drainage lines or floodplains (DPaW, 2016). The potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.

The small amount of clearing (5 hectares) within an application area of approximately 15 hectares is not likely to significantly impact the ecological or hydrological functions of the minor, watercourse or major river habitats. Rio Tinto (2016) report that the raised blade clearing method will also be used to minimise clearing impacts on native vegetation. The proposed clearing will not have a detrimental impact on vegetation associations located in the area.

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

Methodology DPaW (2016)
MWH (2016)
Rio Tinto (2016)

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 variance to this Principle**

The application area is mapped as the Robe and River land systems (Rio Tinto, 2016; Van Vreeswyk et al., 2004; GIS Database). The Robe land system consists of low mesas supporting soft spinifex and occasionally hard spinifex grasslands over gravelly lower slopes and closely to moderately spaced tributary floors (Van Vreeswyk et al., 2004). The Robe land system is not prone to vegetation degradation or soil erosion (Van Vreeswyk et al., 2004). The River land system consists of active flood plains and major rivers supporting grassy Eucalypt woodlands, tussock grasslands and soft spinifex grasslands (Van Vreeswyk et al., 2004). Flood plains and river terraces located in this area are subject to regular overbank flooding from major channels, watercourses, sandy banks and poorly defined levees. The River land system is mostly stabilised by buffel grass and spinifex and erosion is uncommon. However, when vegetation is removed the susceptibility to erosion is high to very high (Van Vreeswyk et al., 2004). The relatively small amount of native vegetation clearing required for the proposal is not likely to cause soil or wind erosion. However, the proposal requires clearing within the River land system and there is a potential for erosion to occur in this land system. Potential land degradation impacts may be minimised by the implementation of a staged clearing condition.

Northcote, et al (1960-68) describe the landforms and soils in the application area as gently undulating plateaux elements sometimes sharply incised by narrow valleys. Dominant soils are gravelly, acid, red earths and areas are capped by the Robe pisolite iron ore formation (Northcote et al., 1960-68).

The small amount of native vegetation clearing (5 hectares) required for the proposal is not likely to change salinity levels, impact nutrient export or soil acidification (Rio Tinto, 2016). It is also unlikely that the proposal will cause waterlogging, flooding or degradation of the land in the area.

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

Methodology Northcote et al. (1960-68)
Rio Tinto (2016)
Van Vreeswyk et al. (2004)

GIS Database:
- Hydrography, linear
- 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 at variance to this Principle**

The application area does not lie within any conservation areas or Department of Parks and Wildlife managed lands (Rio Tinto, 2016; GIS Database). The nearest conservation area is the Millstream-Chichester National Park which is located approximately 113 kilometres north-east of the application area (GIS Database). As this conservation area is located a considerable distance from the application area, the proposed clearing is not likely to have any impacts on the environmental values of adjacent or nearby conservation areas.

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

Methodology Rio Tinto (2016)

GIS Database:
- DPaW 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

No Public Drinking Water Source Areas (PDWSA) are located in the application area. The nearest PDWSA is the Bungaroo Water Reserve which is located approximately 30 kilometres south-east of the application area. The Bungaroo Water Reserve will not be impacted by the proposal (Rio Tinto, 2016; GIS Database).

The groundwater within the application area is between 500 – 1,000 milligrams per litre of Total Dissolved Solids (TDS) which is considered to be potable water (GIS Database). It would not be expected that the proposed clearing of 5 hectares within a permit boundary of 15 hectares would cause salinity levels within the application or surrounding area to alter. No changes to the pH of groundwater are expected as a result of the clearing.

The proposed clearing is unlikely to cause deterioration in the quality of surface water including erosion or eutrophication of water bodies on-site or off-site. A minor non-perennial watercourse associated with the Robe River is located within the application area (GIS Database). Clearing within major river habitat is not likely to increase sedimentation or turbidity. Given the small amount of clearing required for the proposal, clearing impacts are not expected to result in the deterioration of surface water quality.

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

Methodology Rio Tinto (2016)

GIS Database:
- 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

Mean annual rainfall for the nearest weather station located at Pannawonica recorded 404.4 millimetres and total average annual evaporation for the area is 3,200 millimetres (BoM, 2016). As the application area receives low rainfall and annual evaporation is high, there is likely to be little surface flow during normal seasonal rains (BoM, 2016). The Robe River is located east of the application area and surface water will flow following seasonal rainfall. It is unlikely that the clearing of 5 hectares within an application area of 15 hectares will cause or exacerbate the incidence or intensity of localised or regional flooding.

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

Methodology BoM (2016)

GIS Database:
- Hydrography, linear

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

Comments There is one native title claim (WC1999/012) over the application area (DAA, 2016). This claim has been registered with the National Native Title Tribunal on behalf of the claimant groups (DAA, 2016). However, the 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*.

According to available databases, there are no registered Aboriginal sites of significance within the application area (DAA, 2016). 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 Regulation, 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 6 June 2016 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

Methodology DAA (2016)

4. References

- BoM (2016) Bureau of Meteorology Website - Climate Data Online, Pannawonica. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/index.shtml>. (Accessed 20 June 2016).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara (Hamersley subregion) Department of Conservation and Land Management, Perth, Western Australia.
- DAA (2016) Aboriginal Heritage Inquiry System. Department of Aboriginal Affairs. <http://maps.dia.wa.gov.au/AHIS2> (Accessed 14 June 2016).
- 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 (2016) Florabase - the Western Australian Flora. Flora Species Search, Department of Parks and Wildlife, Western Australian Herbarium. <http://florabase.dpaw.wa.gov.au/> (Accessed 5 July 2016).
- DotE (2016a) *Dasyurus hallucatus* in Species Profile and Threats Database. Department of the Environment. <http://www.environment.gov.au/sprat>. Department of the Environment, Canberra. (Accessed 6 July 2016).
- DotE (2016b) *Liasis olivaceus* subsp *barroni* in Species Profile and Threats Database. Department of the Environment. <http://www.environment.gov.au/sprat>. Department of the Environment, Canberra. (Accessed 6 July 2016).
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- Government of Western Australia (2014) 2014 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Western Australian Department of Parks and Wildlife, Perth, Western Australia.
- Keighery B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of Western Australia (Inc.). Nedlands, Western Australia.
- Northcote, K. H. with Beckmann G. G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- MWH (2016). Level 2 Flora and Vegetation Survey: Mesa B-C, Warramboe BWT and Highway to Todd Bore – Phase 1 and Phase 2 (in draft). Report prepared for Rio Tinto, by MWH Australia Pty Ltd, May, 2016.
- Rio Tinto (2016) Statement Addressing the 10 Clearing Principles at Mesa C, Native Vegetation Clearing Permit Supporting Report. Rio Tinto Iron Ore, Perth, Western Australia, May 2016.
- 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.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2015) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

T Threatened species:

Published as Specially Protected under the *Wildlife Conservation Act 1950*, listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

- CR Critically endangered species**
Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EN Endangered species**
Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- VU Vulnerable species**
Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EX Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
- IA Migratory birds protected under an international agreement**
Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- CD Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- OS Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be

included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3

Priority Three - Poorly-known species:

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations 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 locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

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 are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.