



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8901/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robert John Clement & Ronald James Smith

1.3. Property details

Property: Mining Lease 77/532
Local Government Area: Shire of Nungarin
Colloquial name: Lake Brown

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
10		Mechanical Removal	Gypsum Mining and Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 25 March 2021

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:
8: Medium woodland; salmon gum and gimlet (GIS Database).

A flora and vegetation survey was conducted over the application area by PGV Environmental during September, 2020. The following vegetation associations were recorded within the application area (PGV Environmental, 2020):

Es: *Eucalyptus salicola* Low Woodland

Salt Gum (*Eucalyptus salicola*) is the only tree species present. The understorey is very open with a few taller shrubs such as *Templetonia sulcata* and *Pittosporum angustifolium*. Common smaller shrubs and herbs include *Atriplex vesicaria*, *Roepera auranticum*, *Maireana erioclada* and the weed species *Matricaria (Oncosiphon piluliferum)*. The soils are deep gypsum several metres thick. This is the main native vegetation type on the site, occurring on secondary lunettes on the eastern side of the tenement.

Cc: *Callitris columellaris* Low Woodland

Callitris columellaris is up to 4m high and varies in cover up to 20%. Common small shrubs and herbs include *Atriplex vesicaria*, *Melaleuca halmaturorum*, *Carpobrotus modestus*, *Enchylaena tomentosum*, *Roepera auranticum* and *Exocarpos aphyllus*. The soils are gypsum a couple of metres deep. This vegetation type occurs on the low, primary lunettes fringing the edge of Lake Brown.

Tp: *Tecticornia pergranulata* Open Low Heath

Tecticornia pergranulata, *Tecticornia halocnemoides*, *Tecticornia lylei* and *Frankenia cinerea*. The soil type is shallow saline gypsum. This vegetation type occurs on the edge of Lake Brown.

Ml: *Melaleuca lanceolata* Low Woodland

Melaleuca lanceolata is 3-4m high and average 20% cover with *Atriplex vesicaria* the most common small shrub species. Other common species include *Roepera halophila*, *Gnephosis tenuissima* and *Austrostipa elegantissima*. The soils are orange-brown sandy loam. A very small area of this vegetation type occurs at the northern end of the site at the outer edge of the secondary lunette.

Clearing Description Lake Brown.

Robert John Clement & Ronald James Smith propose to clear up to 10 hectares of native vegetation within a boundary of approximately 22.532 hectares, for the purpose of gypsum mining and associated activities. The project is located approximately 37 kilometres north of Merredin, within the Shire of Nungarin.

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 a vegetation survey conducted by PGV Environmental (2020). The majority of the area was considered to be in Excellent condition, however some areas existed in a Completely Degraded condition as a result of previous mining activities (PGV Environmental, 2020).

The proposed clearing is for gypsum mining and a stockpile area.

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 application area is located within the Merredin subregion of the Avon Wheatbelt (AW1) Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Avon Wheatbelt bioregion is characterised by a gently undulating landscape of low relief (CALM, 2002). Proteaceous scrub-heaths, rich in endemics, are found on residual lateritic uplands and derived sandplains and mixed eucalypt, *Allocasuarina huegeliana* and Jam-York Gum woodlands on Quaternary alluvials and eluvials (CALM, 2002).

A reconnaissance flora and vegetation survey of the application area was conducted by PGV Environmental (2020) on 26 September 2020. The vegetation of the application area was dominated by *Eucalyptus salicola* low woodland (PGV Environmental, 2020). No Threatened Ecological Communities (TECs) were identified as potentially occurring in the application area and none were identified during the field assessment (PGV Environmental, 2020). One Priority Ecological Community (PEC), Eucalypt Woodlands of the Western Australian Wheatbelt, listed as a Priority 3 Ecological community at the state level and listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), was identified as potentially occurring within the application area (PGV Environmental, 2020). One vegetation community within the application area, *Eucalyptus salicola* low woodland, was identified as potentially representing this PEC (PGV Environmental, 2020).

The Wheatbelt Woodland TEC criteria is based on canopy cover, not tree density. *Eucalyptus salicola* trees have a relatively thin canopy cover. Therefore, with a low density of trees that are on the site multiplied by the thin canopy cover of each tree, PGV Environmental is confident that the maximum canopy cover on the site is 10% and that overall the cover is considerably less than this, at 5% or less (PGV Environmental, 2021). Conservation advice states "The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10%". The Department of Biodiversity, Conservation and Attractions (DBCA) has advised that if this TEC does occur within the application area, the extent of proposed clearing of the Eucalypt woodlands community is likely to be relatively minimal at a local scale (DBCA, 2021).

A total of 44 flora species representing 17 families and 37 genera were recorded within the application area (PGV Environmental, 2020). The desktop assessment identified 34 conservation significant flora species potentially occurring within the application, however 32 of these were determined to be unlikely to occur due to a lack of suitable habitat within the application area (PGV Environmental, 2020). Two species were identified as possibly occurring due to the presence of suitable habitat, including *Frankenia conferta* (Threatened) and *Roycea pycnophylloides* (Threatened). Neither of these species were identified during the field survey, however it was noted that these species are associated with the salt lake vegetation and that this vegetation was not surveyed in detail (PGV Environmental, 2020). PGV Environmental (2021) has advised that *Frankenia conferta* and *Roycea pycnophylloides* are likely only to be found within vegetation type Tp in the application area. As a targeted flora survey has not been undertaken over the application area, the proponent has removed areas containing vegetation type Tp to minimise any potential impact to these Threatened flora species (PGV Environmental (2021)).

Several species of weeds were recorded during the field survey of the application area (PGV Environmental, 2020). None were listed as a Declared Pest according to the *Biosecurity and Agriculture Management Act 2007*. 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.

Two fauna habitats have been recorded within the application area: 'Low woodland' and 'Open low Heath.' These fauna habitat types are unlikely to support higher fauna diversity and are well represented in the local area and region, particularly in comparison to the adjacent Lake Campion Nature Reserve.

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

Methodology

CALM (2002)
DBCA (2021)
PGV Environmental (2020)
PGV Environmental (2021)

GIS Database:

- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- Threatened and Priority Flora
- 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

A Reconnaissance Fauna Survey was undertaken over the application in September 2020. The following two fauna habitats have been recorded within the application area (PGV Environmental, 2020):

- Low woodland; and
- Open low Heath.

The Low Woodland Habitat corresponds to the areas of native vegetation containing Salt Gum (*Eucalyptus salicola*), Coast Cypress Pine (*Callitris columellaris*) and Moonah (*Melaleuca lanceolata*) (Es, Cc and Ml vegetation types) and occurs over most of the site (PGV Environmental, 2020).

The Open Low Heath Habitat is dominated by *Tecticornia pergranulata*, which corresponds to the Tp vegetation type and is a thin strip along the edge of Lake Brown (PGV Environmental, 2020). Areas containing the Tp vegetation type have been removed from the application area (PGV Environmental, 2021).

The habitat on the site has been only slightly modified with the vegetation being in mostly Very Good to Excellent condition (PGV Environmental, 2020). The vegetation is contiguous with a large area of native vegetation further east and has excellent connectivity so is considered to be 'Very Good' fauna habitat (PGV Environmental, 2020).

The fauna survey did not identify any conservation significant fauna species and desktop analysis did not identify any species that are likely to permanently inhabit the application area (PGV Environmental, 2020).

There are four species that may intermittently occur on the site, being (PGV Environmental, 2020):

- Sharp-tailed Sandpiper (*Calidris acuminata*);
- Great Egret, White Egret (*Ardea alba*);
- Rainbow Bee-eater (*Merops ornatus*); and
- Hooded Plover (*Thinornis rubricollis*).

These species are generally associated with the presence of water so are likely only to be present on the rare occasions that the adjacent lake has standing water (PGV Environmental, 2020). The Rainbow Bee-eater would not be expected to breed in the gypsum or salt lake soils (PGV Environmental, 2020).

A search was also undertaken to identify the potential presence of the Arid Bronze Azure Butterfly. The Arid Bronze Azure Butterfly has an obligate relationship with sugar ants of the species *Campanotus* sp. nr. *Terebrans* which are associated with smooth-barked eucalypts including Gimlet (*Eucalyptus salubris*), Lake Grace gum (*Eucalyptus loxophleba* ssp. *gratiae*), Wheatbelt Wandoo (*E. capillosa*), Salmon Gum (*E. salmonophloia*) and *Eucalyptus concinna* (PGV Environmental, 2020). The application area does contain *Eucalyptus salicola* (Salt Gum) (a smooth-barked eucalypt), however this species has not been identified as being associated with sugar ants or the Arid Bronze Azure Butterfly (PGV Environmental, 2020). Nevertheless, an inspection of Salt Gums was undertaken during the flora and vegetation survey. No Sugar Ant nests or nests of any other sort of ant were recorded at the base of the Salt Gums (PGV Environmental, 2020). The surface of the gypsum soils on the secondary lunettes where the Salt Gum occurred appeared to be too hard for ants to dig nests (PGV Environmental, 2020).

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

Methodology PGV Environmental (2020)
PGV Environmental (2021)

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 may be at variance to this Principle

There are no known records of Threatened flora within the application area (GIS Database). A reconnaissance

flora survey of the application area did not record any species of Threatened flora (PGV Environmental, 2020). However, two Threatened flora species were identified as possibly occurring due to the presence of suitable habitat, including *Frankenia conferta* and *Roycea pycnophylloides*.

Frankenia conferta is known from 13 populations and has records 13.5 kilometres south of the application area, within the Campion Lakes Nature Reserve. The application area is within the species known range. The habitat is described as the edges of salt lakes, among other halophytic shrubs on clay sands with gypsum or white-grey shallow sand over clay.

Roycea pycnophylloides is known from 18 populations and around 1,600,000 plants in total, however 1,500,000 of those plants are from a single population. Many of the surveys completed to date are partial surveys/estimates only. The habitat for *Roycea pycnophylloides* is described as along shorelines or on slight rises above open saline flats and major drainage channels in white to pale brown sand over sandy clay, either on their own or within nearby fringing vegetation with halophytic species.

Although they were not identified during the field survey, no targeted search was conducted and it was noted that these species are associated with the salt lake vegetation which was not surveyed in detail (PGV Environmental, 2020).

Based on known habitat preferences, PGV Environmental (2021) noted that *Frankenia conferta* and *Roycea pycnophylloides* are only potentially going to be present within the vegetation type 'Tp: *Tecticornia pergranulata* Open Low Heath.' As a targeted flora survey has not been undertaken over the application area, the proponent has removed areas containing vegetation type TP from the application to minimise any potential impact to these Threatened flora species.

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

Methodology PGV Environmental (2020)
PGV Environmental (2021)

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 state-listed 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 (PGV Environmental, 2020).

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

Methodology PGV Environmental (2020)

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 may be at variance to this Principle**
The application area falls within the Avon Wheatbelt Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 18-20% of the pre-European vegetation still exists in the IBRA Avon Wheatbelt Bioregion, IBRA Merredin Subregion and Shire of Nungarin (Government of Western Australia, 2019), which gives it a conservation status of 'Vulnerable' according to the Department of Natural Resources and Environment (2002). The application area is broadly mapped as Beard vegetation association 8: Medium woodland; salmon gum and gimlet (GIS Database). Approximately 49%, 14% and 14% of the pre-European extent vegetation association 8 remains uncleared at state, bioregional and subregional level, respectively (Government of Western Australia, 2019). This gives vegetation association 8 a conservation status of 'Vulnerable' according to the Department of Natural Resources and Environment (2002).

Beard vegetation association 8 retains approximately 49 per cent of its pre-European extent at a State level, and 14% at a Bioregion level which is less than the 30 per cent threshold level recommended in the National Objectives and Targets for Biodiversity Conservation, below which species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000).

The clearing of ten hectares of native vegetation within the application area will not reduce the ecological linkages within the local area, and is unlikely to impact the conservation significance of the pre-European vegetation remaining within the local and regional area (GIS Database). The application area is not a remnant, nor forms part of a remnant of vegetation in an extensively cleared area. Potential impacts to vegetation association 8 may be minimised by the implementation of rehabilitation condition, and will allow for the reinstatement of this vegetation association.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA managed lands (and post clearing %)
IBRA Bioregion – Avon Wheatbelt	9,517,108	1,761,187	~18	Vulnerable	~2(9)
IBRA Subregion – Merredin	6,524,180	1,367,565	~20	Vulnerable	~2(9)
Local Government – Nungarin	116,601	21,680	~18	Vulnerable	~9(27)
Beard vegetation associations – WA					
8	694,638	346,425	~49	Depleted	~6(13)
Beard vegetation associations – Avon Wheatbelt Bioregion					
8	356,571	50,340	~14	Vulnerable	~1(8)
Beard vegetation associations – Merredin subregion					
8	353,871	49,941	~14	Vulnerable	~1(8)

* Government of Western Australia (2019)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
EPA (2000)
Government of Western Australia (2019)

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 (PGV Environmental, 2020; GIS Database). The application area exists on the edge of Lake Brown (GIS Database). Lake Brown is a salt lake that is dry for most of the year. The Tp vegetation type described as *Tecticornia pergranulata* open low heath was described as growing in association with the highly saline and waterlogged soils on the edge of Lake Brown (PGV Environmental, 2020). The proponent has removed the Tp vegetation type from the application area due to the potential for Threatened flora to occur in these areas.

Based on the above, the proposed clearing is at variance to this Principle. However, due to the reduced size of the application area and removal of the Tp vegetation type, any impact to vegetation growing in association with Lake Brown is likely to be minimal.

Methodology PGV Environmental (2020)

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 is not likely to be at variance to this Principle

The application area is interpreted to be in the Wallambin Soil Land System (Map Unit 258Wa) of the Northern Zone of Ancient Drainage (DPIRD, 2020). The Zone is summarised as an ancient plain with low relief on weathered granite with no connecting drainage (DPIRD, 2020). Salt lakes occur as remnants of ancient drainage systems which only function in wet years (DPIRD, 2020). Lateritic uplands are dominated by yellow sandplains (DPIRD, 2020). Map Unit 258Wa is summarised as broad valley floors dominated by salt lakes with minor dunes on Quaternary alluvium (DPIRD, 2020). No land degradation risks associated with the proposed clearing were identified (DPIRD, 2020).

The proposed clearing of up to 10 hectares of native vegetation within a boundary of approximately 22.532 hectares, for the purpose of gypsum mining is unlikely to cause appreciable land degradation.

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

Methodology DPIRD (2020)

(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 may be at variance to this Principle

The application area does not lie within any conservation areas, however the Lake Campion Nature Reserve, managed by DBCA (formerly DPaW) for the purposes of conservation, is located approximately 14 metres south of the application area at its nearest point (GIS Database). The proposed clearing may impact the environmental values of this conservation area.

Lake Campion Nature Reserve is a 3,082 hectare reserve in the east of the Shire of Nungarin and has been established for the protection of flora and fauna. The clearing of ten hectares of native vegetation within the application area will not likely reduce the ecological linkages within the local area, and is unlikely to impact the conservation significance of the Lake Campion Nature Reserve. Potential impacts to Lake Campion Nature Reserve may be minimised by the implementation of a weed management condition and a rehabilitation condition.

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

Methodology PGV Environmental (2021)

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). The application area is located on the edge of Lake Brown, an ephemeral lake that is dry for most of the year, only filling briefly immediately following significant rainfall (BoM, 2021; PGV Environmental, 2020). The highly saline and waterlogged soils are tolerated by only a few species including *Tecticornia pergranulata*, *Tecticornia halocnemoides*, *Tecticornia lylei* and *Frankenia cinerea* (PGV Environmental, 2020). The proposed clearing of 10 hectares of native vegetation is unlikely to result in a deterioration to the quality of Lake Brown.

The proposed clearing for gypsum mining and associated activities 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 BoM (2021)
PGV Environmental (2020)

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 semi-arid, with a low average rainfall of approximately 325.3 millimetres per year (BoM, 2021). The application area is located on the edge of Lake Brown, an ephemeral lake that is dry for most of the year, only filling briefly immediately following significant rainfall (BoM, 2021; PGV Environmental, 2020).

The clearing of up to 10 hectares of native vegetation is unlikely to increase the incidence or intensity of natural flooding events in the local or regional area.

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

Methodology BoM (2021)
PGV Environmental (2020)

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 13 July 2020 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 (WC2017/007) over the area under application (DPLH, 2021). This claim has been registered with the National Native Title Tribunal 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, 2021). 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 (2021)

4. References

- BoM (2021) Bureau of Meteorology Website – Climate Data Online, Merredin. Bureau of Meteorology.
<http://www.bom.gov.au/climate/data/> (Accessed 15 March 2021).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DBCA (2021) DBCA Species and Communities Branch - Advice to assessing officer CPS 8901/1 - Robert John Clement & Ronald James Smith. Advice received 17 February, 2021.
- DPIRD (2020) Advice received in relation to Clearing Permit Application CPS 8901/1. Commissioner of Soil and Land Conservation, Department of Primary Industries and Regional Development, Western Australia, July 2020.
- DPLH (2021) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage.
<http://maps.daa.wa.gov.au/AHIS/> (Accessed 22 March 2021).
- 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.
- EPA (2000) Environmental Protection of Native Vegetation in Western Australia – Clearing of Native Vegetation, With Particular Reference to the Agricultural Area, POistion Statement No. 2. Environmental Protection Authority.
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth.
<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.
- PGV Environmental (2020) M77/532 Gypsum Mine, Lake Brown – Flora, Vegetation and Fauna Survey. Unpublished report prepared for Robert Clement by PGV Environmental, January 2021.
- PGV Environmental (2021) Email Response to Further Information request for CPS 8901/1. Advice received 19 February, 2021.

5. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
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)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
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)
DoE	Department of the Environment, Australian Government (now DAWE)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DAWE)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, 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.