



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7469/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Aragon Resources Limited

1.3. Property details

Property: Mining Lease 52/6
Mining Lease 52/96
Mining Lease 52/99
Local Government Area: Shire of Meekatharra
Colloquial name: Nathans Fortnum Gold Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 6 April 2017

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 and are useful to look at vegetation in a regional context. The following 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 29: Sparse low woodland; mulga, discontinuous in scattered groups.

Maia Environmental Consultancy (Maia, 2016) conducted a Level 1 flora and vegetation survey over the majority of the application area between 29 September and 5 October 2016. A total of eight vegetation communities were identified within the application area (Maia, 2016):

ASL-1 (Acacia shrubland) – Sparse Tall *Acacia* Shrubland of either *Acacia incurvaneura* or *A. aptaneura* or *A. pteraneura* with a Sparse mixed Low Shrubland (*Eremophila jucunda* subsp. *jucunda*, *E. latrobei* subsp. *latrobei*, *Ptilotus obovatus*) and Isolated Low Trees of *Acacia pruinocarpa* and / or *A. citrinoviridis*;

ASL-2 (Acacia shrubland) - Sparse Tall Shrubland of *Acacia incurvaneura* with a mixed Sparse Low Shrubland (*Eremophila jucunda* subsp. *jucunda*, *E. obliquisejala* (P3), *Ptilotus obovatus*) and Isolated Low Trees of either *Grevillea beryana* or *Acacia citrinoviridis* or *A. pruinocarpa*;

ASL-3 (Acacia Shrubland) - Open Tall Shrubland of *Acacia Incurvaneura* with a mixed Low Open Shrubland (*Eremophila latrobei* subsp. *latrobei*, *E. jucunda* subsp. *jucunda* and *Ptilotus obovatus*) and Scattered Mallee Trees of *Corymbia ferritcola*;

AWL-1 (Acacia Woodland) - Low Woodland to Low Open Forest of *Acacia pteraneura*, *A. aptaneura* and *A. citrinoviridis* with a mixed Tall Shrubland (*Acacia kempeana*, *A. tetragonophylla*, *Eremophila forrestii* subsp. *forrestii*) and a mixed Low Shrubland (*Sida ectogama*, *Eremophila spectabilis* subsp. *brevis* and *Ptilotus obovatus*);

AWL-2 (Acacia Woodland) - Low Woodland of *Acacia cyperophylla* var. *cyperophylla* and +/- *Eucalyptus victrix* with a Tussock Grassland of *Eriachne pulchella* subsp. *dominii*, *Eragrostis cumingii* and *Aristida contorta* and Isolated mixed Sedges (*Elytrophorus spicatus*, *Schoenoplectus dissachanthus* and *Cyperus vaginatus*).

MSL-1 (Mixed Shrubland) - Sparse mixed Shrubland (*Senna glutinosa* subsp. *pruinosa*, *Eremophila fraseri* subsp. *fraseri* and *Ptilotus rotundifolius*) with a Low Sparse mixed Chenopod Shrubland (*Sclerolaena lanicuspis*, *S. eriakantha* and *S. cuneata*) and a Sparse Tussock Grassland of *Aristida contorta*;

MSL-2 (Mixed Shrubland) - Sparse mixed Low Shrubland (*Pluchea dentex*, *Grevillea deflexa* and *Calytrix*

desolata) with Isolated Low Trees of *Acacia citrinoviridis*;

MSL-3 (Mixed Shrubland) - Sparse Shrubland of *Senna artemisioides* subsp. *helmsii*, *S.* sp. Meekatharra (E. Bailey 1-26) and *S. artemisioides* subsp. *oligophylla* x *helmsii* with a Sparse Tussock Grassland of *Aristida contorta* and *Enneapogon lindleyanus* and Isolated Tall Shrubs of *Acacia aptaneura*.

Clearing Description	Nathans Fortnum Gold Project. Aragon Resources Limited proposes to clear up to 35.4 hectares of native vegetation within a total boundary of approximately 176 hectares, for the purpose of mineral production. The project is located approximately 140 kilometres north-north west of Meekatharra in the Shire of Meekatharra.
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994); To: Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).
Comment	The vegetation condition was derived from flora and vegetation surveys conducted by Maia Environmental Pty Ltd (2016) and via the use of aerial imagery.

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 may be at variance to this Principle**

The proposed clearing of up to 35.4 hectares of native vegetation will allow for the development of the Nathans Fortnum Gold Project. The application area occurs within the Augustus subregion of the Gascoyne Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by Mulga woodland with *Triodia* occur on shallow stony loams on rises, while the shallow earthy loams over hardpan on the plains are covered by Mulga parkland (CALM, 2002).

Several vegetation communities identified within the application area were described as having relatively minor disturbance, such as evidence of grazing, tracks and feral animals (Maia, 2016), which would align with "Excellent on the Keighery (1994) condition rating scale. However, the majority of the vegetation within the application area is considered to be in a "Degraded" to "Completely Degraded" (Keighery, 1994) condition, largely as a result of historic mining disturbance (GIS Database).

Maia Environmental Consultancy (2016) conducted a Level 1 flora and vegetation survey over the majority of the application area, which included M 52/96 and M 52/99. M 52/06 was not surveyed, however several surrounding tenements were included in the survey area, and the survey is considered to provide an indication of species likely to be present over the entire application area. Maia (2016) identified 212 taxa from 102 of genera and 42 families. While the majority of flora surveyed were either in flower or had fruiting bodies which could be used for identification purposes, five taxa could not be identified beyond the genus level due to a lack of flowering or fruiting material (Maia, 2016).

The biological diversity of the application area is considered to be low to moderate with an average of 18 species per 20 x 20 relevés, as is considered to be of similar diversity to that found in nearby areas such as the Robinson Ranges and Mount Gould (Maia, 2016).

Eight vegetation communities were identified during the flora survey, none of which are considered to be analogous to any known Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs), despite the application area falling within the boundary of the Robinson Range vegetation complexes (banded iron formation), which is Priority 1 PEC (Maia, 2016; GIS Database).

Seven Priority flora species were recorded during a flora survey of the application area and surrounding areas; *Eremophila lanata* (P3), *Eremophila obliquiseipala* (P3), *Gunniopsis propinqua* (P3), *Indigofera gilesii* (P3), *Sauropus* sp. Woolgorong (M. Officer s.n. 10/8/94) (P3), *Thryptomene* sp. Leinster (B.J. Lepschi & L.A. Craven 4362) (P3) (Maia, 2016). *Indigofera gilesii* does not occur within area to be impacted by clearing. DPaW (2017a) advised that proposed impacts to these species are acceptable, provided they are kept at the proposed limits. Higher impacts to these species have the potential to be of local significance, and in the case of *Eremophila lanata* (P3) and *Sauropus* sp. Woolgorong (M. Officer s.n. 10/8/94) (P3) higher impacts also have the potential to be of significance at the species level (DPaW, 2017). It is also noted that impacts to *Indigofera gilesii* (P3), *Thryptomene* sp. Leinster (B.J. Lepschi & L.A. Craven 4362) (P3) and *Goodenia berringbinensis* (P4) are not proposed. Given the local significance of these populations, it must be ensured that no clearing of these species occurs. Potential impacts to the Priority flora species as a result of the proposed clearing may be minimised by the implementation of a flora management condition that limits and/or restricts impacts to Priority flora species.

A fauna survey conducted within nearby areas in 2012 identified three broad fauna habitats, none of which are considered unique or restricted (Aragon, 2016; GIS Database). Areas of drainage line habitats occur within these three broad habitats which may offer higher value fauna habitat. However, drainage lines dissect only a small portion of the application area and can be found extensively outside areas proposed to be cleared (GIS

Database).

Seven species of introduced flora (weeds) were recorded within the application area and surrounding areas (Maia, 2016). 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 may be at variance to this Principle.

Methodology CALM (2002)
DPaW (2017a)
Maia (2016)

GIS Database:
- IBRA WA (Regions - Sub Regions)
- Pre-European vegetation
- Threatened Ecological Sites Buffered

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

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

The application area has been subject to significant disturbance as a result of historic mining activities. A pit lake remains within the central part of the application area and the condition of the vegetation is considered to be in a predominately degraded condition.

Three broad habitat types were identified as occurring within the application area and surrounding areas during previous fauna surveys, none of which are considered unique or restricted (Aragon, 2016; GIS Database). Areas of drainage line habitats occur within these three broad habitats which may offer higher value fauna habitat. However, drainage lines dissect only a small portion of the application area and can be found extensively outside areas proposed to be cleared (GIS Database). Potential impacts to the drainage line habitat as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.

According to available databases, there are no records of conservation significant fauna species known from the local area (20 kilometre radius) (DPaW, 2017b). A fauna survey conducted in 2012 in nearby areas recorded the occurrence of the Australian Bustard (*Ardeotis australis*) and Bush Stone-Curlew (*Burhinus grallarius*) (Aragon, 2012). The Australian Bustard and Bush Stone-Curlew are no longer listed as priority fauna and impacts to these species are unlikely to be significant given they are avian fauna with large ranges and can easily vacate the area.

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

Methodology Aragon (2016)
DPaW (2017b)

GIS Database
- Imagery

(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, no Threatened flora species are known from the local area (20 kilometre radius) (DPaW, 2017b; GIS Database) and no Threatened flora species were recorded during a Level 1 flora survey conducted over the majority of the application area and surrounding areas (Maia, 2016).

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

Methodology DPaW (2017b)
Maia (2016)

GIS Database
- Threatened and Priority Flora List

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

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

According to available databases, there are no known Threatened Ecological Communities (TECs) within the

application area (GIS Database) and no communities analogous to any known TECs were recorded during the Level 1 flora survey (Maia, 2016). In addition to this, no TECs are known to occur within a 100 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 Maia (2016)

GIS Database:

- Threatened and Priority Ecological Communities Buffers
- Threatened and Priority Ecological Communities Boundaries

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not at variance to this Principle

The application area occurs within the Gascoyne Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, in which approximately 99.9% of the pre-European vegetation remains (see table below) (Government of Western Australia, 2015; GIS Database).

The vegetation within the application area has been mapped as Beard vegetation associations 18 and 29 (GIS Database). As the below table illustrates, both Beard vegetation associations are well represented, retaining at least 99% of pre-European vegetation within the State and the bioregion (Government of Western Australia, 2015). Given the amount of vegetation remaining in the local area and bioregion, the vegetation proposed to be cleared is not considered to represent a remnant within an extensively cleared area.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Lands
IBRA Bioregion - Gascoyne	18,075,219	18,067,441	~ 99.9	Least Concern	~ 10.3
Beard veg assoc. - State					
18	19,892,305	19,843,727	~ 99.8	Least Concern	~ 6.6
29	7,903,991	7,900,200	~ 99.9	Least Concern	~ 6.3
Beard veg assoc. - Bioregion					
18	3,273,580	3,271,339	99.9	Least Concern	~ 9.7
29	3,802,460	3,799,635	99.9	Least Concern	~ 7.8

* Government of Western Australia (2015)

** 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 (2015)

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

Two minor non-perennial watercourses dissect small sections of the application area (GIS Database). The proposed clearing is likely to have some impact to areas of riparian vegetation associated with these drainage lines. The clearing of vegetation associated within creek lines and/or watercourses should be avoided where possible and existing flow patterns maintained. Potential impacts to riparian vegetation may be minimised through the implementation of a watercourse management condition.

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

Methodology Maia (2016)

GIS Database:
- Hydrography, linear

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

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

Two land systems are mapped within the application area; Jamindie and Horseshoe land systems (Vreeswyk et al., 2004; GIS Database). Over 95% of the application falls within the Jamindie Land System. The Jamindie Land System is described as stony hardpan plains and rises supporting groved mulga shrublands, occasionally with spinifex understorey. Drainage tracts in this system are moderately susceptible to erosion, some hardpan plains are slightly susceptible and other parts are inherently resistant (van Vreeswyk et al., 2004).

The Horseshoe land system consists of gently undulating stony plains and low rounded hills and is generally not susceptible to erosion (Curry et al., 1994). The sections of the application area that fall within this Horseshoe Land system are linear in nature, where clearing is required for the construction of an access/haul road. Potential erosion issues can be managed by standard practises such as the installation of culverts.

Given the existing disturbance within the application area, the proposed clearing of up to 35.4 hectares of native vegetation is not likely to result cause appreciable land degradation. Land degradation issues associated with clearing in the vicinity of drainage lines, can be mitigated through revegetation and rehabilitation of areas after they are no longer required. Potential erosion impacts as a result of the proposed clearing may be further minimised by the implementation of a staged clearing condition and a watercourse management condition.

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

Methodology Curry et al. (1994)
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

The application area is not located within any conservation area (GIS Database). The nearest conservation area is located more than 50 kilometres south west 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:
- 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

The application area is not located within a Public Drinking Water Source Area (GIS Database). The application area is located within the proclaimed East Murchison Groundwater Area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purposes other than domestic and/or stock watering is subject to licence by the Department of Water.

The application area is located within a desert climate with bimodal rainfall environment (CALM, 2002). Average annual rainfall of 233 millimetres (data taken from Three Rivers recording station) and an evaporation rate that far exceeds this figure (BoM, 2017). Any surface water within the application area is likely to only remain for short periods following significant rainfall events. Clearing of native vegetation may temporarily cause excess runoff and sedimentation to enter drainage lines (depending on rainfall occurrence). However, with appropriate management actions, impacts on hydrology and drainage are unlikely to occur once soils have become compacted (Aragon, 2017). Surface water quality is not expected to deteriorate as a result of the proposed clearing.

The application area has a groundwater salinity that is marginal (500 to 1,000 milligrams/Litre Total Dissolved solids) (GIS Database). With high annual evaporation rates and low annual rainfall (BoM, 2017), there is likely to be limited groundwater recharge throughout large portions of the year. The proposed clearing is unlikely to result in measurable impacts to the quality of groundwater (GIS Database).

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

Methodology Aragon (2017)

BoM (2017)
CALM (2002)

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

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

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

One soil type has been mapped over the application area. Soil type Oc49, which is described as partially dissected pediments with some low stony hills on fine-grained sedimentary rocks and basic dykes, frequently flanking areas of steep ranges. Hard alkaline red soils are feature (Northcote et al., 1960-68).

It is possible that areas of hard alkaline soils may hold water for short periods following significant rainfall events, although with an average annual rainfall of 233 millimetres and an average annual evaporation rate exceeding 3,000 millimetres (BoM, 2017), waterlogging and flooding are not considered to be major concerns, arising from the clearing native vegetation. The proposed clearing of 35.4 hectares of native vegetation is not considered likely to result in an increase in the incidence or intensity of flooding in a desert climate.

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

Methodology BoM (2017)
Northcote et al (1960-68)

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

Comments

There are two native title claims over the application area (WC1999/013 and WC1999/003) (DAA, 2017). 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 Sites of Aboriginal Significance located in the area applied to clear (DAA, 2017). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, the Department of Parks and Wildlife and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 27 February 2017 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology DAA (2017)

4. References

- Aragon (2016) Fortnum Gold Project Nathans Mining Area, NVCP application – Supporting Information. Aragon Resources Pty Ltd, February 2017.
- BoM (2017) Climate Statistics for Australian Locations. A Search for Climate Statistics, Australian Government Bureau of Meteorology. www.bom.gov.au (Accessed February 2017).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management.
- Curry, P.J., Payne, A.L., Leighton, K.A., Hennig, P. and Blood, D.A. (1994) An Inventory and Condition Survey of the Murchison River Catchment and Surrounds, Western Australia.
- DAA (2017) Aboriginal Heritage Enquiry System. Department of Aboriginal Affairs. <http://maps.dia.wa.gov.au/AHIS2/> (Accessed April 2017).
- 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 (2017a) Flora advice received in relation to Clearing Permit CPS 7469/1. Department of Parks and Wildlife, Western Australia, March 2017.
- DPaW (2017b) NatureMap. Department of Parks and Wildlife, <http://naturemap.dec.wa.gov.au> (Accessed April 2017).
- Government of Western Australia (2015) 2015 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2015. WA Department of Parks and Wildlife, 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.

Maia (2016) Nathans Survey Area. Level 1 Flora and Vegetation Reconnaissance Survey and Targeted Flora Survey. Report prepared for Metals X Ltd by Maia Environmental Pty Ltd, December 2016.

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.

van Vreeswyk, A M, Leighton, K A, Payne, A L, and Hennig, P. (2004) An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture and Food, Western Australia. Technical Bulletin 92.

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

Definitions:

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

T

Threatened species:

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

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

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

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

CR

Critically endangered species

Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EN

Endangered species

Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

VU

Vulnerable species

Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EX Presumed extinct species

Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.

IA Migratory birds protected under an international agreement

Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.

CD Conservation dependent fauna

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.

OS Other specially protected fauna

Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.

P Priority species

Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 Priority One - Poorly-known species:

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 Priority Two - Poorly-known species:

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 Priority Three - Poorly-known species:

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 Priority Four - Rare, Near Threatened and other species in need of monitoring:

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

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