



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8374/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: Artemis Resources Pty Ltd

1.3. Property details

Property: Mining Lease 47/161

Mining Lease 47/337

Local Government Area: City of Karratha

Colloquial name: Radio Hill

1.4. Application

Clearing Area (ha)

No. Trees

Method of Clearing

For the purpose of:

64.52

Mechanical Removal

Borrow pits, levee bank, haul road and rehabilitation

1.5. Decision on application

Decision on Permit Application: Grant

Decision Date: 2 May 2019

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The vegetation of the application area is broadly mapped as the following Beard vegetation association: 589: Mosaic: Short bunch grassland - savanna/grass plain (Pilbara)/Hummock grasslands, grass steppe; soft spinifex (GIS Database).

Flora and vegetation surveys were conducted over the application area by EcoScape during March and August, 2018. The following vegetation associations were recorded within the application area (EcoScape, 2018a; 2018b):

ApyTw: *Acacia pyrifolia* var. *pyrifolia* isolated mid shrubs over *Triodia wiseana* and *Triodia epactia* low hummock grassland;

AxiEx: *Acacia xiphophylla* tall open shrubland over *Eragrostis xerophila* and *Eriachne benthamii* low tussock grassland;

ChApyTe: *Corymbia hamersleyana* low woodland over *Acacia pyrifolia* var. *pyrifolia*, *Acacia acradenia* and *Acacia bivenosa* mid sparse shrubland over *Triodia epactia* and **Cenchrus ciliaris* mid hummock/tussock grassland;

ChApyTw: *Acacia pyrifolia* var. *pyrifolia*, *Acacia acradenia* and *Acacia bivenosa* mid sparse shrubland over *Triodia wiseana* and *Triodia epactia* low hummock grassland with *Corymbia hamersleyana* low isolated trees;

EvAcoCc: *Eucalyptus victrix* and *Corymbia hamersleyana* low woodland over *Acacia coriacea* subsp. *pendens* tall sparse shrubland over **Cenchrus ciliaris* and *Triodia angusta* mid tussock/hummock grassland; and

Ex: *Eragrostis xerophila* low tussock grassland.

Clearing Description

Radio Hill.

Artemis Resources Pty Ltd proposes to clear up to 64.52 hectares of native vegetation, for the purpose of borrow pits, a levee bank and haul road, to be used for rehabilitation. The project is located approximately 30 kilometres south of Karratha, off the Karratha-Tom Price Highway, within the City of Karratha.

Vegetation Condition

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994);

To:

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

Comment

The vegetation condition was derived from vegetation surveys conducted by EcoScape (2018a; 2018b), with the majority of the vegetation within the application area considered to be in good to very good condition.

The proposed clearing is for borrow pits, levee bank and a haul road to source and transport material for the rehabilitation of three Tailings Storage Facilities (TSFs) within the Radio Hill operations. The majority of the clearing will be for borrow pits to provide suitable capping material for the TSFs.

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 clearing permit application area is located within the Roebourne subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion (GIS Database). This sub-region 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 *Acacia pyrifolia* and *Acacia inaequilatera*. Uplands are dominated by *Triodia* hummock grasslands. Ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands. Samphire, *Sporobolus* and mangal occur on marine alluvial flats and river deltas. Resistant linear ranges of basalts occur across the coastal plains, with minor exposures of granite (CALM, 2002).

Two flora and vegetation assessments of the application area and surrounds were conducted by EcoScape (2018a; 2018b) during March 2018 and August 2018. Six vegetation associations were identified, with the majority of the vegetation within the application area was in good to very good condition (Artemis Resources, 2019; EcoScape, 2018a; 2018b). Of the six vegetation associations identified, two associations, AxiEx and Ex, were representative of the Priority 3 Ecological Community (PEC) Horseflat Land System of the Roebourne Plains (Artemis Resources, 2019; EcoScape, 2018a; 2018b). The Horseflat Land System of the Roebourne Plains are extensive, weakly gilgaied clay plains dominated by tussock grasslands on mostly alluvial non-gilgaied, red clay loams or heavy clay loams (Department of Biodiversity, Conservation and Attractions [DBCA], 2017). Perennial tussock grasses include *Eragrostis xerophila* (Roebourne Plains grass) and other *Eragrostis*, *Eriachne* and *Dichanthium* species (DBCA, 2017). The community also supports a suite of annual grasses including *Sorghum* and rare *Astrebela* species (DBCA, 2017). The community extends from Cape Preston to Balla surrounding the towns of Karratha and Roebourne (DBCA, 2017). DBCA advice received indicated that approximately 174,275 hectares of the PEC exists, with much of the PEC extensively utilised for grazing leading to depletion of grasslands, fragmentation and soil erosion (DBCA, 2019). Areas of the PEC that exist in good condition, such as those within the application area, are therefore of high conservation value and it is recommended that proposed activities avoid clearing of vegetation associations Ex and AxiEx that align with the PEC (DBCA, 2019). During the field assessments of the application area and surrounds by EcoScape (2018a; 2018b), 19.95 hectares of the Ex vegetation association and 13.14 hectares of the AxiEx vegetation association were mapped, with the majority in good condition. The application area proposes to clear 15.10 hectares of Ex and 5.11 hectares of AxiEx (Artemis Resources, 2019). Although the majority of the PEC proposed to be cleared is considered to be in good condition, it is unlikely that clearing of an area, representing less than 0.001 of the estimated extent of the PEC, will significantly impact the flora and vegetation values of the PEC. In addition to the PEC, vegetation association EvAcoCc was identified along creek lines and potentially represents groundwater dependent ecosystem. No Threatened Ecological Communities (TECs) were identified as potentially occurring within the application area, or identified during the field assessment (Artemis Resources, 2019; EcoScape, 2018a; 2018b).

A total of 111 vascular flora taxa from 30 families and 69 genera were identified during the field assessments of the application area (EcoScape, 2018a; 2018b). A desktop assessment of the application area identified 43 conservation significant vascular flora species that may occur within the application area (Artemis Resources, 2019; EcoScape, 2018a; 2018b). Of these, 14 priority flora species were considered to possibly occur within the application due to the presence of suitable habitat (Artemis Resources, 2019; EcoScape, 2018a; 2018b). No threatened flora species were determined to be possibly occurring within the application area and none were recorded during the field assessments of the application area (Artemis Resources, 2019; EcoScape, 2018a; 2018b). *Euphorbia inappendiculata* var. *inappendiculata* (P2) was recorded at one location in the Ex (Horseflat Land System of the Roebourne Plains PEC) vegetation association, just outside the application area (Artemis Resources, 2019; EcoScape, 2018b). Although only recorded outside the application area, it is highly likely that *Euphorbia inappendiculata* var. *inappendiculata* (P2) occurs in association with Ex within the application area and is more widespread and abundant following favourable seasonal conditions with higher rainfall (Artemis Resources, 2019; EcoScape, 2018b).

Five introduced species were recorded within the application area including *Aerva javanica* (Kapok Bush), *Cenchrus ciliaris* (Buffel Grass), *Cenchrus setiger* (Birdwood Grass), *Malvastrum americanum* (Spiked Malvastrum) and *Vachellia farnesiana* (Mimosa Bush, Needle Bush) (Artemis Resources, 2019; EcoScape, 2018a; 2018b). Weeds have the potential to out-compete native flora and reduce the biodiversity of an area. Potential impacts to biodiversity as a result of the introduction of weeds may be minimised by the implementation of a weed management condition.

Four fauna habitat types were identified and mapped in the application area (Artemis Resources, 2019; EcoScape, 2018a; 2018b). Majority of the application area is made up of the stony flats and cracking clay flats habitat types, with the cracking clay habitat type corresponding to the Horseflat PEC (Artemis Resources, 2019). Thirty-two terrestrial vertebrate fauna species were recorded in the application area, which was considered to be a relatively high number in comparison with other project areas and was due to the presence of an artificial waterhole that attracts fauna species for foraging (bats) and drinking (birds), and provides direct habitat (amphibians) (Artemis Resources, 2019; EcoScape, 2018a; 2018b). Twenty-seven terrestrial vertebrate fauna species were recorded within the application during the March field assessment including one native mammal, seven bat species, 15 bird species, three reptile species and one amphibian species (EcoScape, 2018a). During the field assessment in August three native mammals, one introduced mammal

species, 21 bird species and seven reptile species were recorded within the application area (EcoScape, 2018b). No conservation significant fauna were recorded during the field assessments of the application area (Artemis Resources, 2019; EcoScape, 2018a; 2018b).

Two significant SRE morpho-taxa (an isopod: *Buddelundia* sp B79 and a millipede: *Synxenidae* sp.) were recorded from the Radio Hill project area, but outside the proposed clearing areas (Artemis Resources, 2019; EcoScape, 2018a; 2018b). Both are likely to have a wider distribution, however, their taxonomy and ecology are poorly known. No conservation significant fauna were determined to be possibly occurring in the application area due to a lack of suitable habitat and none were recorded during the field assessments of the application area (Artemis Resources, 2019; EcoScape, 2018a; 2018b).

The vegetation associations, fauna habitats and landform types present within the application area, are well represented in surrounding areas (Artemis Resources, 2019; EcoScape, 2018a; 2018b; GIS Database). The application area is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context.

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

Methodology Artemis Resources (2019)
CALM (2002)
DBCA (2017)
DBCA (2019)
EcoScape (2018a)
EcoScape (2018b)

GIS Database:
- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- Threatened Fauna

(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 four fauna habitats have been recorded within the application area (Artemis Resources, 2019; EcoScape, 2018a; 2018b): stony flats, low rocky hills, minor creek line and cracking clay flats. Majority of the application area is made up of the stony flats and cracking clay flats habitat types (Artemis Resources, 2019). The Rocky hills habitat did not exhibit the structure of substantial rock piles necessary for denning habitat for the Northern Quoll (*Dasyurus hallucatus*, EN) and was not considered as potential habitat (EcoScape, 2018a; 2018b). No evidence of Northern Quoll presence was detected on deployed motion cameras within the application area (EcoScape, 2018a; 2018b). No habitat types recorded within the application area were determined to be suitable habitat for any conservation significant species (Artemis Resources, 2019; EcoScape, 2018a; 2018b).

None of the habitat types are unique to the survey area and the clearing of 64.52 hectares of native vegetation is not likely to impact critical feeding or breeding habitat for fauna indigenous to Western Australia.

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

Methodology Artemis Resources (2019)
EcoScape (2018a)
EcoScape (2018b)

GIS Database:
- Imagery
- Pre-European Vegetation
- 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**

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (Artemis Resources, 2019; EcoScape, 2018a; 2018b).

The vegetation associations within the application area are common and widespread within the region (Artemis Resources, 2019; EcoScape, 2018a; 2018b; GIS Database), and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.

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

Methodology Artemis Resources (2019)
EcoScape (2018a)
EcoScape (2018b)

GIS Database:
- Pre-European Vegetation
- 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

There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database).

A flora and vegetation survey of the application area did not identify any TECs (Artemis Resources, 2019; EcoScape, 2018a; 2018b).

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

Methodology Artemis Resources (2019)
EcoScape (2018a)
EcoScape (2018b)

GIS Database:
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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 Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the IBRA Pilbara Bioregion (Government of Western Australia, 2018). The application area is broadly mapped as Beard vegetation association 589: Mosaic: Short bunch grassland savanna/grass plain (Pilbara)/Hummock grasslands, grass steppe; soft spinifex (GIS Database). Approximately 99% of the pre-European extent of this vegetation association remains uncleared at both the state and bioregional level (Government of Western Australia, 2018).

Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA managed lands
IBRA Bioregion – Pilbara	17,808,657	17,733,583	~99	Least Concern	10
Beard vegetation associations – WA					
589	807,698	802,713	~99	Least Concern	1
Beard vegetation associations – Pilbara Bioregion					
589	728,768	724,695	~99	Least Concern	2

* Government of Western Australia (2018)

** 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 (2018)

GIS Database:
- IBRA Australia
- 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**

There are no permanent watercourses or wetlands within the area proposed to clear (Artemis Resources, 2019; EcoScape, 2018a; 2018b; GIS Database). A number of seasonal creek lines pass through the application area (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. One vegetation community mapped during the field assessments of the application area and surrounds, EvAcoCc, grows in association with creek lines and possibly represents a groundwater dependent ecosystem (Artemis Resources, 2019; EcoScape, 2018a; 2018b). However, only a small portion of this vegetation community exists adjacent to the application area and is not proposed to be cleared (Artemis Resources, 2019).

Based on the above, the proposed clearing is at variance to this Principle. Potential impacts to vegetation growing in association with the watercourse may be minimised by the implementation of a watercourse management condition.

Methodology Artemis Resources (2019)
EcoScape (2018a)
EcoScape (2018b)

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

The application area lies within the Horseflat, Paraburdoo, Ruth and Sherlock land systems (GIS Database). These land systems have been mapped and described in technical bulletins produced by the former Department of Agriculture (now the Department of Primary Industries and Regional Development).

The Horseflat land system is described as gilgaied clay plains supporting tussock grasslands and minor grassy snakewood shrublands. Some parts of this land system are moderately to highly susceptible to erosion if vegetation is depleted, other flat units with clay soils and stony mantles are inherently resistant (Van Vreeswyk et al., 2004).

The Paraburdoo land system is characterised by basalt derived stony gilgai plains and stony plains with snakewood and mulga shrublands, spinifex and tussock grasses. This land system is generally not susceptible to erosion, although some erosion risk exists for drainage zones (Van Vreeswyk et al., 2004).

The Ruth land system is characterised by hills and ridges of volcanic and other rocks supporting hard spinifex (occasionally soft spinifex) grasslands. This land system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Sherlock land system is described as stony alluvial plains supporting snakewood shrublands with patchy tussock grasses and spinifex grasslands. This land system is not susceptible to erosion (Van Vreeswyk et al., 2004).

Based on the above, the proposed clearing may be at variance to this Principle. Potential land degradation impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

Methodology Van Vreeswyk et al. (2004)

GIS Database:
- Landsystem Rangelands

(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 in the vicinity of the application area. The nearest DBCA (formerly DPaW) managed land is the Millstream Chichester National Park which is located approximately 25 kilometres south-east of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.

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

Methodology 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

There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. The proposed clearing is unlikely to result in significant changes to surface water flows.

The proposed clearing is unlikely to cause deterioration in the quality of underground water.

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

Methodology GIS Database:
- Hydrography, Linear
- Public Drinking Water Source Areas

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

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

The climate of the region is arid (semi-arid) tropical, with a highly variable rainfall, falling mainly in summer (CALM (2002)). The nearest weather station is Karratha Aero, approximately 30 kilometres north of the application area, with an average rainfall of approximately 296.7 millimetres per year (BoM, 2019).

There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. The application area lies within the Maitand River catchment area (GIS Database). However, the proposed clearing of 64.52 hectares within a catchment of approximately 199,225 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 BoM (2019)
CALM (2002)

GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 4 March 2019 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WC1999/014) over the area under application (DPLH, 2019). This claim has been determined by the Federal Court on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2019). 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 Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

Methodology DPLH (2019)

4. References

- Artemis Resources (2019) Native Vegetation Clearing Permit (NVCP) – Application: M47/161 and M47/337 – Radio Hill. Report prepared by Artemis Resources, February, 2019.
- BoM (2019) Bureau of Meteorology Website – Climate Data Online, Karratha Aero. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 3 April 2019).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DBCA (2017) Priority Ecological Communities for Western Australia Version 27. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, June 2017.
- DBCA (2019) Advice received in relation to Clearing Permit Application CPS 8374/1. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, March 2019.
- DPLH (2019) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. <http://maps.daa.wa.gov.au/AHIS/> (Accessed 15 April 2019).
- 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.
- EcoScape (2018a) 47 Patch, Silica Hills, Carlow Castle, Radio Hill and Weerianna Biological Surveys. Report prepared for Artemis Resources, by Ecoscape (Australia) Pty Ltd, November, 2018.
- EcoScape (2018b) Addendum: Radio Hill additional area biological survey results. Report prepared for Artemis Resources, by Ecoscape (Australia) Pty Ltd, November, 2018.
- Government of Western Australia (2018) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) An Inventory and Condition Survey of Pilbara Region, Western Australia. Technical Bulletin No. 92. Department of Agriculture, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
DEE	Department of the Environment and Energy, Australian Government
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia

DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DSEWPac	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
DWER	Department of Water and Environmental Regulation, Western Australia
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:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T Threatened species:

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

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 in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX Extinct species

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected*

Fauna) Notice 2018 for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW

Extinct in the wild species

Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI

Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes 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 fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD

Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS

Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P

Priority species:

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species 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.