



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 8246/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: APA Operations Pty Ltd

### 1.3. Property details

Property: Pipeline Licence 118  
Local Government Area: Shire of Leonora and Shire of Laverton  
Colloquial name: Murrin Murrin Lateral Loop Pipeline

### 1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|--------------------|-----------|--------------------|---------------------|
| 40                 |           | Mechanical Removal | Gas pipeline        |

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 24 January 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 associations:  
18: Low woodland; mulga (*Acacia aneura*); and  
39: Shrublands; mulga scrub (GIS Database).

A reconnaissance flora and vegetation survey was conducted over the application area by Botanica Consulting (Botanica) during February, 2018. The survey also extended to the south-west of the application area, within the pipeline licence area. The following vegetation types were recorded within the application area (Botanica, 2018):

Types within Clay-Loam Plains:

**CLP-AFW1:** Low forest of *Acacia caesaneura* over *Senna artemisioides* subsp. *helmsii*, *Acacia tetragonophylla*, *Acacia burkittii*, *Eremophila margarethae*, *Ptilotus obovatus*, *Solanum lasiophyllum* and *Maireana triptera* in clay-loam soils;

**CLP-AOW1:** Open low woodland of *Acacia aptaneura* over *Eremophila pantonii*, *Atriplex bunburyana*, *Cratystylis subspinescens* and *Maireana pyramidata* in clay-loam soils;

**CLP-AOW2:** Open low woodland of *Acacia incurvaneura* and *Hakea kippistiana* over *Eremophila pantonii*, *Maireana pyramidata*, *Maireana sedifolia*, *Maireana glomerifolia* and *Maireana triptera* in clay-loam soils;

Type within open depression:

**OD-AOW1:** Open woodland of *Acacia caesaneura*, *Acacia macraneura* and *Acacia ayersiana* over *Acacia ramulosa* var. *ramulosa*, *Eremophila forrestii* subsp. *forrestii*, *Eremophila margarethae*, *Maireana triptera* and *Eragrostis eriopoda* in drainage line;

Type within rocky plain:

**RP-AOW2:** Open woodland of *Acacia ayersiana* and *Acacia caesaneura* over *Eremophila margarethae* and *Acacia tetragonophylla* over Poaceae and Asteraceae spp. in clay with quartz and ironstone pebbles;

Type within rocky slopes:

**RS-AFW1:** Low forest of *Acacia incurvaneura*, *Acacia quadrimarginea* and *Acacia ramulosa* var. *ramulosa* over *Eremophila forrestii* subsp. *forrestii*, *Senna artemisioides* subsp. *helmsii* and *Ptilotus obovatus* on rocky slope;

Type within Sand-Loam Plain:

**SLP-AOW2:** Open low woodland to woodland of *Acacia caesaneura*, *Acacia ayersiana* over *Acacia ramulosa* var. *ramulosa*, *Acacia tetragonophylla*, *Eremophila latrobei* subsp. *latrobei*, *Eremophila* spp., *Maireana triptera*, *Solanum lasiophyllum*, *Ptilotus obovatus* and *Eragrostis eriopoda* in sandy-loam soils.

### Clearing Description

Murrin Murrin Lateral Loop Pipeline.  
APA Operations Pty Ltd proposes to clear up to 40 hectares of native vegetation within a boundary of approximately 74 hectares, for the purpose of a gas pipeline. The project is located approximately 50 kilometres south-west of Laverton, within the Shire of Laverton and the Shire of Leonora. The proposed gas pipeline is

approximately 13.5 kilometres in length.

**Vegetation Condition**

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

to

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

**Comment**

The vegetation condition was derived from a vegetation survey conducted by Botanica (2018).

The proposed clearing is for the construction of the new Murrin Murrin Looping pipeline, a buried gas pipeline which loops the existing Murrin Murrin Lateral pipeline and ties into the Eastern Goldfields Pipeline to increase the supply of gas to existing customers. The proposed clearing is also for temporary activities, which include a laydown area, on-site parking and on-site office.

### 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 Eastern Murchison subregion of the Murchison Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion (GIS Database). The Eastern Murchison subregion is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development (CALM, 2002). Vegetation of the subregion is dominated by Mulga woodlands (often rich in ephemerals), hummock grasslands, saltbush shrublands and samphire shrublands (CALM, 2002). Pastoral grazing occurs over a vast majority of the subregion, and consequently, much of the subregion has been severely degraded by feral herbivores. Mining for gold and nickel in the region is considerable, with most mining tenements occurring on pastoral land (Pringle et al., 1994).

The reconnaissance flora and vegetation survey of the application area recorded a total of seven vegetation types, of which were in 'Good' to 'Very Good' condition (Botanica, 2018). The vegetation types recorded within the application area are well represented in the surroundings and the Murchison region (APA, 2018). The application area has also been subjected to disturbance from the existing buried Murrin Murrin Lateral pipeline constructed along the application area with disturbance of approximately 10 metres wide (Botanica, 2018).

No Threatened Flora, Priority Flora, Threatened Ecological Communities or Priority Ecological Communities were recorded during the flora and vegetation survey within the application area (Botanica, 2018; GIS Database).

The flora survey encompassing the application area as well as extending further to the south-west, recorded a total of 169 taxa from 68 genera and 32 families (Botanica, 2018). The number of taxa recorded, however, is from the whole survey area which was approximately 36 kilometres in length and approximately 100 metres wide. The application area only represents a relatively small subset of the survey area and is unlikely to comprise a high level of diverse flora compared to its surroundings.

The flora recorded included eight introduced species, four of which were recorded within the application area (APA, 2018). Care must be taken to ensure that the proposed clearing activities do not introduce weed species to the non-infested areas. The implementation of a weed management condition may help to minimise impacts of the proposed clearing to biodiversity.

A Level 1 fauna survey recorded 77 fauna species within the survey area which included the application area (KEC, 2018). Nine fauna habitats were identified within the survey area, of which three were considered uncommon or regionally restricted fauna habitats (banded ironstone ridges, low greenstone hills and major drainage lines). The application area however, does not intersect with these habitats except the banded ironstone ridge which only occurs in a limited extent. The remaining fauna habitats were typically described as widespread throughout the Murchison bioregion (APA, 2018).

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

**Methodology**

APA (2018)  
Botanica (2018)  
CALM (2002)  
KEC (2018)  
Pringle et al. (1994)

GIS Database:

- IBRA Australia
- Threatened and Priority Flora
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

**(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**

A Level 1 fauna assessment was conducted over the proposed pipeline route and adjacent area from the 12<sup>th</sup> to 16<sup>th</sup> February 2018. The following nine fauna habitats were recorded within the survey area of which the application area is a subset (KEC, 2018):

1. Low Chenopod shrublands (dominated by dominated by *Maireana pyramidata* shrubs) on low lying plains;
2. Open Acacia shrublands over mixed chenopods and scattered *Pittosporum angustifolium*, *Hakea preissii* and areas of dense *Eremophila scoparia* on plains;
3. Open *Acacia papyrocarpa* and *Acacia victoriae* shrublands over mixed chenopod shrublands (including *Mariana pyramidata*) on calcareous plains;
4. Mulga shrublands on hardpan and stony plains supporting a variable understorey including *Acacia ramulosa*, *Psyrax suaveolens*, *Eremophila forrestii*, *Eremophila latrobei*, *Eremophila clarkei*, *Brachychiton gregorii*, *Scaevola spinescens*, *Grevillea berryana*, *Santalum lanceolatum*;
5. Dense Acacia shrublands fringing drainage tracts supporting seasonal pools with *Acacia aneura*, *Acacia burkittii*, *Senna* species and mixed *Eremophila* species;
6. Undulating low greenstone hills and stony plains supporting mixed Acacia shrublands with *Acacia tetragonophylla*, *Dodonaea lobulata*, *Eremophila clarkei*, *Acacia quadrimarginea*, *Santalum spicatum* and mixed chenopod shrublands;
7. Low ironstone hills supporting Mulga shrublands with *Acacia tetragonophylla*, *Scaevola spinescens*, *Eremophila latrobei*, *Eremophila oldfieldii* with scattered *Casuarina pauper*;
8. Banded ironstone ridges supporting Mulga shrublands with a variable understorey including *Acacia tetragonophylla*, *Eremophila latrobei*, *Psyrax suaveolens*, and occasional minor halophytic communities; and
9. Incised drainage tracts supporting seasonal pools within stony plains supporting fringing Mulga shrublands with scattered Eucalypts and a variable understorey.

The majority of these fauna habitats are considered widespread and well represented in the Murchison region (APA, 2018; Botanica, 2018; KEC, 2018). Three of the fauna habitats identified were considered to be uncommon or regionally restricted habitats: ironstone ridges, low greenstone hills and major drainage lines. The application area however, does not intersect with these habitats except the banded ironstone ridge which only occurs in a limited extent.

According to database searches, 26 native mammals, nine frog, 86 reptile, 145 bird and 10 introduced mammal species were identified as potentially occurring in the survey area (KEC, 2018). A total of 77 fauna species were recorded within the survey area, which included three frogs, six reptiles, eight native mammals, four introduced mammals and 56 birds (KEC, 2018). Two species listed as Vulnerable, the malleefowl (*Leipoa ocellata*) and the grey falcon (*Falco hypoleucos*), are known to occur within the local area. However, neither of the species are expected to depend on or breed within the habitat in the application area (KEC, 2018). Given the proposed clearing is a narrow corridor over a distance of approximately 13.5 kilometres, it is not likely to have a significant impact on faunal diversity in the local area.

While the application area is considered a suitable habitat for a range of fauna species, it is not considered as a significant habitat or regionally restricted for any native fauna species or species of conservation significance (KEC, 2018). In addition to the habitats present being widespread and well represented in the surrounding area, the application area has been previously disturbed. It is unlikely that there will be significant impacts to native fauna or fauna habitats from the proposed clearing.

The applicant has also committed to management and mitigation measures to minimise impacts to native fauna, such as conducting morning and evening visual trench inspections, checking the open trench for fauna and removing any trapped animals prior to backfilling (APA, 2018).

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

**Methodology** APA (2018)  
Botanica (2018)  
KEC (2018)

**(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 any Threatened flora species within the application area (GIS Database). The flora surveys of the application area did not record any Threatened flora species (Botanica, 2018).

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

**Methodology** Botanica (2018)

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). The vegetation survey of the application area did not identify any communities listed as a TEC (Botanica, 2018).

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

**Methodology** Botanica (2018)

GIS Database:  
- 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 falls within the Murchison Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the Murchison IBRA Bioregion (Government of Western Australia, 2018). The application area is broadly mapped as Beard vegetation associations 18: Low woodland; mulga (*Acacia aneura*); and 39: Shrublands; mulga scrub (GIS Database). Approximately 99% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (see table below) (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 – Murchison                          | 28,120,586              | 28,044,823           | ~99          | Least Concern         | 7.78                                 |
| Beard vegetation associations – WA                  |                         |                      |              |                       |                                      |
| 18  | 19,892,306              | 19,843,729           | ~99          | Least Concern         | 6.62                                 |
| 39  | 6,613,567               | 6,602,578            | ~99          | Least Concern         | 12.02                                |
| Beard vegetation associations – Murchison Bioregion |                         |                      |              |                       |                                      |
| 18  | 12,403,172              | 12,363,252           | ~99          | Least Concern         | 4.96                                 |
| 39  | 1,148,400               | 1,138,064            | ~99          | Least Concern         | 3.56                                 |

\* 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 (GIS Database). The application area crosses several non-perennial minor watercourses (GIS Database). The area proposed to be cleared, however, is across a narrow corridor and will be mostly rehabilitated following construction therefore the proposed clearing is not expected to significantly impact any native vegetation associated with these watercourses.

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

**Methodology** 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 lies within the Bevon, Nubev, Hootanui and Jundee 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 Jundee land system is generally not susceptible to erosion, while the other land systems have varying susceptibility to erosion (Pringle et al., 1994):

- Bevon: Breakaway footslopes and narrow drainage tracts are susceptible to soil erosion, particularly if shrub cover is removed;
- Hootanui: Narrow drainage tracts and breakaway footslopes are susceptible to erosion; and
- Nubev: Drainage zones are moderately susceptible to soil erosion, particularly when shrub cover is removed.

The maximum width of the construction right of way will be 25 metres (APA, 2018). Following completion of construction, 33.5 hectares will be rehabilitated (APA, 2018). Given the narrow, linear nature of the proposed activities, the clearing is not likely to result in any appreciable land degradation.

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

**Methodology** APA (2018)  
Pringle et al. (1994)  
  
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 Goongarrie National Park which is located approximately 125 kilometres south-west 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 permanent watercourses or wetlands within the area proposed to clear (GIS Database). The application area crosses several non-perennial minor watercourses (GIS Database). The proposed clearing will involve minimal ground disturbance and is not expected to have a significant impact on surface water flows and the quality of surface or underground water.

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The groundwater quality in the application area is between 1,000 to 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). The proposed clearing for the Murrin Murrin Lateral Loop Pipeline is not likely to significantly alter the groundwater quality in the area.

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

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

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

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

The proposed clearing is for a 25 metre wide corridor over a length of 13.5 kilometres (APA, 2018). The application area is relatively flat across its whole distance (GIS Database). Given this, the proposed clearing is unlikely to cause excessive levels of water runoff that would exacerbate the incidence or intensity of flooding in the local area.

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

**Methodology** APA (2018)  
  
GIS Database:  
- Topographic contours, Statewide

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

**Comments**

The clearing permit application was advertised on 24 December 2018 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. It was re-advertised on 8 January 2019, due to a change in the clearing permit boundary. No submissions were received in relation to this application.

There are no native title claims over the area under application (DPLH, 2018). However, the tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2018). 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 (2018)

**4. References**

- APA (2018) Murrin Murrin Looping Pipeline Supporting Information Purpose Permit to Clear Native Vegetation Permit. APA Group, November 2018.
- Botanica (2018) Murrin Murrin Looping Project Reconnaissance Flora Survey. Report prepared for APA Group by Botanica Consulting, June 2018.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.

- DPLH (2018) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. <http://maps.daa.wa.gov.au/AHIS/> (Accessed 14 January 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.
- 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>
- KEC (2018) Murrin Murrin Looping Project Level 1 Fauna Assessment. Report prepared for APA Group by Kingfisher Environmental Consulting, February 2018.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Pringle, H.J.R, Van Vreeswyk, A.M.E. and Gilligan, S.A. (1994) An inventory and condition survey of rangelands in the north-eastern Goldfields, Western Australia, Technical Bulletin No. 87., Department of Agriculture, South Perth, Western Australia.

## 5. Glossary

### Acronyms:

|                 |   |
|-----------------|---|
| <b>BoM</b>      | Bureau of Meteorology, Australian Government  |
| <b>DAA</b>      | Department of Aboriginal Affairs, Western Australia (now DPLH)  |
| <b>DAFWA</b>    | Department of Agriculture and Food, Western Australia (now DPIRD)   |
| <b>DBCA</b>     | Department of Biodiversity Conservation and Attractions, Western Australia  |
| <b>DEC</b>      | Department of Environment and Conservation, Western Australia (now DBCA and DWER)   |
| <b>DEE</b>      | Department of the Environment and Energy, Australian Government   |
| <b>DER</b>      | Department of Environment Regulation, Western Australia (now DWER)  |
| <b>DMIRS</b>    | Department of Mines, Industry Regulation and Safety, Western Australia  |
| <b>DMP</b>      | Department of Mines and Petroleum, Western Australia (now DMIRS)  |
| <b>DPIRD</b>    | Department of Primary Industries and Regional Development, Western Australia  |
| <b>DPLH</b>     | Department of Planning, Lands and Heritage, Western Australia   |
| <b>DRF</b>      | Declared Rare Flora   |
| <b>DoE</b>      | Department of the Environment, Australian Government (now DEE)  |
| <b>DoW</b>      | Department of Water, Western Australia (now DWER)   |
| <b>DPaW</b>     | Department of Parks and Wildlife, Western Australia (now DBCA)  |
| <b>DSEWPac</b>  | Department of Sustainability, Environment, Water, Population and Communities (now DEE)                                    |
| <b>DWER</b>     | Department of Water and Environmental Regulation, Western Australia   |
| <b>EPA</b>      | Environmental Protection Authority, Western Australia   |
| <b>EP Act</b>   | <i>Environmental Protection Act 1986</i> , Western Australia  |
| <b>EPBC Act</b> | <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)  |
| <b>GIS</b>      | Geographical Information System   |
| <b>ha</b>       | Hectare (10,000 square metres)  |
| <b>IBRA</b>     | Interim Biogeographic Regionalisation for Australia   |
| <b>IUCN</b>     | International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union |
| <b>PEC</b>      | Priority Ecological Community, Western Australia  |
| <b>RIWI Act</b> | <i>Rights in Water and Irrigation Act 1914</i> , Western Australia  |
| <b>TEC</b>      | Threatened Ecological Community   |

### Definitions:

**{DPaW (2017) 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 1950*.  
**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 1950*.  
 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.