Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.:	9012/1
Permit type:	Purpose Permit

1.2. Proponent details

Proponent's name:	**South32 Worsley Alumina Pty Ltd**

1.3. Property details

Property:	*Alumina Refinery Agreement Act 1961*, Mineral Lease 1SA (AML 70/1)
Local Government Area:	Shire of Boddington
Colloquial name:	Lower Hotham Road Bridge Construction

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.99		Mechanical Removal	Bridge Construction and Associated Road Works

1.5. Decision on application

Decision on Permit Application:	Grant
Decision Date:	15 October 2020

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:

3: Medium forest; jarrah-marri (GIS Database).

A flora and vegetation survey was conducted by Mattiske Consulting Pty Ltd in October 2019, over an area broader (but inclusive of) the clearing permit application area. The following three (3) vegetation associations were recorded within this survey area (Mattiske, 2020):

H: Open forest to woodland of *Eucalyptus marginata* and *Corymbia calophylla* over *Petrophile striata, Daviesia decurrens, Daviesia longifolia* and *Daviesia rhombifolia* on sandy loam to sandy gravels on slopes and ridges;

P: Open forest of *Eucalyptus marginata* and *Allocasuarina fraseriana* with a mixture of *Corymbia calophylla* and *Banksia grandis* over *Lasiopetalum cardiophyllum* (P4), *Lasiopetalum floribundum*, *Lechenaultia biloba* and *Ptilotus drummondii* var. *drummondii* on sandy gravels on slopes and ridges; and

Z: Open forest of *Eucalyptus marginata* and *Corymbia calophylla* over *Macrozamia riedlei, Xanthorrhoea preissii, Hakea lissocarpha* and *Phyllanthus calycinus* on sandy-loam to sandy-loam gravel soils on slopes.

Clearing Description

Lower Hotham Bridge Construction.
South32 Worsley Alumina Pty Ltd (Worsley) proposes to clear up to 0.99 hectares of native vegetation within a boundary of approximately 0.99 hectares, for the purpose of building an overpass bridge and completing associated road works over the Lower Hotham Road, within the Saddleback Timber Reserve. The project is located approximately 130 kilometres south-east of Perth, within the Shire of Boddington.

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 around the application area was derived from a vegetation survey conducted by Mattiske (2020). Vegetation condition within the application area was mostly (99.94%) in 'excellent' condition, with only a small fraction of the area (edge of road and/or cleared logging reserve area) being in completely degraded condition.

Impacts associated with vegetation clearing required within the application area will be managed in line with the applicant's Biodiversity and Forest Management Plan (South32a) and associated procedures, which apply to all of Worsley's approved mining and associated activities in the 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 is not likely to be at variance to this Principle

The clearing permit application area is located within the Northern Jarrah Forest subregion of the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (CALM, 2002; GIS Database). The area is formed by a Duricrusted plateau of Yilgarn Craton characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by woodlands of Wandoo - Marri on clayey soils. Eluvial and alluvial deposits support *Agonis* shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands (CALM, 2002).

There are no known Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) located within the application area (GIS Database).

A number of botanical surveys of the region covering the application area have been conducted since 1981 (South32, 2020a). The most recent flora and vegetation assessment of the application area was undertaken by Mattiske Consulting (Mattiske, 2020) in October 2019. No Threatened flora have previously been recorded within the application area (GIS Database) and none were identified by Mattiske (2020).

A desktop search of available databases recorded a total of 313 vascular flora taxa within 10 kilometres of the application area (DBCA, 2007-), however the area does not support any vegetation that does not occur locally or regionally in other forest and woodland areas (Mattiske 2020). One priority flora species, *Lasiopetalum cardiophyllum* (P4), has been identified during the broader local survey and desktop review of records (Mattiske, 2020; Western Australian Herbarium, 1998-), however it was not found within the clearing permit application area and is unlikely to be significantly impacted by the proposed clearing (Mattiske, 2020).

Three vegetation associations were mapped within the application area, all of which are well represented in the northern and eastern Jarrah forest areas. The vegetation displayed for each of these associations was assessed to be in 'excellent' condition (Mattiske, 2020).

Several terrestrial fauna surveys of the region covering the application area have also been conducted since 1981 (South32, 2020a). A targeted fauna survey for the application area was most recently undertaken by Phoenix Environmental Sciences, in November 2019 (Phoenix, 2020).

Database searches and literature reviews indicate that 35 vertebrate species of conservation significance have the potential to occur within 40 kilometres of the application area, comprising: three reptiles, two fish, 18 birds and 12 mammal species. However, the small application area does not represent an area of faunal diversity that is significantly higher to other locally or regionally represented forest and woodland areas (Mattiske, 2020; Phoenix, 2020).

There were three fauna habitat types identified within the application area. These habitats are common in the region and are not likely to support a higher level of fauna diversity than surrounding areas (Phoenix, 2020) 2019a).

The clearing activities associated with the application may further spread or introduce weeds and dieback, known to occur around Worsley's operational areas (South32, 2020a). These have the potential to out-compete native flora and reduce the biodiversity of an area. The proponent will manage activities associated with the application in line with hygiene and weed management commitments and procedures listed in its project environmental management documentation (South32, 2020a; South32, 2020b). In addition, potential impacts may be minimised by the implementation of a weed and dieback management condition.

The area occurs east of the State Forest within the Intensive Land Use Zone, where there is a history of clearing for agricultural, logging and mining activities, and the landscape is fragmented (South32, 2020b). However the vegetation associations, fauna habitats and landform types identified are well represented in surrounding areas (Mattiske, 2020; Phoenix, 2020; South32, 2020b; GIS Database).

The relatively small application area (0.99 hectares) is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context.

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

Methodology

CALM (2002)
DBCA (2007-)
Government of Western Australia (2019)
Mattiske (2020)
Phoenix (2020)
South32 (2020a)
South32 (2020b)
Western Australian Herbarium (1998-)

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

Fauna surveys covering the proposed application area were undertaken by Phoenix Environmental Sciences in November 2019 (Phoenix, 2020).

The following three fauna habitats were identified within the application area (Phoenix, 2020):
- Jarrah/Marri on slopes;
- Jarrah/Marri/Allocasuarina; and
- Marri/Jarrah on lower slopes.

The minor differences in vegetation structure, flora species composition (and topography) of these three habitats are considered unlikely to result in distinct fauna assemblages (Phoenix, 2020). These fauna habitats are well represented locally or regionally in other forest and woodland areas (Mattiske, 2020; Phoenix, 2020).

The vegetation across the application area is considered to be mainly in 'excellent' condition (Keighery, 1994), however the application area occurs within the Saddleback Timber Reserve, east of the State Forest within the Intensive Land Use Zone, where there is a history of clearing for agricultural, logging and mining activities, and the surrounding landscape is fragmented (South32, 2020b).

Based on habitat preferences, known distributions and observations made during the Phoenix (2020) and Mattiske (2020) surveys, the following four EBPC listed species were recorded or have potential to occur within the application area:
- Carnaby's black cockatoo (*Calyptorhynchus latirostris*) (Endangered);
- Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) (Vulnerable);
- Baudin's black cockatoo (*Calyptorhynchus baudinii*) (Endangered); and
- Chuditch (*Dasyurus geoffroii*) (Vulnerable).

An additional four species listed under the BC Act or listed under DBCA Priority listings were recorded or have potential to occur within the application area (Phoenix, 2020):
- Brush-tailed Phascogale (*Phascogale tapoatafa* subsp. *Wambenger*) (Conservation Dependant);
- Quenda *(Isoodon fusciventer*) (P4);
- Western Brush-Wallaby (*Notamacropus irma*) (P4); and
- Western False Pipistrelle (*Falsistrellus mackenziei*) (P4).

The application area contains no confirmed breeding trees for black cockatoo species (Phoenix 2020). Little is known of the Western False Pipistrelle's roosting and foraging requirements, however given its current known range distribution (DBCA, 2007-) it is unlikely the application area constitutes significant habitat for this species (Phoenix, 2020). Evidence collected during the survey and desktop reviews indicates that the mammal marsupial species identified above are widespread and active locally and regionally (Phoenix, 2020).

These species of conservation significance may forage through the application area, however they are unlikely to be specifically dependant on the relatively small area (0.99 hectares) of vegetation proposed to be cleared, either for habitat or breeding (Mattiske, 2020; Phoenix, 2020; South32, 2020b).

It is noted that the proponent will manage activities associated with the application in line with the fauna management commitments and procedures listed in its project environmental management documentation (South32, 2020a; South32, 2020b).

Specifically, in order to minimise the potential risks to conservation significant fauna, within the '*Worsley Mine Expansion Minor or Preliminary Works Application Supporting Document*' (South32, 2020b), the proponent has committed to conduct clearing outside of the primary peak breeding period for black cockatoo species (September to December), and for a designated fauna spotter to be present during clearing activities, to advise on fauna matters.

The area proposed to be cleared (0.99 hectares) is unlikely to represent a significant habitat for fauna in a local or regional context.

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

Methodology

DBCA (2007-)
Keighery (1994)
Mattiske (2020)

Phoenix (2020)
South32 (2020a)
South32 (2020b)

GIS Database:
- Imagery
- Pre-European Vegetation
- Threatened Fauna

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

Comments

Proposal is not likely to be at variance to this Principle

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys completed over the application area did not record any species of Threatened flora (South32, 2020b; Mattiske, 2020).

The vegetation associations within the application area are common and widespread within the region, and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.

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

Methodology

Mattiske (2020)
South32 (2020b)

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

There are no known Threatened Ecological Communities (TECs) located within the application area (GIS Database). A flora and vegetation survey of the application area did not identify any TECs (Mattiske, 2020).

A number of TEC areas ('Mount Saddleback Heath') occur one to nine kilometres from the application area, near Mt Saddleback, Hotham Farm, Marradong and the Boddington Gold Mine (GIS Database). Given their distance from the application area and relatively small application area (0.99 hectares), these communities are not likely to be impacted.

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

Methodology

Mattiske (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 is not at variance to this Principle

The application area falls within the Jarrah Forest Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 53.25% of the pre-European vegetation still exists in the IBRA Jarrah Forest Bioregion (Government of Western Australia, 2019).

The application area is broadly mapped as Beard vegetation association 3: Medium forest; jarrah-marri; (GIS Database). Approximately 67% of the pre-European extent of this vegetation association remains uncleared at both the state and bioregional level (Government of Western Australia, 2019).

The application area occurs east of the State Forest within the Intensive Land Use Zone, where there is a history of clearing for agricultural, logging and mining activities, and the landscape is fragmented (South32, 2020b). The extent of forested areas locally and regionally remains significant however, and the vegetation assemblages and types found in the area are well represented locally and regionally (Mattiske, 2020; South32, 2020b).

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 (and post clearing %)
IBRA Bioregion - Jarrah Forest	2,390,591	1,604,101	67	Least Concern	57 (81)
IBRA Subregion - Northern Jarrah Forest	908,099	723,445	79	Least Concern	70 (84)
Local Government –Shire of Boddington	158,045	116,235	73	Least Concern	55 (71)
Beard vegetation associations - WA					
3	2,661,404	1,803,437	67	Least Concern	58 (81)
Beard vegetation associations - Jarrah Forest Bioregion					
3	2,390,591	1,604,101	67	Least Concern	57 (81)
Beard vegetation associations - Northern Jarrah Forest subregion					
3	908,099	723,445	79	Least Concern	70 (84)

* Government of Western Australia (2019)
** 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 (2019)
Mattiske (2020)
South32 (2020b)

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 not at variance to this Principle

There are no permanent watercourses or wetlands within the areas proposed to be cleared (GIS Database).

Mattiske (2020) did not record any vegetation growing in association with a watercourse or wetland within the application area. The proposed application area occurs on an upper valley system and the Hotham River occurs more than two kilometres west of the application area (South32, 2020b; GIS Database).

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

Methodology South32 (2020b)

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 area under application has been mapped as soil type JZ1 (GIS Database), which Northcote et al. (1960-1968) describes as:

- JZ1- Lateritic gravels and block laterite. The chief soils are ironstone gravels with sandy and earthy matrices.

The proposed clearing of less than one hectare is for the purpose of establishing a haulage overpass bridge over an existing public road. The bridge and associated infrastructure will be specifically engineered to manage natural rainwater flows and control erosion along the adjacent road and timber reserves (South32, 2020b).

Furthermore, the proponent will manage activities associated with the application in line with clearing, rehabilitation, and topsoil and overburden management procedures and working arrangements identified in its Biodiversity and Forest Management Plan (South32, 2020a; South32, 2020b).

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

Methodology Northcote et al. (1960-1968)
South32 (2020a)
South32 (2020b)

GIS Database:
- Soils, Statewide

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no conservation areas within the application area. The application area is located in the Saddleback Timber Reserve and approximately three kilometres east from the Dwellingup State Forest.

The nearest DBCA managed conservation area is the Mooradung Nature Reserve, located approximately 12 kilometres northeast of the application area (GIS Database).

The Saddleback Timber Reserve is managed by the DBCA for the purpose of native forest timber harvesting. Worsley's Biodiversity and Forest Management Plan (South32, 2020a) has been prepared to fulfil requirements set out under Worsley's Bauxite-Alumina Project Ministerial Statement No.719 conditions. It provides a framework for the management of biodiversity, forest resources and rehabilitation in its approved mining areas, which include the Saddleback Timber Reserve. The plan lists strategies, procedures and agreed DBCA Working Arrangements under which all of Worsley's associated operations in the area will be managed (South32, 2020a).

The proposed clearing of less than one hectare for the purpose of building an overpass bridge over an existing public road 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 South32 (2020a)

GIS Database:
- DPaW Tenure

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments **Proposal is not likely to be at variance to this Principle**
There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database).

There are no permanent water courses or waterbodies within the application area. The proposed application area occurs on an upper valley system and does not feature any drainage lines (South32, 2020b; GIS Database).

The proposed clearing of less than one hectare for the purpose of building an overpass bridge over an existing public road is unlikely to result in significant changes to surface water flows or 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 South32 (2020b)

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

(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 Warm Mediterranean, with a mean annual rainfall of approximately 668.9 millimetres per year, recorded from the nearby weather station of Boddington Shire, approximately 16 kilometres north of the application area (BoM, 2020; CALM, 2002).

There are no permanent water courses or waterbodies within the application area. The proposed application area occurs on an upper valley system and does not feature any drainage lines (South32, 2020b; GIS Database).

The proposed clearing is for the purpose of building an overpass bridge over an existing public road. The associated infrastructure will be specifically engineered to manage natural rainwater flows along the adjacent road and timber reserves (South32, 2020b). Therefore, the proposed clearing of less than one hectare is unlikely to increase the incidence or intensity of natural flooding events.

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

Methodology

BoM (2020)
CALM (2020)
South32 (2020b)

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

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

Comments

The clearing permit application was advertised on 7 September 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 a native title claim (WC1998/058) over the area under application (DPLH, 2020). 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 is one registered Aboriginal Site of Significance within the application area (DPLH, 2020). 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.

Since 1984, Worsley has been conducting a large bauxite-alumina mining and refining operation in the southwest of WA. Worsley currently has a resource expansion proposal under formal assessment by the WA EPA (Assessment No.2216) and Commonwealth DAWE (EPBC Reference No.2019/8437): the Worsley Mining Development Envelope (WMDE) project.

As part of this proposal, the applicant requires a haul road for the heavy mining fleet to access mining areas west of the Lower Hotham Road. An overpass bridge over the road, the 'Lower Hotham Road Bridge' (LHRB) will be constructed and operated to ensure safety of the public at that crossing point.

Whilst the main WMDE assessment is underway, Worsley has sought a Minor or Preliminary Works consent under s41A(3) of the EP Act, in order to construct (and operate) the LHRB. On 6 October 2020, the EPA issued a Notice of Decision to Consent to Minor or Preliminary Works for this project (EPA, 2020). This clearing permit application assessment has taken into consideration findings and conditions set in this Notice of Decision.

Methodology

DPLH (2020)
EPA (2020)

4. References

BoM (2020) Bureau of Meteorology Website – Climate Data Online, Boddington Shire. Bureau of Meteorology. http://www.bom.gov.au/climate/data/ (Accessed 29 September 2020).

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

DBCA (2007-) NatureMap: Mapping Western Australia's Biodiversity, Department of Biodiversity, Conservation and Attractions. https://naturemap.dbca.wa.gov.au/ (Accessed 30 September 2020).

DPLH (2020) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. http://maps.daa.wa.gov.au/AHIS/ (Accessed 25 September 2020).

EPA (2020) Notice of Decision to Consent to Minor of Preliminary Works, Worley Mine Expansion – Revised Proposal, Assessment No.2216. Environmental Protection Authority, Western Australia, 6 October 2020.

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.

Mattiske (2020). Review of Lower Hotham Crossing Area. Report prepared for South32 Worley Alumina Pty Ltd by Mattiske Consulting Pty Ltd, February 2020.

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.

Phoenix (2020). Terrestrial vertebrate fauna assessment for the Worsley Mine Expansion - Revised Proposal (Preliminary Works) Project. Report prepared for South32 Worsley Alumina Pty Ltd by Phoenix Environmental Sciences Pty Ltd, June 2020.

South32 (2020a). Biodiversity and Forest Management Plan (MS719), Rev D. Report prepared by South32 Worsley Alumina Pty Ltd, April 2020.

South32 (2020b). Minor or Preliminary Works Application Supporting Document, V.3.0. Report prepared by South32 Worsley Alumina Pty Ltd, June 2020.

Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/ (Accessed 29 September Year).

5. Glossary

Acronyms:

BC Act	*Biodiversity Conservation Act 2016,* 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	*Environmental Protection Act 1986*, Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	*Rights in Water and Irrigation Act 1914*, Western Australia
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.