



# Clearing Permit Decision Report

## 1. Application details and outcomes

### 1.1. Permit application details

Permit number:	9802/1
Permit type:	Purpose Permit
Applicant name:	VRX Silica Limited
Application received:	12 July 2022
Application area:	2.87 hectares
Purpose of clearing:	Mineral Exploration and Rehabilitation Trial
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 70/1390
Location (LGA area/s):	Shire of Chittering
Colloquial name:	Muchea Silica Sand Project

### 1.2. Description of clearing activities

VRX Silica Limited proposes to clear up to 2.87 hectares of native vegetation within a boundary of approximately 128 hectares, for the purpose of mineral exploration and rehabilitation trial. The project is located approximately 11 kilometres northwest of Muchea, within the Shire of Chittering.

The application is to allow for silica exploration drilling and a rehabilitation trial utilising the vegetation direct transfer (VDT) method (Preston, 2022). Drilling is required to further define the resource and will target areas with loose sand and high silica content (Preston, 2022).

### 1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	17 November 2022
Decision area:	2.87 hectares of native vegetation

### 1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 12 July 2022. DMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix D), supporting information provided by the applicant including the results of a flora and vegetation survey, the clearing principles set out in Schedule 5 of the EP Act, proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration the purpose of the clearing to facilitate silica sand exploration drilling and a vegetation direct transfer trial.

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values; and
- a small loss of habitat for multiple fauna species of conservation significance.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback; and
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.

## 2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The proposed exploration activities have been designed to minimise direct impacts to native vegetation to the greatest extent possible (Preston, 2022).

A small track-mounted drill rig and a ground crew consisting of one 4WD will be manoeuvred through trees and larger shrubs by rolling over the understory (Preston, 2022). Access of the drill hole locations will be traversed and mapped on foot prior to avoid larger vegetation (Preston, 2022). The size of the application area allows for sufficient flexibility to re-route if necessary (Preston, 2022). Fallen branches and larger debris will be moved by hand to facilitate track access (Preston, 2022).

At each drill hole location the topsoil will be removed and replaced after the drill hole has been completed (Preston, 2022). The drill hole will collapse upon removal of the drill leaving a small depression (Preston, 2022). Excess cuttings will be used to fill the depression, and topsoil will be respread over the drilling location. No drill pads will be required for the proposed drilling (Preston, 2022).

The proposed activities include conducting a rehabilitation trial utilising the vegetation direct transfer (VDT) method (Preston, 2022). An excavator will move the sod to an area of cleared vegetation. The disturbed areas will be rehabilitated progressively as a result of the VDT (Preston, 2022). The access to the VDT trial area will be track rolled (Preston, 2022).

The permit holder has committed to a number of additional environmental management and mitigation measures listed below (Preston, 2022):

- vegetation clearing will be managed through internal ground disturbance procedures;
- VRX will conduct line surveys prior to moving to each drill hole to determine and choose the 'path of least resistance', minimising the extent of disturbance;
- disturbance areas will be identified using GPS coordinates and demarcated using tape and pickets;
- mapped disturbance areas will be provided to operators to restrict disturbance to mapped areas only;
- access will be via existing tracks where possible; and
- all vehicles, equipment and personnel will be inspected and cleaned as required to prevent the incidental spread of weeds and dieback.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles identified that the impacts of the proposed clearing present a risk to biological values (fauna, adjacent flora and vegetation). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

#### 3.2.1. Biological values (flora) - Clearing Principles (a), (c), (d)

##### Assessment

There are six vegetation types mapped within the application area (Mattiske, 2022). The permit area is located in a large area of remnant vegetation with approximately 76.3% of native vegetation remaining in the surrounding 10 kilometre radius (Preston, 2022).

There were 225 flora species, from 103 genera and 42 families recorded within the Muchea Project Silica Sand Project survey area (Mattiske, 2022). A desktop assessment of the Muchea Silica Sand Project area identified 26 flora species of conservation significance the potential to occur (Mattiske, 2022; Preston, 2022). These species were considered to have a low or moderate likelihood of occurrence within the permit area (Mattiske, 2022; Preston, 2022). There are no known records of threatened or priority flora located within the permit area (GIS Database). A flora survey conducted over the permit area and surrounds did not identify any flora species of conservation significance (Mattiske, 2022; Preston, 2022). The majority of the conservation significant flora species recorded nearby the permit area are found within low lying habitats that are likely to be prone to waterlogging, while the permit area is located on a small incline in the landscape (GIS Database).

The application area has been mapped as part of the 'Banksia Woodlands of the Swan Coastal Plain' Threatened Ecological Community (TEC) listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and by the DBCA as a Priority 3 Priority Ecological Community (PEC) (Mattiske, 2022; Preston, 2022; GIS Database). While the permit area is located within this ecological community, the proposed drilling activities will not impact the *Banksia* overstory (Preston, 2022). While there will be some disturbance to the understory from track rolling a small drill rig, the structure of the ecological community will not be impacted to the extent that it can't regenerate (Preston, 2022).

The proposed VDT trial area is approximately 0.53 hectares (Preston, 2022). The VDT trial involves progressive rehabilitation with the expectation that the understory will be quickly established through this method (Preston, 2022). It is expected that some *Banksia* species in the VDT trial area will be lost due to having a deeper root structure than the majority of the understory vegetation present in the permit area (Preston, 2022).

Eight weed species were identified within the application area and surrounds (Mattiske, 2022). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. No dieback assessment has been undertaken over the application area (Mattiske, 2022). Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed and dieback management condition.

#### Conclusion

Based on the above assessment, the proposed clearing is unlikely to result in impacts to conservation significant flora or available habitat for any species of conservation significance.

There may be a loss of some *Banksia* species within the Banksia Woodlands of the Swan Coastal Plain TEC/PEC as a result of the VDT trial. The total area of the VDT trial is approximately 0.53 hectares, and will result in progressive rehabilitation. There may be some loss to the extent of this ecological community through the VDT trial, however the trial will result in further knowledge to improve future rehabilitation efforts.

#### Conditions

To address the above impacts, the following offset and management measures will be required as conditions of the permit:

- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

### 3.2.2. Biological values (fauna) - Clearing Principles (a) and (b)

#### Assessment

One fauna habitat was mapped within the application area (Bamford, 2022):

- **Banksia woodland (VSA 3):** Intact mixed woodland of *Banksia attenuata*, *Banksia menziesii* and *Banksia illicifolia* with scattered *Eucalyptus tottiana* over *Adenanthos* and complex mixed Myrtaceous and Proteaceous low shrubland over *Hibbertia* and other low shrubs and herbs, on pale grey deep sands. This VSA includes low dunes, low gentle midslopes and swales on Spearwood sands in the west of the survey area and plains on Bassendean sands in the east of the survey.

A total of 79 fauna species were recorded during the field surveys of the permit area and surrounds, including three frogs, 21 reptiles, 41 bird, eight native mammal and six introduced mammal species (Bamford, 2022; Preston, 2022). A total of 120 species are expected to be resident in the survey area, 46 as migrants or regular visitors, 33 as irregular visitors, 14 as vagrant and five as locally extinct (Bamford, 2022; Preston, 2022).

The Carnaby's cockatoo (*Zanda latirostris* – Endangered) and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso* – Vulnerable) (herein referred to collectively as black cockatoos) were all considered likely to utilise foraging habitat within the permit area (Bamford, 2022; Preston, 2022).

Black cockatoos nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powder bark, bullich and blackbutt (Commonwealth of Australia, 2017). They are known to forage on the seeds and flowers of a large variety of plants including Eucalypt and Corymbia species (Valentine & Stock, 2008). Black cockatoo habitat can be considered in terms of breeding habitat, night roosting habitat, and foraging habitat. Black cockatoos will generally forage up to 12 kilometres from an active breeding site (DSEWPac, 2012; DoEE, 2017; DPaW, 2013). Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DSEWPac, 2012; DoEE, 2017; DPaW 2013), but may range up to 20 kilometres (Commonwealth of Australia, 2017). Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites, particularly within 12 kilometres of an impact area (Commonwealth of Australia, 2017).

Both black cockatoos were confirmed present during the field survey and area expected to be regular visitors to the Muchea Silica Sand Project area (Bamford, 2022; Preston, 2022). A flock of 15 Carnaby's cockatoo were seen on 11 July 2018, and a single forest red-tailed cockatoo was seen on 23 November 2018 (Preston, 2022). The *Banksia* woodland habitat lacks large trees used for roosting or breeding, therefore it is unlikely that roosting or breeding would occur within the permit area (Bamford, 2022; Preston, 2022).

There are three known black cockatoo roost sites located within a 12 kilometre radius of the permit area (Bamford, 2022; GIS Database). These roost sites are all located within 8 to 10 kilometres from the permit area (GIS Database). The nearest known breeding site is located approximately 12.5 kilometres from the permit area (GIS Database).

Bamford (2022) determined that the fauna habitat within the permit area was of high value foraging habitat for Carnaby's cockatoo, and low-moderate value foraging habitat for forest red-tailed black cockatoo (Preston, 2022). This conclusion was based on available key food plants present, the extent of the fauna habitat, and species density (Bamford, 2022). However, no *Banksia* species are expected to be impacted from drilling activities, however there may be a small loss of *Banksia* species through the VDT trial (less than 0.53 hectares) (Preston, 2022).

One other species of conservation significance was identified during the field survey: black-striped snake (*Neelaps calonotos* – Priority 3) (Bamford, 2022). Based on the habitat present, the jewelled southwest Ctenotus (*Ctenotus gemmula* – Priority 3), western brush wallaby (*Notamacropus irma* – Priority 4) and quenda (*Isodon fusciventer* – Priority 4) could all possibly be found within the application area (Bamford, 2022). Two invertebrate species were considered potentially occurring within the permit area: *Leioproctus contrarius* (Priority 3) and *Glossurocolletes bilobatus* (Priority 2) (Bamford, 2022). These species were all considered to be residents of the area if they were present, however the proposed disturbance is unlikely to result in a significant loss of available habitat for these species (Bamford, 2022; Preston, 2022). There is however potential for individuals to be impacted during the clearing process. To minimise the impacts on fauna during clearing the permit includes a condition requiring slow one directional clearing to allow fauna the opportunity to move into adjacent areas.

### Conclusion

Based on the above assessment, the proposed clearing will result in a small amount of disturbance to available fauna habitat.

The proposed activities will have minimal impact on the primary foraging species for black cockatoos (*Banksia* species). The drilling activities will have no impact on trees within the permit area (Preston, 2022). The VDT trial may result in a small loss of *Banksia* trees within an area of 0.53 hectares (Preston, 2022). This potential loss of *Banksia* is unlikely to significantly reduce the extent of foraging habitat for black cockatoos, as the permit area is located within an extensive remnant of *Banksia* woodland (>28,000 hectares).

### Conditions

To address the above impacts, the following offset and management measures will be required as conditions of the permit:

- Directional clearing, which requires slow, progressive, one directional clearing to allow terrestrial fauna to disperse ahead of the clearing activity should they occur on site at the time of clearing.

## **3.3. Relevant planning instruments and other matters**

The permit area is within the South West Native Title Settlement area (DPLH, 2022). This settlement resolves Native Title rights and interests over an area of approximately 200,000 square kilometres within the south west of Western Australia. 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, 2022). 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.

Other relevant authorisations that may be required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.

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.

**End**

## Appendix A. Site characteristics

### A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of a large remnant of native vegetation in the intensive land use zone of Western Australia. It is surrounded by remnant vegetation and farmland (GIS Database). The permit area is comprised almost entirely of native vegetation (Preston, 2022). Surrounding the permit area of radii 5, 10, and 20 kilometres the native vegetation remaining equates to 36.9%, 76.3% and 51.5%, respectively (Preston, 2022).
Ecological linkage	The application area is part of a larger and extensive area of native vegetation and has continuous connectivity with Yeal Nature Reserve (GIS Database).
Conservation areas	The application area is located within the Yeal – Gnangara Area Register of National Estate, listed as an Environmentally Sensitive Area (ESA) (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>949: Low woodland; <i>Banksia</i>; and</p> <p>1014: Mosaic: Low woodland; <i>Banksia</i> / Shrublands; tea tree thicket (GIS Database).</p> <p>A detailed flora and vegetation survey was conducted over the application area by Mattiske Consulting (Mattiske) during August to October 2018, and 18-19 November 2021, covering approximately 1,100 hectares. The following vegetation types were recorded within the application area (Mattiske, 2022):</p> <p><b>A:</b> Low woodland of <i>Banksia attenuata</i> and <i>Banksia menziesii</i> with occasional <i>Eucalyptus todtiana</i> over <i>Beaufortia elegans</i>, <i>Bossiaea eriocarpa</i>, <i>Eremaea pauciflora</i>, <i>Jacksonia floribunda</i>, <i>Petrophile linearis</i> and <i>Scholtzia involucreta</i>, over <i>Drosera erythrorhiza</i>, <i>Lyginia barbata</i> and <i>Patersonia occidentalis</i> on white-grey sand. Occurs predominantly on mid slopes, but also flats and upper slopes.</p> <p><b>B:</b> Low open woodland of <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over <i>Jacksonia floribunda</i>, <i>Scholtzia involucreta</i>, <i>Styphelia conostephioides</i>, <i>Verticordia nitens</i> and <i>Xanthorrhoea preissii</i> over <i>Dasypogon bromeliifolius</i> and <i>Patersonia occidentalis</i> on white-grey sand. Occurs mostly on lower slopes and valley floors in moister sites.</p> <p><b>F:</b> Low woodland of <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over <i>Allocasuarina humilis</i>, <i>Conostephium pendulum</i>, <i>Jacksonia floribunda</i>, <i>Melaleuca trichophylla</i>, <i>Petrophile linearis</i>, <i>Scholtzia involucreta</i> and <i>Stirlingia latifolia</i>, over <i>Burchardia congesta</i>, <i>Drosera drummondii</i> and <i>Lyginia barbata</i> on white-grey sand. Occurs on upper slopes and some ridges.</p> <p><b>H:</b> Low woodland of <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over <i>Hibbertia subvaginata</i>, <i>Jacksonia floribunda</i>, <i>Melaleuca trichophylla</i>, <i>Petrophile linearis</i>, <i>Scholtzia involucreta</i> and <i>Styphelia conostephioides</i> over <i>Lyginia barbata</i> and <i>Patersonia occidentalis</i> on white-grey-brown sand and sandy loam. Occurs predominantly on flats, but also across a range of lower slopes to ridges.</p> <p><b>J:</b> Low woodland of <i>Eucalyptus todtiana</i>, <i>Banksia menziesii</i> and <i>Banksia attenuata</i> over <i>Beaufortia elegans</i>, <i>Bossiaea eriocarpa</i>, <i>Eremaea pauciflora</i> var. <i>calyptra</i>, <i>Hibbertia subvaginata</i>, <i>Jacksonia floribunda</i>, <i>Philothea spicata</i> and <i>Scholtzia involucreta</i> over <i>Lyginia barbata</i> and <i>Patersonia occidentalis</i> on white-grey sand and sandy loam, occurs mostly on upper slopes.</p> <p><b>K:</b> Low woodland of <i>Eucalyptus todtiana</i>, <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over <i>Beaufortia elegans</i>, <i>Eremaea pauciflora</i>, <i>Hibbertia subvaginata</i>, <i>Jacksonia floribunda</i>, <i>Philothea spicata</i> and <i>Scholtzia involucreta</i>, over <i>Patersonia occidentalis</i> and <i>Phlebocarya</i> spp. on white grey sands over yellow/brown sand on mid to upper slopes.</p>
Vegetation condition	<p>The vegetation survey (Mattiske, 2022) indicate the vegetation within the proposed clearing area is in pristine and excellent (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> <li>- <b>Pristine:</b> Pristine or nearly so, no obvious signs of disturbance.</li> <li>- <b>Very good:</b> Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.</li> </ul> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>

Characteristic	Details
Climate and landform	The application area is mapped within elevations of 75-85 metres AHD (GIS Database). The annual average rainfall (Gingin Aero) is 620.7 millimetres (BoM, 2022).
Soil description	The soil is mapped as Bassendean sands in the Jandakot phase (GIS Database). These soils are described as Jandakot low dunes of grey sand over pale yellow sands generally underlain by humic and iron podsols (GIS Database).
Land degradation risk	There is minimal land degradation risk associated with the proposed activities as no areas will be left bare of vegetation or topsoil (Preston, 2022). Following exploration activities all drill holes will be immediately rehabilitated by respreading of topsoil (Preston, 2022). The exploration drilling will be to a maximum depth of 3 metres above the water table (Preston, 2022).
Waterbodies	The desktop assessment and aerial imagery indicated that there are no waterbodies or wetlands within the area proposed to be cleared (GIS Database).
Hydrogeography	The application area is located within the Gngangara Groundwater Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (GIS Database). The application area is also within the Priority 1 Gngangara Underground Water Pollution Control Area Public Drinking Water Source Area (PDWSA) (GIS Database). The mapped groundwater salinity is <500 and 500-1000 milligrams per litre which is described as fresh to marginal water quality (GIS Database).
Flora	A total of 225 vascular plant taxa, representative of 103 genera and 42 families, were recorded within the permit area and surrounds (Mattiske, 2022). No conservation significant flora species were recorded within the permit area (Mattiske, 2022).
Ecological communities	The Banksia Woodlands of the Swan Coastal Plains community is mapped within the application area (GIS Database). This community is listed as a Threatened Ecological Community (Endangered) under the EPBC Act and a Priority Ecological Community (P3) at a state level (GIS Database).
Fauna	A total of 79 fauna species were recorded during the field surveys, including three frogs, 21 reptiles, 41 bird, eight native mammal and six introduced mammal species (Bamford, 2022). Three conservation significant fauna species were recorded during the field surveys (Bamford, 2022).

## A.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent Remaining %	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA Managed Lands
IBRA Bioregion - Swan Coastal Plain	1,501,221	579,813	~38	222,916	~17
Beard vegetation associations - State					
949	218,193	123,104	~56	68,764	~42
1014	41,064	22,787	~55	12,240	~30
Beard vegetation associations - Bioregion					
949	209,983	120,287	~57	67,844	~32
1014	41,064	22,787	~55	12,240	~29
Hedde vegetation complexes					
Bassendean Complex-North	79,057	56,659	~71	30,558	~38

Government of Western Australia (2019)

## A.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix D.1), and biological survey information (Mattiske, 2022; Preston, 2022), impacts to the following conservation significant flora required further consideration.

Species	Conservation Status	Likelihood of Occurrence
<b>Threatened Species</b>		
<i>Andersonia gracilis</i>	Endangered	Low
<i>Anigozanthos viridis</i> subsp. <i>terraspectans</i>	Vulnerable	Low
<i>Caladenia huegelii</i>	Endangered	Low
<i>Chamelaucium lullfitzii</i>	Endangered	Moderate
<i>Darwinia foetida</i>	Critically Endangered	Moderate
<i>Diuris purdiei</i>	Endangered	Low
<i>Drakaea elastica</i>	Endangered	Low
<i>Eleocharis keigheryi</i>	Vulnerable	Moderate
<i>Grevillea curviloba</i>	Endangered	Moderate
<i>Grevillea thelemanniana</i>	Critically Endangered	Low
<i>Lepidosperma rostratum</i>	Endangered	Low
<i>Macarthuria keigheryi</i>	Endangered	Moderate
<i>Thelymitra stellata</i>	Endangered	Low
<b>Priority Species</b>		
<i>Grevillea evanescens</i>	Priority 1	Low
<i>Isotropis cuneifolia</i> subsp. <i>glabra</i>	Priority 2	Low
<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i>	Priority 2	Moderate
<i>Eryngium pinnatifidum</i> subsp. <i>palustre</i>	Priority 3	Low
<i>Pithocarpa corymbulosa</i>	Priority 3	Low
<i>Acacia drummondii</i> subsp. <i>affinis</i>	Priority 3	Low
<i>Cyathochaeta teretifolia</i>	Priority 3	Low
<i>Meionectes tenuifolia</i>	Priority 3	Low
<i>Myriophyllum echinatum</i>	Priority 3	Low
<i>Verticordia serrata</i> var. <i>linearis</i>	Priority 3	Low
<i>Rumex drummondii</i>	Priority 4	Low
<i>Jacksonia sericea</i>	Priority 4	Low
<i>Stylidium longitubum</i>	Priority 4	Low

#### A.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix D.1), and biological survey information (Bamford, 2022; Preston, 2022), impacts to the following conservation significant fauna required further consideration.

Species	Conservation listing	Presence within survey area	Expected Status
<b>Reptiles</b>			
<i>Ctenotus gemmula</i> (Jewelled Sand-plain Skink)	Priority 3	Unconfirmed	Resident
<i>Neelaps calonotos</i> (Black-striped Snake)	Priority 3	Confirmed	Resident
<b>Birds</b>			
<i>Calyptorhynchus banksii naso</i> (Forest Red-tailed Black-Cockatoo)	Vulnerable – EPBC and BC Act	Confirmed	Regular visitor
<i>Zanda latirostris</i> (Carnaby's Black-Cockatoo)	Endangered – EPBC and BC Act	Confirmed	Regular visitor
<i>Zanda baudinii</i> (Baudin's Black-Cockatoo)	Vulnerable – EPBC Act Endangered – BC Act	Unconfirmed	Vagrant
<i>Ninox connivens</i> Barking Owl	Priority 2	Unconfirmed	Vagrant
<i>Tyto novaehollandiae</i> (Masked Owl)	Priority 2	Unconfirmed	Vagrant
<i>Apus pacificus</i> (Fork-tailed Swift)	Migratory – EPBC Act	Unconfirmed	Vagrant
<i>Falco peregrinus</i> (Peregrine Falcon)	Schedule 7 – BC Act	Unconfirmed	Regular visitor
<b>Mammals</b>			
<i>Dasyurus geoffroyi</i> (Chuditch)	Vulnerable	Unconfirmed	Irregular visitor
<i>Phascogale tapoatafa wambenger</i> (Brush-tailed Phascogale)	Migratory – EPBC and BC Act	Unconfirmed	Irregular visitor
<i>Isodon fusciventer</i> (Quenda)	Priority 4	Unconfirmed	Resident
<i>Notamacropus irma</i> (Western Brush Wallaby)	Priority 4	Unconfirmed	Resident
<i>Hydromys chrysogaster</i> (Rakali, Water-Rat)	Priority 4	Unconfirmed	Irregular visitor
<b>Invertebrates</b>			
<i>Leioproctus contrarius</i> (Short-tongued bee)	Priority 3	Unconfirmed	Resident
<i>Glossurocolletes bilobatus</i> (Short-tongued bee)	Priority 2	Unconfirmed	Resident

**Appendix B. Assessment against the clearing principles**

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><b>Principle (a):</b> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><b>Assessment:</b> The area proposed to be cleared does not contain locally or regionally significant flora (Mattiske, 2022). The application area is located within the ‘Banksia Woodlands of the Swan Coastal Plain’ (Priority 3) priority ecological community (PEC) (Mattiske, 2022; GIS Database).</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><b>Principle (b):</b> <i>“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.”</i></p> <p><b>Assessment:</b> The area proposed to be cleared contains foraging habitat for threatened black cockatoo species and other conservation significant fauna species.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><b>Principle (c):</b> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><b>Assessment:</b> The area proposed to be cleared may contain habitat for flora species listed under the BC Act. The proposed clearing is not likely to impact on these species.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><b>Principle (d):</b> <i>“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.”</i></p> <p><b>Assessment:</b> The application area is located within the Banksia Woodlands of the Swan Coastal Plain TEC (GIS Database). This TEC is listed as Endangered under the EPBC Act.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><b>Principle (e):</b> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><b>Assessment:</b> The application area falls within the Swan Coastal Plain Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 38% of the pre-European vegetation still exists in the IBRA Geraldton Sandplains Bioregion (Government of Western Australia, 2019).</p> <p>The application area is broadly mapped as Beard vegetation associations 949: Low woodland; <i>Banksia</i>; and 1014: Mosaic: Low woodland; <i>Banksia</i> / Shrublands; tea tree thicket (GIS Database). Approximately 55-57% of the pre-European extent of these vegetation associations remain uncleared at both the state and bioregional level (Government of Western Australia, 2019). Heddle et al. (1980) also described and mapped one vegetation complex within the permit area; the Bassendean complex-north which has approximately 71% remaining (GIS Database).</p> <p>The permit area is located in a large area of remnant vegetation with approximately 76.3% of native vegetation remaining in the surrounding 10 kilometre radius (Preston, 2022). The proposed activities are considered low impact and the vegetation will likely be able to regenerate upon completion of exploration activities and the VDT trial (Preston, 2022).</p>	Not likely to be at variance	No
<p><b>Principle (h):</b> <i>“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.”</i></p> <p><b>Assessment:</b> The application area is located approximately 1.5 kilometres east of the Yeal Nature Reserve and 2.5 kilometres northeast of the Gnangara-Moore River State Forest (GIS Database).</p> <p>The application area is located within the Yeal – Gnangara Area Register of National Estate, listed as an Environmentally Sensitive Area (ESA) (GIS Database). The significance of this ESA is attributable to the unique range of soil and vegetation types associated with the Bassendean dune systems (DCCEEW, 2022).</p> <p>Given the proposed activities have the potential to introduce weeds and dieback within the application area, the proposed clearing may have an impact on the</p>	May be at variance	No



Assessment against the clearing principles	Variance level	Is further consideration required?
<p>environmental values within the Yeal – Gngangara Area (GIS Database). Potential impacts to this conservation area as a result of the proposed clearing may be minimised by the implementation of a weed and dieback management condition.</p> <p>Rehabilitation will commence immediately following the proposed activities, therefore the proposed clearing is unlikely to significantly reduce the extent of the Yeal – Gngangara Area ESA (GIS Database).</p>		
<b>Environmental value: land and water resources</b>		
<p><b>Principle (f):</b> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><b>Assessment:</b> Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact any vegetation growing in association of a watercourse or wetland (GIS Database).</p>	Not at variance	No
<p><b>Principle (g):</b> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><b>Assessment:</b> The area within the permit boundary has been mapped as the Bassendean Jandakot Phase unit (DPIRD, 2022). This soil-landscape system is described as being low gently sloping dunes of grey sand over pale yellow sands (DPIRD, 2022). These sands are generally underlain by humic and iron podsols (DPIRD, 2022).</p> <p>The sandy topsoils within the permit area may be prone to wind erosion if they are dry and loose with little or no groundcover. Given that the proposed method of clearing is unlikely to leave areas bare of vegetation for an extended amount of time, the risk of land degradation is minimal.</p> <p>The soils in the permit area are dominated by rapidly drained soils which are positioned on gentle slopes, reducing the likelihood of water erosion (DPRID, 2022). There is also a low risk of the exploration activities and rehabilitation trial leading to increased salinity causing land degradation (DPIRD, 2022).</p>	Not likely to be at variance	No
<p><b>Principle (i):</b> <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.”</i></p> <p><b>Assessment:</b> The application area is located within the Gngangara Underground Water Pollution Control Area Public Drinking Water Source Area (PDWSA) (DWER, 2022; GIS Database). This PSWSA is managed for Priority 1 source protection (DWER, 2022). The application area is not located within wellhead or reservoir protection zones (DWER, 2022; GIS Database). The proposed activities (mineral exploration and rehabilitation trial) are compatible with conditions in P1 areas, in accordance with DWER’s land use compatibility tables for public drinking water source areas (DWER, 2022). The proposed activities should also be managed using current best practice and comply with the DWER’s Water Quality Protection Notes and Guidance (DWER, 2022). The proposed clearing is unlikely to cause deterioration in the quality of groundwater.</p> <p>There are no wetlands or watercourses located within the application area. The proposed clearing is unlikely to cause deterioration in the quality of any surface water (GIS Database).</p>	Not likely to be at variance	No
<p><b>Principle (j):</b> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><b>Assessment:</b> The mapped soils (sands) and topographic contours (elevated above the surrounds) in the application area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding (Mattiske, 2022; Preston, 2022; GIS Database).</p> <p>Given no watercourses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>	Not likely to be at variance	No

## Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

### Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

## Appendix D. Sources of information

### D.1. GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Black Cockatoo WTBC Breeding
- Black Cockatoo BC Roosts
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

## D.2. References

- Bamford (2022) Fauna Assessment for VRX Silica – Muchea Silica Sand Project. Prepared by Bamford Consulting, for VRX Silica Limited, August 2022.
- BoM (2022) Bureau of Meteorology Website – Climate Data Online, Gingin Aero. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 3 October 2022).
- Commonwealth of Australia (2017) Revised draft referral guideline for three threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo.
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022) Australian Heritage Database. Yeal - Gngangara Area. Available from: <http://www.environment.gov.au/cgi-bin/ahdb/search.pl> (Accessed 21 September 2022).
- Department of the Environment and Energy (DoEE) (2016) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (s 266B). Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community.
- Department of Environment Regulation (DER) (2013) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: [https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2\\_assessment\\_native\\_veg.pdf](https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf)
- Department of Planning, Lands and Heritage (DPLH) (2022) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 23 September 2022).
- Department of Primary Industries and Regional Development (DPIRD) (2022) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/> (Accessed 3 October 2022).
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPoC) (2012) EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (Endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (Vulnerable) *Calyptorhynchus baudinii*, Forest red-tailed black cockatoo (Vulnerable) *Calyptorhynchus banksii naso*. Department of Sustainability, Environment, Water, Population and Communities (now the Department of Agriculture, Water and Environment), Canberra.
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: [https://dwer.wa.gov.au/sites/default/files/Procedure\\_Native\\_vegetation\\_clearing\\_permits\\_v1.pdf](https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.pdf)
- Department of Water and Environmental Regulation (DWER) (2022) Advice received in relation to Clearing Permit Application CPS 9802/1. Department of Water and Environmental Regulation, Western Australia, September 2022.
- DPaW (2013) Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Department of Parks and Wildlife, October 2013.
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: [http://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey\\_Dec13.pdf](http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf)
- Environmental Protection Authority (EPA) (2016) Technical Guidance – Terrestrial Fauna Surveys. Available from: [https://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf](https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf)
- 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. <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 (2022) Flora & Vegetation Assessment – Muchea Silica Sand Project, WA. Prepared by Mattiske Consulting, for VRX Silica Limited, March 2022.
- Peck, A., Barrett, G. and Williams, M (2019) The 2019 Great Cocky Count: a community-based survey for Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*), Baudin's Black-Cockatoo (*Calyptorhynchus baudinii*) and Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*). BirdLife Australia, Floreat, Western Australia.
- Preston (2022) Muchea Exploration Drilling and VDT Trial. Native Vegetation Clearing Permit Application Supporting Information. Prepared by Preston Consulting, for VRX Silica Limited, July 2022.
- Valentine, L.E. and Stock, W (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gngangara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.

## 4. Glossary

### Acronyms:

<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i> , Western Australia
<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>DAWE</b>	Department of Agriculture, Water and the Environment, Australian Government
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions, Western Australia
<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>DoEE</b>	Department of the Environment and Energy (now DAWE)
<b>DoW</b>	Department of Water, Western Australia (now DWER)

<b>DPaW</b>	Department of Parks and Wildlife, Western Australia (now DBCA)
<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 (now known as Threatened Flora)
<b>DWER</b>	Department of Water and Environmental Regulation, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPA</b>	Environmental Protection Authority, 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>RWI Act</b>	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
<b>TEC</b>	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.

### **Specialty 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.

**Principles for clearing native vegetation:**

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened 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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.