

**Appendix F4  
Assessment of potential  
impacts to fauna - EPBC  
Act Significant Impact  
Guidelines, Happy  
Valley**



## APPENDIX F4 ASSESSMENT OF POTENTIAL IMPACTS TO FAUNA USING THE EPBC ACT SIGNIFICANT IMPACT GUIDELINES (2006), HAPPY VALLEY

### 1 ABOUT THIS DOCUMENT

This document is an appendix to the 2009 Happy Valley ERMP for the purpose of applying the *Significant Impact Guidelines* published by the Department of Environment and Heritage (2006) to those fauna species that are listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and have been identified through search records or direct observation as being present or potentially present within the proposed disturbance area at Happy Valley. Those species are:

- Carnaby's or Short-billed Black-Cockatoo *Calyptorhynchus latirostris* (Endangered)
- Baudin's or Long-billed Black-Cockatoo *Calyptorhynchus baudinii* (Vulnerable)
- Western Ringtail Possum *Pseudocheirus occidentalis* (Vulnerable)
- Chuditch *Dasyurus geoffroii* (Vulnerable).

The only migratory bird species with EPBC Act status that has been confirmed as present within the proposal area, the Rainbow Bee-eater *Merops ornatus*, is also assessed using the guidelines.

#### 1.1 ABOUT THE SIGNIFICANT IMPACT CRITERIA

The significant impact criteria were developed by DEH to assist in determining whether the impacts of a proposed action on matters with EPBC Act status<sup>1</sup>, are likely to be significant impacts. The general test for significance, according to the guidelines, is whether an impact is 'important, notable or of consequence, having regard to its context or intensity'. The significant impact criteria provide more distinctive tests and a proposed action must have a 'real<sup>2</sup> chance or possibility' of failing one or more of the criteria to be considered a controlled action under the EPBC Act.

#### 1.2 DEFINITIONS

The following definitions are taken from the Significant Impact Guidelines (DEH 2006)

##### Population

A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations

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<sup>1</sup> i.e. matters of 'national environmental significance'

<sup>2</sup> 'real' is also defined in the guidelines as 'not remote'

- a population, or collection of local populations, that occurs within a particular bioregion.

#### Population of a migratory species

‘Population’, in relation to migratory species, means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries including Australia.

#### Important population

An ‘important population’ is a population that is necessary for a species’ long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity
- populations that are near the limit of the species range.

#### Critical habitat

‘Habitat critical to the survival of a species or ecological community’ refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development
- for the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the Register of Critical Habitat maintained by the Minister under the EPBC Act.

#### Important habitat for migratory species

An area of ‘important habitat’ for a migratory species is:

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species
- habitat that is of critical importance to the species at particular life-cycle stages
- habitat utilised by a migratory species which is at the limit of the species range
- habitat within an area where the species is declining.

### **1.3 REFERENCES**

All citations to other material made within this document are consistent with those in the Happy Valley ERMP, in which a full bibliography is provided.

**Table 1 Assessment of significance of potential impact: Carnaby's Black Cockatoo *Calyptorhynchus latirostris* (Schedule 1/Endangered)**

Criteria	Assessment information	Risk
Will proposal lead to a long-term decrease in the size of a population?	<p>Garnett &amp; Crowley (2000) considers there to be 3-5 sub-populations of Carnaby's Black Cockatoo, with birds of the upper-southern wheatbelt sub-population presumed to be using the vegetated and cleared areas of the proposal site as foraging habitat. The vegetation proposed to be cleared (155 ha) is extensive in the local area (Bancroft &amp; Bamford 2008).</p> <p>The low relative significance of the site as foraging habitat, the low likelihood of the area being within the breeding range of Carnaby's Black Cockatoo (Cale 2003) and the low availability of nesting hollows in the site (Bancroft &amp; Bamford 2008) support the reasonable conclusion that the Proposal will not lead to a decrease in the sub-population.</p> <p>The mitigation measures and conservation offsets that are included as part of the proposal, such as rehabilitation of the disturbed areas, revegetation of other areas, protection of other habitats and support for local and regional conservation efforts, will potentially support or increase the sub-population Carnaby's Black Cockatoo in the medium – long term.</p>	Unlikely
Will proposal reduce the area of occupancy of the species?	<p>Carnaby's Cockatoo inhabits a large area of south-west Western Australia, extending from Kalbarri south-east to Esperance. The species is mainly found in uncleared or remnant areas of Eucalypt woodland, and shrubland and heath country (DEC 2007). Beeston, Hopkins &amp; Shepherd (2002) mapped the remnant vegetation of the Intensive Land-use Zone (ILZ) of south-west W.A., which corresponds roughly to the distribution of Carnaby's mapped by DEC (2007), and estimated that there was 7.7 million ha of vegetation remaining in the ILZ. Garnett &amp; Crowley (2000), however, estimated that the area of occupancy as 200,000 ha – a substantially lower figure.</p> <p>The proposal will require the clearing of 155 ha of native vegetation, which is potential foraging habitat for Carnaby's Black Cockatoo. The area is a small part of a substantially larger remnant, the Argyle forest block, which is &gt;10,000 ha in size. The block is on the Whicher Scarp/northern Blackwood Plateau, both of which contain large areas of continuous native vegetation.</p> <p>The proposal therefore will have negligible effect on the regional and local occupancy of the remaining population. The mitigation measures and conservation offsets that are included as part of the proposal, such as rehabilitation of the disturbed areas, revegetation of other areas, protection of other habitats and support for local and regional conservation efforts, will increase the area of occupancy of Carnaby's Black Cockatoo in the medium – long term.</p>	Unlikely
Will proposal fragment an existing population into two or more populations?	<p>The proposal area represents foraging habitat for Carnaby's Black Cockatoo (presence of its main foods, such as seeds of hakeas, grevilleas, banksias and eucalypts, but the cockatoos also take seeds of weeds and exotic pines <i>Pinus radiata</i>, as well as insect larvae (Garnett &amp; Crowley 2000). The use of such areas is seasonal (Cale 2003) and therefore the proposal will not fragment existing populations.</p>	Unlikely
Will proposal adversely affect habitat critical to the survival of a species?	<p>Critical habitat is difficult to designate accurately for Carnaby's Black-Cockatoo, mainly because the species moves over long distances and now depends partly on altered landscapes (Cale 2003). The proposal area is not located in or near any identified or potential priority areas listed in the Recovery Plan (Cale 2003).</p> <p>The proposal area is not considered as valuable breeding habitat (see below) but does contain feeding and roosting resources for Carnaby's Black-Cockatoo. In this latter regard, however, the proposal area is not unique in the region and identical resources are located throughout the Blackwood Plateau and Whicher Scarp (Bancroft &amp; Bamford 2008). The proposal area does not contain pine plantations.</p>	Unlikely

Criteria	Assessment information	Risk
Will proposal disrupt the breeding cycle of a population?	<p>Carnaby's Black-Cockatoo nests in the hollows of live or dead eucalypts, primarily the smooth-barked Salmon Gum and Wandoo, although other eucalypts are sometimes used and most breeding occurs in areas receiving between 300 and 750 mm of annual average rainfall (Cale 2003). The Proposal site is dominated by Jarrah/Mountain Marri woodland and rainfall is in the 900-1000 mm range. Additionally, the area has been heavily logged so it is considered very unlikely that <i>C. latirostris</i> uses the area as a breeding ground. Field surveys have not recorded any breeding activity.</p> <p>The Proposal requires vegetation potentially containing tree hollows to be cleared, which may impact on arboreal nesting fauna generally. To offset this, nesting boxes/tubes will be established in vegetation surrounding the mine, all vegetation will be rehabilitated, existing old quarries will be revegetated. Additional offsets also apply (see below).</p>	Unlikely
Will proposal modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?	The proposal (155 ha) will have a negligible effect, if any, on the extent of occurrence of Carnaby's Black Cockatoo, currently estimated at 32,000 km <sup>2</sup> (Garnett & Crowley 2000). The proposal area is part of the >10,000 ha Argyle forest block, which is one of four blocks that make up the >16000 ha Boyanup State Forest.	Unlikely
Will proposal result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?	The feral bee <i>Apis mellifera</i> is considered to be a major competitor for tree hollows (Cale 2003). The proposal is not associated with increases in local populations of feral bees, however, to offset the temporary disruption to local nesting resources, the proposal includes commitments for feral bee control in surrounding vegetation.	Unlikely
Will proposal introduce disease that may cause the species to decline?	The proposal has the potential to facilitate the spread of jarrah dieback <i>Phytophthora cinnamomi</i> , which could affect foraging habitat for Carnaby's Black Cockatoo. However, the risk is localised and Best Practice management controls will be in place as part of the proposal. <i>P. cinnamomi</i> is already established through much of the tenement area.	Unlikely
Will proposal interfere with the recovery of the species?	The proposal does not constitute a priority or potential priority area for the Carnaby's Black Cockatoo Recovery Plan (Cale 2003). Mitigation and offset proposals may contribute to the recovery plan by increasing the availability of nesting hollows in non-breeding areas and monitoring their use by Carnaby's, as per the recovery plan.	Unlikely

Table 2 Assessment of significance of potential impact: Baudin's Black Cockatoo *Calyptorhynchus baudinii* (Vulnerable)

Criteria	Assessment information	Risk
Will proposal lead to a long-term decrease in the size of an important population?	Baudin's Black Cockatoo occurs as a single, contiguous population, with an estimated 12,000 breeding birds (Garnett & Crowley 2000) and sub-populations are unlikely to exist. The range of the species is (reportedly) determined in the breeding season by the distribution of Karri and in the non-breeding season by the distribution of Marri (Saunders 1979). Marri do occur in the Proposal site (as do other known forage plants) but the distribution in the general locality will not be significantly affected and will increase in the medium – long term.	Unlikely
Will proposal reduce the area of occupancy of an important population?	The Proposal will affect 155 ha of foraging habitat (Open Eucalyptus woodland), which is well represented in the area (e.g. the Proposal site is part of/abuts the >10,000 ha Argyle Forest Block). The area will be rehabilitated to native vegetation with standards based on pre-existing structure and composition. Additional disturbed areas will also be revegetated and other areas of native vegetation on private property placed in the conservation estate.	Unlikely
Will proposal fragment an existing important population into two or more populations?		Unlikely
Will proposal adversely affect habitat critical to the survival of a species?		Unlikely
Will proposal disrupt the breeding cycle of an important population?	Baudin's Black Cockatoo are reputed to breed only in the Karri forests of south-west W.A., which is quite distant from the Proposal site. No nesting activity has been recorded in studies of the Proposal site and surrounds. Management measures include feral bee control (competition for nesting hollows) and artificial nesting boxes.	Unlikely
Will proposal modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?	The Proposal will affect 155 ha of foraging habitat (Open Eucalyptus woodland), which is well represented in the area (e.g. the Proposal site is part of/abuts the >10,000 ha Argyle Forest Block). The area will be rehabilitated to native vegetation with standards based on pre-existing structure and composition. Additional disturbed areas will also be revegetated and other areas of native vegetation on private property placed in the conservation estate.	Unlikely
Will proposal result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?	Competition with introduced bees for nesting hollows is a major threat to Baudin's Black Cockatoo (Garnett & Crowley 2000). Feral bees already exist in the Proposal site. Mitigation measures that form part of the Proposal include feral bee control (to commence prior to clearing) and the placement of nesting boxes in surrounding native vegetation to offset loss of potential nesting/roosting habitat.	Unlikely
Will proposal introduce disease that may cause the species to decline?	The Proposal will not introduce any new animal or plant diseases into the area. The soil pathogen <i>Phytophthora cinnamomi</i> is already present at the site and will be managed. It is not considered a threat to Baudin's Black Cockatoo.	Unlikely
Will proposal interfere with the recovery of the species?	The National Draft Recovery Plan for Baudin's Black Cockatoo is still in development. None of the threat abatement and recovery actions listed by DEWHA (2008) will be affected by the Proposal.	Unlikely

**Table 3 Assessment of significance of potential impact: Chuditch *Dasyurus geoffroii* (Vulnerable)**

Criteria	Assessment information	Risk
Will proposal lead to a long-term decrease in the size of an important population?	<p>The Proposal site is not located near any of the populations managed or monitored (or previously monitored) under the Recovery Plan (Orell &amp; Morris 1994).</p> <p>The poor trapping and survey returns for the Proposal site (none recorded since 1999) and control areas, coupled with the large home ranges and solitary nature of Chuditch (Orell &amp; Morris 1994) reasonably confer that the population area is neither populated enough or large enough to satisfy the definition of a population under EPBC Act guidance.</p>	Negligible
Will proposal reduce the area of occupancy of an important population?		
Will proposal fragment an existing important population into two or more populations?		
Will proposal adversely affect habitat critical to the survival of a species?		
Will proposal disrupt the breeding cycle of an important population?	<p>The Proposal will directly remove 155 ha of native vegetation. The likelihood of secondary impacts to quality of additional vegetation is considered minor, through the baseline investigations and application of controls. The vegetation to be cleared in part of/contiguous to the Argyle forest block (&gt;10,000 ha), which is part of the Boyanup State Forest.</p> <p>The Proposal site does not appear to contain sufficient resources to support multiple home ranges for Chuditch, particularly their requirement for large numbers of fallen, hollow logs (Orell &amp; Morris 1994). Heavy logging, numerous fires and uncontrolled access for firewood collection is presumably a reason for this shortage. Consistent with this, repeated searches over the period 1999 – 2007 returned only 3 captures over the study area (Bamford 2000) with no captures in 2004 and 2007, despite extensive and targeted searches. Survey results from other critical-weight mammals did not reflect this trend.</p> <p>Conservation offset commitments, such as fox control (local and regional), the revegetation of disturbed areas and closure of uncontrolled tracks, may contribute to population increase over time.</p>	Negligible
Will proposal modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?		Negligible
Will proposal result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?	Feral predators, such as the fox, are already established in the area. The Proposal includes measures to control foxes locally and to support regional control programs.	Negligible
Will proposal introduce disease that may cause the species to decline?	The Proposal has the potential to facilitate the spread of jarrah dieback <i>Phytophthora cinnamomi</i> , which could affect foraging habitat for Chuditch but could also increase availability of logs/hollows. However, the risk is localised and Best Practice management controls will be in place as part of the proposal. <i>P. cinnamomi</i> is already established through much of the tenement areas.	Negligible
Will proposal interfere with the recovery of the species?	Contribution to regional fox control in the surrounding state forest and contribution to the knowledge of rehabilitation and recolonisation is expected to contribute towards species recovery.	Negligible

Table 4 Assessment of significance of potential impact: Western Ringtail Possum *Pseudocheirus occidentalis* (Vulnerable)

Criteria	Assessment information	Risk
Will proposal lead to a long-term decrease in the size of an important population?	No Western Ringtail Possum (WRP) have been recorded within the Happy Valley tenements, i.e. local density is absent to low. Accordingly, no short or long-term population decrease is expected. Furthermore, the commitment to control foxes and feral bees in surrounding bushland may result in a local increase in WRP numbers.	Negligible
Will proposal reduce the area of occupancy of an important population?	The Proposal site is not considered as core or support habitat. Distribution of WRP is patchy and is most commonly recorded where peppermint ( <i>Agonis flexuosa</i> ) trees are prevalent and where the brushtail possum ( <i>Trichosurus vulpecula</i> ) does not co-occur (DEWHA 2008). Peppermint trees are locally uncommon in the proposal area, being restricted to the lower foothills and drainage valleys, to which impacts will be minimal (avoidance).	Negligible
Will proposal fragment an existing important population into two or more populations?	The Proposal is located on the mid and upper slopes of the Whicher Scarp/Blackwood Plateau, which is considered to be on the margins of WRP distribution (DEWHA 2008). As such, the Proposal is unlikely to fragment the existing population, which is centred near the coastal dunes.	Negligible
Will proposal adversely affect habitat critical to the survival of a species?	Peppermint trees are locally uncommon in the proposal area, being restricted to the lower foothills and drainage valleys, to which impacts will be minimal (avoidance). No WRP have been recorded within the Happy Valley tenements.	Negligible
Will proposal disrupt the breeding cycle of an important population?	Clearing of habitat, particularly nesting hollows in senescent trees, has the potential to disrupt the breeding cycle of WRP. The Proposal site contains trees with suitable nesting hollows and the density of trees with the <i>potential</i> to contain suitable nesting hollows has been mapped both on and off the disturbance footprint and values are similar. Additionally, the potential for WRP to be present in the Proposal site is considered to be low.	Negligible
Will proposal modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?	Peppermint trees appear to be a major requirement of WRP habitat and are locally uncommon in the Proposal site, being restricted to the lower foothills and drainage valleys, to which impacts will be minimal (avoidance). No WRP have been recorded within the Happy Valley tenements.  The Rehabilitation Plan includes Peppermint trees in its seed mix for Happy Valley North, which should increase WRP habitat in the medium-long term.	Negligible
Will proposal result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?	The Proposal will not result in the introduction and/or establishment of invasive species that compete with WRP, such as foxes, cats, brushtail possum and feral bees. The commitment to control foxes and feral bees in surrounding bushland may result in a local increase in WRP numbers.	Negligible
Will proposal introduce disease that may cause the species to decline?	Jarrah dieback disease <i>Phytophthora cinnamomi</i> , which is present in the area and may be spread by activities such as mining, is not considered a threat to Peppermint trees.	Negligible
Will proposal interfere with the recovery of the species?	The Proposal is not located within the core or support habitats and does not affect a WRP corridor.	Negligible

**Table 5 Listed migratory birds of the Happy Valley region (based on Appendix F1 and F2)**

Listed taxa	Preferred habitat	1999	2004	2007	Likelihood of presence/use
Cattle Egret, <i>Ardeola ibis</i>	Wetland margins and mudflats	-	-	-	Unlikely
Crested Shrike-tit, <i>Falcunculus frontatus</i>	Eucalypt woodlands, large territories	-	-	-	Unlikely
Fork-tailed Swift, <i>Apus pacificus</i>	Non-breeding visitor, widespread in WA	-	-	-	Low (presence would be entirely aerial)
Glossy Ibis, <i>Plegadis falcinellus</i>	Freshwater swamps (mostly in northwest WA)	-	-	-	Unlikely
Great Egret, <i>Egretta alba</i> or <i>Ardea modesta</i>	Perm or temp wetlands	-	-	-	Unlikely
Marsh Sandpiper, <i>Tringa stagnatilis</i>	Shorelines of fresh/salt waterbodies	-	-	-	Unlikely
Rainbow Bee-eater, <i>Merops ornatus</i>	Includes open Eucalyptus forests	✓	✓	✓	Confirmed- Happy Valley North
Wood Sandpiper, <i>Tringa glareola</i>	Shorelines of open fresh waterbodies	-	-	-	Unlikely

**Table 6 Assessment of significance of potential impact: Migratory birds.**

Criteria	Assessment information	Risk
Will the proposal substantially modify an area of important habitat for a migratory species?	The only migratory bird considered to be at any risk from the Proposal is the Rainbow Bee-eater <i>Merops ornatus</i> , due to the lack of suitable habitat for other potentially-present taxa or the low frequency of use of the area.	Negligible
Will the proposal destroy an area of important habitat for a migratory species?	Survey records show the Rainbow Bee-eater presence in the area is strongly associated with the vegetated seasonal watercourse at the Happy Valley North Proposal site, as it has not been recorded elsewhere in the study area, including control sites. While the watercourse may be locally important to Rainbow Bee-eaters (including for nesting), other similar features are present in the wider area (e.g. there are at least 6 minor and major watercourses within a 4 km radius of the feature), so the site is not considered as important habitat (using the definition of DEH 2006). Additionally, the potential for impact is expected to be reduced greatly by the retention of stream buffer zones (50 m in this case) for all activities, except for a crossing/corridor.	Negligible
Will the proposal isolate an area of important habitat for a migratory species?		Negligible
Will the proposal result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species?	While the biggest threat to Rainbow Bee-eaters is considered to be the spread of the Cane Toad, the potential exists for predation by foxes and dogs, which are already present at Happy Valley. The Proposal includes commitments for local and regional fox control programs.	Negligible

<b>Criteria</b>	<b>Assessment information</b>	<b>Risk</b>
Will the proposal seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species?	The Rainbow Bee-eater is widely distributed globally and across Australia. Accordingly, the localised and minor potential impacts are not considered to have any effect on the population of the Rainbow Bee-eater.	Negligible



