Government of **Western Australia**
Department of **Mines and Petroleum**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6427/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Cassini Resources Limited**

1.3. Property details

Property: Exploration Licence 69/1505
Exploration Licence 69/1530
Exploration Licence 69/2313
Local Government Area: Shire of Ngaanyatjarraku
Colloquial name: West Musgraves Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 5 March 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. Two Beard vegetation associations are located within the application area (GIS Database):

Beard vegetation association 18: Low woodland; mulga (*Acacia aneura*); and
Beard vegetation association 236: Hummock grasslands, shrub steppe; mulga and mallee (marble gum) over hard spinifex.

Two Level 1 flora and vegetation surveys were conducted by Coffey (2010a; 2010b) between 22 October to 5 November 2009 and 9 to 16 February 2010, and identified 23 vegetation communities within the application area:

1. **Dune:** Shrubland of *Acacia ligulata, Grevillea stenobotrya, Gyrostemon ramulosus, Aluta maisonneuvei* subsp. *maisonneuvei* and *Acacia melleodora* to 2m over Low Open Shrubland of *Bonamia rosea* and *Solanum coactiliferum* to 0.3 metres over Scattered Tussock Grasses of *Aristida contorta* to 0.2 metres with a lower slope component of Low Shrubland of *Aluta maisonneuvei* subsp. *maisonneuvei* and *Acacia maitlandii* to 1.4 metres over Hummock Grassland of *Triodia basedowii* and *Triodia schinzii* to 1.1 metres on larger dunes;

2. **Calcrete:** Scattered Shrubs to Tall Open Shrubland of *Hakea lorea* subsp. *lorea* to 3 metres over Open Shrubland of *Acacia ligulata* to 1.6 metres over Low Open Shrubland of *Petalostylis cassioides, Halgania cyanea* var. Allambi Stn and *Alyogyne pinoniana* to 1m over Mixed Tussock/Hummock grasses;

3. **SLT:** Scattered Low Trees of *Corymbia opaca* to 4 metres with mallee pockets (*Eucalyptus oxymitra* and *Eucalyptus gamophylla*) over Scattered *Hakea lorea* subsp. *lorea* to 4m over Open Shrubland of *Acacia ligulata* to 1.8 metres over Mid-Dense Hummock Grassland of *Triodia* spp. To 1.1 metres;

4. **LOW:** Low Open Woodland of *Eucalyptus oxymitra, Eucalyptus gamophylla* and *Brachychiton gregorii* to 2.2 metres with occasional *Corymbia opaca* to 4m Scattered Shrubs of *Codonocarpus cotinifolius* to 1.8 metres over Low Open Shrubland of *Halgania erecta* and *Dicrastylis doranii* to 0.3 metres over Very Open Tussock grassland;

5. **OS:** Open Shrubland of *Acacia ligulata* and *Codonocarpus cotinifolius* to 2 metres over Scattered Low Shrubs of *Rulingia loxophylla* to 0.3 metres over Scattered Tussock Grasses of *Eragrostis eriopoda* to 0.3 metres;

6. **SLTEs:** Scattered Low Trees of *Eucalyptus socialis* subsp. *eucentrica* and *Corymbia opaca* to 8m over Open Shrubland of *Acacia kempeana, Acacia ligulata, Melaleuca glomerata* and *Senna artemisioides* subsp. *petiolaris* to 2 metres;

7. **TOS:** Tall Open Shrubland of *Acacia aneura* to 5m over Low Open Shrubland of *Senna artemisioides* subsp. *artemisioides* and *Eremophila latrobei* subsp. *filiformis* to 1.1 metres over Very Open Tussock

Grassland;

8. **TS:** Tall Shrubland of *Acacia aneura* subsp. *aneura* to 4m over Low Shrubland of *Aluta maisonneuvei* subsp. *maisonneuvei* to 1 metre over Mid-Dense Hummock Grassland of *Triodia basedowii* to 1 metre;

9. **STS:** Scattered Tall Shrubs of *Hakea lorea* subsp. *lorea*, *Grevillea eriostachya* and *Acacia sericophylla* to 3 metres over Scattered Shrubs of *Acacia pachyacra* to 2 metres over Very Open Tussock Grassland of *Amphipogon caricinus* var. *caricinus* to 0.3 metres over Low Open Shrubland of *Leptosema chambersii* and *Rulingia leptophylla* to 0.3 metres;

10. **LOWEoTOS:** Low Open Woodland of *Eucalyptus oxymitra* to 5m over Tall Open Shrubland of *Acacia aneura* to 4 metres over Scattered Shrubs of *Acacia abrupta* to 1.5m over Mid-Dense Hummock Grassland of *Triodia basedowii* to 1 metre;

11. **LOWEoCo:** Low Open Woodland of *Eucalyptus oxymitra* and *Corymbia opaca* to 4m over Scattered Tall Shrubs of *Hakea lorea* subsp. *lorea* to 3 metres over Open Shrubland of *Melaleuca glomerata* and *Acacia ligulata* to 2 metres over Mid-Dense Hummock Grassland of *Triodia basedowii* to 1.1 metres; and

12. **SCTAp:** Scattered Tall Shrubs of *Acacia pruinocarpa* to 4m over Low Open Woodland *Eucalyptus oxymitra, Eucalyptus socialis* subsp. *eucentrica* and *Corymbia opaca* to 4 metres over Open Shrubland of *Hakea lorea* subsp. *lorea, Acacia ligulata, Melaleuca glomerata* and *Acacia kempeana* to 2m over Mid-Dense Hummock Grassland of *Triodia scariosa* to 1 metre (Coffey, 2010a).

13. **TOS:** Tall Open Shrubland to Tall Shrubland of *Acacia aneura* to 5 metres over Scattered Shrubs to Open Shrubland of *Senna artemisioides* subsp. *artemisioides*, *Eremophila latrobei* subsp. *filiformis* to 2m over Scattered Low Shrubs of *Ptilotus obovatus* to 0.6 metres over Very Open Tussock Grassland of *Eriachne helmsii*, *Enneapogon polyphyllus*, *Monachather paradoxus* and *Aristida contorta* to 0.4m over Scattered Herbs of *Heliotropium moorei* to 0.2 metres;

14. **OCo:** Occasional *Corymbia opaca* and *Acacia aneura* to 4.5m over Scattered Tall Shrubs of *Hakea lorea* subsp. *lorea* to 3 metres over Open Shrubland of *Acacia pachyacra* and *Acacia ligulata* to 1.8 metres over Mid-Dense Hummock Grassland of *Triodia schinzii* and *Triodia basedowii* to 1.2 metres over Scattered Low Shrubs to Low Open Shrubland of *Rulingia loxophylla* to 0.5m over Scattered Tussock grasses of *Aristida holathera* var. *holathera* to 0.4 metres;

15. **TS:** Tall Shrubland of *Acacia aneura* to 4m over Scattered Shrubs of *Senna artemisioides* subsp. *artemisioides* to 1.6 metres over Mid-Dense Hummock Grassland of *Triodia basedowii* to 1m over Scattered *Ptilotus obovatus* to 0.4 metres;

16. **TOSAa:** Tall Open Shrubland of *Acacia aneura* and *Callitris columellaris* to 3.5 metres over Open Shrubland of *Pandorea pandorana*, *Dodonaea viscosa* subsp. *spathulata*, *Hibiscus leptocladus, Santalum lanceolatum* and *Prostanthera albiflora* to 2 metres over Low Open Shrubland of *Abutilon leucopetalum* and *Ptilotus obovatus* to 0.4 metres over Scattered Tussock Grasses of *Cymbopogon obtectus* and *Enneapogon polyphyllus* to 0.5 metres;

17. **TSAa:** Tall Shrubland of *Acacia aneura* to 3 metres over Shrubland of *Indigofera* sp., *Eremophila latrobei* subsp. *filiformis* and *Senna artemisioides* subsp. *artemisioides* to 1.5 metres over Very Open Tussock Grassland of *Eriachne mucronata* (arid form) and *Aristida holathera* var. *holathera* to 0.3 metres;

18. **TOSAaSS:** Tall Open Shrubland of *Acacia aneura* to 4 metres over Scattered Shrubs of *Senna artemisioides* subsp. *artemisioides* to 1.5 metres over Scattered Tussock Grasses of *Aristida contorta* and *Enneapogon polyphyllus* to 0.3 metres;

19. **Spa:** Shrubland of *Prostanthera albiflora*, *Eremophila longifolia* and *Santalum lanceolatum* to 1.5 metres over Scattered Low Shrubs of *Hibiscus leptocladus* to 0.6 metres over Very Open Tussock Grassland of *Digitaria brownii* and *Enneapogon polyphyllus* to 0.4 metres;

20. **TSAs:** Tall Shrubland of *Acacia sericophylla*, *Grevillea juncifolia* subsp. *juncifolia*, *Acacia pruinocarpa* and *Grevillea eriostachya* to 4 metres over Scattered Shrubs of *Eremophila forrestii* subsp. *forrestii*, *Acacia melleodora* and *Acacia ligulata* and *Acacia pachyacra* to 1.6 metres over Mid-Dense Hummock Grassland of *Triodia schinzii* and *Triodia basedowii* to 1.2 metres over Scattered Low Shrubs of *Rulingia loxophylla* to 0.4 metres;

21. **LOW:** This vegetation type is a subset of TsAs but with a significant component of E*ucalyptus gamophylla*: Low Open Woodland of *Eucalyptus gamophylla* to 2.5 metres over Tall Shrubland of *Acacia sericophylla*, *Grevillea juncifolia* subsp. *juncifolia*, *Acacia pruinocarpa* and *Grevillea eriostachya* to 4 metres over Scattered Shrubs of *Eremophila forrestii* subsp. *forrestii*, *Acacia melleodora* and *Acacia ligulata* and *Acacia pachyacra* to 1.6 metres over Mid-Dense Hummock Grassland of *Triodia schinzii* and *Triodia basedowii* to 1.2 metres over Scattered Low Shrubs of *Rulingia loxophylla* to 0.4 metres;

22. **TsGs:** Tall Shrubland of *Grevillea stenobotrya* and *Dodonaea viscosa* subsp. *angustissima* to 3 metres over Shrubland of *Aluta maisonneuvei* subsp. *maisonneuvei* and *Acacia ligulata* to 1.1 metres over Open Hummock Grassland of *Triodia basedowii* and *Triodia schinzii* to 1.1 metres over Scattered Tussock grasses of *Aristida holathera* var. *holathera* to 0.4 metres over Scattered Low Shrubs of *Leiocarpa semicalva* subsp. *semicalva* and *Scaevola parviflora* subsp. *parviflora* to 0.3 metres; and

23. **TSAc:** Tall Shrubland of *Acacia colletioides*, *Grevillea juncifolia* subsp. *juncifolia* and *Acacia melleodora* to 3 metres over Mid-Dense Hummock Grassland of *Triodia basedowii* to 1.1 metres.

Clearing Description

West Musgrave Project.

Cassini Resources Limited proposes to clear up to 18 hectares of native vegetation within a total boundary of approximately 27,731 hectares, for the purpose of mineral exploration. The project is located approximately 590 kilometres north-east of Laverton, in the Shire of Ngaanyatjarraku.

Vegetation Condition

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994);

To:

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment

The proposed clearing of native vegetation is for the purposes of constructing drill pads and associated access tracks, and it is estimated approximately 20 holes will be drilled under this project.

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area occurs within the Central Ranges and Great Victoria Desert Interim Biogeographic Regionalisation of Australia (IBRA) bioregions (GIS Database). The Great Victoria Desert bioregion is characterised by dunefields with playa lakes and lunettes. Vegetation is predominantly marble gum, mulga and yarldarlba over spinifex grassland (Barton and Cowan, 2001). The Central Ranges bioregion is dominated by rugged ranges and red sand plains. The vegetation is predominantly mulga open woodland over spinifex grasslands (Graham and Cowan, 2001).

Graham and Cowan (2001) assessed the biodiversity of the Mann-Musgrave Block IBRA subregion, finding that the subregion is rich and diverse in both its flora and fauna. However, most species are wide ranging and usually occur in at least one, and often several adjoining subregions (Graham and Cowan, 2001).

There have been several flora and vegetation surveys within the surrounding areas since 2001, two of which are relevant to the application area (Cassini, 2014). Based on the flora and vegetation surveys by Coffey (2010a; 2010b), 23 vegetation types were mapped within the application area. The vegetation types recorded within the application area is considered regionally well represented (Coffey, 2010a; 2010b).

Coffey (2010a; 2010b) identified a total of 271 native flora species within the application area including one Priority 3 Flora species, *Stackhousia clementii.* Approximately 17,038 individuals of *Stackhousia clementii* were recorded within the application area (Coffey, 2010a). This species has been recorded within several IBRA regions and is well represented within the regional area (Western Australian Herbarium, 2015). The proposed clearing of 18 hectares of native vegetation within a boundary of 27,731 hectares is unlikely to impact the conservation significance of this species.

Goodenia sp. (A.S GEORGE 4809) was recorded within the application area, however this species has yet to be formally described and may become a Priority Flora species in the future (Coffey, 2010a). A total of 158 individuals of *Goodenia* sp. (A.S GEORGE 4809) were recorded within the application area in association with calcrete outcrops, and were recorded mainly in the south east and north east portions of the application area (Coffey, 2010a). It is unlikely that the proposed clearing of native vegetation will impact on the conservation significance of this species as the species were found to be locally abundant (Coffey, 2010a).

The timing of the flora survey by Coffey (2010b) did not coincide with the flowering periods of *Menkea lutea* (Priority 1) and *Calotis latiuscula* (Priority 3), therefore these Priority Flora species may not have been identifiable or present at the time of the survey (Coffey, 2010b). The sandy clay areas within the application area are preferred habitat of *Calotis latiuscula* and it is possible that *Menkea lutea* may also occur in sandy clay habitats after the summer rain season has finished (Coffey, 2010b). Given the preferred habitat types for these Priority Flora species are abundant in the local area (GIS Database), the proposed clearing of 18 hectares of native vegetation within a boundary of 27,731 hectares is unlikely to impact the conservation significance of these species.

No Threatened or Priority Ecological Communities, or Threatened Flora species have been recorded within the application area (DPaW, 2015; Coffey, 2010a, 2010b).

Coffey (2010a; 2010b) identified two weed species during the flora and vegetation survey. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the 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 is not likely to be at variance to this Principle.

Methodology

Barton and Cowan (2001)
Cassini (2014)
Coffey (2010a)
Coffey (2010b)

DPaW (2015)
Graham and Cowan (2001)
Western Australian Herbarium (2015)
GIS Database:
- IBRA WA (Regions - Subregions)
- Imagery
- Pre-European vegetation
- Threatened Ecological Sites Buffered

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

Comments

Proposal is not likely to be at variance to this Principle

The vegetation types, landforms and habitat types within the application area are common and widespread in the region (Coffey, 2010a; 2010b; GIS Database).

There are no records of fauna of conservation significance occurring within the area applied to clear (GIS Database; DPaW, 2015).

Cassini (2014) state that drill holes and pads will not be located within dune systems wherever possible and practicable. The clearing of 18 hectares of native vegetation scattered over an area of approximately 27,731 hectares is unlikely to have any significant impact on available fauna habitats.

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

Methodology

Cassini (2014)
Coffey (2010a)
Coffey (2010b)
DPaW (2015)
GIS Database:
- Imagery
- Threatened Fauna

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

Comments

Proposal is not likely to be at variance to this Principle

According to the available databases, there are no known records of Threatened Flora within the application area (GIS Database). A search of the Department of Parks and Wildlife's Threatened and Priority Flora databases identified no Threatened Flora species as occurring within a 10 kilometre radius of the application area (DPaW, 2015).

Flora surveys conducted over the application area and surrounding areas did not record any species of rare flora (Coffey, 2010a; 2010b).

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

Methodology

Coffey (2010a)
Coffey (2010b)
DPaW (2015)
GIS Database:
- Declared Rare and Priority Flora List

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

Comments

Proposal is not likely to be at variance to this Principle

A search of the available databases showed that there are no known Threatened Ecological Communities situated within 200 kilometres of the application area (GIS Database).

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

Methodology

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 Central Ranges and Great Victoria Desert IBRA bioregions (GIS

Database). The vegetation within the application area is recorded as:

Beard vegetation association 18: Low woodland; mulga (*Acacia aneura*); and
Beard vegetation association 236: Hummock grasslands, shrub steppe; mulga and mallee (marble gum) over hard spinifex.

The above Beard vegetation associations retain approximately 99**%** or above of their pre-European extent at both the state and bioregion level (Government of Western Australia, 2013). The area proposed to be cleared is not a significant remnant of native vegetation.

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

Methodology Government of Western Australia (2013)
GIS Database:
- IBRA WA (regions - subregions)
- Pre-European Vegetation

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

Comments **Proposal is at variance to this Principle**
According to available databases, there are no watercourses or wetlands within the application area (GIS Database). The vegetation within the application area is not considered to be growing in association with any watercourse or wetland.

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

Methodology GIS Database:
- Geodata, Lakes
- 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 Central Ranges bioregion is widely affected by the grazing of feral camel herds, with the camel population increasing exponentially each year (Ward, 2007).

Cassini Resources Limited proposes to clear 18 hectares of native vegetation, distributed over a large application area of approximately 27,731 hectares. Disturbance will be for access tracks and drill pads using machinery with the blade up to ensure soil is not removed, which is not likely to result in large areas of disturbed or open land. Given the nature and scale of the proposed activities, the clearing is not likely to result in appreciable land degradation.

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

Methodology Ward (2007)

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

Comments **Proposal is not likely to be at variance to this Principle**
The proposed clearing is within the 'Ranges of the Western Desert', an area which is listed on the Register of National Estate for its unique natural values (GIS Database). The ranges of the Western Desert cover an area of approximately 8 million hectares. The small area of the proposed clearing (18 hectares) is unlikely to have any significant impact on the natural values of this area.

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

Methodology GIS Database:
- Register of National Estate

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments **Proposal is not likely to be at variance to this Principle**
The application area is not within a Public Drinking Water Source Area (GIS Database).

Groundwater within the application area is fresh to brackish, at between 1,000 - 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). The proposed clearing, is unlikely to have any significant impact on groundwater levels or quality.

The proposed clearing area is relatively flat, and is not associated with any permanent watercourses or waterbodies (GIS Database). The proposed clearing of approximately 18 hectares of native vegetation for mineral exploration, is unlikely to cause any deterioration in surface water quality.

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

Methodology GIS Database:
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

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

Comments

Proposal is not likely to be at variance to this Principle

The application area falls within the Warburton Basin catchment area, which covers a total area of approximately 17,195,989 hectares (GIS Database).

The mean annual rainfall for the area is approximately 300 millimetres per year, while the evaporation of the area is at around 3,400 millimetres per year (GIS Database). Localised flooding may occur following heavy rainfall events. However, the proposed clearing of approximately 18 hectares within a total application area of approximately 27,731 hectares, is unlikely to increase the incidence or intensity of natural flooding events.

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

Methodology GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments - Catchments
- Rainfall, Mean Annual

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

Comments

There is one Native Title claim over the area under application (GIS Database). The claim WC2004/003 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*.

There are no registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment 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 26 January 2015 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims - Registered with the NNTT
- Native Title Claims - Filed at the Federal Court
- Native Title Claims - Determined by the Federal Court

4. References

Barton, B. and Cowan, M (2001) Great Victoria Desert 2 (GVD2 - Central subregion), in A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002, Western Australia.

Cassini (2014) CPS 6217/1 Clearing permit application. Cassini Resources Limited, Perth, Western Australia.

Coffey (2010a) Flora and Vegetation Assessment West Musgraves Project Area Great Victorian Desert. Prepared for BHP Billiton Nickel West by Coffey Environments Australia Pty Ltd. Unpublished report, January 2010.

Coffey (2010b) Flora and Vegetation Assessment West Musgraves Project Area Great Victorian Desert, February 2010. Prepared for BHP Billiton Nickel West by Coffey Environments Australia Pty Ltd. Unpublished report, March 2010.

DPaW (2015) NatureMap Department of Parks and Wildlife, viewed 23 February 2015 <http://naturemap.dec.wa.gov.au>.

Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.

Graham, D. and Cowan, M (2001) Central Ranges 1 (CR1 - Mann-Musgrave Block subregion), in A Biodiversity Audit of

Western Australia's 53 Biogeographical Subregions in 2002, Western Australia.
Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
Ward, B (2007) Feral Camel Distribution and Abundance of the Warburton Central Ranges and Northern Great Victoria Desert. Draft report Department of Environment and Conservation Perth WA.
Western Australian Herbarium (2015) FloraBase - the Western Australian Flora. Department of Parks and Wildlife, viewed 3 March 2015 <https://florabase.dpaw.wa.gov.au>.

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	*Environmental Protection Act 1986*, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (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	*Rights in Water and Irrigation Act 1914*, Western Australia
s.17	Section 17 of *the Environment Protection Act 1986*, Western Australia
TEC	Threatened Ecological Community

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 DPaW according to their level of threat using IUCN Red List criteria. For example Carnaby's Cockatoo *Calyptorynchus 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.

Principles for clearing native vegetation:

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

(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.

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

(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.

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

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

(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.

(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.

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