

Ransberg Pty Ltd
Byford Whitby Quarry, portion of Mining Lease
M70/1240
Preliminary Documentation (EPBC 2021/9045) Rev 6

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JBS&G Australia Pty Ltd

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1. Introduction

1.1 Background

Ransberg Pty Ltd (WA Bluemetal) are proposing to undertake clearing associated with the Byford (Whitby) Quarry operations. The proposed works will necessitate the clearing of 13.2 ha of vegetation within a boundary of the same size. The clearing will take place within Mining Tenement M70/1240 Karrakup (the site) for storage purposes (Figure 1-1). The site is located within the Serpentine-Jarrahdale approximately 40 km southeast of Perth.

The proposed clearing will facilitate construction of the following elements:

- Storage and laydown areas;
- Access tracks/roads; and
- Associated quarry infrastructure.

A Clearing Permit (purpose permit) has been granted over the entirety of the proposal area (8038/1) which is valid from 5th December 2020 to 4th December 2025. The life of the mine is expected to be in excess of 100 years.

Impacts are considered to be associated with the clearing of 13.2 ha of vegetation across Mining Tenement 70/1240 including habitat for Black Cockatoo species and Chuditch, which are Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The site is predominantly dominated by Jarrah-Marri forest with an area of Marri-Wandoo woodlands on clayey soils in the east. The vegetation ranges in condition from 'Completely Degraded' to 'Excellent' (Mattiske 2005; 2017).

The proposed action was referred to the Department of Climate Change, Energy, the Environment and Water¹ (DCCEE) on 5 October 2021, as a result of the anticipated impacts on Matters of National Environmental Significance protected under the EPBC Act (EPBC Referral Document provided in Appendix A). On 4 November 2021 a delegate of the Minister for the Environment determined that the proposed action is a controlled action and will be assessed by preliminary documentation, on the basis of the potential impacts to Matters of National Environmental Significance described in Table 1-1.

¹ As of 1 July 2022, the functions of the Department of Agriculture, Water and the Environment (DAWE) relevant to this project will become the responsibility of the new Department of Climate Change, Energy, the Environment and Water.

Table 1-1: MNES with the potential to be impacted by the proposed action

| MNES | Impact |
|--|--|
| Fauna species | Clearing of 13.2 ha of high-quality foraging habitat which may support potential roosting and breeding habitat for Carnaby's Black Cockatoo, Baudin's Black Cockatoo and the Forest Red-tailed Black Cockatoo. |
| Carnaby's Black Cockatoo (<i>Zanda latirostris</i> formerly <i>Calyptorhynchus latirostris</i>) – endangered | |
| Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus banksii naso</i>) – vulnerable | |
| Baudin's Black Cockatoo (<i>Calyptorhynchus baudinii</i>) (Endangered) | |
| Malleefowl (<i>Leipoa ocellata</i>) - Vulnerable | Clearing of 13.2 ha of potential habitat for the above species. |
| Woylie (<i>Bettongia penicillata ogilbyi</i>) – Endangered | |
| Chuditch, Western Quoll (<i>Dasyurus geoffroii</i>) – Vulnerable | |
| Quokka (<i>Setonix brachyurus</i>) – Vulnerable | |
| Flora species | Clearing of 13.2 ha of native vegetation that may include plant specimens or habitat. |
| Dwarf Bee-orchid (<i>Diuris micrantha</i>) – Vulnerable | |
| Purdie's Donkey-orchid (<i>Diuris purdiei</i>) – Endangered | |
| Glossy-leafed Hammer Orchid (<i>Drakaea elastica</i>) – Endangered | |
| Selena's Synaphea (<i>Synaphea sp.</i> Fairbridge Farm (D. Papenfus 696)) – Critically Endangered | |
| <i>Synaphea sp.</i> Pinjarra Plain (A.S. George 17182) – Endangered | |
| Southern Tetraria (<i>Tetraria australiensis</i>) – Vulnerable | |

1.2 Purpose and scope of this document

This document provides responses to the Additional Information Request issued by DCCEEW on 13 December 2021. The format of this document (the preliminary documentation) follows that of the accompanying preliminary documentation outline provided by DCCEEW to ensure that all information requests are adequately addressed.



Figure 1-1: Site Boundary and Regional Location

2. Description of the Action

2.1 Summary of all components of the proposed action

The Whitby Quarry is located on Lot 901 South Western Highway, Whitby. The proposed quarry was formally assessed by the EPA and approval was granted on the 5 August 1993 subject to the conditions of Ministerial Statement 318. Approval for the quarry covered activities on both Lot 901 and Lot 902. Following environmental concerns raised by the Shire of Serpentine-Jarrahdale, and economic reasons regarding 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 of land was excised from State Forest in 2016 and Mining Lease M70/1240 was granted on the 1 November 2017.

Clearing of vegetation has been assessed by relevant state government agencies through a native vegetation clearing permit (purpose permit for mineral production) which has been granted over the site. The clearing permit is valid for a period of five years from 5 December 2020 to 4 December 2025. The clearing permit covers a total area of 17.36 ha within a boundary of the site.

The proponent originally applied to clear 25.87 ha within a permit boundary of approximately 83.86 ha equivalent to the tenement boundaries of Mining Lease 70/1240. The application area was reduced to 17.36 ha to avoid all trees with suitable Black Cockatoo breeding hollows that have shown signs of use. The revised clearing boundary also reduced the impact on the known population of Priority 2 flora species *Millotia tenuifolia* var. *laevis* by 54%.

2.2 Description of the activities associated with the proposed action

The proposed action will necessitate the clearing of 13.2 ha of native vegetation (within the 17.36 ha of the WA clearing permit area) to facilitate construction of the following elements:

- Storage and laydown areas;
- Access tracks/roads; and
- Associated quarry infrastructure.

A Clearing Permit (purpose permit) has been granted over the entirety of the proposal area (8038/1) which is valid from 5th December 2020 to 4th December 2025.

3. Listed threatened species and ecological communities (S18 & S18A)

3.1 Suitability of the Proposed Action Area to listed Matters of National Environmental Significance

A targeted fauna survey conducted by Bamford Consulting Ecologists in April 2022 (Bancroft & Bamford, 2022; Appendix B) and expert advice on threatened flora from Mattiske in November 2021 (Mattiske, 2021; Appendix C) provides contemporary assessment on presence and suitability of the Proposed Action Area to Matters of National Environmental Significance listed in Table 1-1.

To date, the following environmental surveys have been undertaken that cover the Proposed Action Area and are considered in assessment of presence and suitability:

- Mattiske. (2005). *Flora and Vegetation on the WA Bluemetal Quarry Survey Area at Serpentine*. Report prepared for WA Bluemetal Quarry. (Appendix D)
- Western Wildlife. (2006). Proposed land-swap. WA Bluemetal Mundijong Quarry: A fauna assessment. Prepared for WA Bluemetal. (Appendix E)
- Mattiske. (2017). Assessment of Flora, Vegetation and Fauna Values on the WA Bluemetal Quarry Survey Area at Serpentine. Report prepared for WA Bluemetal Quarry (Appendix F)
- Kirkby. (2017). *Black Cockatoo Habitat Survey, Proposed Byford Quarry Extension M70/1240*. Report prepared for BlueMetal Quarry by Tony Kirkby (Appendix G).
- Bancroft & Bamford. (2022). *Byford Quarry Extension – Supporting information for Matters of National Environmental Significance (Fauna)*. (Appendix B)

Determinations from Bancroft and Bamford (2022), and Mattiske (2021) are considered in the sections below, providing refined context in assessing potential impact on relevant MNES detailed in Section 3.2.

3.1.1 EPBC Act Listed Threatened Fauna

Black Cockatoos (Carnaby's Black Cockatoo [*Calyptorhynchus latirostris*], Baudin's Black Cockatoo [*Calyptorhynchus baudinii*] and Forest Red-tailed Black Cockatoo [*Calyptorhynchus banksii naso*])

Carnaby's Cockatoo (now *Zanda latirostris*), listed as Endangered under the EPBC Act, feed on the seeds, nuts and flowers, of a variety of native and introduced plant species and insect larvae (DAWE, 2021). Food plants generally occur within proteaceous genera such as *Banksia*, *Hakea* and *Grevillea*, though they are known to forage on eucalypt species in woodland areas. Carnaby's Cockatoo have also adapted to feeding on exotic species such as pines, cape lilac and weeds such as wild radish and wild geranium (EPA, 2019). Carnaby's Cockatoo usually breed between July and December, nesting in artificial nest boxes or hollows of live or dead eucalypts; primarily in Salmon Gum and Wandoo, but also within Jarrah, Marri and other eucalypt species (Johnstone & Kirkby, 2011). Hollows are usually at least 2 m above ground, sometimes over 10 m and the depth of the hollow varies from 0.25m to 6m (DAWE, 2022). Mapping of Carnaby's Cockatoo distribution (Johnstone and Kirkby, 2011) identifies the Proposed Action Area as occurring within the range of the species.

Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii* subsp. *naso*), listed as Vulnerable under the EPBC Act, depend primarily on Marri and Jarrah trees for both foraging and nesting. The seeds of both eucalypts are the favoured food source of the birds and hollows within live or dead individual trees are utilised for nesting purposes (Johnstone & Kirkby, 2011). Breeding varies between years and occurs at times of Jarrah and Marri fruiting. These black cockatoos nest in woodland, forest or artificial nest boxes, but may also breed in former woodland or forest that has been reduced to isolated trees (DAWE, 2022). Mapping of the Forest Red-tailed Black Cockatoo distribution (Johnstone and Kirkby, 2011) identifies the species as occurring in the Proposed Action Area.

Baudin's Black-Cockatoo (*Zanda baudinii*) primarily occur in eucalypt forests and forage at all strata levels within the forests with a tendency to favour areas containing Marri (Johnstone and Kirkby 2011, DAWE, 2021). For nesting they require large natural hollows that form in old (>100 years old) Karri *Eucalyptus diversicolor*, Marri (*Corymbia calophylla*), Wandoo (*Eucalyptus wandoo*), Tuart (*Eucalyptus gomphocephala*) and Bullich (*Eucalyptus megacarpa*) trees. Baudin's can also nest in artificial nesting boxes. Breeding generally occurs in the Jarrah, Marri and Karri forests of the southwest of Western Australia in areas averaging more than 750 mm of rainfall annually (DAWE, 2022). As with the other two species of threatened black cockatoos in Western Australia, breeding habitat also occurs in former woodland or forest that has been reduced to isolated trees (DAWE, 2022). Mapping of the Baudin's Black-Cockatoos distribution (Johnstone and Kirkby, undated) identifies the species as occurring in the Proposed Action Area.

Based on Bancroft and Bamford's (2022) study of the Proposed Action Area, it is considered that:

- Carnaby's Black-Cockatoo may be a breeding migrant to the site and surrounds;
- Forest Red-tailed Black-Cockatoo is likely to be a breeding resident, in low numbers, in and around the site; and
- Baudin's Black-Cockatoo may be a non-breeding migrant to the site and surrounds.

Forest Red-tailed Black Cockatoo were recorded in the Proposed Action Area.

Suitable habitat is present for all three Black Cockatoos.

Malleefowl (*Leipoa ocellata*) – Vulnerable

Malleefowl are found in arid and semi-arid areas dominated by mallee eucalypts on sandy soils. They are known to also occur in Mulga, Broombrush, Scrub Pine, Eucalyptus woodlands and coastal heathlands. Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds (Department of Parks and Wildlife, 2016).

The nearest known Malleefowl record in this dataset is from the Dryandra Woodland National Park, near Narrogin, some 100 km from the survey area. It is not certain whether this population is extant; birds were known from Dryandra in the 1990s (Bancroft & Bamford, 2022)

No Malleefowl or nest mounds were recorded within the Proposed Action Area.

No suitable habitat was present in the Proposed Action Area.

Woylie (*Bettongia penicillate ogilbyi*) – Vulnerable

Woylies persist in dry sclerophyll forest, usually with a dense understorey, in three locations within the Western Australian Wheatbelt:

- Dryandra Woodland National Park (near Narrogin),
- Tutanning Native Reserve (east of Pingelly), and
- Perup Forest (east of Manjimup).
- Several sites also have reintroduced Woylies into predator-proof enclosures (e.g. Karakamia, near Chidlow; Mount Gibson Sanctuary, near Paynes Find; and the Woodland Reserve at Whiteman Park in the Perth metropolitan area) (Bancroft & Bamford, 2022).

No evidence of Woylies was recorded in the Proposed Action Area.

No suitable habitat was present in the Proposed Action Area.

Chuditch, Western Quoll (*Dasturus geoffroii*) – Vulnerable

The Chuditch is a wide-ranging resident in Marri-Jarra forest of the south-west of Western Australia and also in heaths and eucalypt woodlands of the eastern wheatbelt and goldfields. Historical distribution was throughout western and inland Australia, with the species contemporary range having contracted approximately south-west of a line between Shark Bay and Esperance (Bancroft & Bamford, 2022).

Chuditch have large home ranges, with females utilising 55-120 ha and males over 400 ha. Further east, Chuditch in the Forrestania area occurred at an average density of 0.039 individuals/km², with home ranges as small as 189 ha (a female) and as large as 2,125 ha (a male). Therefore, the survey area (13.2 ha) represents only a small proportion of a single animal's typical home range (Bancroft & Bamford, 2022).

Chuditch presence was confirmed in the Proposed Action Area.

Suitable habitat is present in the Proposed Action Area.

Quokka (*Setonix brachyurus*)

Quokka populations in the northern Jarrah Forest occur in distinct patches of Swamp Peppermint (*Taxandria linearifolia*) swamp shrubland or thickets that occur in the upper reaches of drainage systems. Quokkas have a preference for a mosaic of freshly burnt (< 10 years) and long-unburnt areas. Mainland populations of Quokka appear disjointed, and largely confined to areas that experience more than 1000 mm of annual rainfall (Bancroft & Bamford, 2022).

The nearest known record in this dataset is from the Canning Dam area, c. 25 km from the survey area. Quokkas are also known to occur along the drainage systems and swamp areas east of Pinjarra, south of the survey area (M. Bamford, pers. obs.).

3.1.2 EPBC Act Listed Threatened Flora

Mattiske (2017) conducted a likelihood of occurrence assessment that suggested the potential for several threatened flora species to occur in the area. However, the supporting field survey determined that the Proposed Action Area is not suitable.

Correspondence from Dr E.M. Mattiske (Mattiske, 2021) in support of the DCCEEW's request for further information has indicated that all threatened flora species identified as MNES in the Protected Matters Search Tool are extremely unlikely to occur in the Proposed Action Area as all species occur on the Swan Coastal Plain in sandy or wetter sites. These do not occur on the lateritic sandy-gravel soils of the Darling Scarp that have been confirmed to be in the Proposed Action Area.

Selena's Synaphea (*Synaphea* sp. Fairbridge Farm (D. Papenfus 696)) – Critically Endangered

Synaphea sp. Fairbridge Farm is endemic to the Pinjarra Plain of Western Australia and has been known to occur in Canning, Dardanup, Murray and the Serpentine-Jarrahdale area. It is found on grey, clayey sand with lateritic pebbles in low woodland areas near winter flats (Mattiske, 2021).

Synaphea sp. Fairbridge Farm (D. Papenfus 696) has not been recorded in the Proposed Action Area.

No suitable habitat is present in the Proposed Action Area, which occurs on lateritic sandy gravels on upland areas of the Darling Scarp.

Synaphea sp. Pinjarra Plain (A.S. George 17182) – Endangered

Synaphea sp. Pinjarra Plain (A.S. George 17182) is known to occur on grey sandy loam or clay, grey-brown clayey sand, brown clayey loam, and laterite. It occurs on flats, seasonally wet areas, railroad reserves, and often on wet depressions or drains (Mattiske, 2021).

Synaphea sp. Pinjarra Plain (A.S. George 17182) has not been recorded in the Proposed Action Area.

No suitable habitat is present in the Proposed Action Area, which occurs on lateritic sandy gravels on upland areas of the Darling Scarp.

Southern Tetraria (formerly *Tetraria australiensis*, now known as *Morelotia australiensis*) – Vulnerable

The distribution of *Morelotia australiensis* is severely fragmented, with the known populations occurring in isolated remnant patches of vegetation. It is found on grey sand over clay, and yellow sandy or clayey lateritic soils and favours winter-wet swampy depressions, drainage lines or rises surrounding swamps (Mattiske, 2021)

Morelotia australiensis has not been recorded in the Proposed Action Area.

No suitable habitat is present in the Proposed Action Area, which occurs on lateritic sandy gravels on upland areas of the Darling Scarp.

Dwarf Bee Orchid (*Diuris micrantha*) – Vulnerable

Diuris micrantha is known from seven populations, from east of Kwinana and south towards the Frankland area, Western Australia and is found on dark, grey to blackish, sandy clay-loam substrates in swamps or winter wet depressions, with bases of the flowering plants often covered with shallow water (Mattiske, 2021).

Diuris micrantha not been previously recorded in the Proposed Action Area.

No suitable habitat is present in the Proposed Action Area, which occurs on lateritic sandy gravels on upland areas of the Darling Scarp.

Purdie’s Donkey Orchid (*Diuris purdiei*) – Endangered

Diuris purdiei grows in areas subject to inundation, and amongst native sedges and dense heath with scattered emergent overstorey species on flats and wet or damp grey-black sandy soils (Mattiske, 2021).

Diuris purdiei has not been previously recorded in the Proposed Action Area.

No suitable habitat is present in the Proposed Action Area, which occurs on lateritic sandy gravels on upland areas of the Darling Scarp.

Glossy leafed Hammer Orchid (*Drakaea elastica*) – Endangered

Drakaea elastica is known only from the Swan Coastal Plain over a range of approximately 350 km between Cataby in the north and Busselton in the southwest of Western Australia. The species grows on bare patches of white or grey sand near adjoining low-lying winter-wet swamps (Mattiske, 2021).

Drakaea elastica has not been previously recorded in the Proposed Action Area

No suitable habitat is present in the Proposed Action Area, which occurs on lateritic sandy gravels on upland areas of the Darling Scarp

3.2 Assessment of Impacts

Based on the assessment of suitability of the Proposed Action Area to listed MNES in Section 3.1, four species were assessed as being relevant (Table 3-1) based on a combination of survey results, desktop study and literature review.

Table 3-1: Revised list of MNES with the potential to be impacted by the proposed action.

| MNES | Impact |
|---|--|
| Carnaby's Black Cockatoo (<i>Zanda latirostris</i> formerly <i>Zanda latirostris</i>) – Endangered | Clearing of 13.2 ha of high-quality foraging habitat which may support potential roosting and breeding habitat for Carnaby's Black Cockatoo, Baudin's Black Cockatoo and the Forest Red-tailed Black Cockatoo. |
| Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus banksii naso</i>) – Vulnerable | |
| Baudin's Black Cockatoo (<i>Zanda baudinii</i> formerly <i>Calyptorhynchus baudinii</i>) - Endangered | |
| Chuditch, Western Quoll (<i>Dasyurus geoffroii</i>) – Vulnerable | Clearing of 13.2 ha of potential habitat for the above species. |

3.2.1 Carnaby's Black Cockatoo (*Zanda latirostris*), Baudin's Black Cockatoo (*Zanda baudinii*) and Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*)

3.2.1.1 Direct impacts

The proposed development will necessitate the removal of:

- 13.2 ha of Black Cockatoo foraging, potential breeding and roosting habitat.
- 31 trees with hollows with entrances considered to be of suitable size for use by Black Cockatoos (Bancroft & Bamford, 2022), as per Table 3-2 ("Unsuitable orientation" hollows can still be used as breeding hollows in the absence of preferred habitat (Dawson pers. comm., 2023)).

Table 3-2: The number of potential nest-trees of each species in each nest-tree rank category in the survey area (Bancroft & Bamford, 2022; Appendix B)

| Rank | | Number of Trees | | | TOTAL | Percentage (of Grand Total) |
|------|---|-----------------|--------|--------|--------|-----------------------------|
| | | Jarrah | Marri | Sheoak | | |
| 1 | Active nest. | - | - | - | 0 | 0.00 |
| 2 | Potential hollow with chew-marks. | - | - | - | 0 | 0.00 |
| 3 | Potential hollow, no chew marks. | 7 | 13 (1) | 1 | 21 | 15.79 |
| 4 | Potential hollow, unsuitable orientation. | 5 | 5 | 0 | 10 | 7.52 |
| 5 | Sufficient DBH, no observable hollows. | 30 | 42 | 30 | 102 | 79.69 |
| | TOTAL: | 42 | 60 | 31 | 133 | 100.00 |
| | Percentage (of Grand Total) | 31.58 | 45.11 | 23.31 | 100.00 | |

3.2.1.2 Indirect impacts

Construction activities have the potential to indirectly impact adjacent Black Cockatoo habitat through:

- erosion;
- uncontrolled access;
- dust deposition; and
- spread of weeds and dieback.

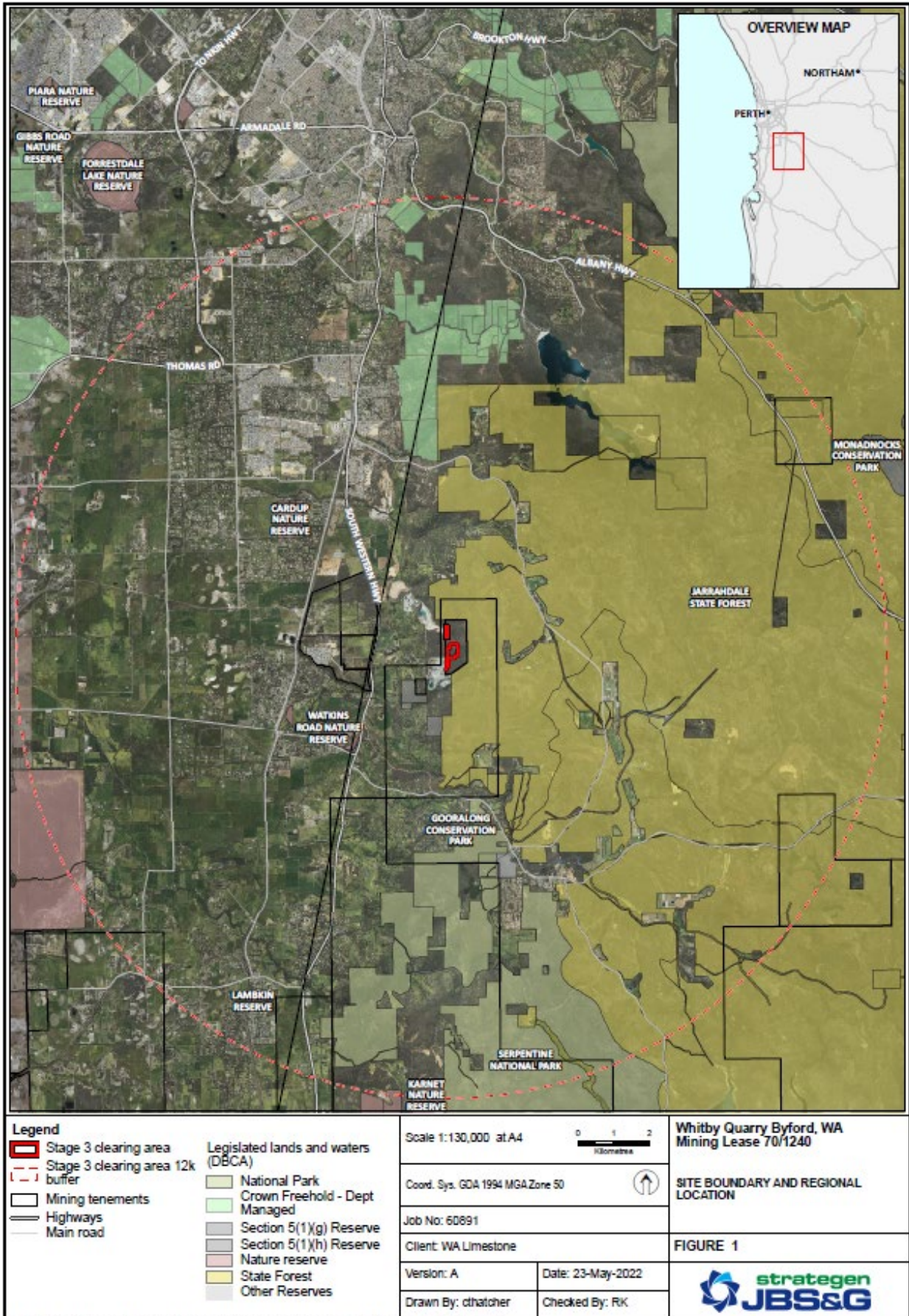
3.2.1.3 Cumulative impacts

A broad analysis of cumulative impacts to Black Cockatoos is provided in consideration of the estimated extent of Black Cockatoo habitat present within 6km and 12km of the Proposed Action Area. The extent of Black Cockatoo habitat within the surrounding area has been calculated based

on the remaining extent of native vegetation within vegetation complexes comprising of species suitable for foraging, breeding and roosting, for all three species of Black Cockatoo.

Within 6 km of the site, there is an estimated 6,014 ha of foraging habitat suitable for CBC, of which 4,911.22 ha (81.8%) is within lands managed by the WA Department of Biodiversity, Conservation and Attractions (DBCA). Within 12 km of the site, there is an estimated 23,190 ha of foraging habitat for CBC, of which 18,569.22 ha (80.1%) is within lands managed by the DBCA (Figure 3-1).

The clearing of a maximum 13.2 ha of foraging habitat therefore represents 0.2% of foraging habitat available within 6 km of the site and 0.06% of that within 12 km.



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Figure 3-1 Regional Context

3.2.1.4 Avoidance / Mitigation measures

All avoidance / mitigation measures will include further details within the proposed management plan. This will include commitments that are specific, measurable, achievable, realistic and time-bound (SMART). The summary of avoidance / mitigation measures is summarized in Table 3.3.

Table 3-3. Avoidance and Mitigation measures.

| MNES Species Targeted | Avoidance /mitigation method | Measurable | Achievable/realistic | Time bound | Response to trigger |
|---------------------------|---|---|--|--|--|
| CBC, FRTBC, BBC, Chuditch | Total clearing area has been reduced to ensure retention of trees identified as having suitable hollows for Black Cockatoos breeding. | Clearing will be reduced from 25.9 ha to 13.2 ha to retain all trees identified with hollows suitable for use. | The revised project boundary reflects the retention of hollow bearing trees. Further reduction in area will significantly impact on viability of the site as a storage / laydown area. | Clearing will be undertaken once approval is granted | If clearing outside of the Clearing Envelope is detected it will immediately be ceased until it is reported to DCCEEW. Any clearing outside of Clearing Envelope will required to be offset. |
| Chuditch | Identify the target feral fauna species that may be impacting Chuditch distribution locally and suitable control methods at the offset site. | Significant reduction (20%) in number of ferals recorded per annum from regular monitoring across the site. | Local contractors and subject matter experts available to develop / implement program. If 20% reduction is not reached within 5 years then alternative control methods will be explored with DBCA. | Within 6 months of offset site transfer. Program will continue for 10 years and then reviewed. | If 20% reduction in ferals is not detected then alternate / additional controls will be developed in consultation with DBCA. (Controls will be responsive to the feral species of concern.) |
| CBC, FRTBC, BBC | Clearing undertaken outside of CBC breeding season where possible. All hollows with in and adjacent to disturbance area will be checked prior to clearing. Clearing will be undertaken as | Checking of hollows included in Annual Report. Clearing commenced within 5 days of checking hollows. Evidence of nesting is discovered within proposed clearing | Standard construction management measures and standard cockatoo nesting survey techniques as detailed in DEWHA (2017). | Clearing within 5 days of checking hollows. Reported in Annual Report. | If clearing not commenced within 5 days then additional checking of hollows will be required. If clearing has already occurred then it will be reported to DCCEEW. |

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| | soon as possible after checking hollows. If a known nesting hollow is discovered, work will stop and DCCEEW notified. | area. | | | If evidence of nesting is identified, no further clearing will occur until DCCEEW notified. |
| CBC, FRTBC, BBC | Installation of 35 artificial nesting hollows in the proponent's land holding adjacent to the impact site. | The installation of 35 artificial hollows is in accordance with the offset calculator to offset the 31 potential hollows found within the clearing areas. | Artificial hollows have been successfully implemented to augment natural hollows for Black Cockatoo species since the 1980s. FRTBC have been known to breed in artificial nesting hollows in the absence of suitable natural hollows (Dawson, R. pers. com., 2023). DBCA will be consulted in the development of an artificial nesting box program to maximise opportunities for Black Cockatoos. | | Artificial hollows can be installed prior to or coincide with commencement of the action. The hollows will be maintained for 20 years and then either decommissioned or handed over to DBCA. Monitoring program will provide annual reporting on signs of usage and on the utilisation of the artificial cockatoo hollows. Copies of the annual reporting will be provided to DCCEEW. |
| CBC, FRTBC, BBC, Chuditch | Direct acquisition of an appropriate offset site for the purpose of conservation. | The DCCEEW offset calculator identifies the requirement for a 119 ha offset. A 119 ha offset site has been identified with like for like ecological values, based on an initial inspection by Western Environmental (2022) and a targeted assessment by Bamford (2022). | As the current biological value of the offset is currently comparable to the project site, with the addition of a pest control schedule it would be expected to increase in ecological value of the site. Implementation of dieback management measures will minimise the risk of introduction of dieback to the site and prevent loss in site quality over time. This will ensure a net gain for the proposed offset site. | The purchase of the offset site has commenced. Transfer to DBCA will occur as soon as practical once the site has been approved. | If transfer of land has not commenced within 2 years of approval, then DCCEEW will be notified with explanatory reasons and alternative options(s) provided. |

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| CBC, FRTBC, BBC, Chuditch | Provision of funding to the State Government (i.e. DBCA) for the management and maintenance of the direct acquisition site | The funding will be in accordance with the agreed amount in consultation with DBCA. | WA Limestone have the financial funds to provide to the State Government for the management and maintenance of the direct acquisition site | WA limestone will pay the issued invoice within 30 business days of receipt or as otherwise agreed. | If transfer of land has not commenced within 2 years of approval, then DCCEEW will be notified with explanatory reasons. |
| CBC, FRTBC, BBC | Ongoing support of Murdoch University <i>Corymbia calophylla</i> (Marri) Planting Project | WA limestone agreed to provide licence of approximately 4 ha of land to Murdoch for the purposes of planting approximately 5,000 Marri trees | The agreement is already in place between the parties and the program has commenced. | The program is scheduled to be complete in 2025. | If access to the land is rescinded, then DCCEEW will be notified with explanatory reasons. |
| CBC, FRTBC, BBC, Chuditch | Decommissioning | A Decommissioning Management Plan (DMP) will be prepared near to the end of the mines life including any necessary monitoring and management requirements. This will be approved by DCCEEW. | The DMP will also be a requirement of the DMIRS approval. | The DMP will be prepared at least 5 years before decommissioning and provided to DCCEEW and DMIRS for approval. | If the Decommissioning Management Plan is not submitted to DMIRS (in accordance with their approvals), they will be notified. |

The mitigation and avoidance strategies for increased risk of vehicle strikes with fauna, noise, and light disturbances are summarized in the following:

- a. Impacts with moving vehicles can cause injury or death to native fauna. The establishment of new roads and introduction of additional vehicles, particularly during the clearing phase, will have the potential to adversely impact fauna.

Minimise:

- Vehicle speeds will be managed on site (including entry and exit points) by enforcing speed limits in all areas to reduce the potential for vehicle strikes.
- All employees will be required to record and report any native fauna strikes.
- Site induction to emphasise that all native fauna has right-of-way, where possible and safe to do so.
- Personnel will be inducted regarding the key risk times for vehicle strike to fauna (e.g. Dusk and dawn periods when some fauna are more active are times when these interactions could be more prevalent).
- Where possible, all non-essential movement will be scheduled to take place during the day.
- Site inductions to introduce personnel to local conservation significant fauna, and signage displayed in crib rooms and notice boards, to ensure all personnel can identify all larger conservation significant species.

- b. Artificial light emanating from the site could attract fauna and alter foraging patterns, increase predation risks, disrupt biological clocks and disrupt dispersal movements impacting breeding and roosting regimes.

Minimise:

- The laydown / storage area will not be operational at night therefore no artificial light sources will be required.

- c. Noise and vibration are not identified as threatening processes however could act as a general stressor, mask acoustic signals, and disturb ecosystem balance. Noise emissions during the clearing phase such as large mobile plant movements could have a potential impact on fauna.

Minimise:

- There is concern that use of hollows near to the laydown area may be reduced due to disturbance from construction and trucking movement. Black Cockatoos are thought to tolerate high traffic noise given proximity of many nesting hollows to primary regional roads (for example Albany Highway, Great Northern Highway). Proximity to foraging habitat and standing water are much higher differentiators on suitability of hollows for breeding. There is evidence of foraging from Baudins and FTRTBC within 28m of existing laydown operations (refer to Figure 3.2). This suggests that foraging adjacent to proposed new laydown areas will be minimally affected.
- Maintain equipment such that all noise emitting equipment is fully serviceable and working to the correct specifications.
- The storage / laydown area will not be operational at night minimising the potential disturbance or stress.

Minimise

A number of measures will be implemented through the application of the mitigation hierarchy to minimise impacts from the proposed action on MNES. Key measures include:

- Reduction in clearing area to avoid 14 suitable hollows as identified by Kirkby (2017), refer to Figure 3-2. The minimum distance from the protected tree to the development envelope is 28m. Advice from Damien Grose from Tranen (Pers. Comm, 15/1/2024) is “the root zone generally extends to the edge of the tree canopy”. The canopy extends an estimated 7m to 10m from the trunk of the tree which is consistent with the Australian Standard AS 4970-2009 for tree protection zones being 12 x Diameter at Breast Height. This provides a 9.6m tree protection zone for the average size of nest trees for Black Cockatoos (Daws et al, 2021). Therefore it is not expected that the laydown area will impact on the 14 trees with suitable hollows identified by Kirkby (2017),
- Surveying and demarcating clearing areas to minimise the risk of over clearing,
- Application of direction clearing (west to east) to encourage fauna to move into adjacent state forest,
- Water based dust suppression during clearing activities to minimise fugitive dust emissions, as required during windy conditions. A water cart or sprinklers will be used on unsealed roads and cleared areas respectively as required to reduce fugitive dust lift off,
- Application of appropriate hygiene protocols to reduce risk of the introduction or spread of weeds or pathogens. All vehicles entering the site during clearing and laydown construction will be clear of soil and vegetation to minimise the risk of introduction of dieback or weed seeds. Once the laydown area is constructed, vehicle movements beyond the road and laydown boundary will be prohibited (unless in an emergency, such as fire control).

Rehabilitate

Revegetation is planned to provide suitable habitat for conservation significant fauna, including black cockatoo habitat, once operations have ceased. The Revised Mine Closure Plan (2016) (Appendix H) states that revegetation is estimated to provide foraging habitat within eight years after post closure (Lee et al, 2013).

Revegetation following the completion of operations will be designed to incorporate locally native species that provide foraging resources for Black Cockatoos. Specifically, the tree species *Eucalyptus marginata*, *Corymbia calophylla* and *Allocasuarina fraseriana* will be planted to reinstate the current dominant overstorey and provide future foraging, nesting, and breeding habitat in the long term.

As part of an ongoing program with Murdoch University (2017-2025), WA Blue Metal assists in the study of *Corymbia calophylla* (Marri) survivability through the provision of fee-free land use that will see up to 5,000 Marri individuals planted. This program aims to progress understanding and methodologies in improving success rates of Marri plantings, both for rehabilitation and plantation purposes (Appendix I).

3.2.1.5 Residual Impacts

The proposed action will necessitate the full clearing of 13.2 ha of foraging habitat for Black Cockatoos, inclusive of a mature overstorey of Jarrah and Marri that presents potential roosting and breeding habitat for the three species. The site is immediately adjacent to the Jarrahdale State Forest that is considered to contain breeding and foraging habitat of an equivalent type and quality to that within the site. Given this, the proposed clearing is not considered to constitute a significant impact on the conservation status of each species due to availability of key features within adjacent Jarrahdale State Forest.

A considerable proportion of vegetation within the area surrounding the site is within land managed by DBCA, with much of the vegetation containing foraging resources for black cockatoo species. Within 6 km of the site, there is an estimated 6,014 ha of foraging habitat suitable for CBC, of which 4911.2 (81.8%) ha is within lands managed by the DBCA. Within 12 km of the site, there is an estimated 23,190 ha of foraging habitat for CBC, of which 18,569.2 ha (80.1%) is within lands managed by the DBCA. The clearing of a maximum 13.2 ha therefore represents 0.2% of foraging habitat available within 6 km of the site and 0.06% of that within 12 km. These figures were derived utilising the Black Cockatoo foraging habitat mapping by DBCA (2018) and mapping of native vegetation extent available through the Department of Primary Industries and Regional Development (DPIRD 2020). The following lands managed by DBCA provide large areas of intact native vegetation containing suitable foraging resources. Large habitat nodes within 12 km of the site are provided within the areas listed below:

- Jarrahdale State Forest: 14,497.8 ha of potential habitat (200 m from site)
- Serpentine National Park: 2,707.7 ha of potential habitat (3.8 km from site)
- Cardup Nature Reserve: 71.4 ha of potential habitat (4.7 km from site)
- Gooralong Conservation Park: 62.7 ha of potential habitat (4.2 km from site).
- A number of confirmed roosting sites are located within 6 km of the site (three white-tailed black cockatoo roosts, one FRTBC roost and two joint roosts). The proposed action will not directly impact any known roosting sites.
- Potential breeding trees were assessed by Bancroft and Bamford in April 2022, where field assessment identified 133 potential nesting trees. Only 31 were deemed to have suitable hollows for use by Black Cockatoos. Given the requirement to clear these trees as part of the proposed action, it is the intent of the proponent to mitigate for this loss through the installation of artificial nesting hollows that will ensure no net loss of available nesting values in the vicinity of the Proposed Action Area.
- In considering potential indirect impacts of clearing, by way of the removal of foraging habitat within the 'critical habitat area' of the roost sites, these impacts are not expected to be significant given the large quantum of intact native vegetation that presents foraging habitat within the surrounding area, as outlined above.

Through the implementation of measures outlined in Section 4, it is determined that the proposed action can be implemented in accordance with the following statutory documents through the minimisation of the impact of mining on habitat loss and implementation of management measures for the conservation of the species:

- Approved Conservation Advice for *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) DEWHA (2009);
- Commonwealth Listing Advice on *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) TSSC (2009);
- Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksia naso*) Recovery Plan. (DAWE 2008); and
- Carnaby's Cockatoo (*Zanda latirostris*) Recovery Plan. DPaW (2013).

To quantify the potential significance of impact, the Commonwealth Significant Impact Guidelines 1.1 adopts criteria for assessment of impact to threatened species relating to 'populations' and/or 'important populations' (DotE, 2013). However, for Black Cockatoos these terms have not been defined, due to the mobile and widely distributed nature of these species, and the variation in flock compositions (e.g. between breeding and non-breeding seasons).

For Black Cockatoos, it is more appropriate to consider significance in terms of impacts on habitat rather than a resident population (DSWEPaC, 2012; DEE, 2017). Considering this, the impacts of the Proposed Action on Black Cockatoos have also been broadly assessed against the Commonwealth Significant Impact Guidelines 1.1 (DotE, 2013) and discussed in 3.4.

Table 3-4: Assessment of residual Impacts of the Proposed Action on Black Cockatoos against the *Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DEWHA, 2013)*

| Impact Criteria (Critically Endangered (CR); Endangered (EN); and Vulnerable (V) species | <i>Zanda latirostris</i> (Carnaby's Cockatoo) EPBC Act (Endangered) | <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo) EPBC Act (Endangered) | <i>Calyptorhynchus banksii naso</i> (Forest Red-tailed Black Cockatoo) EPBC Act (Vulnerable) |
|--|---|--|--|
| <p>Lead to a long- term decrease in the size of a population (CR) (E)</p> <p>Lead to a long- term decrease in the size of an important population of a species (V)</p> | <p>Significant Impact Unlikely</p> <p>The proposed action is not expected to lead to a long-term decrease in the size of Carnaby Cockatoo populations. As discussed previously, the term 'population' has not been defined for Carnaby's Cockatoos, due to the mobile and widely distributed nature of these species, and the variation in flock compositions. For Carnaby's Cockatoos, it is more appropriate to consider significance in terms of impacts on habitat rather than a resident population (DSWEPaC, 2012; DEE, 2017).</p> <p>The proposed action will necessitate the clearing of up to 13.2 ha of potential foraging habitat, which represents 0.2% of the total available potential foraging habitat within 6 km of the proposed action, based on remnant native vegetation associations known to be utilised by Carnaby's Cockatoos.</p> <p>The proposed action area is comprised of five vegetation associations (Mattiske, 2017), the following of which are most relevant to the species:</p> <ul style="list-style-type: none"> • Open Forest of <i>Allocasuarina fraseriana Eucalyptus marginata</i> subsp. <i>marginata Corymbia calophylla Banksia grandis</i> over <i>Adenanthos barbiger</i> on mid and upper slopes • Open Forest of <i>Allocasuarina fraseriana Eucalyptus marginata</i> subsp. <i>marginata Corymbia calophylla</i> over <i>Grevillea wilsonii</i>, <i>Adenanthos barbiger</i>, <i>Baeckea camphorosmae</i> and <i>Hypocalymma angustifolium</i> on mid and upper slopes. <p>The condition of vegetation within the proposed action area has been assessed to be in 'Good' to 'Excellent' condition. Given the condition and type of vegetation present, the proposed action area is considered to contain high quality foraging habitat for Carnaby's cockatoo. It should be noted that the proposed action area is surrounded by extensive areas of State Forest to the east, with three nature reserves occurring within 6km of the proposed action area to the west:</p> <ul style="list-style-type: none"> • Cardup Nature Reserve • Brickwood Reserve and • Watkins Road Nature Reserve <p>Each of these nature reserves contain relatively large areas of remnant vegetation of similar quality foraging habitat. Regional mapping indicates that a total of 6,014 ha and 23,190 ha of potential Carnaby Cockatoo foraging habitat occurs within 6 km and 12 km of the proposed action area, respectively, with 19,167 ha of this habitat (within 12 km) located within DBCA managed lands as conservation estate (Figure 3-3). Much of this vegetation is contained within the Jarrah Forest of the Darling Scarp.</p> <p>Kirkby (2017) undertook Black Cockatoo habitat assessment of the entirety of Mining Lease M70/1240, which encompasses the Proposed Action Area and found 14 trees with hollows suitable to support black cockatoo breeding. Ten of the hollows showed signs of recent or old use, and seven of these were heavily chewed at the entrance. Two of the hollows had signs of wear at the entrance, while two did not show signs of use (Kirkby 2017). Due to Kirkby's (2017) identification of used hollows, the Proposed Action Area was reduced such that none of these trees are located within the Proposed Action Area.</p> | <p>Significant Impact Unlikely</p> <p>The proposed action is not expected to lead to a long-term decrease in the size of Baudin's Black Cockatoo populations. As for the other two black cockatoo species, the term 'population' has not been defined for Baudin's Cockatoos, due to the mobile and widely distributed nature of these species, and the variation in flock compositions. For Baudin's Cockatoos, it is more appropriate to consider significance in terms of impacts on habitat rather than a resident population (DSWEPaC, 2012; DEE, 2017).</p> <p>The proposed action will necessitate the clearing of up to 13.2 ha of potential foraging habitat, which represents 0.2% of the total available potential foraging habitat within 6 km of the proposed action, based on remnant native vegetation associations known to be utilised by Carnaby Cockatoos.</p> <p>The proposed action area is comprised of five vegetation associations (Mattiske, 2017), the following of which are most relevant to the species:</p> <ul style="list-style-type: none"> • Open Forest of <i>Allocasuarina fraseriana Eucalyptus marginata</i> subsp. <i>marginata Corymbia calophylla Banksia grandis</i> over <i>Adenanthos barbiger</i> on mid and upper slopes • Open Forest of <i>Allocasuarina fraseriana Eucalyptus marginata</i> subsp. <i>marginata Corymbia calophylla</i> over <i>Grevillea wilsonii</i>, <i>Adenanthos barbiger</i>, <i>Baeckea camphorosmae</i> and <i>Hypocalymma angustifolium</i> on mid and upper slopes. <p>The condition of vegetation within the proposed action area has been assessed to be in 'Good' to 'Excellent' condition. Given the location, type and assumed condition of vegetation present, the proposed action area is considered to contain high quality foraging habitat for Baudin's cockatoo. It should be noted that the proposed action area is surrounded by extensive areas of State Forest to the east, with three nature reserves occurring within 6km of the proposed action area to the west:</p> <ul style="list-style-type: none"> • Cardup Nature Reserve • Brickwood Reserve and • Watkins Road Nature Reserve <p>Each of these nature reserves contain relatively large areas of remnant vegetation of similar quality foraging habitat.</p> <p>Regional mapping indicates that a total of 6,014 ha and 23,190 ha of potential Baudin's cockatoo foraging habitat occurs within 6 km and 12 km of the proposed action area, respectively, with 19,167 ha of this habitat (within 12 km) located within DBCA managed lands as conservation estate (Figure 3-2). Much of this vegetation is contained within the Jarrah Forest of the Darling Scarp.</p> <p>Kirkby (2017) undertook Black Cockatoo habitat assessment of the entirety of Mining Lease M70/1240, which encompasses the Proposed Action Area and found 14 trees with hollows suitable to support black cockatoo breeding. Ten of the hollows showed signs of recent or old use, and seven of these were heavily chewed at the entrance. Two of the hollows had signs of wear at the entrance, while two did not show signs of use (Kirkby 2017). Due to Kirkby's (2017) identification of used hollows, the Proposed Action Area was reduced such that none of these trees are located within the Proposed Action Area.</p> <p>31 trees have been flagged by Bancroft and Bamford (2022) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in</p> | <p>Significant Impact Unlikely</p> <p>The Proposed action is not expected to lead to a long-term decrease in the size of Forest Red-tailed Black Cockatoo (FRTBC) populations. As discussed previously, the term 'population' has not been defined for FRTBC, due to the mobile and widely distributed nature of these species, and the variation in flock compositions. For FRTBC's, it is more appropriate to consider significance in terms of impacts on habitat rather than a resident population (DSWEPaC, 2012; DEE, 2017).</p> <p>The Proposed action will necessitate the clearing of up to 13.2 ha of potential FRTBC foraging habitat, which represents 0.2% of the total available potential foraging habitat within 6 km of the proposed action area, based on remnant native vegetation associations known to be utilised by FRTBC.</p> <p>The condition of vegetation within the proposed action area has been assessed to be in 'Good' to 'Excellent' condition. Given the condition and type of vegetation present, the proposed action area is considered to contain quality foraging habitat for FRTBC.</p> <p>The proposed action area is comprised of five vegetation associations (Mattiske, 2017), the following of which are most prevalent:</p> <ul style="list-style-type: none"> • Open Forest of <i>Allocasuarina fraseriana Eucalyptus marginata</i> subsp. <i>marginata Corymbia calophylla Banksia grandis</i> over <i>Adenanthos barbiger</i> on mid and upper slopes • Open Forest of <i>Allocasuarina fraseriana Eucalyptus marginata</i> subsp. <i>marginata Corymbia calophylla</i> over <i>Grevillea wilsonii</i>, <i>Adenanthos barbiger</i>, <i>Baeckea camphorosmae</i> and <i>Hypocalymma angustifolium</i> on mid and upper slopes. <p>The condition of vegetation within the proposed action area has been assessed to be in 'Good' to 'Excellent' condition. Given the location, type and assumed condition of vegetation present, the proposed action area is considered to contain high quality foraging habitat for FRTBC. It should be noted that the proposed action area is surrounded by extensive areas of State Forest to the east, with three nature reserves occurring within 6km of the proposed action area to the west:</p> <ul style="list-style-type: none"> • Cardup Nature Reserve • Brickwood Reserve and • Watkins Road Nature Reserve <p>Each of these nature reserves contain relatively large areas of remnant vegetation of similar quality foraging habitat.</p> <p>Regional mapping indicates that a total of 6,014 ha and 23,190 ha of potential FRTBC foraging habitat occurs within 6 km and 12 km of the proposed action area, respectively, with 19,167 ha of this habitat (within 12 km) located within DBCA managed lands as conservation estate (Figure 3-3). Much of this vegetation is contained within the Jarrah Forest of the Darling Scarp.</p> <p>Kirkby (2017) undertook Black Cockatoo habitat assessment of the entirety of Mining Lease M70/1240, which encompasses the Proposed Action Area and found 14 trees with hollows suitable to support black cockatoo breeding. Ten of the hollows showed signs of recent or old use, and seven of these were heavily chewed at the entrance. Two of the hollows had signs of wear at the entrance, while two did not show signs of use (Kirkby 2017). Due to Kirkby's (2017) identification of used hollows, the Proposed Action Area was reduced such that none of these trees are located within the Proposed Action Area.</p> <p>31 trees have been flagged by Bancroft and Bamford (2022) as containing suitable hollows</p> |

| Impact Criteria (Critically Endangered (CR); Endangered (EN); and Vulnerable (V) species | <i>Zanda latirostris</i> (Carnaby's Cockatoo) EPBC Act (Endangered) | <i>Calyptrorhynchus baudinii</i> (Baudin's Cockatoo) EPBC Act (Endangered) | <i>Calyptrorhynchus banksii naso</i> (Forest Red-tailed Black Cockatoo) EPBC Act (Vulnerable) |
|--|---|--|--|
| | <p>31 trees have been flagged by Bancroft and Bamford (2022) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>Current management practices at the site include number of mitigation measures that will further minimise the risk of impact to the species. These measures include, but are not limited to:</p> <ul style="list-style-type: none"> • Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; • Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; • Avoid clearing during cockatoo breeding season (July to February) where possible; • Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; • Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and • Limiting clearing by using previously disturbed areas where possible. <p>On this basis it is unlikely that the proposed action will lead to a long-term decrease in the size of a population.</p> | <p>adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>Research undertaken by Murdoch University shows tracking of a specific individual of Baudin's cockatoo, within a flock, utilising vegetation to the west of the proposed action area (Yeap et al. 2015). This individual is assumed to have integrated with a local flock in the serpentine region and was found to have frequently used habitat to the west of the area, including within the Watkins Road Nature Reserve. While noting that this research was focused on an individual and that other flocks will be present in the area, it highlights that the species forages over a wide area and is not reliant on one particular patch.</p> <p>Current management practices at the site include number of mitigation measures that will further minimize the risk of impact to the species. These measures include, but are not limited to:</p> <ul style="list-style-type: none"> • Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; • Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; • Avoid clearing during cockatoo breeding season (July to February) where possible; • Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; • Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and • Limiting clearing by using previously disturbed areas where possible. <p>On this basis it is unlikely that the proposed action will lead to a long-term decrease in the size of a population.</p> | <p>within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>Current management practices at the site include number of mitigation measures that will further minimize the risk of impact to the species. These measures include, but are not limited to:</p> <ul style="list-style-type: none"> • Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; • Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; • Avoid clearing during cockatoo breeding season (July to February) where possible; • Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; • Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and • Limiting clearing by using previously disturbed areas where possible. <p>On this basis it is unlikely that the proposed action will lead to a long-term decrease in the size of a population.</p> |
| <p>Reduce the area of occupancy of the species (CR)</p> <p>Reduce the area of occupancy of an important population (V)</p> | <p>Significant impact Unlikely</p> <p>The Proposed action will not significantly reduce the area of occupancy of Carnaby's Cockatoo. As outlined by IUCN (2019), the 'area of occupancy' can be defined as a scaled metric that represents the area of suitable habitat currently occupied by the taxon. The current area of occupancy estimates for CBC is between 34,500 km² and 86,800 km² (DoE, 2020). Clearing because of the project represents between 0.04% and 0.01% of the estimated post-2003 area of occupancy (DPaW, 2013).</p> <p>Considering the above and noting the presence of adjacent and nearby conservation reserves providing habitat of similar quality, the proposed action will not reduce the area of occupancy of this species.</p> | <p>Significant impact Unlikely</p> <p>The proposed action will not significantly reduce the area of occupancy of Baudin's Cockatoo. As outlined by IUCN (2019), the 'area of occupancy' can be defined as a scaled metric that represents the area of suitable habitat currently occupied by the taxon. The current area of occupancy estimates for Baudin's Cockatoo is estimated at 25,000 km² (Garnett et al. 2011). Clearing because of the proposed action represents 0.05% of the estimated area of occupancy.</p> <p>Considering the above and noting the presence of adjacent and nearby conservation reserves providing habitat of similar quality, the proposed action will not reduce the area of occupancy of this species.</p> | <p>Significant impact Unlikely</p> <p>The Proposed action is located within the mapped distribution of Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo (DSEWPac, 2012; DAWE, 2022), with Forest Red-tailed Black Cockatoo being recorded in the field.</p> <p>There is approximately 6,014 ha of mapped potential Black Cockatoo foraging habitat within 6 km of the proposed action area, based on native remnant vegetation associations known to be utilised by FRTBC. This number was determined through intersecting vegetation associations consistent with suitable habitat with the latest remnant native vegetation spatial data.</p> <p>Removal of up to 13.2 ha of potential foraging habitat within the proposed action area represents 0.06% of the total available potential foraging habitat within 12 km of the proposed action area, based on native remnant vegetation associations known to be utilised by FRTBC.</p> <p>On this basis the proposed action it is unlikely to reduce the area of occupancy of this species.</p> |
| <p>Fragment an existing important population into two or more populations (CR) (E) (V)</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to fragment populations of this species into two or more populations. The Proposed Action Area will not create gaps of greater than 4 km between patches of habitat that can limit movement from roosts and hollows as a result of the proposed action.</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to fragment populations of this species into two or more populations. The Proposed Action Area will not create gaps of greater than 4 km between patches of habitat that can limit movement from roosts and hollows as a result of the proposed action.</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to fragment populations of this species into two or more populations. The Proposed Action Area will not create gaps of greater than 4 km between patches of habitat that can limit movement from roosts and hollows as a result of the proposed action.</p> |

| Impact Criteria (Critically Endangered (CR); Endangered (EN); and Vulnerable (V) species | <i>Zanda latirostris</i> (Carnaby's Cockatoo) EPBC Act (Endangered) | <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo) EPBC Act (Endangered) | <i>Calyptorhynchus banksii naso</i> (Forest Red-tailed Black Cockatoo) EPBC Act (Vulnerable) |
|--|--|---|--|
| <p>Adversely affect habitat critical to the survival of a species (CR) (V)</p> <p>Adversely affect habitat critical to the survival of the species (V)</p> | <p>Significant impact likely</p> <p>Habitat critical to the survival of a species or ecological community refers to areas that are necessary:</p> <ul style="list-style-type: none"> 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, or for the reintroduction of populations or recovery of the species or ecological community. <p>Such habitat may be, but is not limited to:</p> <ul style="list-style-type: none"> 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 (DotE, 1999). <p>Surveys undertaken to date have not recorded evidence of roosting within the Proposed Action Area. Based on information available from the Great Cocky Count and Department of Biodiversity, Conservation and Attractions (DBCA) data, there are six confirmed roosting sites within 6km of the Proposed Action Area. While breeding, black cockatoos will generally forage within a 6–12 km radius of their nesting site. Following breeding, birds assemble into flocks and move through the landscape searching for food, usually foraging within 6 km of a night roost. Because of this mobility and the irregular or infrequent flowering and fruiting patterns of many of their food sources, large areas of foraging habitat are required to support black cockatoo populations.</p> <p>The proposed clearing may result in a localized impact on habitat critical to the survival of Carnaby's Cockatoo, given that the proposed action area includes high quality foraging habitat within a known breeding area for Carnaby's Cockatoo, and is within proximity to six confirmed roost locations within a 6 km radius and the presence of ten trees which had hollows showing signs of old or recent use within the immediate surrounds of the proposed action area (Kirkby, 2017).</p> <p>In a regional context, the proposed removal of 13.2 ha of foraging habitat is unlikely to be considered significant, given the large expanse of suitable foraging habitat of similar quality within conservation estate to the east of the proposed action area. The EPA (2019) discusses that Black Cockatoos rely on overlapping foraging resources within 6 km and 12 km of breeding sites in addition to water resources to support breeding pairs. While the proposed action will require the removal of 13.2 ha of quality foraging habitat, it is not expected to result in a significant impact when considered in the context of the volume of surrounding vegetation and the presence of the Jarrahdale State Forest. As previously discussed approximately 6,014 ha and 23,190 ha of potential foraging habitat occurs within 6 km and 12 km of the site. Clearing for the proposed action represents a reduction in this available foraging habitat by 0.2% (6km) and 0.06% (12km). In addition, approximately 19,167 ha (within 12 km) is located within DBCA</p> | <p>Significant impact likely</p> <p>The <i>Forest Black Cockatoo Recovery Plan</i> (DEC 2008) identifies habitat critical for the survival of Baudin's cockatoo as those areas:</p> <ul style="list-style-type: none"> Currently occupied by the cockatoos Not currently occupied by the cockatoos due to recent fire but capable of supporting cockatoo populations when sufficiently recovered Of natural vegetation in which the cockatoo's nest, feed and roost Of natural vegetation through which the cockatoos can move from one occupied area to another Of suitable vegetation within the recorded range in which undiscovered cockatoo populations may exist. <p>In considering the broad definition above, the proposed action area contains habitat critical to the survival of the species. However, the proposed action is not expected to result in a significant impact to critical habitat either directly or indirectly that would compromise the survival of the species.</p> <p>While the proposed action area comprises of suitable foraging habitat that is considered to be high quality (Kirkby, 2017), as discussed previously, this habitat represents 0.2% and 0.06% of the surrounding vegetation likely to consist of similar if not better habitat that would meet the definition of critical habitat.</p> <p>Baudin's Cockatoo are known to breed in low numbers in the Serpentine Hills area approximately 10 km to the south of the Proposed Action and in the Wungong Catchment approximately 16km to the east. The species is mostly known to breed during summer months (between November and February) in Karri (<i>Eucalyptus diversicolor</i>) in the Southern Jarrah Forest Bioregion (Higgins 1999, McKenzie et al. 2003). It is considered unlikely that this species will breed in the Proposed Action Area and the proposed action is unlikely to impact on breeding habitat for the species.</p> <p>31 trees have been flagged by Bancroft and Bamford (2021) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>In considering the above, it may be considered likely that the Proposed action can result in a significant localized effect of habitat critical to the survival of the species. However, to alleviate the impact of the proposed action to the habitat, Offset Strategy document and Offset Management Plan including the details of the Offset Site are prepared (see N).</p> | <p>Significant impact likely</p> <p>Habitat critical to the survival of a species or ecological community refers to areas that are necessary:</p> <ul style="list-style-type: none"> 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, or for the reintroduction of populations or recovery of the species or ecological community. <p>Regional mapping indicates that a total of 6,014 ha and 23,190 ha of potential FRTBC foraging habitat occurs within 6 km and 12 km of the proposed action area, respectively, with 19,167 ha of this habitat (within 12 km) located within DBCA managed lands as conservation estate (Figure 3). Most of this vegetation is contained within the Jarrah Forest of the Darling Scarp.</p> <p>While the proposed action area comprises of suitable foraging habitat that is considered to be high quality (Kirkby, 2017), as discussed previously, this habitat represents 0.2% and 0.06% of the surrounding vegetation likely to consist of similar if not better habitat that would meet the definition of critical habitat.</p> <p>31 trees have been flagged by Bancroft and Bamford (2021) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>Current management practices at the site include a number of mitigation measures that will further minimise the risk of impact to the species. These measures include, but are not limited to:</p> <ul style="list-style-type: none"> Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; Avoid clearing during cockatoo breeding season (July to February) where possible; Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and Use of previously disturbed areas where possible. <p>In considering the above, it may be considered likely that the Proposed action can result in a significant localized effect of habitat critical to the survival of the species. However, to alleviate the impact of the proposed action to the habitat, Offset Strategy document and Offset Management Plan including the details of the Offset Site are prepared (see Appendix J and "Offset Site Management Plan" (JBS&G, 2023).</p> |

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|---|--|---|--|
| | <p>managed lands as conservation estate.</p> <p>31 trees have been flagged by Bancroft and Bamford (2022) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>In considering the above, it may be considered likely that the Proposed action can result in a significant localized effect of habitat critical to the survival of the species. However, to alleviate the impact of the proposed action to the habitat an Offset Strategy document (Appendix J) and Offset Management Plan (Appendix N) including the details of the Offset Site have been included.</p> | | |
| <p>Disrupt the breeding cycle of a population (EN)</p> <p>Disrupt the breeding cycle of an important population (V)</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to disrupt the breeding cycle of a population of Carnaby's Cockatoos. Kirkby (2017) undertook Black Cockatoo habitat assessment of the entirety of Mining Lease M70/1240, which encompasses the proposed action area and found 14 trees with hollows suitable to support black cockatoo breeding. Ten of the hollows showed signs of recent or old use, and seven of these were heavily chewed at the entrance. Two of the hollows had signs of wear at the entrance, while two did not show signs of use (Kirkby 2017). As a result of this assessment, the original extent of the proposed action area was amended to avoid all 14 trees with suitable hollows.</p> <p>EPA (2019) discusses that Black Cockatoos rely on overlapping foraging resources within 6 km and 12 km of breeding sites in addition to water resources to support breeding pairs. While the proposed action will require the removal of 13.2 ha of quality foraging habitat, it is not expected to result in a significant impact when considered in the context of the surrounding vegetation and the presence of the Jarrahdale State Forest. As previously discussed, within 6 km and 12 km, approximately 6,014 ha and 23,190 ha of potential foraging habitat occurs. Clearing for the proposed action represents a reduction in this available foraging habitat by 0.2% (6km) and 0.06% (12km). In addition, approximately 19,167 ha (within 12 km) is located within DBCA managed lands as conservation estate (Figure 3).</p> <p>31 trees have been flagged by Bancroft and Bamford (2022) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>Considering the above, it is unlikely that the proposed action will result in a significant impact that will disrupt the breeding cycle of a population.</p> | <p>Significant impact Unlikely</p> <p>The Proposed action is not expected to disrupt the breeding cycle of a population of Baudin's Cockatoo as no known breeding of Baudin's Cockatoo occurs in the proposed action area. The removal of potential breeding trees and foraging habitat may result in some disruption to the species breeding cycle. However, when considered in the context of habitat availability within the local area (based on suitable remnant vegetation within a 12 km radius), the potential loss of 13.2 ha Baudin's Cockatoo foraging habitat (representing a 0.06% reduction in potential foraging and breeding habitat within the local area) is not considered a significant impact to the species.</p> <p>Baudin's Cockatoo are known to breed in low numbers in the Serpentine Hills area approximately 10km to the south of the Proposed Action and in the Wungong Catchment approximately 16km to the east, therefore it is not expected that this species breeds within the Proposed Action.</p> <p>31 trees have been flagged by Bancroft and Bamford (2022) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>Considering the above, it is unlikely that the proposed action will result in a significant impact that will disrupt the breeding cycle of a population.</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to disrupt the breeding cycle of a population of FRTBC's. Kirkby (2017) undertook Black Cockatoo habitat assessment of the entirety of Mining Lease M70/1240, which encompasses the proposed action area and found 14 trees with hollows suitable to support black cockatoo breeding. Ten of the hollows showed signs of recent or old use, and seven of these were heavily chewed at the entrance. Two of the hollows had signs of wear at the entrance, while two did not show signs of use (Kirkby 2017). As a result of this assessment, the original extent of the proposed action area was amended to avoid all 14 trees with suitable hollows.</p> <p>EPA (2019) discusses that Black Cockatoos rely on overlapping foraging resources within 6 km and 12 km of breeding sites in addition to water resources to support breeding pairs. While the proposed action will require the removal of 13.2 ha of quality foraging habitat, it is not expected to result in a significant impact when considered in the context of the surrounding vegetation and the presence of the Jarrahdale State Forest. As previously discussed, within 6 km and 12 km, approximately 6,014 ha and 23,190 ha of potential foraging habitat occurs. Clearing for the proposed action represents a reduction in this available foraging habitat by 0.2% (6km) and 0.06% (12km). In addition, approximately 19,167 ha (within 12 km) is located within DBCA managed lands as conservation estate (Figure 2).</p> <p>31 trees have been flagged by Bancroft and Bamford (2022) as containing suitable hollows within the Proposed Action Area but show no signs of chew marks. It is proposed to replace the loss of suitable hollows with artificial nesting boxes in adjacent landholding that have been recognised to be as successful as natural hollows (Birdlife Australia, 2018)</p> <p>Considering the above, it is unlikely that the proposed action will result in a significant impact that will disrupt the breeding cycle of a population.</p> |
| <p>Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline (CR) (E) (V)</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to impact the availability or quality of habitat to the extent that Carnaby's Cockatoos are likely to decline. The clearing of approximately 13.2 ha of potential habitat represents a 0.06% reduction in potential foraging and breeding habitat for Carnaby's Cockatoos within the local area (suitable remnant vegetation within a 12 km radius).</p> <p>The reduction in this relatively small area of foraging habitat, may result in a minor localised impact, however when considered in context of the</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to impact the availability or quality of habitat to the extent that Baudin's cockatoos are likely to decline. The clearing of approximately 13.2 ha of potential habitat represents a 0.06% reduction in potential foraging and breeding habitat for Baudin's cockatoo within the local area (suitable remnant vegetation within a 12 km radius).</p> <p>The reduction in this relatively small area of foraging habitat, may result in a minor localised impacted, however when considered in context of the surrounding area, it is considered highly unlikely that this will result in the decline of the species. The</p> | <p>Significant impact Unlikely</p> <p>The Proposed action is not expected to impact the availability or quality of habitat to the extent that FRTBC are likely to decline. The clearing of approximately 13.2 ha of potential habitat represents a 0.06% reduction in potential foraging and breeding habitat for FRTBC within the local area (suitable remnant vegetation within a 12 km radius). The reduction in foraging and potential breeding habitat for may result in a minor residual impact associated with the Proposed action.</p> <p>On this basis, the Proposal is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.</p> |

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|--|--|---|---|
| | <p>surrounding area, it is considered highly unlikely that this will result in the decline of the species. In addition, all confirmed or likely nesting trees are being retained. Considering that Black Cockatoos exhibit high breeding site fidelity, and that successful breeding attempts are seen in birds that can utilise the same hollow, or one nearby (Saunders, 2018), the retention of these trees is vital to the population.</p> <p>On this basis, the Proposal is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.</p> | <p>proposed action area is located outside of the known Baudin's Cockatoo breeding areas and no known or likely trees suitable for breeding use by the species will be removed.</p> <p>On this basis, the Proposal is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that this species is likely to decline.</p> | |
| <p>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat (CR) (E)</p> <p>Result in invasive species that are harmful to vulnerable species becoming established in the vulnerable species' habitat (V)</p> | <p>Significant impact Unlikely</p> <p>The proposed action is unlikely to introduce harmful or invasive species to the Proposed Action Area. Current management practices at the site include measures to manage the potential spread of weeds, dieback and feral animals into adjacent retained vegetation that could comprise habitat for the species. There are no known diseases, that may impact the species, that could be introduced by the proposed action.</p> | <p>Significant impact Unlikely</p> <p>The proposed action is unlikely to introduce harmful or invasive species to the Proposed Action Area. Current management practices at the site include measures to manage the potential spread of weeds, dieback and feral animals into adjacent retained vegetation that could comprise habitat for the species. There are no known diseases, that may impact the species, that could be introduced by the proposed action.</p> | <p>Significant impact Unlikely</p> <p>The proposed action is unlikely to introduce harmful or invasive species to the Proposed Action Area. Current management practices at the site include measures to manage the potential spread of weeds, dieback and feral animals into adjacent retained vegetation that could comprise habitat for the species. There are no known diseases, that may impact the species, that could be introduced by the proposed action.</p> |
| <p>Introduce disease that may cause the species to decline (CR) (E) (V)</p> | <p>Significant impact Unlikely</p> <p>The proposed action is unlikely to introduce a disease (e.g. beak and feather disease virus) that may cause the species to decline. There are no known diseases that may be introduced to the area that may cause the population to decline and it is unlikely that any disease already exists in the proposed action area that may be spread by the activities of the Proposal (as there has been no indication of any such disease).</p> | <p>Significant impact Unlikely</p> <p>The proposed action is unlikely to introduce a disease (e.g. beak and feather disease virus) that may cause the species to decline. There are no known diseases that may be introduced to the area that may cause the population to decline and it is unlikely that any disease already exists in the proposed action area that may be spread by the activities of the Proposal (as there has been no indication of any such disease).</p> | <p>Significant impact Unlikely</p> <p>The proposed action is unlikely to introduce a disease (e.g. beak and feather disease virus) that may cause the species to decline. There are no known diseases that may be introduced to the area that may cause the population to decline and it is unlikely that any disease already exists in the proposed action area that may be spread by the activities of the Proposal (as there has been no indication of any such disease).</p> |
| <p>Interfere with the recovery of the Species (CR) (V)</p> | <p>Significant impact Unlikely</p> <p>The Recovery Plans (DBCA, 2013 and DEC, 2008) provide measures for the species recovery. These include identifying, protecting and managing important habitat. The proposed action is not inconsistent with the recovery plans for Carnaby's Cockatoo.</p> <p>Current management practices at the site include number of mitigation measures that will further minimize the risk of impact to the species. These measures include, but are not limited to:</p> <ul style="list-style-type: none"> • Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; • Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; • Avoid clearing during cockatoo breeding season (July to February) where possible; • Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; • Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and | <p>Significant impact Unlikely</p> <p>The Recovery Plans (DBCA, 2013 and DEC, 2008) provide measures for the species recovery. These include identifying, protecting and managing important habitat. The proposed action is not inconsistent with the recovery plans for Carnaby's Cockatoo.</p> <p>Current management practices at the site include number of mitigation measures that will further minimize the risk of impact to the species. These measures include, but are not limited to:</p> <ul style="list-style-type: none"> • Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; • Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; • Avoid clearing during cockatoo breeding season (July to February) where possible; • Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; • Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and • Limiting clearing by using previously disturbed areas where possible. | <p>Significant impact Unlikely</p> <p>The Recovery Plans (DBCA, 2013; DEC, 2008) provide measures for the species recovery. These include identifying, protecting and managing important habitat. The Proposed action is not inconsistent with the recovery plans for FRTBC.</p> |

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|---|---|---|---|
| | <ul style="list-style-type: none"> Limiting clearing by using previously disturbed areas where possible. <p>On this basis it is unlikely that the proposed action will interfere with the recovery of the species.</p> | <p>On this basis it is unlikely that the proposed action will interfere with the recovery of the species.</p> | |
| Proposed Outcome | <p>Direct impact to 13.2 ha of high quality foraging habitat</p> <p>The proposed action will result in the clearing of 13.2 ha of high-quality black cockatoo foraging habitat. A proposed offset strategy and Offset Management Plan are discussed in Section 4 (Appendix J) and "Offset Site Management Plan" (Appendix N) respectively to mitigate for this loss.</p> | <p>Direct impact to 13.2 ha of high quality foraging habitat</p> <p>The proposed action will result in the clearing of 13.2 ha of high-quality black cockatoo foraging habitat. The proposed offset strategy and Offset Management Plan are discussed in Section 4 (Appendix J) and "Offset Site Management Plan" (Appendix N) respectively to mitigate for this loss.</p> | <p>Direct impact to 13.2 ha of high quality foraging habitat</p> <p>The proposed action will result in the clearing of 13.2 ha of high-quality black cockatoo foraging habitat. The proposed offset strategy and Offset Management Plan are discussed in Section 4 (Appendix J) and "Offset Site Management Plan" (Appendix J).respectively to mitigate for this loss.</p> |

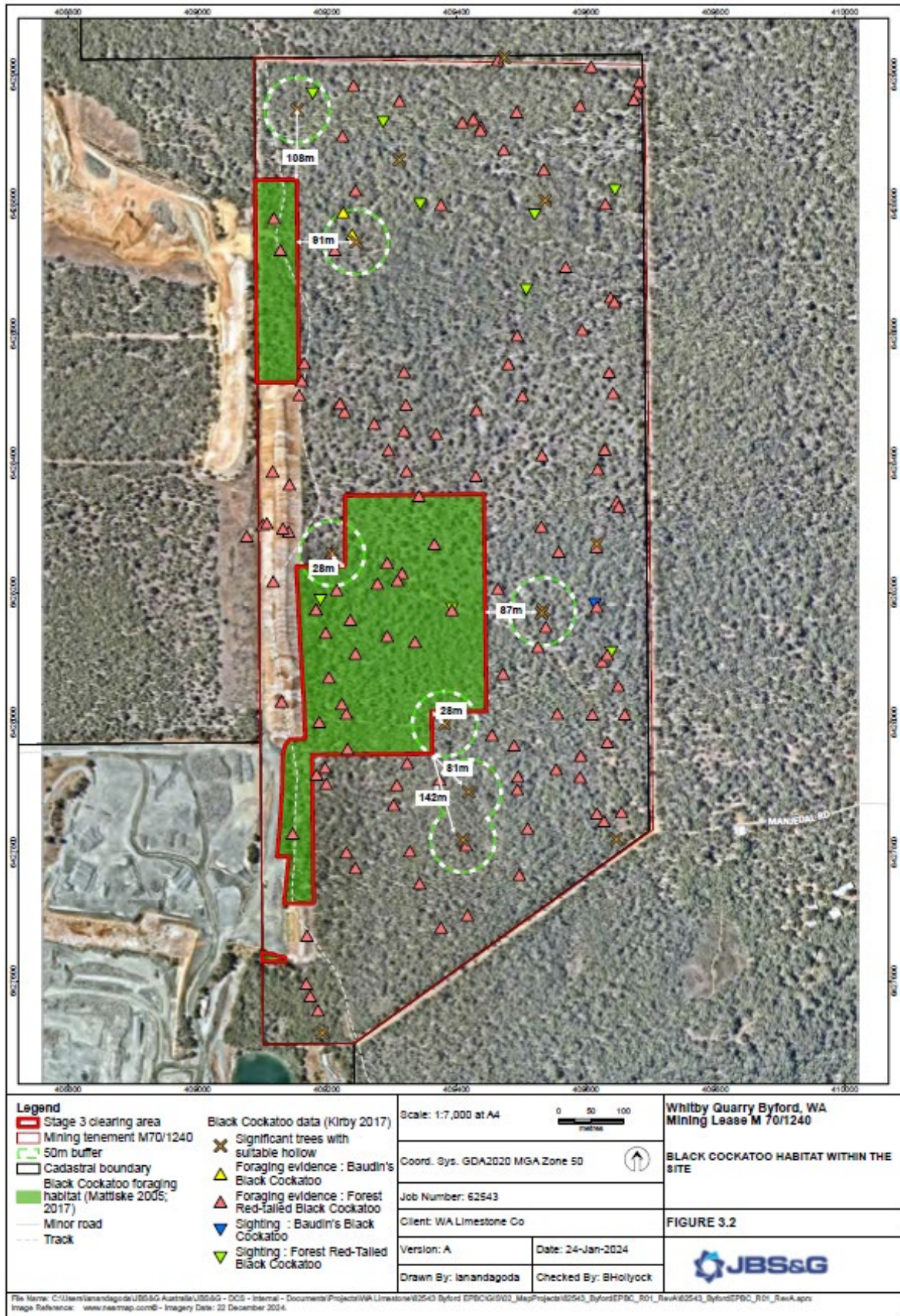


Figure 3-2 Black Cockatoo Habitat within the site

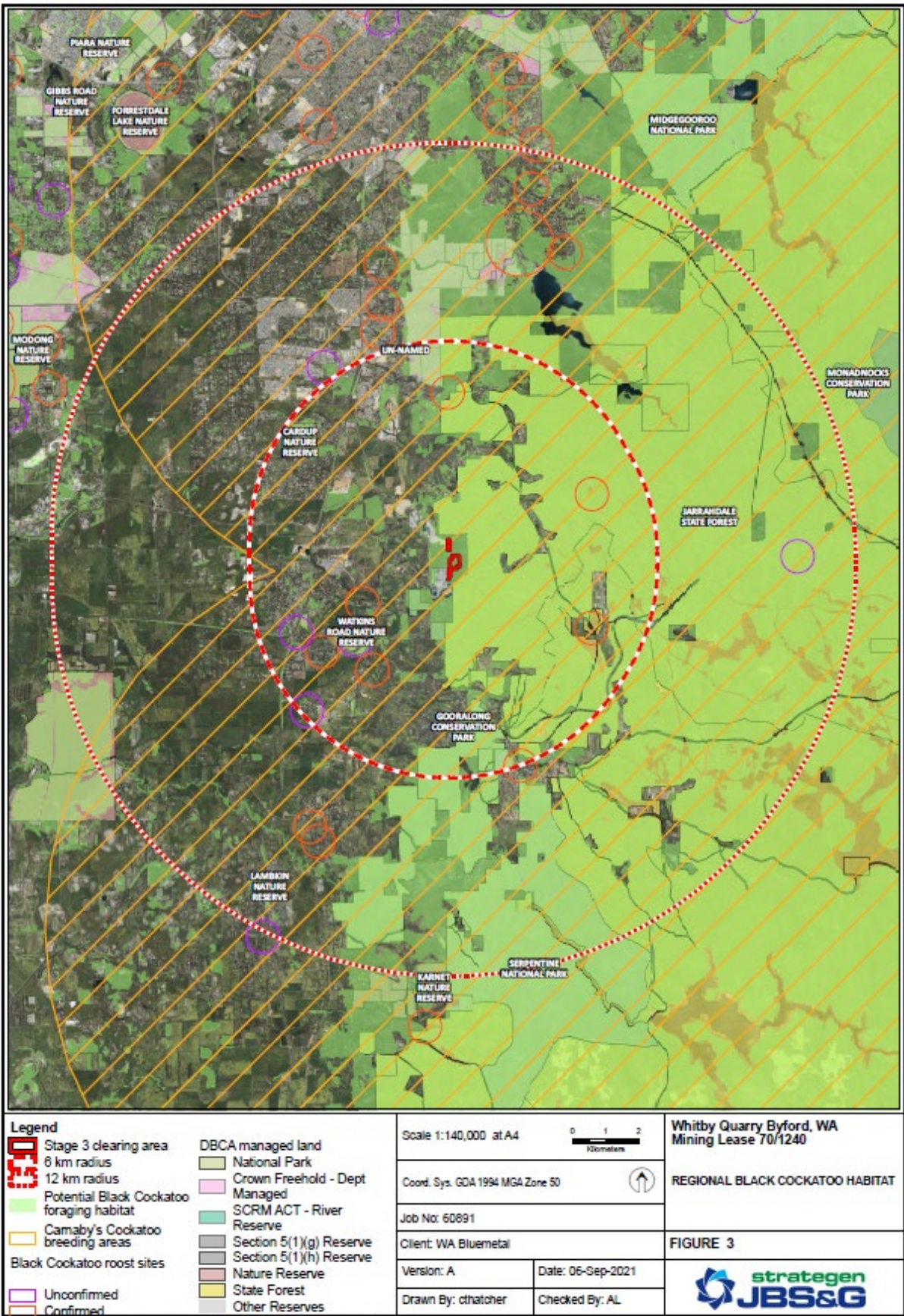


Figure 3-3 Regional Black Cockatoo Habitat

3.2.1.6 Acceptability of Impacts

The proposed action has been assessed against the significant impact criteria listed in Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DEWHA, 2013) which has concluded that the proposed action may be considered likely to result in a significant localized impact on the three Black Cockatoo species (Table 3-4). However, to mitigate the impact of the proposed action to the habitat, Offset Strategy document and Offset Management Plan including the details of the Offset Site are prepared (see Appendix J) and “Offset Site Management Plan” (Appendix N). The installation of 35 artificial nesting hollows near to the impact site will offset the loss of potential nesting hollows.

3.2.2 Chuditch, Western Quoll (*Dasturus geoffroii*) – Vulnerable

The Chuditch was recorded in the Proposed Action Area. Bancroft and Bamford (2022) note the area is at a minimum suitable for foraging and is suitable for transit through the area. Chuditch have a large home range (males averaging 400 ha, females between 55-120 ha) and with the presence of the Jarrahdale State Forest connecting contiguously with vegetation in the Proposed Action Area and the proponent’s adjacent landholding, a large area of suitable habitat is available to sustain home ranges of individuals

The proposed action will necessitate the clearing of up to 13.2ha of habitat suitable for the species. The removal of this vegetation represents <1% of habitat suitable for the species within 12 km of the proposed action area.

3.2.2.1 Direct impacts

The proposed action will necessitate the removal of:

- 13.2 ha of Chuditch foraging habitat.

This has the potential to impact the species directly through the removal of suitable habitat.

The clearing of a maximum of 13.2 ha of vegetation, in the context of the surround Jarrahdale State Forest, represents a reduction in suitable habitat of 0.13% and may pose a significant impact to the species.

3.2.2.2 Indirect impacts

Construction activities have the potential to indirectly impact adjacent Chuditch habitat through:

- Noise;
- Dust;
- Vibration; and
- Erosion

3.2.2.3 Cumulative impacts

The Chuditch have large home ranges that require mostly intact patches of vegetation to support foraging and denning activities. The decline in Chuditch populations is closely linked to habitat fragmentation, fox and cat predation, and deliberate/accidental death by vehicle strike, poisoning and trapping (Department of Environment and Conservation, 2012).

Chuditch require that habitat mostly be intact and contiguous to allow free movement across the species generally large home ranges. The closest stretch of intact and connected vegetation to the Proposed Action Area is DBCA-managed Jarrahdale State Forest, covering approximately 10,000 hectares of suitable habitat, and connecting contiguously with the Proposed Action Area. While the clearing of 13.2 ha of suitable habitat represents a reduction of the size of home range by 24% for a female (for a 55 ha range) and 3.3% for a male (400 ha range), contextually, the Jarrahdale State Forest has the potential to support at a maximum, 182 female and 25 male distinct home ranges. These ranges can overlap except for female core areas where den sites are located (usually 90 ha in size) (Department of Environment and Conservation, 2012).

The clearing of a maximum of 13.2 ha of foraging habitat, in the context of the surround Jarrahdale State Forest, represents a reduction in suitable habitat of 0.13% and is not considered to pose a significant impact to the species.

3.2.2.4 Mitigation measures

Avoid

The proposed area of clearing has been reduced from the broader tenement area of 25.86 ha to 17.36 ha and further to a 13.2 ha portion (reducing the efficiency of the site) in order to limit the impact of clearing on suitable hollows for the three black cockatoos identified by Kirkby (2007), which in turn reduces the loss of suitable habitat available to the Chuditch.

Minimise

A number of measures will be implemented through the application of the mitigation hierarchy to minimise impacts from the proposed action on MNES. Key measures include:

- Reduction in clearing area to avoid critical values to MNES,
- Surveying and demarcating clearing areas,
- Application of directional clearing (west to east) to encourage fauna to move into adjacent state forest,
- Dust suppression during clearing activities to minimise dust emissions, as required during windy conditions,
- Application of appropriate hygiene protocols to reduce risk of the introduction or spread of weeds or pathogens.

Rehabilitate

Revegetation is planned that will provide suitable habitat for conservation significant fauna, including Chuditch habitat, once operations have ceased. The Revised Mine Closure Plan (2016) (Appendix H) states that revegetation is estimated to provide foraging habitat within eight years after post closure (Lee et al, 2013).

Revegetation following the completion of operations will be designed to focus on the use of locally native species that provide foraging resources. Specifically, the tree species *Eucalyptus marginata*, *Corymbia calophylla* and *Allocasuarina fraseriana* will be planted to reinstate the current dominant overstorey and provide future foraging and denning habitat in the long term.

3.2.2.5 Residual Impacts

The site is considered to contain suitable habitat for Chuditch (Bancroft & Bamford, 2022); however, it is unknown whether the site is part of the home range for any individuals. Chuditch are generally solitary species that occupy relatively large home ranges, males over 15km² and females 3-4 km² (Department of Environment and Conservation, 2012) and the proposed action area represents only a small area (0.13 km²) in comparison. Given the availability of similar habitat within the adjacent Jarrahdale State Forest, the clearing of 13.2 ha is not considered likely to impact the conservation status of the species. Current management practices at the site include several mitigation measures that will further minimize the risk of impact to the species, including directional clearing west to east to allow fauna to escape into adjacent areas of vegetation.

Through the implementation of measures outlined in Section 3.2.2.4, it is determined that the proposed action can be implemented in accordance with the following statutory documents through the minimisation of the impact of mining on habitat loss and implementation of management measures for the conservation of the species:

- Chuditch (*Dasyurus geoffroyi*) Recovery Plan. Department of Environment and Conservation (2012)

The significant residual impacts of the proposed action on Chuditch populations have been broadly assessed against the Commonwealth Significant Impact Guidelines 1.1 (DoE, 2013) as discussed in Table 3-5.

Table 3-5: Assessment of Residual Impacts of the Proposed Action on Chuditch Against the *Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DEWHA, 2013)*

| Impact Criteria (Critically Endangered (CR); Endangered (EN); and Vulnerable (V) species | Chuditch (<i>Dasyurus geoffroii</i>) |
|--|--|
| <p>Lead to a long- term decrease in the size of a population (CR) (E)</p> <p>Lead to a long- term decrease in the size of an important population of a species (V)</p> | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to lead to a long-term decrease in the size of Chuditch populations.</p> <p>The proposed action will necessitate the clearing of up to 13.2 ha of suitable habitat, which represents 0.13% of the total available contiguous habitat that is found in Jarrahdale State Forest. No known populations are known to exist in the vicinity of the Proposed Action Area.</p> <p>Current management practices at the site include number of mitigation measures that will further minimise the risk of impact to the species. These measures include, but are not limited to:</p> <ul style="list-style-type: none"> • Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; • Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; • Avoid clearing during cockatoo breeding season (July to February) where possible; • Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; • Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and • Limiting clearing by using previously disturbed areas where possible. <p>On this basis it is unlikely that the proposed action will lead to a long-term decrease in the size of a population.</p> |
| <p>Reduce the area of occupancy of the species (CR) (E)</p> <p>Reduce the area of occupancy of an important population (V)</p> | <p>Significant impact Likely</p> <p>The Proposed Action may reduce the area of occupancy of Chuditch. The Proposed Action Area is located in an area where one individual was sited during the survey by Bancroft and Bamford (2022). However it was noted this individual may be transiting rather than resident to the Proposed Action Area. As outlined by IUCN (2019), the ‘area of occupancy’ can be defined as a scaled metric that represents the area of suitable habitat currently occupied by the taxon. The latest area of occupancy estimates for Chuditch is between 20,100 km² (National Environmental Science Program Threatened Species Research Hub, 2019). Clearing because of the project represents 6.6⁴% of the total area of occupancy for the species. Given the cryptic nature of the species and very large home range there may be a risk that the impact site is regularly transited and so reducing the area of occupancy of the population.</p> <p>Considering the above while noting the presence of adjacent and contiguous conservation reserve providing habitat of similar</p> |

| Impact Criteria (Critically Endangered (CR); Endangered (EN); and Vulnerable (V) species | <i>Chuditch (Dasyurus geoffroii)</i> |
|--|--|
| | quality, the proposed action may reduce the area of occupancy of this species. |
| Fragment an existing important population into two more population (CR) (E) (V) | <p>Significant impact Unlikely</p> <p>The proposed action is not expected to fragment populations of this species into two or more populations. The Proposed Action Area will not isolate patches of vegetation.</p> |
| <p>Adversely affect habitat critical to the survival of a species (CR) (V)</p> <p>Adversely affect habitat critical to the survival of the species (V)</p> | <p>Significant impact likely</p> <p>Habitat critical to the survival of a species or ecological community refers to areas that are necessary:</p> <ul style="list-style-type: none"> • 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, or • for the reintroduction of populations or recovery of the species or ecological community. <p>Such habitat may be, but is not limited to:</p> <ul style="list-style-type: none"> • 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 (DotE, 1999). <p>Surveys undertaken to date have not recorded evidence of breeding within the Proposed Action Area. Bancroft and Bamford (2022) recorded one individual foraging in the Proposed Action Area, indicating the site may be suitable for foraging. €The Proposed Action Area does not appear to act as a habitat corridor, which therefore does not play a role in maintaining genetic diversity.</p> <p>No important populations have been identified in the vicinity of the Proposed Action Area however there is a reduction in the potential Area of Occupancy, therefore it is possible that the proposed action will adversely affect habitat critical for the survival of the Chuditch.</p> |
| Disrupt the breeding cycle of a population (CR) (E) | Significant impact Unlikely |
| Disrupt the breeding cycle of an important population (V) | The proposed action is not expected to disrupt the breeding cycle of a population as no presence of dens were noted within the Proposed Action Area (Bancroft & Bamford, 2022) |
| Modify, destroy, remove or isolate or decrease the availability | Significant impact Unlikely |

| Impact Criteria (Critically Endangered (CR); Endangered (EN); and Vulnerable (V) species | <i>Chuditch (Dasyurus geoffroii)</i> |
|--|--|
| or quality of habitat to the extent that the 31 species is likely to decline (CR) & (V) | The proposed action is not expected to impact the availability or quality of habitat to the extent that Chuditch are likely to decline. The clearing of approximately 13.2 ha of potential habitat represents 0.13% reduction of suitable habitat when considering the availability of Jarrahdale State Forest as one intact patch of vegetation for foraging and breeding by Chuditch locally. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in critically endangered or endangered species habitat (CR) (E) Result in invasive species that are harmful to vulnerable species becoming established in the vulnerable species' habitat (V) | Significant impact Unlikely The proposed action is unlikely to introduce harmful or invasive species to the Proposed Action Area. Current management practices at the site include measures to manage the potential spread of weeds, dieback and feral animals into adjacent retained vegetation that could comprise habitat for the species. There are no known diseases, that may impact the species, that could be introduced by the proposed action. |
| Introduce disease that can cause the species to decline (CR) (E) (V) | Significant impact Unlikely The proposed action is unlikely to introduce a disease (e.g. beak and feather disease virus) that may cause the species to decline. There are no known diseases that may be introduced to the area that may cause the population to decline and it is unlikely that any disease already exists in the proposed action area that may be spread by the activities of the Proposal (as there has been no indication of any such disease). |
| Interfere with the recovery of the species (CR) (E) (V) | Significant impact Unlikely The Chuditch Recovery Plan (DEC, 2012) provides measures for species recovery. These include retaining and improving habitat critical for survival. The proposed action is not inconsistent with the Recovery Plan. Current management practices at the site include a number of mitigation measures that will further minimize the risk of impact to the species. These measures include, but are not limited to: <ul style="list-style-type: none"> • Prestart & toolbox meeting to raise awareness of environmental management requirements and operational controls; • Directional clearing west to east to allow fauna to escape into adjacent areas of vegetation; • Defined work areas and exclusion zones using fencing, flagging or other appropriate signage; • Injured, sick or orphaned native fauna located on project site will be notified immediately to the Superintendent. Contact will be made to either the local DBCA office or Wildlife care centre; and • Limiting clearing by using previously disturbed areas where possible. On this basis it is unlikely that the proposed action will interfere with the recovery of the species. |
| Proposed Outcome | Direct impact to 13.2 ha of suitable habitat The proposed action will result in the clearing of 13.2 ha of suitable habitat. The proposed offset strategy for the Black |

| Impact Criteria (Critically Endangered (CR); Endangered (EN); and Vulnerable (V) species | Chuditch (<i>Dasyurus geoffroii</i>) |
|---|---|
| | <p>cockatoo species, discussed in Section 4, will also benefit the Chuditch and mitigate for this loss. The proposed offset site contains habitat suitable for chuditch, including denning. A feral animal control program will be implemented across the offset site to reduce the prevalence of foxes and cats and improve suitability of the site for maintaining a chuditch population. This is discussed further in the Offset Management Plan (Appendix N).</p> |

3.2.2.6 Acceptability of Impacts

The proposed action has been assessed against the significant impact criteria listed in Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DEWHA, 2013) which has concluded that the proposed action will not result in a significant impact on the Chuditch (Table 3-5).

It is recognised that the loss of localised suitable habitat for the Chuditch is an adverse residual impact on Matters of National Environmental Significance. The proposed offset for the Black cockatoo species, will also provide suitable Chuditch habitat that will ensure no net loss in habitat values for the Chuditch. The offset strategy is discussed further in Section 4.

4. Offsets

Based on the application of the mitigation hierarchy, and the outcomes of this impact assessment, it is anticipated that the following adverse residual impacts will be required to be offset:

- The clearing of 13.2 ha of suitable foraging habitat and potential roosting and breeding habitat for all three species of southwest Black Cockatoo within a total Proposed Action Area of 17.36 ha.
- The removal of 31 potential breeding trees with hollows suitable for nesting
- The clearing of 13.2 ha of suitable habitat for Chuditch.

A standalone offset strategy has been developed in accordance with the following key policies and guidelines, which is presented in Appendix J:

- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (DSEWPaC 2012)
- *Offset Assessments Guide* (DSEWPaC 2012a)
- *Offset Calculator Guidelines* (DSEWPaC 2012b)
- *Guidance for delivering 'risk of loss' estimates when evaluating biodiversity offset proposals under the EPBC Act* (DAWE 2022).
- *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan* (DPaW 2013)
- *Forest Black Cockatoo (Baudin's Black Cockatoo [Calyptorhynchus baudinii] and Forest RedTailed Black Cockatoo [Calyptorhynchus banksii naso]) Recovery Plan* (DAWE 2008)
- *EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo (Zanda latirostris), Baudin's Cockatoo (Zanda baudinii) and the Forest RedTailed Black-Cockatoo (Calyptorhynchus banksii naso)* (DAWE 2022).
- *Chuditch (Dasyurus geoffroii) National Recovery Plan* (DEC 2012).

The intention of the offset strategy is to provide an offset package which demonstrates that adverse residual impacts resulting from the proposed action are adequately accounted for and directly contributes to the ongoing viability of the three Black Cockatoo species and the Chuditch impacted by the proposed action, and will deliver an overall conservation outcome that improves or maintains the viability of the above species. To this end, the offset strategy incorporates the following measures:

1. Direct acquisition of an appropriate offset site for the purpose of conservation initially via Proponent acquisition with subsequent transfer to the State Government (i.e. the DBCA). Transfer of the land into the conservation estate is supported by DBCA who have purchased the block of land adjacent to the south for a similar purpose. Should the transfer not proceed then a Conservation Covenant under the *Biodiversity Conservation Act 2016* will be placed over the site to achieve the same conservation outcomes.

The proponent has identified, and commenced acquisition of, a 119 ha parcel of land as a potentially suitable offset site, being the western portion of Lot P011005 6, 8772 Albany Highway, Bannister within the Shire of Boddington (Figure 4-1).

This property lies approximately 70 km to the south east of the controlled action location and contains remnant vegetation with potential value for threatened fauna, and in particular for its potential to support all three species of black-cockatoos as well as Chuditch and is within the known distribution of all three species of Black Cockatoo and Chuditch (DAWE, 2022; National Environmental Science Program Threatened Species Research Hub, 2019). The offset site is within the travel distance of all three species that may utilise the impact site and extensive habitat lies between the offset site and the impact site. Opportunities for including in-tact

patches of high-quality vegetation that potentially supports all MNES impacted by this project into the conservation estate are uncommon. No closer, available sites have been identified.

Bamford Consulting Ecologists (BCE) were commissioned to conduct a targeted desktop assessment and site inspection (September 2022) to better understand the use, and potential use, of the survey area by black-cockatoos, and also the potential for the site to support other species of conservation significance. The result of this assessment and site inspection are detailed in Bamford's (2022b) report, as provided in the Offset Site Management Plan in Appendix E.

The area of the acquisition site, as surveyed by Bamford (2022b) is approximately 389 ha. Of this the required offset area, 119 ha will be allocated as an offset for this proposed action, and the remainder being held in reserve to offset future Proponent activities.

The good quality vegetation on site is identified as highly susceptible to impacts from dieback if introduced (South Coast Natural Resource Management, 2024). The continued establishment and use of the site by wild pigs provides a significant vector for the introduction of dieback to site (Yufa Li, 2012). Spread of dieback by feral pigs has been identified as a key threat from feral pigs in the DoEE "Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs (*Sus scrofa*) (2017)". Control of feral pigs to minimise the risk of spread of disease is part of the recommended actions from the Threat Abatement Plan and consistent with the feral animal controls that will be implemented at the offset site.

Various form of *Phytophthora* have been identified on public and private land in the region. In Dryandra Woodland National Park, Monadocks Reserve, Youraling State Forest, Jarrahdale State Forest, Dwellingup State Forest and Marradong Mining Area. Dieback has been mapped on the State forest approximately 7km west of the offset site (South Coast Natural Resource Management, 2024). The outbreak appears to have originated from the gold mining operations in the area and is spreading east and west. Without active management and effective access controls it is likely this dieback will spread to the offset site significantly altering the vegetation structure and condition and reducing foraging and breeding opportunities for Black Cockatoos on-site.

Other vectors such as drainage from heavy use farm tracks on neighbouring properties and stockyards immediately adjacent to conservation areas; limited control of access within the property; limited visual surveillance and/or technical knowledge of early identification; and continued domestic and commercial activities occurring on-site all have the potential to introduce dieback onto the property. Potential sale of the property is likely to see these activities continue. Incorporation of the property into the Conservation Estate and managed by DBCA will enable the introduction of control measures.

A "Dieback Management Plan" (JBS&G, 2024) has been prepared that provides strategies for the prevention of dieback entering the site and management requirements if it is detected.

2. Installation of 35 artificial nesting hollows throughout the landholding adjacent to the impact site providing breeding opportunities to local flocks and offsetting the loss of potential nesting hollows within the impact area.
3. Provision of funding to the State Government for the management and maintenance of the direct acquisition site.
4. Each of the above measures are discussed further within the offset strategy (Appendix J).
5. Consultation with the DBCA is currently ongoing regarding the site identified to fulfil the acquisition component of the strategy and potential management costs and proportion of property to be assigned to offset the proposed action. Initial indicative costs are presented in the offset strategy (Appendix J)

6. Through the implementation of the mitigation measures outlined within this supporting document, as well as implementation of the offset strategy, no significant residual environmental impacts are anticipated to remain as a result of the proposed action.
7. An annual report will be prepared and submitted to DCCEEW showing compliance with the commitments in this document. Any outstanding items will be identified and remedial actions prepared.

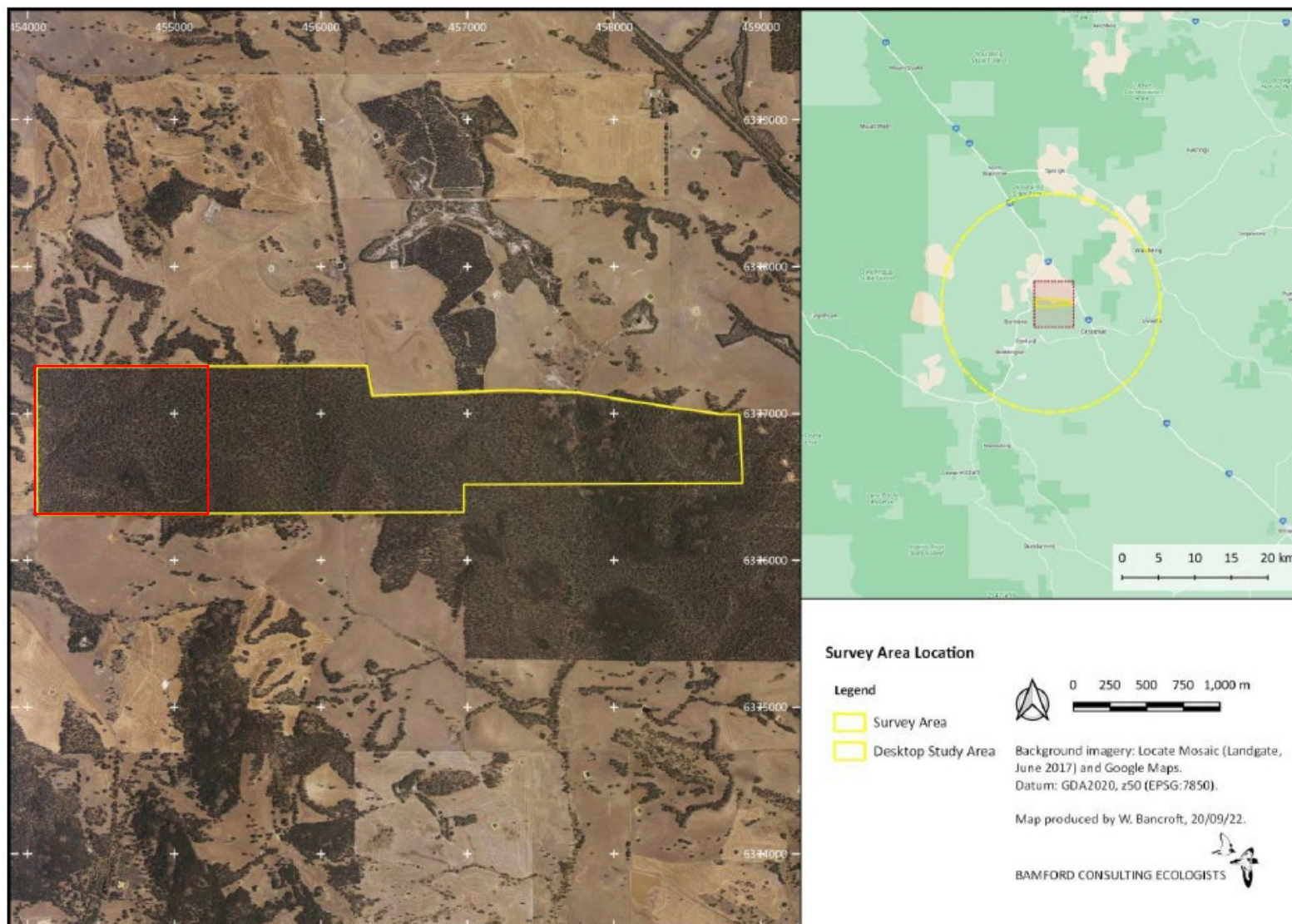


Figure 4-1: Proposed Offset Site (Lot 6, 8772 Albany Highway, Bannister).

5. Economic and Social Matters

5.1 Financial matters

5.1.1 Financial Investment

WA Bluemetal (WAB) currently operates a quarry on Lots 344 and 901 at Whitby WA. Lot 344 is quarried under Ministerial Statement 318 (MS 318) issued under the State *Environmental Protection Act 1986* (EP Act) in 1993 and Lot 901 is quarried under an Extractive Industry Licence (EIL) which is issued yearly by the Shire of Jarrahdale and Serpentine (SoSJ) under a Planning Approval. Planning approval has been in place from c.2001.

WAB is required to expand into mining lease M70/1240 to keep the quarry operational. Initially the expansion will be used for storage of clay overburden to allow access to granitic resource at the existing quarry before expanding into the lease. The current quarry has limited storage space which is scheduled to run out in early 2023 (January/February).

WAB has significant financial investment already in the Whitby Quarry. Under MS 318 approval was given to quarry Lot 902 south of Manjedal Creek, however technical and environment concerns were raised by the SoSJ and it was decided to enter into a negotiated land swap with the state government to avoid Lot 902. Under the agreement WAB transferred Lot 902 which was freehold land to the State and purchased Lot 502 Whitfield Springs Road in Beermullah as an additional land package for the State.

Once approval is obtained WAB, will spend considerable resources and capital expanding the quarry to access resources needed for infrastructure projects around the Perth Metropolitan area and Swan and Peel Regions. Over time capital expenditure for growth and stay-in-business will likely exceed 25 million dollars in acquiring and maintaining mobile and fixed plant for quarry expansion. Annual operating costs are in the order of 10 million dollars per annum to sustain operations and a workforce of 25 direct employees and 150 indirect employees and contractors.

5.1.2 Cost Benefit Analysis

Cost impact

Costs of the proposal include clearing of mixed Jarrah/Marri/Sheoak vegetation complex which is foraging and breeding habitat for all three Black Cockatoo species. WAB has completed extensive flora and fauna assessments in the mining lease and has gained a thorough understanding of the environmental values. WAB is committed to offsetting the environmental cost associated with the proposed action with the purchase of land for conservation which meets the required environmental values.

Significance of the Resource

The quarry has been identified under State Planning Policy 2.4 (2018) as a Significant Geological Supply (SGS). SGS are identified as the highest priority extraction areas for BRM. SGS are BRM identified by the Department of Mines, Industry Regulation and Safety (DMIRS) that represent strategic, long-term supplies of BRM requiring protection.

Basic Raw Materials Policy of 1992 identified the site as lying adjacent to and on the east of the Hanson Quarry, which was listed as a Key Extraction Area for granite hard rock.

In the Department of Planning and Urban Development, 1993, Darling Range Regional Park and Landscape Study the site is listed as a hard rock quarry site.

In State Planning Policy 2.4 Basic Raw Materials, 2000, the existing quarry is listed as Priority Hard Rock Resource Number 29/28 which is listed as a Priority Resource Hard Rock.

In State Planning Policy 2.4 Basic Raw Materials, 2000, the site is adjacent to the Priority Hard Rock Resource number 29/28 which is listed as a Priority Resource but has since been dropped through a land swap. This land, being cleared, does not have the same environmental restrictions.

With the revision of SPP 2.4 in 2021 the mapping has been replaced by Significant Geological Supplies mapping on GeoVIEW WA available on the Department of Mines Industry Regulation and Safety web sites. The subject land is not listed as an “Exclusion Site” and is included in the Significant Geological Supplies mapping.

Alternate Resources

Hard rock such as granite is required for road and concrete aggregates and coastal developments where rock up to 12 tonnes in size is required to prevent coastal erosion and storm damage of the structures.

There are few alternative resources on the Darling Scarp as almost all land is sterilised by conservation or is already located within land of smaller lot sizes, and therefore it is important to identify and protect any areas where hard rock or other extraction can be completed with minimal community impacts.

The Perth and Peel regions have a limited – and rapidly diminishing – supply of basic raw materials (BRM), the sand, limestone, clay and hard rock used by the development industry in construction, for clean fill and as road base. There are only 6 blue-metal quarries currently operating on the escarpment which include WAB Whitby Quarry to supply the Perth and Peel Region. WAB Whitby Quarry is in a key position to help meet the Perth and Peel 3.5 million Sustainable Growth Strategy.

Perth and Peel at 3.5million Growth Plan

In the Perth and Peel Region an estimated 90 per cent of all extracted BRM is used in commercial and residential development and demand is increasing. At the same time, the number of economically-viable deposits is decreasing, with availability of these finite resources generally restricted by a range of environmental and land use constraints and while extraction costs are moderate, considerable transportation costs are impacting on housing affordability. WAB is ideally placed to supply the Perth and Peel regions growth plan and supply resource that is in heavy demand given the State Governments ambitious plans for transport and harbour infrastructure development over the next 5-10 years.

Without security of tenure and access to a long-term rock resource at WAB, the future of the Group’s other downstream manufacturing businesses will continue to remain uncertain and presents a real risk to our further planned investments in WA.

5.2 Social environment

The mining activities on M70/1240 are proposed to commence in an area of native vegetation to the north east, into land recently excised from State Forest No.22. To the east of the site is State Forest, which also contains the Manjedal Scout Camp. The camp is currently 280 metres from the proposed activities. Representatives of the Scout Camp have previously expressed their desire to move the camp further to the south east. Negotiations have commenced and will continue with respect to assistance with moving the permanent facilities further to the south east when the quarry eventually moves north east, in order to maintain a similar or greater buffer.

To the north west of M70/1240 is the Hanson Byford quarry. This quarry is proposed to eventually extend south to the northern boundary of WAB and between M70/1240 and the scarp. To the west is the Quarry Farm Function Centre (formerly Tumbulgum Farm). This property was acquired by WAB in 2012 after being largely disused in recent years. The centre is currently being used as a function centre managed by WA Limestone.

The new Whitby urban development site is in early stages of construction, currently 2,070m away, on the western side of the South Western Highway. According to the Shire of Serpentine-Jarrahdale Whitby Local Structure Plan July 2012, larger residential lots will be located around the eastern edges of the structure plan, which will provide a design response to noise.

South of the quarry and M70/1240 is State Forest. Lot 902, directly south of the current quarry was formerly owned by WAB and was originally to be the area of future expansion for the quarry. As part of this current land swap process involving M70/1240, this land was subdivided and donated to the State Government and community for inclusion into the State Forest.

5.3 Public consultation undertaken, including indigenous stakeholder consultation

Engagement with regulators, indigenous stakeholders and other interested parties has been ongoing since 1992, when the existing quarry was referred to the Western Australian Environmental Protection Authority (EPA). The clearing permit granted in November 2020 (with commencement date of 5 December 2020) was subject to a period of public appeal. No appeals were received.

More recently, direct consultation has been undertaken with DBCA regarding a suitable offset site and there has been ongoing informal consultation with DCCEW regarding information required for this assessment and the potential offset requirements.

Table 5.1 summarises all engagement undertaken from 1992 to date.

Table 5-1: Stakeholder Consultation

| Stakeholder (current at the time) | Consultation | Comment |
|--|---|--|
| DBCA | 2022 Consultation with Land Acquisition team regarding potentially suitable offset property in Bannister | An inspection of the property by MJ & AR Bamford Consulting Ecologist in August 2022 found the property to be favourable for potential to support Black Cockatoos and other listed fauna. The property is understood to be site of interest to DBCA given the quality and availability of habitat, and proximity to existing conservation estate. |
| DCCEW | 2024 Ongoing consultation regarding additional information required to support this assessment. | |
| Department of Parks and Wildlife (now DBCA) | 2014 The mining proposal will be sent to DPaW for comment | Past consultations through previous versions of the DPaW. DPaW approved Mining activities on the tenement |
| Department of Water | The Mining Proposal will be sent to DoW for comment | No comments are available |
| Department of Mines, Industry Regulation and Safety (formerly DMP) | A clearing permit application | No comments. The application has not been lodged. |
| Traditional Owners | Notification of Traditional Owners | Agreement has been reached with the registered |

| Stakeholder (current at the time) | Consultation | Comment |
|---|--|--|
| | | claimants. |
| Department of Lands | 2016 Progressing the land exchange | DoL advised the DMP provided a section 91(5) approval – DPaW provided support of the submission to the Minister of Lands. DoL are required to complete the freehold transfer of land to WA Blue Metal. The s91 licence is only a temporary protection on the land until this occurs. WA Blue Metal is waiting for native title to be extinguished so the land can be converted to freehold and transferred to WA Blue Metal. |
| Environmental Protection Authority | 2010 Referral of Mining Proposal to EPA | Determined that a formal assessment was not required, and that the proposal could be assessed under the provisions of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. |
| Department of Mines, Industry Regulation and Safety (formerly DMP) | On-going consultation | No conditions currently in place. |
| Alcoa | 2005 Discussions with Alcoa | Alcoa support the granting of M70/1240 |
| Local Government Agency | Discussions with the Shire of Serpentine | The Shire of Serpentine Jarrahdale has provided in principle support for the granting of M70/1240 |
| Department of Agriculture, Water and the Environment (formerly DEC) | 2007 Discussion regarding land swap | DEC confirmed support for the land swap to proceed |

6. Ecologically Sustainable Development

The principles of ecologically sustainable development as defined under Section 3A of the EPBC Act and how they have been applied with regard to the proposed action are outlined in Table 6.1.

Table 6-1 Principles of ecologically sustainable development

| Principle of ecologically sustainable development | How it has been applied |
|--|--|
| <p>Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.</p> | <p>WA Bluemetal originally applied to clear 25.87 ha within a permit boundary of approximately 83.86 ha equivalent to the tenement boundaries of Mining Lease 70/1240. The application area has been further reduced to 13.2ha to avoid all trees with suitable Black Cockatoo breeding hollows that have shown signs of use. The revised clearing boundary also reduced the impact on the known population of Priority 2 flora species <i>Millotia tenuifolia</i> var. <i>laevis</i> by 54%. This demonstrates that WA Bluemetal's planning process considered the short and long-term impacts of the project and sought to reduce the economic, environmental and social impacts by reducing the amount of disturbance as far as practicable.</p> |
| <p>If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation</p> | <p>The proposed action meets the precautionary principle through avoidance and minimisation of impacts to key environmental values with the residual impacts to be managed through the application of environmental offsets.</p> <p>The proposed action has been assessed against the significant impact criteria listed in Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DEWHA, 2013) which has concluded that the proposed action is unlikely to result in a significant impact on the three Black Cockatoo species and the Chuditch (Table 3-4; Table 3.3).</p> <p>It is recognised however that the loss of localised suitable habitat for these species is a residual impact on Matters of National Environmental Significance that requires mitigation to ensure no net loss in foraging, potential breeding and roosting qualities. Section 4 details a proposal to offset the loss of these qualities.</p> |
| <p>The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations</p> | <p>The Proposed Action meets the principle of the conservation of biological diversity and ecological integrity through avoidance of key environmental values and management measures to minimise environmental impacts.</p> <p>The intention of the offset strategy is to provide a package which demonstrates that all significant residual impacts resulting from the proposed action are adequately accounted for. To this end, the offset strategy incorporates three measures, which are:</p> <ul style="list-style-type: none"> • The direct acquisition of an appropriate offset site for the purpose of conservation and transfer of this property (or a portion thereof) to the State Government (via DBCA) • Installation of 35 artificial nesting hollows throughout the proponent's adjacent landholding • Provision of funding to the State Government for the management and maintenance of the direct acquisition site. |

| Principle of ecologically sustainable development | How it has been applied |
|--|--|
| | <p>As part of an ongoing program with Murdoch University (2017-2025), WA Blue Metal assists in the study of <i>Corymbia calophylla</i> (Marri) survivability through the provision of fee-free land use that will see up to 5,000 Marri individuals planted. This program aims to progress understanding and methodologies in improving success rates of Marri plantings, both for rehabilitation and plantation purposes.</p> <p>Implementation of the offset strategy in conjunction with the ongoing program with Murdoch University will ensure that the health, diversity and productivity of the environment is maintained or enhanced for future generations.</p> |
| <p>The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.</p> | <p>The proposed action meets the principle of the conservation of biological diversity and ecological integrity through the avoidance of key environmental values and management measures to minimise environmental impacts.</p> <p>WA Bluemetal originally applied to clear 25.87 ha within a permit boundary of approximately 83.86 ha equivalent to the tenement boundaries of Mining Lease 70/1240. The application area was further reduced to 13.2 ha to avoid all trees with suitable Black Cockatoo breeding hollows that have shown signs of use. The revised clearing boundary also reduced the impact on the known population of Priority 2 flora species <i>Millotia tenuifolia</i> var. <i>laevis</i> by 54%.</p> |
| <p>Improved valuation, pricing and incentive mechanisms should be promoted.</p> | <p>The proposed action meets the principle of improved valuation, pricing and incentive mechanisms by consideration of environmental information into the design whilst also considering construction and operational limitations.</p> <p>The mechanism for funding of offsets and environmental management measures are outlined in the Offset Strategy (Appendix J).</p> |

7. Environmental Record

7.1 Details of any proceedings under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the person proposing to take the action.

All WA Bluemetal (Ransberg Pty Ltd) sites and projects are certified to ISO 14001.

The WA Bluemetal Whitby Quarry has successfully operated since 1999.

No environmental incidents or substantiated complaints in the past 10 years.

The environmental performance of the quarry was recognised in 2018 by Cement Concrete & Aggregates Australia with a "Highly Commended" award for Environmental Innovation.

7.2 Details of the proponent's environmental policy and planning framework.

WA Blue Metal is committed to environmentally responsible mining in Byford. This commitment is recognised, communicated and achieved through the implementation of the WA Blue Metal Environmental Management System (EMS). The site is ISO:14001 certified and guided by the WA Blue Metal Environmental Policy which governs all of its operations such that the proponent:

- Protect and enhance the natural environment.
- Perform all operations and workplace activities to minimise impact to the environment.
- Continual improvement in environmental performance.

WA Blue Metal is committed to undertaking all phases of its business activities in an environmentally responsible manner and through effective management practices, aims to minimise environmental impacts at every stage of work.

The proponent's commitment to the following guiding principles is fundamental in carrying out the company's environmental policy:

- To comply with environmental, safety and health laws and regulations, and to consider environmental aspects as an essential element when evaluating new projects, products and operations.
- To establish objectives and targets aimed at the prevention of pollution by reducing the generation of waste, recycling waste that is generated and properly disposing of waste that cannot be recycled.
- To encourage the conservation of energy, water and natural resources through increased efficiency and continual improvement in environmental performance.
- Where applicable rehabilitate sites or disturbed areas by company activities to comply with the Environmental Management Plans.
- To provide employees with a better understanding of environmental issues and the company's commitment, policies and programs to preserve and improve the environment.
- Compliance with all relevant Acts, Regulations and industry standards.
- Through this EMS, rehabilitation and closure aspects across all of its operations are addressed as follows:
 - Environmental risks are identified, analysed and evaluated, and controls established.
 - Responsibility for meeting environmental objectives, targets, obligations and controls are being met.
 - Environmental performance is monitored and reviewed to ensure continuous improvement.

The proponent's environmental policy is provided in Appendix K and evidence of their ISO 14001 certification is provided in Appendix L.

8. References

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9. Limitations

Scope of services

This report ("the report") has been prepared by JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

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Appendix A Referral Document

**Appendix B WA Limestone Byford Quarry Expansion Supporting information
for Matters of National Environmental Significance (Fauna). M.J.
& A.R. Bamford Consulting Ecologists. 2022**

Appendix C Expert Advice – Matiske Consulting Pty Ltd 2021

**Appendix D Flora and Vegetation on the WA Bluemetal Quarry Survey Area
at Serpentine. Mattiske Consulting (2005)**

Appendix E Proposed land-swap. WA Bluemetal Mundijong Quarry. A Fauna Assessment. Western Wildlife (2006)

**Appendix F Assessment of Flora, Vegetation and Fauna Values on the WA
Bluemetal Quarry Survey Area At Serpentine. Matiske Consulting Pty Ltd
(2017)**

**Appendix G Black Cockatoo Habitat Survey, Proposed Byford Quarry
Extension M70/1240. Kirby (2017)**

Appendix H Mine Closure Plan

Appendix I Licence Agreement Marri Planting Research Project. Murdoch University, WA Bluemetal (2014)

Appendix J Offset Strategy

Appendix K WA Limestone Environment Policy

Appendix L WA Limestone ISO 14001 Certification

Appendix M Bannister Offset Inspection Report

Appendix N Bannister Offset Management Plan

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