



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8038/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Ransberg Pty Ltd

1.3. Property details

Property: Mining Lease 70/1240
Local Government Area: Shire of Serpentine Jarrahdale
Colloquial name: WA Bluemetal Whitby Quarry

1.4. Application

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

Decision on Permit Application: Grant

Reasons for Decision

This clearing permit application has been assessed with consideration for the clearing principles, planning instruments and other matters in accordance with s51O of the *Environmental Protection Act 1986*. It has been concluded that the proposed clearing is at variance to Clearing Principles (a) and (b), may be at variance to Principles (c), (g), (h) and (e), and is not or is not likely to be at variance to the remaining Clearing Principles.

The Delegated Officer determined that the proposed clearing will result in the loss of 17.36 hectares of vegetation that; contains high biodiversity and significant habitat for fauna, including foraging habitat for the Carnaby's Cockatoo, Baudin's Cockatoo and Forest Red-tailed Black Cockatoo, and may impact on the conservation status of *Millotia tenuifolia* var. *laevis*.

In a letter dated 17 January 2019 the applicant was afforded the opportunity to provide additional information or modify the application for it to be considered environmentally acceptable. The applicant undertook additional searches for Priority flora and reduced the amount of clearing and the application boundary, including retention of confirmed breeding trees for Black Cockatoo species. The Delegated Officer considered the reduction in impacts and additional information in making the decision on this matter.

The Delegated Officer notes that there is uncertainty when determining impacts to *Millotia tenuifolia* var. *laevis* as the differences between the common *Millotia tenuifolia* var. *tenuifolia* and the priority listed *Millotia tenuifolia* var. *laevis* are difficult to distinguish in the field. The Delegated Officer notes that if the species is determined to be that of *Millotia tenuifolia* var. *laevis*, then the proposed clearing will have a significant impact on the local population. Given the taxonomic issues, a targeted survey of *Millotia tenuifolia* var. *laevis* within the area shaded red on Plan 8038/1 (where specimens suspected to be the Priority 2 species have previously been recorded) is required, until the species is identified. It is recommended that specimens be submitted to the WA Herbarium for identification.

Due to its significance for threatened black cockatoo species, the clearing of the vegetation within the application area has been determined to be at variance to Clearing Principle (b). Given the proximity of confirmed breeding trees, high quality foraging habitat in the area that surrounds nesting hollows is required for successful breeding. The clearing of native vegetation may increase the risk of further decline in breeding success and population size, as breeding birds require a high quantity of food to be available during the breeding season. While the application area contains quality foraging habitat, foraging vegetation within 7 to 12 kilometres (species dependent) of a breeding site is important to adequately support breeding cockatoos. The Delegated Officer notes there are large tracts of State Forest No. 22 (Jarrahdale State Forest) located to the east and north of the application area and Serpentine National Park (R39825) located to the south which contain foraging habitat for black cockatoos.

The Delegated Officer notes that the area of the application was subject to a land swap between the applicant and the State, which resulted in Lot 902, Southwest Highway, Whitby (48.637 hectares) and Lot 502 Whitefield Springs Road, Beermullah (approximately 363 hectares) being transferred to the State in exchange for the area of Mining Lease 70/1240 (84.016 hectares) being excised from State Forest No. 22. The Delegated Officer notes that these land swaps were negotiated in good faith with local and State Government, including the former Department of Conservation and Land Management (and superseding agencies) prior to the establishment of Western Australia's current Environmental Offsets Policy (September 2011) and associated Environmental Offset Guidelines (August 2014). It is therefore acknowledged that the land swap does not constitute an offset under the contemporary offsets framework.

The Delegated Officer had regard to the environmental values of the native vegetation outlined under principles (a) to (j), and planning instruments and other relevant matters outlined in this report, in making the decision on this application.

These matters were taken into consideration by the Delegated Officer in the decision to grant a clearing permit.

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>3: Medium forest; jarrah-marri; and</p> <p>4: Medium woodland; marri & wandoo (GIS Database).</p> <p>A flora and vegetation survey was conducted over the area of Mining Lease 70/1240 by Mattiske Consulting during October, 2005. The following six vegetation associations were recorded within the application area (Mattiske, 2005; 2017):</p> <p>CW - Woodland to Open Forest of <i>Eucalyptus rudis</i> – <i>Corymbia calophylla</i> with dense <i>Taxandria linearifolia</i> and <i>Astartea scoparia</i> in understorey on creek-lines and water-courses;</p> <p>PS - Open Forest of <i>Allocasuarina fraseriana</i> - <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> - <i>Banksia grandis</i> with scattered understorey, including <i>Adenanthos barbiger</i> on mid and upper slopes;</p> <p>PW - Open Forest of <i>Allocasuarina fraseriana</i> - <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia</i> with scattered understorey, including <i>Grevillea wilsonii</i>, <i>Adenanthos barbiger</i>, <i>Baeckea camphorosmae</i> and <i>Hypocalymma angustifolium</i> on mid and upper slopes;</p> <p>S - Open Forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Banksia grandis</i> - <i>Allocasuarina fraseriana</i> with scattered understorey, including <i>Adenanthos barbiger</i>, <i>Leucopogon capitellatus</i> and <i>Styphelia tenuiflora</i> on upper slopes and ridges;</p> <p>SW - Open Forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> - <i>Banksia grandis</i> with scattered understorey, including <i>Adenanthos barbiger</i>, <i>Hypocalymma angustifolium</i> and <i>Styphelia tenuiflora</i> on upper gullies and lower slopes; and</p> <p>TS - Open Forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> - <i>Corymbia calophylla</i> with scattered understorey, including <i>Leucopogon verticillatus</i> and <i>Clematis aristata</i> var. <i>occidentalis</i> on mid and upper slopes.</p>
Clearing Description	<p>WA Bluemetal Whitby Quarry.</p> <p>Ransberg Pty Ltd proposes to clear up to 17.36 hectares of native vegetation within a boundary of the same size, for the purpose of mineral production. The project is located approximately 7 kilometres north-east of Jarrahdale, within the Shire of Serpentine Jarrahdale.</p>
Vegetation Condition	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).</p> <p>To:</p> <p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).</p>
Comment	<p>The vegetation condition was derived from a vegetation survey conducted by Mattiske (2005; 2017).</p> <p>The flora and vegetation survey (Mattiske, 2005) was reviewed by Mattiske Consulting in October 2017 to identify any changes in conservation status to flora species and vegetation communities.</p>



Figure 1: Application area and land parcels associated with this proposal.

3. Background

General Introduction

The Whitby Quarry is currently located on Lot 901, South Western Highway, Whitby. The proposed quarry was formally assessed by the EPA and approval was granted on 5 August 1993 subject to the conditions of Ministerial Statement 318. Approval for the quarry covered activities on both Lot 901 and Lot 902 (see Figure 1). Following environmental concerns raised by the Shire of Serpentine Jarrahdale and economic reasons about potential quarrying activities south of Manjedal Brook on Lot 902, a land swap was initiated for an area of State Forest northeast of Lot 901. This area was determined based on advice from a stakeholder consultation group. It was subsequently determined that Lot 502 Whitefield Springs Road, Beermullah which adjoins Moore River National Park would also be included as part of the land swap.

In 2005, Ransberg Pty Ltd applied for Mining Lease 70/1240 over the area subject to the land swap. Lot 502 Whitefield Springs Road, Beermullah was transferred to the State as Unallocated Crown Land in 2009. Lot 902 was transferred to the former Department of Environment and Conservation in 2012. Following this, the area of land covered by Mining Lease 70/1240 was excised from State Forest in 2016 and Mining Lease 70/1240 was granted on 1 November 2017.

To support this application, Ransberg Pty Ltd has supplied letters of support for the land swap from the former Department of Conservation and Land Management (and superseding agencies). Correspondence was also provided stating that the following stakeholders had no objections to the land swap:

- Department of Industry and Resources (now Department of Mines, Industry Regulation and Safety)
- Department of Water
- Shire of Serpentine Jarrahdale
- Forest Products Commission

Avoidance and Mitigation

Avoidance and Mitigation

Ransberg Pty Ltd originally applied to clear 25.87 hectares within a permit boundary of approximately 83.86 hectares which mirrored the tenement boundaries of Mining Lease 70/1240. During the course of this assessment, the application was reduced to 17.36 hectares within a permit boundary of the same size. The amended permit boundary has removed all the trees with suitable breeding hollows for black cockatoos. The amended permit boundary will also now impact on two populations of the Priority 2 flora species *Millotia tenuifolia* var. *laevis* instead of four (WA Bluemetal, 2020), reducing the impact on the known population size within Mining Lease 70/1240 by approximately 54 per cent (DBCA, 2020).

A fauna management plan has been developed to minimise impacts on fauna during clearing activities. Specific management measures include:

- Make contact with DBCA Regional Wildlife Officer (Perth Hills) prior to any clearing.
- Engage a qualified/experienced fauna specialist who will remain onsite in a project management role during clearing activities.
- Implement a fauna trapping program for conservation significant species.
- Avoid clearing during the cockatoo breeding season (July to February), where possible.
- Conduct tree hollow assessments for cockatoo occupancy prior to clearing. If cockatoos are present, clearing will be postponed and a 50 metre exclusion zone created.
- Have provisions onsite for the fauna specialist to provide immediate care for any injured/displaced fauna.
- Conduct clearing contractor inductions.
- Retain vegetation and use previously disturbed areas where possible.

4. 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 at variance to this Principle

The application area is located within the Northern Jarrah Forest subregion of the Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Northern Jarrah Forest subregion is 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).

Mattiske (2005; 2017) identified six vegetation associations within the application area. The vegetation condition of the majority of the application area was 'excellent', with areas impacted by existing disturbances such as snigging tracks and dieback described as 'completely degraded' (Keighery, 1994; Mattiske, 2005; 2017).

The flora and vegetation survey in 2005 identified a total of 161 vascular plant taxa from 47 families and 105 genera within Mining Lease 70/1240 (Mattiske, 2005; 2017). No Threatened Flora species were identified within the application area (Mattiske, 2005).

Mattiske (2005) recorded the Priority 2 Flora species *Millotia tenuifolia* var. *laevis* from seven locations during the flora survey over Mining Lease 70/1240. The proposed clearing will impact on two of these locations (WA Bluemetal, 2020). Mattiske (2017) advise that although this species is not restricted to the application area, it is relatively geographically restricted and only known from 22 records in the region, although this could be reflected by the lack of survey effort in the wider region. DBCA (2018) advised that the 2017 flora survey report is outdated and does not accurately represent the current size and extent of the population of *Millotia tenuifolia* var. *laevis*. This population was surveyed by DBCA in 2015 where 1,345 individuals were recorded, of which approximately 88 per cent of individuals occur within Mining Lease 70/1240 (DBCA, 2018). DBCA (2018) advised that the surveyed population is significant at the regional level, and represents 22 per cent of the total number of known individuals, making it a significant population for the conservation of the species.

Mattiske (2020) undertook further targeted searches on Mining Lease 70/1240 and Lot 902 in October and December 2019 to further quantify the impact of the clearing on this species. These searches were not able to identify any individuals of *Millotia tenuifolia* var. *laevis* (Mattiske, 2020). Mattiske (2020) theorised that this species may rely on certain establishment and growth conditions such as climatic condition, ground disturbance or specific fire regimes. DBCA (2020) advise that whilst the species is generally associated with open areas, there is currently no evidence to suggest it responds favourably to disturbance as it has been found in long undisturbed areas. Further surveys are proposed to identify additional individuals in the local area. It is also proposed that the clearing for the first stage of mining on Mining Lease 70/1240 will allow time to determine whether disturbance triggers the germination of the species and allow for the collection of seed for propagation and further studies (WA Bluemetal, 2020). The proposed clearing of *Millotia tenuifolia* var. *laevis* has the potential to clear up to 40 per cent of the recorded individuals surveyed by DBCA in 2015 and is likely to have a significant impact on the local population (DBCA, 2020). However, there is uncertainty when determining impacts to this species as the differences between the common *Millotia tenuifolia* var. *tenuifolia* and the priority listed *Millotia tenuifolia* var. *laevis* are difficult to distinguish in the field (DBCA, 2020). It is possible that very few *Millotia tenuifolia* var. *laevis* occur within the application area (DBCA, 2020). Given the taxonomic issues, a resurvey of population 2 is supported and it is recommended that specimens be submitted

to the WA Herbarium for identification. Potential impacts to *Millotia tenuifolia* var. *laevis* may be minimised by the implementation of an exclusion zone.

Other conservation significant flora which have the potential to occur within the application area include the Threatened flora *Lasiopetalum pterocarpum* and two Priority species *Grevillea manglesii* subsp. *ornithopoda* (P2) and *Bossiaea modesta* (P2). However, most known occurrences for *Grevillea manglesii* subsp. *ornithopoda* and *Lasiopetalum pterocarpum* are along creeks and rivers not minor drainage lines and are therefore considered less likely to occur (DBCA, 2018).

The CW vegetation type is considered to be significant in providing habitat diversity for fauna species (Mattiske, 2005). However, this vegetation type occurs in a small pocket in the south-western corner of the application area and has largely been disturbed by existing quarry operations (Mattiske, 2017; GIS Database).

There were 11 weed species identified within the application area (Mattiske, 2005). There are areas of Dieback (*Phytophthora cinnamomi*) present on Mining Lease 70/1240 (Mattiske 2017). Dieback is a major threat to plant biodiversity in the south west of Western Australia because the plant pathogen *P. cinnamomi* kills susceptible plants by attacking their root systems. Dieback has the potential to reduce the understorey species in the area which can lead to an increase of weed species. It is important to limit the spread of dieback and this can be achieved through strict hygiene measures.

There were no Threatened or Priority Ecological Communities identified within the application area (Mattiske, 2015; 2017; GIS Database).

Based on the biological survey by Harewood (2017), Mattiske (2005; 2017), Western Wildlife (2006), and the available databases, the vegetation within the application area has the potential to comprise high faunal diversity, especially of reptile, mammal and bird species, including the Carnaby's Cockatoo (*Calyptorhynchus latirostris* – Endangered), Baudin's Cockatoo (*Calyptorhynchus baudinii* - Endangered), and Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso* – Vulnerable) (GIS Database).

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

Methodology CALM (2002)
DBCA (2018)
DBCA (2020)
Harewood (2017)
Keighery (1994)
Mattiske (2005)
Mattiske (2017)
Mattiske (2020)
WA Bluemetal (2020)

GIS Database:
- IBRA Australia
- Imagery
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- 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 at variance to this Principle

A Level 1 fauna survey was conducted over Mining Lease 70/1240 and Lot 902 in 2005 (Western Wildlife, 2006). In addition to this a black cockatoo habitat survey was conducted by Tony Kirkby (2017), and a summary of potential conservation significant fauna that may occupy the application area was undertaken by Harewood (2017) in the Fauna Management Plan. A review of the flora survey was undertaken by Mattiske (2017) and also included an assessment of potential fauna within the application area.

The vegetation of Mining Lease 70/1240 has been described as Jarrah forest containing large areas of Marri, Sheoak (*Allocasuarina fraseriana*) woodland, dense thickets of Parrot Bush (*Banksia sessilis*) and areas of low heath (Western Wildlife, 2006). There was evidence of dieback, past logging, fire and weeds within the vegetation on Mining Lease 70/1240 (Western Wildlife, 2006).

There are 10 fauna species of conservation significance listed as either threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or protected under Western Australian legislation (*Biodiversity Conservation Act 2016* (BC Act)), which may potentially occur within a 5 kilometre radius of the application area (NatureMap, 2020). Based on habitat type, vegetation mapping

associated with the application area (Harewood, 2017; Mattiske, 2017) and available databases (NatureMap, 2020; GIS Database), the following conservation significant fauna species may occur within the application area:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris* – Endangered);
- Baudin's Cockatoo (*Calyptorhynchus baudinii* - Endangered);
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso* – Vulnerable);
- Chuditch (*Dasyurus geoffroii* - Vulnerable);
- Darling Range Heath Ctenotus (*Ctenotus delli* – Priority 4);
- Southern Brown Bandicoot (*Isodon obesulus fusciventer* – Priority 4);
- Western Brush Wallaby (*Notamacropus irma* – Priority 4);
- Western False Pipistrelle (*Falsistrellus mackenziei* – Priority 4);
- Peregrine Falcon (*Falco peregrinus* – Other Specially Protected Fauna);
- South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger* – Conservation Dependent).

The Carnaby's Cockatoo, Baudin's Cockatoo and Forest Red-tailed Black Cockatoo (herein referred to collectively as black cockatoos) are listed as endangered (Carnaby's and Baudin's Cockatoos) and vulnerable (Forest Red-tailed Black Cockatoo) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). All three species are known to occur within the local area (GIS Database). 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, 2012). They are known to forage on the seeds and flowers of a large variety of plants including Eucalypt species and Corymbia species (Valentine & Stock, 2008).

The Carnaby's Cockatoo recovery plan (DPaW, 2013) summarises habitat critical to the survival for Carnaby's cockatoos as:

- The eucalypt woodlands that provides nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- In the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resource.

The Carnaby's Cockatoo Recovery Plan states that there are multiple reasons for the decline of Carnaby's Cockatoos, however the decline to date has primarily been through the extensive clearing of nesting and feeding habitat (DPaW, 2013). Ongoing counts of Carnaby's Cockatoo numbers on the Perth-Peel Coastal Plain estimate that there has been a 35 per cent reduction in their population from 2010-2019 (Peck, Barrett and Williams, 2019). The long-term survival of Carnaby's Cockatoos depends on the availability of suitable breeding habitat and hollows, as well as foraging habitat capable of providing enough food to sustain the population (DPaW, 2013).

The Recovery Plan for Forest Red-tailed Black Cockatoo and Baudin's Cockatoo states that critical habitat for the survival of important populations of these species comprises all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 millimeters of annual average rainfall (DEC, 2008). The Recovery Plan also states that two of the main threats is habitat loss through land clearing and nest hollow shortages (DEC, 2008). Nest hollow shortage is the principal ongoing threat to both the Forest Red-tailed Black Cockatoo and Baudin's Cockatoo (Garnett et al., 2011). Trees with hollows large enough for use by the Forest Red-tailed Black Cockatoo may need to be at least 209 years old (Johnstone et al., 2013), and such trees are scarce and many have been preferentially felled (DEC 2008; Garnett et al., 2011). For Baudin's Cockatoos, suitable hollows are considered scarce, only forming in trees that are at least 130 to 220 years of age, many too which have been preferentially felled (DEC, 2008; Garnett et al., 2011). Nest hollows are likely to continue to be lost to mining (DEC, 2008) and fire (Garnett et al., 2011). Entire populations are at risk from these threats (DEC, 2008).

Kirkby (2017) undertook a black cockatoo habitat survey between 29 August and 4 September 2017. The survey covered Mining Lease 70/1240 and identified the area as containing Jarrah and Marri trees containing hollows suitable for breeding (Kirkby, 2017). The survey observed 14 trees with hollows that contained suitable entrances for use as breeding hollows (Kirkby, 2017). Of these, 13 hollows were in Marri, and one in Jarrah. Ten of the hollows showed sign of recent or old use, and seven of these were heavily chewed at the entrance. Two of the hollows had sign of wear at the entrance, and two had signs of no use (Kirkby, 2017). All known habitat trees with suitable hollows have been excluded from the application area.

DBCA (2018) advised that the vegetation on Mining Lease 70/1240 is significant to black cockatoos, and that the significance of breeding habitat is at a local, regional and species scale. Tree hollows with confirmed cockatoo breeding are very significant and identifies the habitat as having a higher level of significance within the local area, in comparison to hollows that are identified as being potentially suitable but have no evidence of use. Hollows that have been heavily chewed at the entrance are considered to be hollows used for nesting by black cockatoos and a confirmation of breeding occurring (DBCA, 2018).

Feeding residues from the black cockatoos were plentiful and easily located during the survey of the mining lease, with residues primarily from Forest Red-tailed Black Cockatoos, and two records from Baudin's

Cockatoos (Kirkby, 2017). Kirkby (2017) noted that Forest Red-tailed Black Cockatoos were present in small groups throughout the survey period and were feeding on seeds from Marri. Breeding displays and mating calls were also noted and a pair of birds were seen prospecting hollows. A pair of Baudin's Cockatoos with the male making the breeding call were noted. Carnaby's Cockatoos were not seen or heard during the survey (Kirkby, 2017), however this species could still utilise the area for breeding and foraging purposes (DBCA, 2018). The main and most important food species within the application area are Jarrah, Marri, Sheoak (*Allocasuarina fraseriana*) and *Banksia sessilis* (Kirkby, 2017). DBCA (2018) advise that sufficient foraging habitat in the area that surrounds a nesting hollow is required for successful breeding, as breeding birds require a high quantity of food to be available during the breeding season.

The vegetation within the application area provides a breeding habitat that is significant for black cockatoos (DBCA, 2018). The condition of the majority of the vegetation in the area under application is reported as being Excellent to Very Good (Harewood, 2017; Keighery, 1994; Matiske, 2017), suggesting that the application area may be high quality foraging habitat for cockatoos in the local area. Kirkby (2017) noted the presence of cockatoo feeding residue within the application area. Given the proximity of confirmed breeding trees, high quality foraging habitat in the area that surrounds nesting hollows is required for successful breeding. The proposed clearing of native vegetation may increase the risk of further decline in breeding success and population size, as breeding birds require a high quantity of food to be available during the breeding season (DEC, 2008). The loss of feeding habitat has been identified as a leading cause of the decline of these species. The impacts of the proposed clearing are considered significant given that the vegetation within the application area comprises significant habitat for the maintenance and ongoing recovery of black cockatoos. While the application area contains quality foraging habitat, foraging vegetation within 7 to 12 kilometres (species dependent) of a breeding site is important to adequately support breeding cockatoos (Commonwealth of Australia, 2012; DPaW, 2013). There are large tracts of State Forest No. 22 (Jarrahdale State Forest) located to the east and north of the application area and Serpentine National Park (R39825) located to the south which contain foraging habitat for black cockatoos (GIS Database). A historical land swap between the State and the applicant has resulted in a net gain of native vegetation within conservation estate which includes suitable foraging habitat for the black cockatoos. The land swap includes an addition to State Forest No. 22 south of the application area (Figure 1).

Matiske (2017) and Harewood (2017) suggest that the Chuditch (*Dasyurus geoffroyi*) is likely to occur within the application area. DBCA (2018) suggest that unless there is a den site within the application area, or that the application area is part of the core home range of an individual, the proposed clearing is unlikely to impact this species. Given that only a desktop fauna assessment was undertaken, it is not possible to verify the presence of a den site or confirm whether the application area is core habitat for the Chuditch.

The Darling Range Heath Ctenotus is endemic to the Darling Plateau and are associated with Jarrah and Marri woodlands that have a shrub-dominated understorey on laterite, sand or clay soils and are occasionally found on granite outcrops (Storr, 1974). The application area provides suitable habitat for this species, and the proposed clearing may impact this species.

The Southern Brown Bandicoot have a patchy distribution through the Jarrah and Karri Forest, and prefer scrubby, often swampy vegetation with dense cover up to one metre high (DEC, 2012a). Populations that inhabit Jarrah forests are usually associated with watercourses. The Bandicoot may utilise the application area for foraging, however it is unlikely to be core habitat for this species.

The Western Brush Wallaby prefers open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets (Christensen, 1995). The habitat present within the application area is not considered significant habitat for this species.

The application area includes individual mature Eucalyptus trees that have hollows suitable to be utilised for habitat by the Western False Pipistrelle, however the species prefers habitat which are co-dominant with Marri, Sheoak and Peppermint trees (DotEE, 1999). There were no Peppermint trees recorded within the application area (Matiske, 2017).

The Peregrine Falcon could potentially use the application area and adjoining areas for foraging; however given the high mobility of this species, it is not likely that the proposed clearing will significantly impact the conservation significance of this species.

The South-western Brush-tailed Phascogale inhabits dry sclerophyll forests and open woodlands that contain hollow-bearing trees (DEC, 2012b). Given that the application area does not contain hollow bearing trees, it is unlikely to be utilised by the Phascogale.

Potential impacts to conservation significant fauna may be minimised by the implementation of a directional clearing condition and a fauna management condition.

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

Methodology Christensen (1995)
Commonwealth of Western Australia (2012)
DBCA (2018)

DEC (2008)
 DEC (2012a)
 DEC (2012b)
 DotEE (1999)
 DPaW (2013)
 Garnett et al. (2011)
 Harewood (2017)
 Johnstone et al. (2013)
 Keighery (1994)
 Kirkby (2017)
 Matiske (2017)
 NatureMap (2020)
 Peck, Barrett and Williams (2019)
 Storr (1974)
 Valentine & Stock (2008)
 Western Wildlife (2006)

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

Comments Proposal may be at variance to this Principle

There are no known records of Threatened flora within the application area (GIS Database). A flora and vegetation survey undertaken by Matiske in October 2005 did not record any species of Threatened flora (Matiske, 2005).

Available databases indicate that suitable habitat for *Lasiopetalum pterocarpum* and *Thelymitra stellata* is potentially within the application area (Matiske, 2017; Western Australian Herbarium, 1998-). These species were not recorded during the 2005 survey of the application area or noted opportunistically during targeted searches for *Millotia tenuifolia* var. *laevis* (Priority 2) in 2019 (Matiske, 2017; 2020). However, most known occurrences for *Lasiopetalum pterocarpum* are along creeks and rivers not minor drainage lines and are therefore considered less likely to occur (DBCA, 2018). Despite not being located during any surveys, there is still potential for *Thelymitra stellata* to occur in the application area given its preferred soil types may be present within the application area (Matiske, 2017).

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

Methodology DBCA (2018)
 Matiske (2005)
 Matiske (2017)
 Matiske (2020)
 Western Australian Herbarium (1998-)

GIS Database:
 - Pre-European Vegetation
 - Threatened and Priority Flora

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

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

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is approximately two kilometres west of the application area (GIS Database).

Matiske (2005; 2017) did not identify any vegetation communities representing TEC's within the survey area (GIS Database).

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

Methodology Matiske (2005)
 Matiske (2017)

GIS Database:
 - Threatened and Priority Ecological Communities Boundaries
 - Threatened and Priority Ecological Communities Buffers

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

Comments

Proposal may be at variance to this Principle

The application area falls within the Northern Jarrah Forest subregion of the Jarrah Forest IBRA bioregion (GIS Database). Approximately 53 per cent of the pre-European vegetation remains within the bioregion (Government of Western Australia, 2019). The vegetation within the application area is recorded as:

Beard vegetation association 3: Medium forest; jarrah-marri; and

Beard vegetation association 4: Medium woodland; marri & wandoo (GIS Database).

Beard vegetation association 4 retains approximately 27 per cent of its pre-European extent at a State and Bioregion level which is less than the 30 per cent threshold level recommended in the National Objectives and Targets for Biodiversity Conservation, below which species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000). There is approximately one hectare of vegetation within the application area which has been mapped as Beard vegetation association 4 (GIS Database).

The proposed clearing will reduce connectivity between the vegetation immediately to the east and west of the application area, however the application area is located on the western edge of a large intact tract of State Forest (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA Managed Lands (and post clearing %)
IBRA Bioregion - Jarrah Forest	4,506,660	2,399,838	~53.25	Least Concern	39.43 (69.74)
IBRA Subregion - Northern Jarrah Forest	1,898,780	1,108,380	~58.37	Least Concern	42.65 (69.43)
Local Government – Shire of Serpentine-Jarrahdale	90,050	46,411	~51.54	Least Concern	49.21 (84.86)
Beard vegetation associations - State					
3	2,661,405	1,803,437	~67.76	Least Concern	58.39 (81.50)
4	1,054,280	284,102	~26.95	Vulnerable	6.64 (23.85)
Beard vegetation associations - Bioregion					
3	2,390,592	1,604,101	~67.10	Least Concern	57.71 (81.00)
4	1,022,712	277,087	~27.09	Vulnerable	6.66 (23.81)
Beard vegetation associations - subregion					
3	908,100	723,446	~79.67	Least Concern	70.50 (84.03)
4	614,201	197,904	~32.22	Vulnerable	10.14 (30.56)

* Government of Western Australia (2019)

** Department of Natural Resources and Environment (2002)

Whilst representation of Beard vegetation association 4 is below minimum recommended thresholds (Commonwealth of Australia, 2001), the application area is not a remnant, nor forms part of a remnant of vegetation in an extensively cleared area.

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

Methodology

Commonwealth of Australia (2001)
Department of Natural Resources and Environment (2002)
EPA (2000)

Government of Western Australia (2019)

GIS Database:

- IBRA Australia
- Imagery
- 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 watercourses within the application area (GIS Database). The flora survey did not identify any vegetation within the application area as being associated with a watercourse or wetland (Mattiske 2005; 2017).

There is a resource enhancement (geomorphic) wetland that intersects the application area (GIS Database), however Mattiske (2005; 2017) did not identify any vegetation growing in association with a wetland.

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

Methodology Mattiske (2005)
Mattiske (2017)

GIS Database:

- Geomorphic Wetlands - Swan Coastal Plain
- 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 may be at variance to this Principle

The soils within the application area are mapped as 'Mw31' which are described as deeply incised, steep scarp and valley side slopes of the Darling scarp and its more deeply incised tributary valleys. Chief soils of the steep scarp and valley side slopes, on which massive rock outcrops are a feature, seem to be acid red earths on the colluvial slope deposits (Northcote et al., 1960-68). There is a low risk of wind erosion given the application area is sheltered by the Jarrah Forest and cleared areas are either exposed granite rock within the quarry pit, or sheeted or sealed for roads or stockpile areas (WA Bluemetal, 2020; GIS Database). There is a high risk of water erosion occurring due to the soil type and location of the proposed clearing (GIS Database), however the proponent states that there is no known risk of acid sulphate soils occurring (WA Blue Metal, 2020). Potential impacts caused by erosion may be minimised by the implementation of a staged clearing condition.

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

Methodology Northcote et al. (1960-68)
WA Bluemetal (2020)

GIS Database:

- Imagery
- Soils, Statewide
- Topography

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

Comments Proposal may be at variance to this Principle

The application area is approximately 200 metres from the Jarrahdale State Forest which is managed by DBCA (formerly DPaW) (GIS Database). Mining Lease 70/1240 has been excised from the State Forest in exchange for Lot 902 to the south which was added into the State Forest.

The proposed clearing may impact on the environmental values of this area through the increased degradation of the adjoining vegetation, edge effects, increased weed and dieback infestation and allowing easier access to introduced predators.

Given the application area is adjacent to the Jarrahdale State Forest, the clearing has the potential to impact the environmental values of this area through the loss of biodiversity, increased potential for the intrusion of weeds and dieback and through the decreased capacity for fauna dispersal.

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

Methodology GIS Database:
- DPaW Tenure

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

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

The application area is not located within a Public Drinking Water Source Area (GIS Database). There are no watercourses within the application area (GIS Database). The application area is free-draining and centred on the northern slopes of the Manjedal Brook (WA Bluemetal, 2020). The surface water from the proposal area will drain back towards the existing clearing areas for the quarry on Lot 901 (WA Bluemetal, 2020). The surface water run-off will then be captured by the existing settlement basins in the quarry.

The groundwater within the application area is between 500 to 1,000 milligrams per litre of total dissolved solids (GIS Database). This is considered to be potable water. It would not be expected that the proposed clearing would cause groundwater salinity levels within the application or surrounding area to alter significantly.

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

Methodology WA Bluemetal (2020)

GIS Database:
- Groundwater Salinity, Statewide
- Hydrography, Linear
- Public Drinking Water Source Areas

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

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

There are no watercourses within the application area (GIS Database). Temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.

Given the size of the area to be cleared (17.36 hectares) compared to the size of the Peel Estuary – Serpentine River catchment area (168,341 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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

Methodology GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear

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

Comments

The clearing permit application was advertised on 23 April 2018 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. One submission was received. The submission did not support the clearing permit application in its original form or area, and provided the following comments:

- The clearing of the whole tenement was not supported and a staged approach to clearing would be preferred;
- The proposed clearing will impact on two creeklines, one which flows into Manjedal Brook and contains a mapped resource enhancement wetland;
- The proposed clearing will impact known Priority 2 Flora species within the application area; and
- The proposed clearing will impact on the community use and amenity of the application area to the public, in particular the Manjedal Scout camp which is located 130 metres from the application area at its closest point.

The amendment to the application area has addressed some of the concerns raised in this submission. The reduction in the clearing and application boundary is to allow a staged approach to clearing on Mining Lease 70/1240. The two creeklines identified in this submission have now been removed from the application area. Impacts on riparian vegetation and water quality is addressed in the assessment of Clearing Principles (f) and (i). The amended permit boundary is now approximately 400 metres from the closest building at the Manjedal

Scout camp (GIS Database). Impacts to Priority flora have been addressed above in the assessment of Principle (a).

The area covered by Mining Lease 70/1240 was excised from the Jarrahdale State Forest as part of a land-swap for Lot 902, South Western Highway, Whitby and Lot 502 Whitefield Springs Road, Beermullah which are to be included in the conservation estate. Ransberg Pty Ltd has supplied letters of support for the land swap from the former Department of Conservation and Land Management (and superseding agencies). Correspondence was also provided stating that the following stakeholders had no objections to the land swap:

- Department of Industry and Resources (now Department of Mines, Industry Regulation and Safety)
- Department of Water (now Department of Water and Environmental Regulation)
- Shire of Serpentine-Jarrahdale
- Forest Products Commission

The application area is within the South West Native Title Settlement area (DPLH, 2020). 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, 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.

It is noted that the proposed clearing will impact on significant habitat for the Baudin's Cockatoo, Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo which are a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Agriculture, Water and the Environment for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of Agriculture, Water and the Environment for further information regarding notification and referral responsibilities under the EPBC Act.

The application area is located within the draft Perth and Peel Green Growth Plan for 3.5 million (Green Growth Plan). The Green Growth Plan is draft and is currently suspended, therefore, has no statutory basis at this time and is therefore not a consideration in this application.

Mining Lease 70/1240 is located within the State Planning Policy 2.4: Basic Raw Materials (SPP 2.4) area. SPP 2.4 is designed to facilitate the extraction of basic raw materials close to major markets in the metropolitan region. The policy recognises the importance of ensuring the extraction of basic raw materials occurs with minimal detriment to the environment, including regionally significant bushland and in a manner that allows for the future use and development consistent with the long-term planning intentions for the area (Western Australian Planning Commission, 2000). SPP 2.4 does not remove obligations to identify environmental constraints that may determine the extent and/or manner in which a proposal can be implemented (Western Australian Planning Commission, 2000). SPP 2.4 specifically states that the development of land for the extraction of basic raw materials should not adversely affect the environment. It is for this reason that key legislation for the protection of the environment, including the clearing provisions of the *Environmental Protection Act 1986*, applies to extraction of basic raw materials.

Methodology DPLH (2020)
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6. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
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)

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 (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T Threatened species:

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

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

CR Critically endangered species

Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX Extinct species

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW

Extinct in the wild species

Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI

Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD

Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS

Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P

Priority species:

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1

Priority One - Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural

or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 Priority Two - Poorly-known species

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

P3 Priority Three - Poorly-known species

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

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

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

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

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