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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6233/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Spinifex Crushing and Screening Services Pty Ltd**

1.3. Property details

Property: Mining Lease 47/1484
Local Government Area: Shire of Roebourne
Colloquial name: Mt Regal Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 12 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 at a 1:250,000 scale for the whole of Western Australia. Two Beard vegetation associations have been mapped within the application area (GIS Database).

Beard vegetation association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana*; and
Beard vegetation association 589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex (Government of Western Australia, 2013; GIS Database).

A flora and vegetation survey of the application area and its surrounds was undertaken between 19 to 22 May 2014. Ten broad vegetation types were identified during the survey (360 Environmental, 2014):

1a) Low woodland of *Corymbia hamersleyana* and *Acacia coriacea subsp. pendens* over scattered shrubs of *Acacia bivenosa, Acacia pyrifolia* and *Santalum lanceolatum* over hummock grassland of *Triodia epactia/pungens (T. wiseana)* over (open) tussock grassland of **Cenchrus ciliaris*;

1b) Low woodland of *Terminalia canescens* and *Acacia coriacea subsp. pendens* over mixed shrubs of *Ehretia saligna* or *Flueggea virosa subsp. melanthesoides* over hummock grassland of *Triodia epactia/pungens*;

2a) Tussock grassland of *Eragrostis xerophila* over scattered mixed herbs of *Sida fibulifera, Rhynchosia minima* and *Sclerolaena eriacantha*;

2b) Open shrubland *Acacia xiphophylla* over very open hummock grassland of *Triodia epactia/pungens* over very open tussock grassland of *Eragrostis xerophila* and **Cenchrus ciliaris* over mixed herb;

2c) Tall scattered shrubs of *Acacia synchronicia* over *shrubland* of *Acacia xiphophylla* over open hummock grassland of *Triodia epactia/pungens* and *Triodia wiseana*;

2d) Tall scattered shrubs of *Acacia synchronicia* over open shrubland of *Acacia bivenosa, Acacia pyrifolia* and mixed *Senna spp.* over (open) hummock grassland of *Triodia wiseana*;

2e) Tall open shrubland of *Acacia inaequilatera* and *Acacia citrinoviridis* over open shrubland of *Acacia bivenosa* over mixed low scattered shrubs of *Senna spp.* over hummock grassland of *Triodia wiseana* over very open herbland of *Cassytha capillaris*;

3a) Scattered shrubs (open shrubland) of *Acacia bivenosa* over *Triodia wiseana* hummock grassland;

3b) Low scattered trees of *Terminalia canescens* over scattered shrubs of *Acacia bivenosa* over low scattered shrubs of *Indigofera monophylla* over open hummock grassland of *Triodia wiseana* and *Triodia epactia/pungens;*

3c) Tall scattered mixed shrubs of *Brachychiton acuminatus, Acacia coriacea subsp. pendens, Terminalia canescens* and over scattered tussock grasses of *Cymbopogon ambiguus* over *Triodia epactia/pungens* open hummock grassland.

Clearing Description

Mt Regal Project

Spinifex Crushing and Screening Services Pty Ltd proposes to clear up to 272.02 hectares of native vegetation within a total boundary of approximately 272.02 hectares for the purpose of mineral production. The project is located approximately 11.5 kilometres south-west of Karratha.

Vegetation Condition

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994);

To

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

Comment

The vegetation condition was assessed by botanists from 360 Environmental (2014).

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 Roebourne subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This subregion is characterised by quaternary alluvial and older colluvial coastal and subcoastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera*. Uplands are dominated by *Triodia* hummock grasslands and ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands. Samphire, *Sporobolus* and mangal occur on marine alluvial flats and river deltas (CALM, 2002).

A targeted flora survey of the application area identified ten vegetation types within the application area (360 Environmental, 2014). A total of 38 families, 87 genera and 144 taxa were identified within the application area and surrounding vegetation (360 Environmental, 2014). A search on the Department of Parks and Wildlife's Threatened and Priority Flora databases revealed no Threatened Flora species and three Priority Flora species that may potentially occur in the application area; *Trianthema* sp. Python Pool Priority 2 (P2), *Eriochloa fatmensis* Priority 3 (P3) and *Vigna* sp. Rockpiles (P3) (DPAW, 2014).No Threatened flora species were identified within the application area or surroundings during the vegetation survey (Native Vegetation Solutions, 2014). *Vigna* sp. Rockpiles was identified during the flora survey, although is outside the application area (360 Environmental, 2014).

There were four species of weeds identified during the survey; *Cenchrus ciliaris, Cenchrus setiger, Passiflora foetida var. hispida and Portulaca oleracea*. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were four faunal habitats identified within the application area (360 Environmental, 2014). A search of the Department of Parks and Wildlife (DPAW) Naturemap identified that 22 reptile, 69 bird and 3 mammal species have the potential to occur within a 10 kilometre radius of the application area (DPAW, 2014). A Level 1 fauna and habitat survey was conducted by 360 Environmental on 19 - 22 May 2014, followed by a targeted Northern Quoll survey. Four main habitats for fauna were identified during the site visit: Hill slope and crest; Stony plain; Loam/sand plain; and minor drainage lines. There has been recent fire disturbance through much of the application area (360 Environmental, 2014). All of the habitats within the application area are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to that found in similar habitat located elsewhere in the region (360 Environmental, 2014).

There are no Threatened Ecological Sites or Priority Ecological Sites within the application area (GIS Database).

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

Methodology

360 Environmental (2014)
CALM (2002)
DPAW (2014)
GIS Database:
- IBRA WA (Regions - Subregions)
- 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 search of the Department of Parks and Wildlife (DPAW) Naturemap identified that 22 reptile, 69 bird and 3 mammal species have the potential to be within a 10 kilometre radius of the application area (DPAW, 2014). A Level 1 fauna and habitat survey was conducted by 360 Environmental on 19 to 22 May 2014. Four fauna habitats were identified within the application area. These being:

- Hill slope and crest

- Stony plain
- Loam/sand plain
- Minor drainage lines

360 Environmental (2014) identified the vegetation condition to be 'completely degraded' to ‘excellent’ (Keighery, 1994). The landforms and habitat found within the application area is considered as being well represented in the Pilbara bioregion (360 Environmental, 2014).

Based on habitats available and known distributions, a total of 15 Schedule or Priority fauna species may potentially occur in the area: Airlie Island Ctenotus (*Ctenotus angusticeps*), Lined Soil-crevice Skink (*Notoscincus butleri)*, Pilbara Olive Python (*Liasis olivaceous barroni*), Flock Bronzewing (*Phaps histionica*), Fork Tailed Swift (*Apus pacificus*), Australian Bustard (*Ardeotis australis*), Ranbow Bee-eater (*Merops ornatus*), Barn Swallow (*Hiundo rustica*), Bushstone Curlew (*Burhinus grallarius*), Northern Quoll (*Dasyyrus hallucatus*), Northern Marsupial Mole (*Notoryctes caurinus*), Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*), Northern Short-tailed Mouse (*Leggadina lakedownensis),* Western Pebble-mouse (*Pseudomys chapmani*) (360 Environmental, 2014).

Some of the conservation significant species are considered to be highly mobile, have a wide distribution and/or are able to utilise a wide range of habitat types so the clearing is unlikely to significantly impact on the species (360 Environmental, 2014). Other species are known mostly from historical records and based on their current distribution these species are not expected to be found in the surrounding area (360 Environmental, 2014).

Two conservation significant species were recorded during the fauna survey within the application area; the Rainbow Bee-eater and the Northern Quoll.

Merops ornatus - The Rainbow Bee-eater is listed as Migratory under the EPBC Act and WC Act. This species is one of the most common and widespread birds in Australia with a distribution that covers the majority of Australia (Barrett et al. 2003). Due to its widespread distribution, impacts to the Rainbow Bee-eater population as a result of mining related activity in the application area will likely be insignificant at the local level, and particularly so at the regional level (360 Environmental, 2014).

Dasyurus hallucatus - The Northern Quoll is listed as Endangered under the EPBC Act and S1 under the WC Act. The Northern Quoll can be locally common, but its former range has retracted considerably (Van Dyck and Strahan, 2008). The Northern Quoll is found in dissected rocky escarpments, utilising a variety of den sites, including rock crevices, tree hollows, logs and termite mounds. It favours rocky areas, taking refuge in rock crevices, and utilises gullies and drainage lines. The Project area contained areas of rock piles and rock outcropping suitable for denning in the south-west of the application area. It is considered the potential impacts on the Northern Quoll as a result of project implementation will not be significant due to the following factors:

- It does appear as though Northern Quolls are in low abundance across the project area and they are utilising previously quarried areas;
- Potential impacts as a result of vegetation clearing in the north east of the project area where construction material is proposed to be quarried are unlikely to significantly impact Northern Quoll populations at the local or regional scale, given that clearing will occur on the plains of the project area;
- The sand excavation area is highly unlikely to contain any denning habitat, but could be used as foraging habitat; and
- Potential impacts as a result of proposed quarrying activity in the south west of
- the project area, may impact to some extent on denning sites, though these impacts are likely to be limited, given the relatively small extent of the proposed disturbance, which is planned to be staged over a number of years, and the potential for individuals to utilise the quarried areas as denning habitat on the cessation of quarrying (360 Environmental, 2014).

The following management actions will be undertaken to minimise any direct or in-direct impacts to Northern Quolls:

- Minimise the clearing of rock-piles where practical and possible;
- Educate mine site personnel about Northern Quoll ecology on site and place posters around the workplace that include pictures of the Northern Quoll; and
- Investigate construction of boulder piles (artificial den sites) with quarry material where practical and possible as these may be used for denning (360 Environmental, 2014).

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

Methodology

360 Environmental (2014)
Barrett et al. (2003)
DPAW (2014)
Keighery (1994)
Van Dyck and Strahan (2008)

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, there are no records of Threatened Flora within the application area (360 Environmental, 2014; 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, 2014).

A targeted significant flora survey of the application area and its surrounds did not record any Threatened Flora species, and identified one Priority flora species (*Vigna* sp. Rockpiles) that was just outside of the application area (360 Environmental, 2014).

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

Methodology

360 Environmental (2014)
DPAW (2014)
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 records of any Threatened Ecological Communities (TECs) within the application area (GIS Database). There is no known Threatened Ecological System within a 100 kilometre radius 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 Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The vegetation of the application area has been broadly mapped as Beard vegetation associations 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* and 589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex (GIS Database).

Vegetation association 157 remains at approximately 99.32% and 99.24% of pre-European extent, at the state and bioregion levels respectively, and vegetation association 589 remains at approximately 99.38% and 99.44% of pre-European extent, at the state and bioregion levels respectively (see table below). Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPAW Managed Lands
IBRA Bioregion - Pilbara	17,808,657	17,733,583	~99.58	Least Concern	2.61
Beard vegetation associations - State					
157	502,729	499,312	~99.32	Least Concern	18.06
589	807,699	802,713	~99.38	Least Concern	1.59
Beard vegetation associations - Bioregion					
157	199,832	198,409	~99.24	Least Concern	5.67
589	728,768	724,696	~99.44	Least Concern	1.77

* Government of Western Australia (2013)
** 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 (2013)
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 may be at variance to this Principle

The application area is located in a semi-desert-tropical region, with an average annual rainfall of approximately 272.8 millimetres falling mainly during the summer months, and an average annual evaporation rate of approximately 3,400mm (BoM, 2014). Hence, the presence of surface water resulting from significant rain events is relatively short-lived.

Based on the vegetation mapping by 360 Environmental (2014), the vegetation types '1a', '1b' and '3b' are associated with drainage lines:

- 1a: Low woodland of *Corymbia hamersleyana* and *Acacia coriacea subsp. pendens* over scattered shrubs of *Acacia bivenosa, Acacia pyrifolia* and *Santalum lanceolatum* over hummock grassland of *Triodia epactia/pungens (T. wiseana)* over (open) tussock grassland of **Cenchrus ciliaris*;
- 1b: Low woodland of *Terminalia canescens* and *Acacia coriacea subsp. pendens* over mixed shrubs of *Ehretia saligna* or *Flueggea virosa subsp. melanthesoides* over hummock grassland of *Triodia epactia/pungens*;
- 3b: Low scattered trees of *Terminalia canescens* over scattered shrubs of *Acacia bivenosa* over low scattered shrubs of *Indigofera monophylla* over open hummock grassland of *Triodia wiseana* and *Triodia epactia/pungens;*

The application area does not contain any significant watercourses or wetlands (360 Environmental, 2014).

Surface drainage in the application area is through several ephemeral drainage lines (GIS Database), which flow during periods of intense rainfall. The ephemeral drainage lines do not contain any significant groundwater dependent species (360 Environmental, 2014). The vegetation types associated with the drainage lines are considered to be common and widespread within the subregion, and do not contain any significant groundwater dependent species (360 Environmental, 2014).

Based on the above the proposed clearing may be at variance to this Principle. However, the proposed clearing is unlikely to result in any significant impact to any watercourse or wetland due to the small scale of clearing of vegetation types associated with watercourses.

Methodology 360 Environmental (2014)
BoM (2014)
GIS Database:
- Hydrography, Linear

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is broadly mapped as falling within the Boolgeeda, Rocklea and Horseflat Land Systems (GIS Database).

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

The Rocklea land system is described as basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. This system has very low erosion hazard (Van Vreeswyk, 2004).

The Horseflat Land System consists of gilgaied clay plains supporting tussock grasslands and minor snakewood shrublands (Van Vreeswyk et al., 2004). The non-gilgaied plains, alluvial plains and dissected slopes of this system are moderately to highly susceptible to erosion if vegetation is depleted, however, other flat units with clay soils and stony mantles are inherently resistant (Van Vreeswyk et al., 2004).

360 Environmental (2014) has advised the following measures will be utilised to minimise potential land degradation:

- Clearing activities will be limited to only the area necessary and, where possible, existing areas of disturbance will be used;
- Clearing areas will be demarcated to prevent over clearing;
- Habitat trees will be marked prior to clearing with a view of retaining the trees where possible;

- Dry vegetative material will be managed to prevent build up on equipment involved in vegetation clearing, thus reducing the risk of fires;
- No unauthorised off-track driving will be permitted;
- Erosion control measures will be put in place, including limiting the amount of vegetation removed from drainage lines;
- Stockpiles will be preferentially located to avoid obstructing surface water flows; and
- Water will be collected in a sump/water settling pond and used for dust suppression as required.

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

Methodology 360 Environmental (2014)
Van Vreeswyk (2004)
GIS Database:
- Rangeland Land System Mapping

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no conservation areas within the vicinity of the application area (GIS Database). The nearest conservation area is C Class Reserve 32144 (Burrup Peninsula) located approximately 10 kilometres north east of the application area and the Murujuga National Park which is located approximately 13 kilometres north 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:
- 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**
According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent water bodies or watercourses within the application area (GIS Database).

The application area experiences an annual average rainfall of 272.8 millimetres and an average annual evaporation rate of approximately 3,400 millimetres per year (BoM, 2014; GIS Database). The only surface water runoff expected would be following significant storm events. The proposed clearing is not likely to impact on the quality of surface water runoff.

The proposed vegetation clearing would be unlikely to cause deterioration in the quality of surface water or underground water due to the majority of vegetation in the Project area being shallow rooted and the removal of it is unlikely to significantly impact groundwater levels (360 Environmental, 2014).

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

Methodology 360 Environmental (2014)
BoM (2014)
GIS Database:
- Public Drinking Water Source Area (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**
With an average annual rainfall of approximately 272.8 millimetres and an average annual evaporation rate of 3,400 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2014; GIS Database). Whilst large rainfall events may result in the flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding (360 Environmental, 2014).

Given the size of the area to be cleared (272.02 hectares) compared to the size of the Maitland River catchment area (199,380 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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

Methodology 360 Environmental (2014)
GIS Database:
- Evaporation Isopleths

- Rainfall, Mean Annual

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

Comments

There is one Native Title Claims (WC1999/014) over the area under application (GIS Database). This claim has been determined by the Federal Court of Australia. 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*.

According to available databases, 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 20 October 2014 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions 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

360 Environmental (2014) Application for a Native Vegetation Clearing Permit – Purpose Permit - Mt Regal Project M47/1484. Spinifex Crushing and Screening Services.

Barrett, G., Silcocks, A., Barry, S., Cunningham, R., & Poulter, R. (2003). The New Atlas of Australian Birds. Hawthorn East, Victoria: Royal Australasian Ornithologists Union.

BoM (2014) Bureau of Meteorology Website - Climate Statistics for Australian Locations, Karratha. http://www.bom.gov.au/climate/averages/tables/cw_010568.shtml (Accessed 5 December 2014).

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management, Western Australia.

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

DPAW (2014) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation, http://naturemap.dec.wa.gov.au (Accessed 5 December 2014).

Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). 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.Northcote et al (1960-68).

Van Dyck, S., and Strahan, R. (2008). The Mammals of Australia. New South Wales: New Holland Publishers.

Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture, Western Australia.

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 the Department 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.