Targeted Fauna Survey: Black Cockatoo and Western Ringtail Possum (Diurnal)

Lot 4201 Jindong Treeton Road, Jindong

FEBRUARY 2024

Version control

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Rev 0	13/02/24	Shane Priddle SW Environmental	Angela Filardi SW Environmental	Shane Priddle SW Environmental

Statement of limitations

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Common terms/acronyms

BC Act	WA *Biodiversity Conservation Act 2016*
DCCEEW	Federal Department of Climate Change, Energy, the Environment and Water
DBCA	WA Department of Biodiversity, Conservation and Attractions
DBH	Diameter at Breast Height in centimetres
DWER	WA Department of Water and Environmental Regulation
EP Act	WA *Environmental Protection Act 1986*
EPBC Act	Federal *Environment Protection and Biodiversity Conservation Act 1999*
FRTBC	Forest Red-tailed Black Cockatoo
Locality / Study area	A 12 km buffer around the Survey area
Project	The proposed action
Survey area	Lot 4201 Jindong Treeton Road, Jindong
Suitable DBH tree	Tree of a suitable species and size to develop large hollows (>50cm DBH most trees in the Southwest or >75cm for Karri).
WA	Western Australia
WRP	Western ringtail possum

1 Introduction

1.1 Background and scope

Accendo Australia was engaged by Leeuwin Civil Pty Ltd to provide environmental assessment and approvals for the extension of an existing gravel extraction pit at Lot 4201 on Plan 208196, Jindong Treeton Road, Jindong, within the City of Busselton (Appendix A, Figure 1). The proposed pit includes a circa 8.55 hectare (ha) area of native vegetation - the survey area (Appendix A, Figure 2).

It understood that a clearing permit application has been submitted (CPS 10019/1) under section 51E of the *Environmental Protection Act 1986* and that the project will be referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for potential assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A targeted western ringtail possum (WRP) (*Pseudocheirus occidentalis*) survey (diurnal and nocturnal) was also required to identify WRP habitat values and inform the environmental assessment. A targeted Black Cockatoo[1] Habitat Assessment was undertaken by Greg Harewood (Zoologist) in 2021. Black cockatoo birds and roosts were to be noted if they were observed during the nocturnal work.

1.2 Regulatory context

Key environmental legislation relevant to the survey is outlined in Table 1-1.

Table 1-1 Environmental legislation that may be relevant to the Project

Legislation	Responsible Government Department	Aspect
Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Matters of National Environmental Significance including threatened fauna and environmental offsets.
Biodiversity Conservation Act 2016 (BC Act)	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Threatened species habitats, threatening processes, environmental pests and weeds.
Environmental Protection Act 1986 (EP Act)	Environmental Protection Authority or Department of Water and Environmental Regulation (DWER)	Environmental impact assessment and management and offsets.

[1] Black cockatoos collectively refers to

- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii subsp. naso*) (Vulnerable)
- Baudin's Cockatoo (*Zanda baudinii*) (Endangered)
- Carnaby's Black Cockatoo (*Zanda latirostris*) (Endangered)

Fauna in WA may be afforded protection under the WA BC Act and/or federal EPBC Act. All three black cockatoo species targeted in this survey are listed under the BC and EPBC Acts as:

- EN: Endangered species (Baudin's cockatoo and Carnaby's cockatoo)
- VU: Vulnerable species (FRTBC)

WRP are listed as Critically Endangered under both Acts.

1.2.1 Guidelines

The survey methodologies were developed with consideration of:

- Environmental Protection Authority (2020) Technical Guidance – Terrestrial Guidance for Fauna Surveys for Environmental Impact Assessment. Perth, Western Australia.
- Commonwealth Matters of National Environmental Significance – *Significant impact guidelines 1.1 Environmental Protection and Biodiversity Conservation Act 1999*, Department of the Environment, Water, Heritage and the Arts (DEWHA)', (2009).

2 Methods

2.1 Desktop review

A desktop review was completed prior to the field survey and included the following:

- Review of relevant literature WRP, such as recovery plans, journal articles and other publications.
- Review of relevant mapping and spatial datasets, such as:
    - Atlas of Living Australia database (ALA 2024),
    - BirdLife Australia's Atlas and Birdata datasets (Birdlife Australia, 2023),
    - Protected Matters Database (DCCEEW 2024),
    - Danjoo Biodiversity Data Repository (DBCA 2024), and
    - Naturemap (DBCA 2021).

2.2 Field survey

2.2.1 Survey area

The 'survey area' included a circa 8.55 ha patch of native vegetation on Lot 4201 Jindong Treeton Road, Jindong for the proposed expansion of the existing gravel extraction pit on the same lot. The survey area included a patch of trees over cleared pasture.

2.2.2 Site reconnaissance

Field surveys consisted of a diurnal site visit on the 8th December and on nocturnal surveys on the 5th and 7th February 2024 by SW Environmental Principal, Shane Priddle, and an assistant, Greg Overton. Field surveys were undertaken to validate the desktop review and ground truth fauna habitat. Evidence of target fauna (e.g. feed residue, scat, breeding evidence, roosts etc) and actual sightings were also noted. Survey methodology for black cockatoos and WRP are described below.

2.2.3 Black cockatoo survey methodology

As a previously survey had recently been undertaken by Harewood (2021) the scope of this component only included noting the presence of black cockatoos and roosts sites if they were observed. Twelve kilometres (km) is referenced as a nominal distance in considering wider local vegetation and habitat values being the maximum that black cockatoos travel from their nesting or roost site to forage (Commonwealth of Australia 2017).

2.2.4 Western ringtail possum survey methodology

WRP targeted surveys included a diurnal and two non-consecutive nocturnal surveys. The diurnal survey included general habitat assessment and WRP scat searches broadly over the site at the base of trees, on fallen timber and areas of bare ground. The presence or absence of dreys and hollows was also noted. Photos were taken within all habitat types.

2.2.5 Animal ethics

The survey conformed to Section 4 of the *Australian code of practice for the care and use of animals for scientific purposes* (National Health and Medical Research Council 2004). No animals were captured or collected during the survey. Surveys were also carried out under Scientific Use License *Animal Welfare Act 2002* Licence to use animals for scientific purposes: Licence No: U285/ 2022-2024 and Wildlife Animal Ethics Committee (WAEC) Permit: WAEC 22-08-88.

2.3 Limitations

In accordance with *Technical Guidance* (EPA 2020) potential survey limitations are identified below.

Table 2-1 Limitations of survey adequacy and accuracy

Aspect	Constraint	Comment
Competency / experience	No	Suitably qualified individuals carried out the work. Shane Priddle (Ba Science; Certified Environmental Practitioner No.310) with 20 years' experience conducting black cockatoo and WRP surveys throughout NSW and WA.
Scope	No	The scope of work related primarily to WRP. The survey scope is adequate to provide the information required to support a planning assessment in relation to WRP and add additional knowledge to black cockatoo use of the site.
Adequacy of the survey intensity and proportion of survey achieved	No	Suitable survey effort has been carried out to identify WRP habitat values associated with the survey area. A precautionary approach has been adopted.
The proportion of the task achieved and further work	No	The surveys were completed adequately, to a sufficient level with respect to the scope.
Timing/weather/season	No	The surveys were completed in suitable weather conditions in early summer.
Disturbances	No	There were no disturbances that affected the survey.
Intensity	No	The survey effort was adequate to meet the project scope.
Completeness	No	All of the survey area was surveyed, with spotlight transects approximately 30m apart.
Resources	No	The surveys were completed adequately.
Access problems	No	The site was within private property and accessible.

3 Desktop review

The survey area falls within the Cape to Capes subregion of the Swan Coastal Plain Management Zone of the Western Ringtail Possum Recovery Plan (Department of Parks and Wildlife 2017) and within the modelled distribution for of all three black cockatoo species (SEWPAC 2012), and. There are scattered records for WRP and all three black cockatoo species locally from the database searches (ALA 2024) (Birdlife Australia, 2024) (DBCA 2024). A western ringtail possum species profile is provided below. Refer to Harewood (2021) for background relating to black cockatoos (breeding and foraging requirements).

3.1 Black cockatoo survey (Harewood 2021)

In a targeted survey of the 20 ha site which included the current 8.55 survey area, Harewood noted the following:

- Most of the survey area has low habitat values which has resulted as a consequence of historical and ongoing disturbances such livestock grazing and firewood collecting. The survey area is almost completely covered with a jarrah – marri woodland/open forest composed of a sandy gravel substrate and contains little midstorey vegetation. Native ground cover vegetation is absent with introduced grasses dominating.
- The habitat tree assessment identified 915 trees within the survey area with a DBH of >50cm.
    - 851 did not contain hollows of any size.
    - 57 trees contained apparent or obvious hollows, all of which were assessed as being unlikely to be suitable for black cockatoos
    - 7 trees contained one or more hollows potentially suitable for black cockatoos to use for nesting purposes though none of the hollows showed evidence of use by black cockatoos.
- Evidence of all three of black cockatoos foraging with the survey area was observed
- No roost sites were identified within the survey area with the closest documented roost site being located about six kilometres north east of the survey area.
- The fauna habitats present are highly degraded. Much of the vegetation appears to be regrowth from historical clearing. The total fauna assemblage within the survey area itself is likely to be extremely depauperate as a consequence.

3.2 Western ringtail possum species profile

Western ringtail possum (WRP) (*Pseudocheirus occidentalis*)

CE (EPBC Act), CE (BC Act)

WRP populations mostly inhabit Peppermint and Peppermint-Tuart associations from Bunbury to Albany. The highest densities of WRP occur in the Swan Coastal Plain and South Coast (Biota 2019; Shedley et al. 2014). Peppermint leaves form the basis of the WRP diet in coastal areas, but when unavailable, the dominant myrtaceous species are preferred. In the inland forest, Jarrah and Marri are the main food source. Garden plant varieties are also exploited in urban areas. WRP also feed on new shoots, flowers, leaves and/or fruiting bodies from a range of flora including *Nuytsia floribunda, Acacia saligna, Hardenbergia comptoniana, Allocasuarina fraseriana, E. gomphocephala, E. rudis, Melaleuca viminea, M. cuticularis, M. rhaphiophylla, Kunzea glabrescens* and *Xylomelum occidentale* (Shedley and Williams 2014).

WRP use a range of nest and shelter sites to avoid predators and exposure to the weather. Dreys are constructed in the canopy if hollows are not available. Adequate nest and shelter sites are necessary components of good quality habitat (Jones 1994, Shedley and Williams 2014).

Fox predation is one of the main threats and causes of mortality to WRP (Wayne 2005) along with the loss and fragmentation of native vegetation. This is due to their high dependence on midstorey and overstorey vegetation for food, shelter and protection from predators.

In the Jarrah Marri forests, for example around Margaret River, the highest relative abundance occurs in areas with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation (DPaW 2014).

The survey area is within mapped extent of the three habitat categories determined by the Australian Government for WRP in the southern Swan Coastal Plain (DEWHA, 2009) in the *Significant impact*

guidelines for the vulnerable western ringtail possum (Pseudocheirus occidentalis) in the southern Swan Coastal Plain, but not recognised as an important area under the plan.

Critical habitat for the species as outlined in the Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan (Department of Parks and Wildlife, 2017) is as follows:

> Habitat critical to survival for western ringtail possums is not well understood, and is therefore based on the habitat variables observed where western ringtail possums are most commonly recorded. These appear to vary between key management zones. The common themes however are high nutrient foliage availability for food, suitable structures for protection/nesting, and canopy continuity to avoid/escape predation and other threats. Long-term survival of the species requires linkages between suitable habitat patches and as such habitat critical to survival incorporates this. Vegetation communities critical to the species include long unburnt mature remnants of peppermint (Agonis flexuosa) woodlands with high canopy continuity and high foliage nutrients (high in nitrogen and low toxin levels); jarrah (*Eucalyptus marginata*)/marri (*Corymbia calophylla*) forests and woodlands with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation; coastal heath, jarrah/marri woodland and forest, peppermint woodlands, myrtaceous heaths and shrublands, Bullich (*Eucalyptus megacarpa*) dominated riparian zones and karri forest. Any habitat where western ringtail possums occur naturally are considered critical and worthy of protection.

Biota (2020) undertook a regional survey of WRP which estimated a combined number of over 20,000 WRP within the areas surveyed, from three regional populations. The surveys targeted over 113,340 ha over 45 sites on the Swan Coastal Plain and identified 3,675 individual WRP. The survey area falls within the Cape to Cape subpopulation of the Swan Coastal Plain management zone in Biota (2020). Population estimates within the survey areas included the Swan Coastal Plain management zone at 9,270 individuals, the Southern Forest management zone at 7,500 individuals and the South Coast management zone at 3,340 WRP. These results were based on density sampling and provide an estimate of population size for the Cape to Capes subpopulation, along with providing context to other subpopulations.

Within the Cape to Cape subpopulation, 627 unique western ringtail possum were recorded at a rate of 3.95 individuals per km. The nearest survey area was Yelverton NP block located approximately six kilometres east of the survey area, which had an individual encounter rate 2.82 WRP / km. Based on the location of the survey area, WRP may occur at similar densities (0-1.5 km) if habitat was suitable, and they were to occur.

3.3 WRP habitat in a local context

In a local context, there are significant areas of native vegetation remaining within 12 kms of the project (the maximum distance travelled by foraging black cockatoos from nests/roosts) (SEWPAC 2012).

Thirty five percent of lands within 12 kms of the project are mapped as native vegetation (including regrowth with more than 20% cover) (SLIP 2024). A smaller proportion are reserved, with approximately 13 % within 12 kms being DBCA reserved land mostly to the south of the site and associated with the Southern Jarrah Forest. Much of the Swan Coastal Plain vegetation around the site has been historically

over cleared. (refer to Appendix A, Figure 3). It is noted that while much of these vegetation types include jarrah and marri as key structural species in the vegetation type and have potential to be suitable black cockatoo breeding, foraging and or roosting habitat, WRP are more selective and generally require more intact vegetation including the presence of a midstorey element.

Table 3-1 Areas of DBCA reserves and native vegetation remaining within 12 km of the survey area (SLIP 2024)

Foraging range	Total area (ha)	Reserved (DBCA) %, Area (ha)	Native vegetation remaining %, Area (ha)
12 km	46,820	13.3 % (6,235)	35.6 % (16,675)

4 Results and discussion

4.1 General habitat characteristics

The 8.55 ha survey area included a patch of jarrah (*Eucalyptus marginata*) – marri (*Corymbia calophylla*) Woodland / Open Forest over occasional sheoak (*Allocasuarina fraseriana*), bull banksia (*Banksia grandis*), and peppermint (*Agonis flexuosa*). Native understorey vegetation within the survey area was non-existent due being grazed (sheep). Broadly the vegetation types at the site could support WRP however they would be in low densities if present. Jarrah and marri may provide roosting (foraging and breeding) habitat for black cockatoos. The cleared and grazed areas have no habitat value for WRP or black cockatoos.

Photo 1 Typical vegetation within the survey area.

4.2 WRP results

The diurnal survey did not detect and evidence of WRP within the survey area through individuals, scats or dreys. The vegetation structure was only marginally suitable for WRP, given most of the midstorey vegetation which is preferred by WRP had been historically cleared. No WRP were observed on either survey night. The nocturnal surveys did identify 11 CBP on 5th February and five CBP on 7th February (Appendix A, Figure 4). A fox was observed during the nocturnal survey with fox predation being one of the key risks to WRP (Parks and Wildlife 2017).

4.3 Black cockatoo results

As noted, targeted black cockatoo surveys were limited to observations of birds and roosts. Two groups of FRTBC however were observed roosting within the survey area on the night of the 5th February 2024. They included a male and two females at one location (40cm DBH marri) and approximately 5-6 FRTBCs at the second roost (60cm DBH jarrah), within the northern and central parts of the site respectively (Figure 4, Appendix A). Very light whitewash was seen under the jarrah and no evidence of roost (down, clipped branches or whitewash) under the marri. A follow up dusk watch was conducted on the evening of 7th February 2024, with each of the previous roost trees checked – there was no evidence of any black cockatoos using the patch for roosting otherwise on the night of the 7th. It is considered unlikely that FRTBC (or Baudins or Carnaby's cockatoos) are using the site as a permanent roost.

5 Conclusions and Recommendations

A summary of the black cockatoo and WRP habitat values are provided below:

- The survey area included 8.55 ha of jarrah (*Eucalyptus marginata*) – marri (*Corymbia calophylla*) Woodland / Open Forest over occasional sheoak (*Allocasuarina fraseriana*), bull banksia (*Banksia grandis*), and peppermint (*Agonis flexuosa*).
- Impacts to WRP are likely to be negligible given habitat suitability was marginal and no animals or evidence of WRP were observed.
- Key impacts are likely to be associated with clearing of DBH trees, loss of hollows and black cockatoo foraging habitat.
- Two groups of FRTBC however were observed roosting within the survey area on the night of the 5th February 2024. They included a male and two females at one location (40cm DBH marri) and approximately 5-6 FRTBCs at the second roost (60cm DBH jarrah), within the northern and central parts of the site respectively. Very light whitewash was seen under the jarrah and no evidence of roost activity under the marri. A follow up dusk watch was conducted on the evening of 7th February 2024, with each of the previous roost trees checked – there was no evidence of any black cockatoos using the patch for roosting otherwise on the night of the 7th. It is considered unlikely that FRTBC (or Baudins or Carnaby's cockatoos) are using the site as a permanent roost.
- The vegetation within the survey area is considered high quality black cockatoo foraging habitat.

- In a local context, there are significant areas of native vegetation remaining within 12 kms of the project with 35 % of lands within 12 kms of the project mapped as native vegetation (SLIP 2024). Approximately 13 % within 12 kms are DBCA reserves.

The following recommendations are made:

- Clearing should be minimised, if possible.
- Final impact footprints should be checked against the significant impact criteria for black cockatoos and WRP and other matters of NES to determine the need to refer the project to DCCEEW.
- Clearing should be avoided during the spring breeding period (September to January included).
- An authorised fauna spotter should be present during any clearing of hollow bearing trees in particular.

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Note not all referenced in the text.

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Appendix A Figures

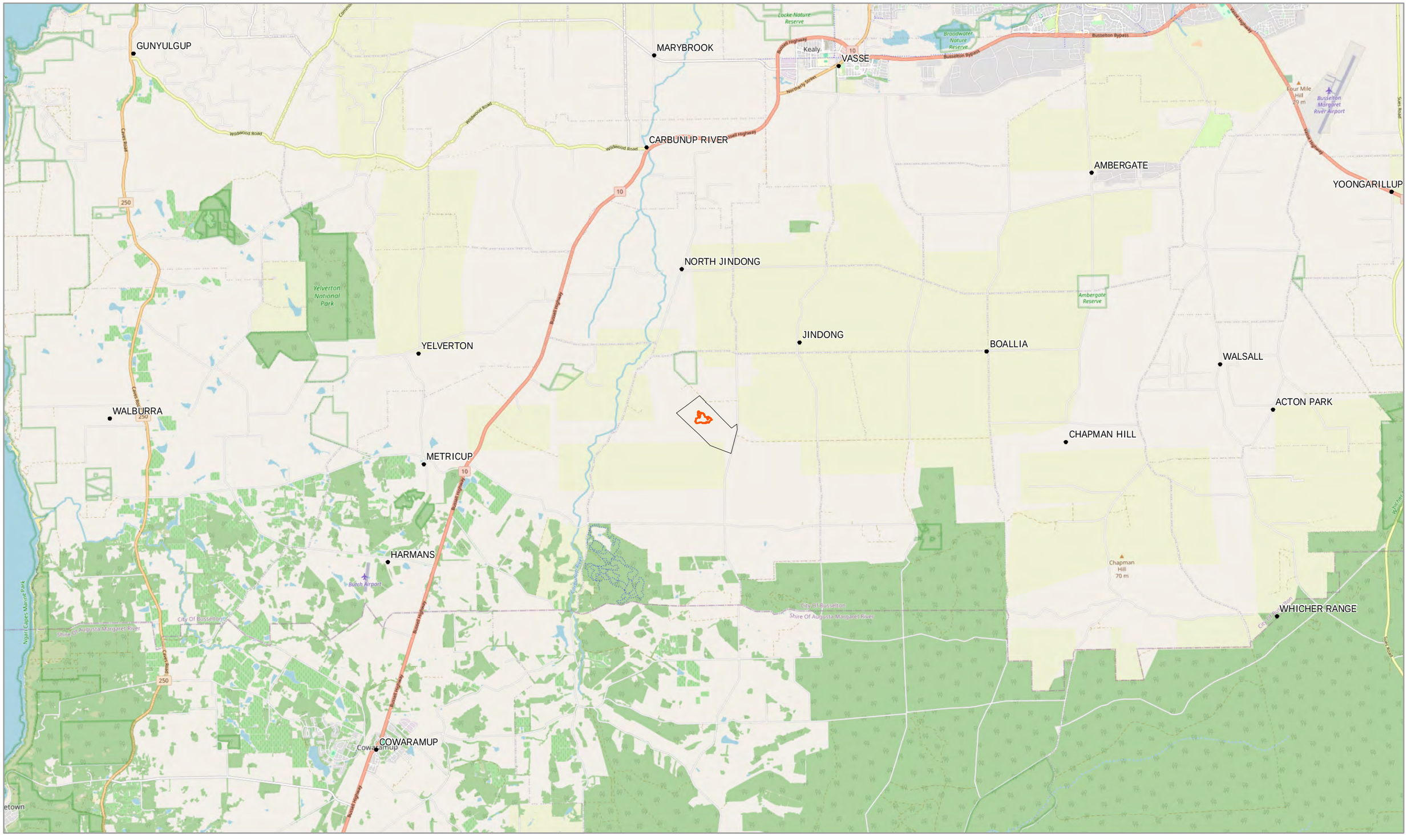
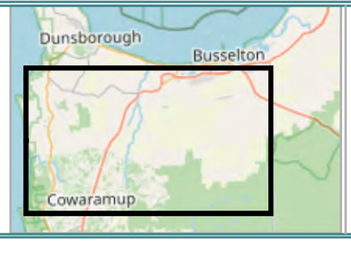


FIGURE 1 LOCATION MAP

Survey area

Lot 4201 Jindong Treeton Road, Jindong

LOT 4201 JINDONG-TREETON RD, JINDONG



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GRID: GDA zone 50

N

Ref: SW494
Date: 13/02/2024 Author: SP

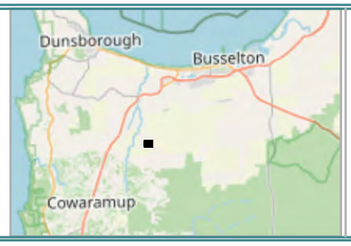
Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)

SW environmental
www.swenvironmental.com.au

FIGURE 2 SURVEY AREA

Survey area

LOT 4201 JINDONG-TREETON RD, **JINDONG**



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GRID: GDA zone 50

SW environmental

www.swenvironmental.com.au

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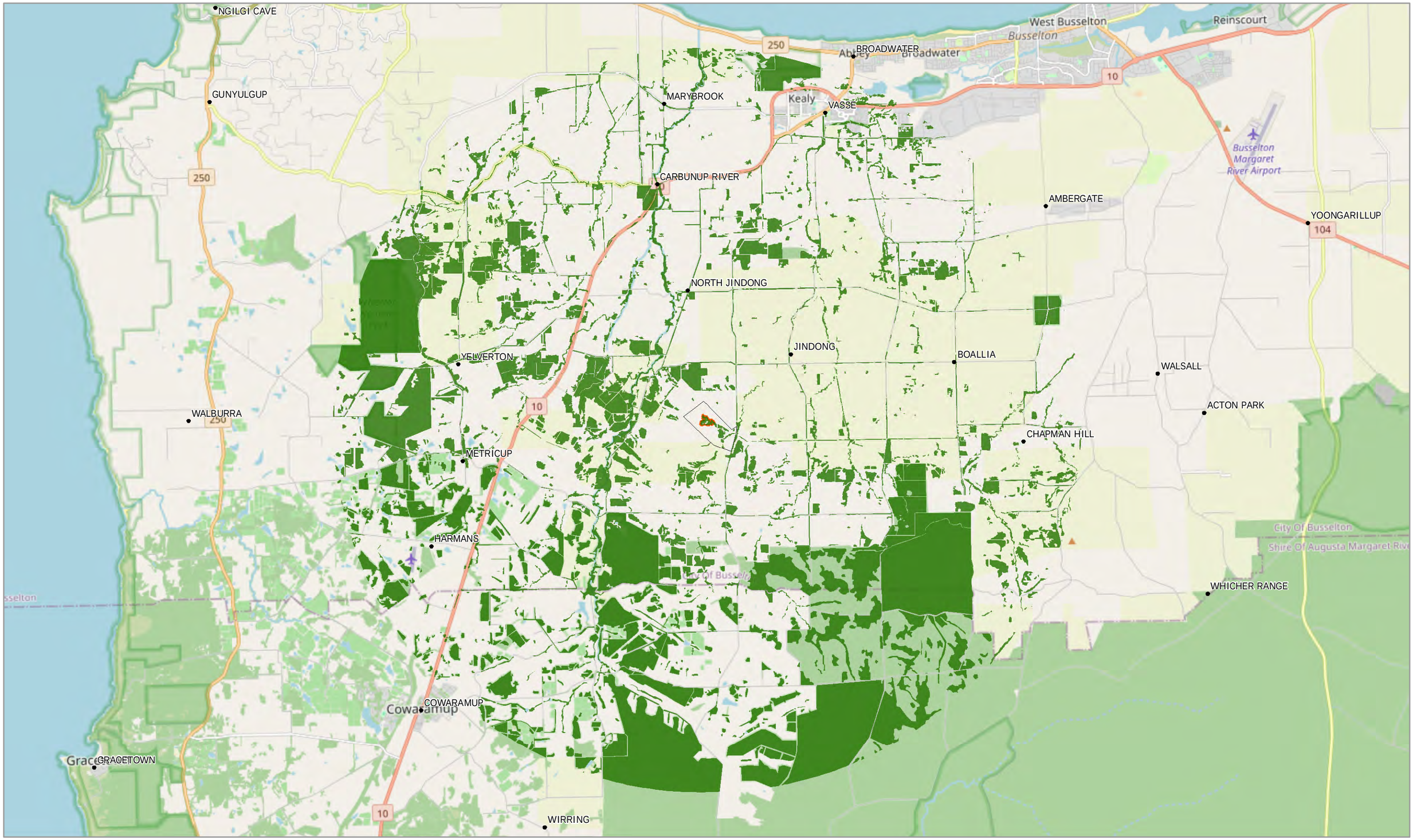
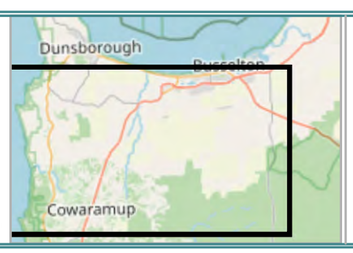


FIGURE 3 VEGETATION REMAINING WITHIN 12 KM OF THE SURVEY AREA

LOT 4201 JINDONG-TREETON RD, JINDONG

- Native vegetation remaining within 12 km of the survey area (SLIP 2024)
- Survey area
- Lot 4201 Jindong Treeton Road, Jindong



A3 @ 1:115000

0 0.5 1 2 km

GRID: GDA zone 50

N

SW environmental

www.swenvironmental.com.au

Ref: SW494
Date: 13/02/2024 Author: SP

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)

FIGURE 4 WRP NOCTURNAL EFFORT AND RESULTS

LOT 4201 JINDONG-TREETON RD, JINDONG

Ref: SW494
Date: 13/02/2024 Author: SP

Taxon, Abundance, Date

- Common brushtail possum (1) 5/02/2024
- Common brushtail possum (2) 5/02/2024
- Common brushtail possum (1) 7/02/2024
- Black cockatoo roost (FRTBC) 5th Feb 2024 only

Nocturnal survey transect

- 5 th February 2024
- 7 th February 2024
- Survey area

A3 @ 1:2000

0 10 20 40 m

GRID: GDA zone 50

N

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