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Flora and Fauna Significance Assessment

North Jindong Road, North Jindong

22 November 2021

Prepared for:
City of Busselton



Limitations Statement

This report has been prepared in accordance with the Agreement between Ecosystem Solutions Pty Ltd and the City of Busselton (“Client”). It has been solely prepared to facilitate road widening at Jindong Road North, Jindong (“Site”).

Information

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City of Busselton

North Jindong Road, North Jindong

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Contents

Document Control	3
Contents	4
1 Introduction	8
2 Site Details	9
3 Flora and Vegetation	11
3.1 Desktop Analysis	11
3.1.1 Landscape, Soils and Vegetation	11
3.1.2 Threatened and Priority Flora	17
3.1.3 Threatened and Priority Ecological Communities	17
3.2 Results	17
3.2.1 Threatened and Priority Flora	17
3.2.2 Vegetation Communities	31
3.2.3 Vegetation Condition	31
3.3 Field Survey	32
4 Fauna	34
4.1 Desktop Analysis	34
4.2 Field Survey	38
4.3 Results	39
5 Survey Constraints	55
6 Significance	56
7 Summary and Recommendations	62
8 References (not all cited)	63

List of Figures

Figure 1	Site Plan for the northern portion of North Jindong Road	10
Figure 2	Soil Landscape North Jindong Road (north of Site)	13
Figure 3	Soil Landscape North Jindong Road (south of Site).	14
Figure 4	Vegetation Complex North Jindong Road (north of Site).	15
Figure 5	Vegetation Complex North Jindong Road, Jindong (south of Site)	16
Figure 6	Loxocarya magna (Priority 3 Flora) populations identified along North Jindong Road, Jindong	27
Figure 7	Possible Conservation Significant Flora locations - Loxocarya sp., most likely L. magna (Priority 3).	28
Figure 8	Possible Conservation Significant Flora locations - Loxocarya sp., most likely L. magna (Priority 3).	29
Figure 9	Possible Conservation Significant Flora locations - Loxocarya sp., most likely L. magna (Priority 3).	30
Figure 10	Relevé locations at North Jindong Road, Jindong	33
Figure 11	Western Ringtail Possum and Drey Locations - Northern Extent	41
Figure 12	Western Ringtail Possum and Drey Locations - Southern Extent	42
Figure 13	Significant Trees surveyed & Black Cockatoos at North Jindong Road	43
Figure 14	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	44
Figure 15	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	45
Figure 16	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	46
Figure 17	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	47
Figure 18	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	48
Figure 19	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	49
Figure 20	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	50
Figure 21	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	51
Figure 22	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	52
Figure 23	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	53
Figure 24	Significant Trees surveyed & Black Cockatoos continued at North Jindong Road	54

List of Tables

Table 1	Conservation significant flora species recorded within 10 km of the Site.	18
Table 2	Conservation significant fauna species recorded within 10 km of the Site.	35
Table 3	Fauna survey times and observations	39
Table 4	Significant Impact Criteria for Key Protected Species	57
Table 5	Assessment of Significant Impact to Black Cockatoo	60

Appendices

Appendix A	NatureMap Extract
Appendix B	EPBC Act Protected Matters Report
Appendix C	Conservation Codes for Western Australian Flora and Fauna (DBCA, Jan 2018)
Appendix D	Relevé Field Sheets
Appendix E	Significant Trees

1 Introduction

Ecosystem Solutions were contracted by the City of Busselton to survey a portion of North Jindong Road, North Jindong (SLK 0.38 to SLK 6.20, hereafter called the **“Site”**) **within the City of Busselton**, to document the presence and distribution of flora and fauna to facilitate the widening of this portion of the road.

The purpose of this report is to identify flora, fauna and assess vegetation within the Site to best protect the ecological valued of the Site in widening of the road.

The fauna species specifically targeted were the Western Ringtail Possum (*Pseudocheirus occidentalis*) and signs or suitable habitat for Black Cockatoo Species (*Calyptorhynchus baudinii*, *C. latirostris* and *C. banksii subsp. naso*) as well as any other significant fauna likely to occur within the proposed area of disturbance.

The flora elements specifically targeted includes Threatened and Priority species and Threatened or Priority Ecological Communities.

The flora and fauna assessments were limited to observing the species present during the time of the surveys.

2 Site Details

The Site is a portion of North Jindong Road, North Jindong approximately 5.82 km in length, within the City of Busselton (Figure 1).

The Site includes areas of remnant vegetation and previously cleared areas. Located at approximately 35 m AHD (Australian Height Datum) to the south, the Site slopes to the north at a lower elevation of 15 m AHD.

The surrounding area consists of rural lots with extensive areas that have been cleared for agricultural purposes, with small patches of remnant and planted vegetation.



Figure 1 Site Plan for the northern portion of North Jindong Road

3 Flora and Vegetation

3.1 Desktop Analysis

3.1.1 Landscape, Soils and Vegetation

Soil-Landscape systems are areas with recurring patterns of landforms, soils and vegetation and are used by the Department of Agriculture to maintain a consistent approach to land resource surveys.

Most of the Site is located within the Pinjarra Zone, consisting of *alluvial deposits (early Pleistocene to recent) between the Bassendean Dunes Zone and the Darling Scarp, colluvial and shelf deposits adjacent to the Darling Scarp*.

Soils of this zone are typically clayey to sandy alluvial soils with wet areas (Figure 2 and 3) (DPIRD, 2019). These soils are further classified as soil systems.

The Abba System represents the soils of the Site. This system is located on the southern Swan Coastal Plain and consists of deep, grey, sandy duplex and wet soils on poorly drained flats (DPIRD, 2019).

Within the Site, there are five sub-soil systems.

- Abba Flats Phase (213AbAB1) - Flats and low rises with sandy grey-brown duplex (Abba) and gradational (Busselton) soils.
- Abba Gentle Slopes (213AbAB2) - Very gently sloping terrain. Pale sandy earths, Semi-wet soils, Pale deep sands and Duplex sandy gravels
- Abba Vales Phase (213AbABv) - Small narrow depressions along drainage lines, alluvial soils.
- Abba Wet Flats (213AbABw) Winter wet flats and slight depressions with sandy grey-brown duplex (Abba) and gradational (Busselton) soils.
- Jindong Flats Phase (213AbJD1) - Well drained flats with sandy gradational, grey brown (Busselton) soils, some red brown sands and loams (Marybrook Soils).

The vegetation mapping of Havel and Matiske (2000) identifies the Site (Figure 4 and 5) as being located on the Abba Vegetation Complex (Heddle, Loneragan and Havel, 1980).

Updated Heddle et.al (1980) vegetation complex descriptions by Webb, Kinloch, Keighery & Pitt (2016) define the Abba Complex vegetation

- Abba Complex - is dominated by an open-forest of marri, jarrah, banksia and a woodland of marri with the presence of the occasional mountain gum adjacent to the Whicher Scarp. Common plant species include *Nuytsia floribunda*, *Kingia australis*, *Persoonia longifolia* and

Banksia grandis. The low-lying areas along the creeks and on the flood plains support a woodland of *E. rudis*, *Melaleuca* spp., with common species including *M. preissiana*, *M. raphiophylla*, *Regelia ciliata*, *Hypocalymma angustifolia*, *Pericalymma ellipticum*, *Hakea varia*, *Acacia saligna*, *Astartea scoparia*, *A. leptophylla*, *Viminaria juncea* and sedges of the *Chaetanthus*, *Schoenus*, *Hypolaena* and *Anarthria* genera.

Vegetation Complex statistics for the Swan Coastal Plain indicate the vegetation extent remaining of the Abba Complex to be 6.7%. (Webb, et al., 2016).

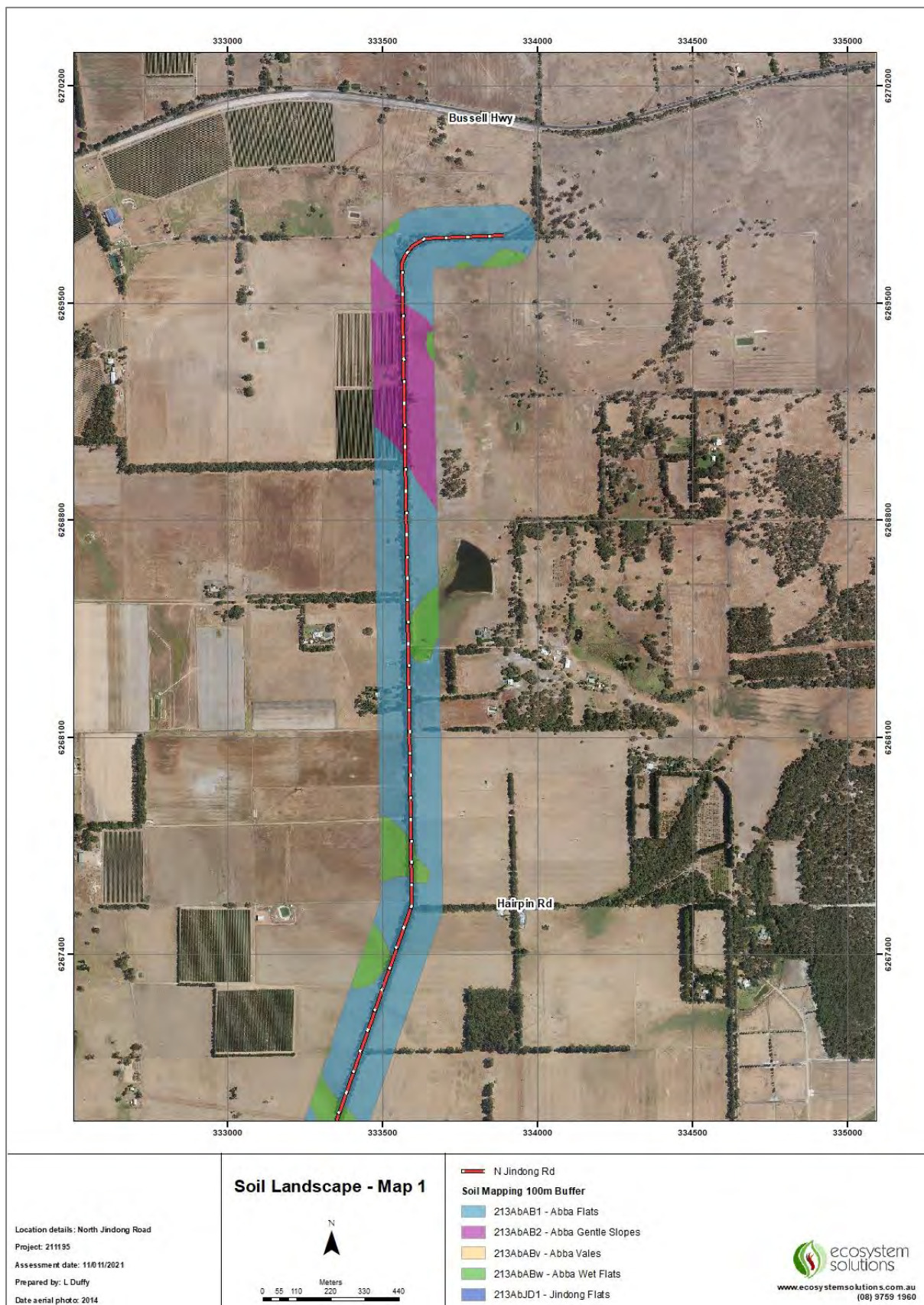


Figure 2 Soil Landscape North Jindong Road (north of Site)

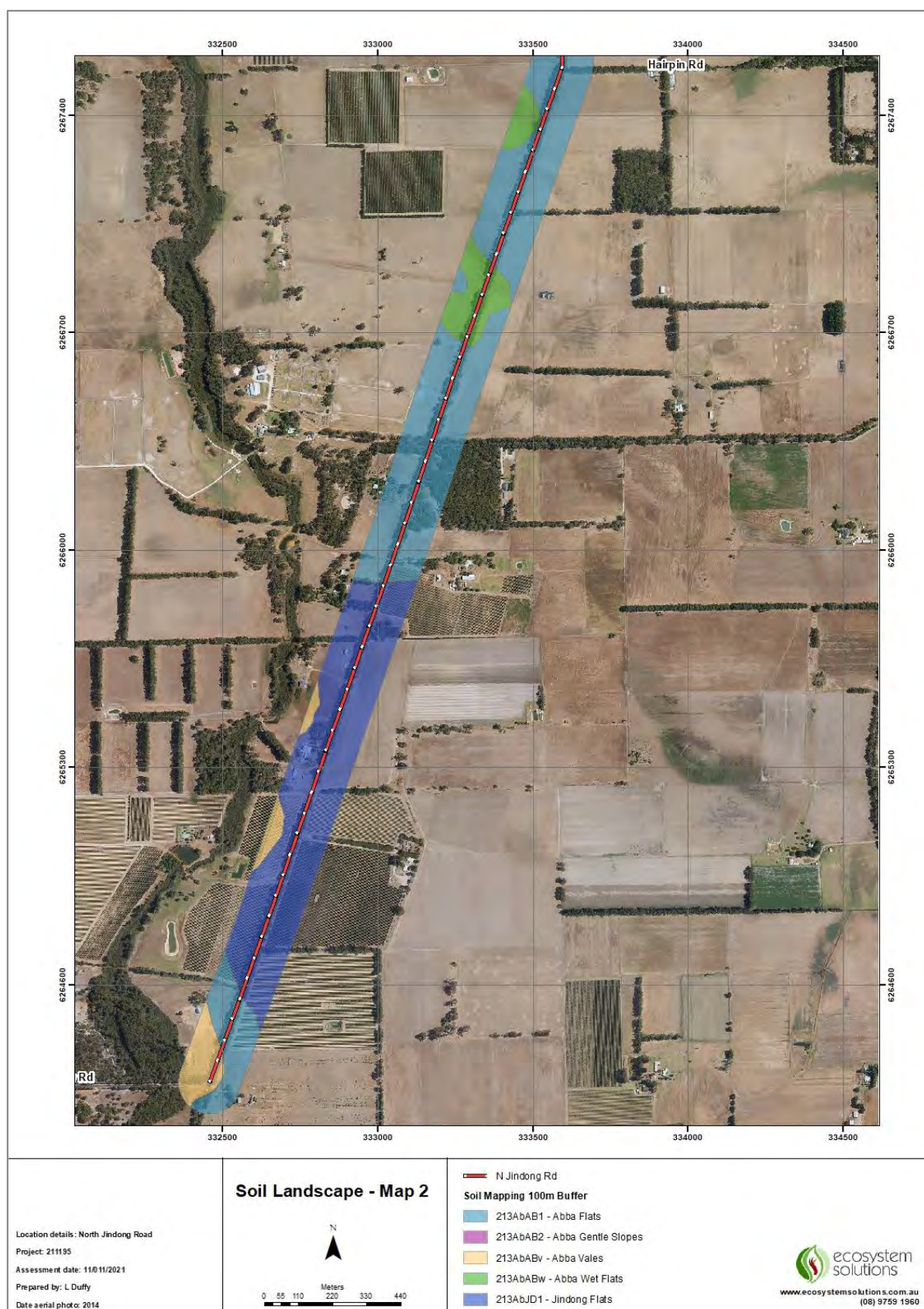


Figure 3 Soil Landscape North Jindong Road (south of Site).



Figure 4 Vegetation Complex North Jindong Road (north of Site).

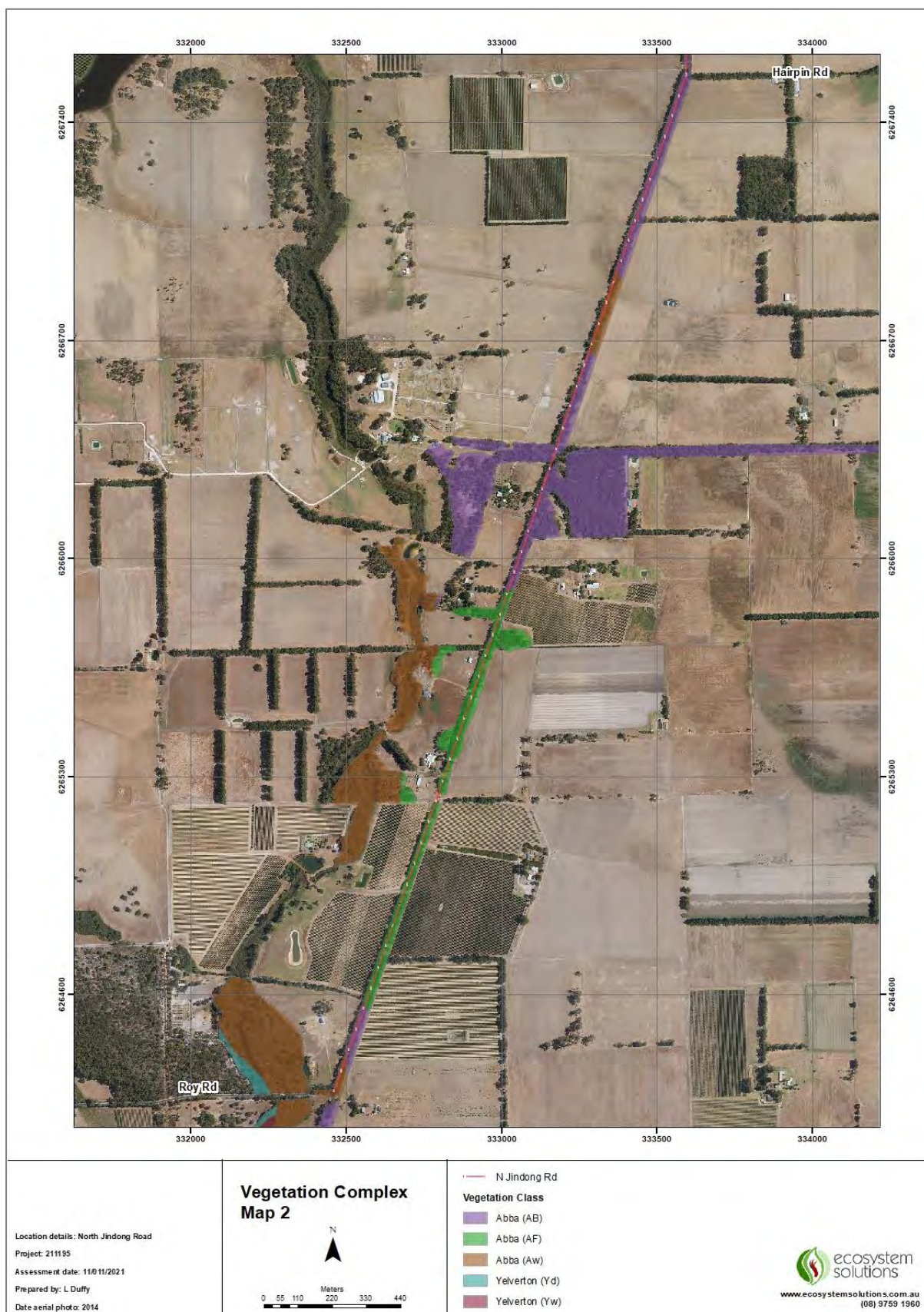


Figure 5 Vegetation Complex North Jindong Road, Jindong (south of Site)

3.1.2 Threatened and Priority Flora

Extracts from the Department of Biodiversity, Conservation and Attractions (DBCA) Threatened Species Database, their Nature Base Database (Appendix A) and the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Search Tool (Appendix B) were obtained to determine if records of any rare or threatened flora are known within the boundary or in vicinity of the Site. A reconnaissance survey of the results of the desktop study was conducted, consistent with a Reconnaissance Survey Flora and Vegetation Survey (EPA, 2016).

Species of flora and fauna are protected as defined in Table 1, have been determined that their populations are restricted geographically or threatened by local processes. DBCA recognizes these threats of extinction and consequently applies regulations towards population and species protection. Protected species are gazetted under the *Biodiversity Conservation Act (2016)* and therefore it is an **offence to “take” or damage rare flora without Ministerial approval. The act defines “to take” as “... to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means” (Government of Western Australia, 2010).**

Appendix C presents the definitions for conservation codes under the *Biodiversity Conservation Act (2016)* which was previously the *Wildlife Conservation Act 1950*.

3.1.3 Threatened and Priority Ecological Communities

An ecological community is a naturally occurring biological assemblage that occurs in a particular habitat. A Threatened Ecological Community (TEC) is one which is found to fit into one of the following categories: Presumed Totally Destroyed; Critically Endangered; Endangered, or Vulnerable.

Possible TECs that do not meet survey criteria are added to the Department of Parks and Wildlife’s Priority Ecological Community Lists, under Priority 1, 2 and 3. These are ranked in order of priority for survey and/or the definition of the community and evaluation of its conservation status.

3.2 Results

3.2.1 Threatened and Priority Flora

The DBCA Database/s identified 14 Threatened species, which are rare or are likely to become extinct, and 30 Priority listed species within a 10 km radius of the Site. The Protected Matters Search Tool identified 23 threatened species, within a 10 km radius of the Site. Four of those are considered Critically Endangered species, thirteen Endangered species and six Vulnerable species (Appendix A & B). An extract from the DBCA database was also obtained. The results for all database searches are summarised in Table 1.

Table 1 Conservation significant flora species recorded within 10 km of the Site.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Caladenia procera</i>	Herb	Alluvial loamy flats.	Threatened	Critically Endangered	Species or species habitat known to occur within area. Naturemap database closest record is approximately 2.9km east of the site collected in 2007.
<i>Grevillea brachystylis subsp. grandis</i>	Shrub	Narrow band, 10 km long, of degraded habitat at the base of Whicher Scarp. Brown lateritic clay loam soils in Marri woodland.	Threatened	Critically Endangered	Species or species habitat known to occur within area. Naturemap database closest record is approximately 5.2km south of the site collected in 2002.
<i>Banksia nivea subsp. uliginosa</i>	Shrub	Red, sandy, shallow loams over ironstone in thick scrub, in winter wet Southern and Scott ironstones.	Threatened	Endangered	Species or species habitat known to occur within area. Naturemap database closest record is approximately 9.4km northeast of the site collected in 1996.
<i>Caladenia busselliana</i>	Herb	Sandy loam. Winter-wet swamps.	Threatened	Endangered	Species or species habitat known to occur within area. Naturemap database closest record is approximately 5.4km west of the site collected in 2012.
<i>Caladenia viridescens</i>	Herb	Loam, grey sand.	Threatened	Endangered	Species or species habitat known to occur within area. Naturemap database closest record is approximately 9.9km east of the site collected in 2014.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Verticordia densiflora</i> <i>var. pedunculata</i>	Shrub	Light yellow or grey sands in low lying winter-wet areas.	Threatened	Endangered	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 6.3km southeast of the site collected in 2011.
<i>Verticordia plumosa</i> <i>var. ananeotes</i>	Shrub	Light yellow or grey sands in low lying winter wet areas.	Threatened	Endangered	Species or species habitat known to occur within area. Naturemap database closest record is approximately 6km south of the site.
<i>Verticordia plumosa</i> <i>var. vassensis</i>	Shrub	Variety of sands and swampy clay soils in mostly winter-wet flats and depressions.	Threatened	Endangered	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 5km east of the site collected in 1950.
<i>Banksia squarrosa</i> <i>subsp. argillacea</i>	Shrub	White/grey sand, gravelly clay or loam. Winter-wet flats, clay flats.	Threatened	Vulnerable	Species or species habitat known to occur within area. Naturemap database closest record is approximately 6.4km south of the site.
<i>Chamelaucium</i> sp. <i>S</i> <i>coastal plain</i> (<i>R.D. Royce 4872</i>)	Shrub	Winter-wet sandy clay sites in low woodlands and heathland.	Threatened	Vulnerable	Species or species habitat known to occur within area. Naturemap database closest record is approximately 2.9km south of the site collected in 1997.
<i>Daviesia elongata</i>	Shrub	Sand, laterite.	Threatened	Vulnerable	Species or species habitat known to occur within area Naturemap database closest record is approximately 5.8km west of the site collected in 1998.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Drakaea micrantha</i>	Herb	White-grey sand	Threatened	Vulnerable	Species or species habitat known to occur within area. Naturemap database closest record is approximately 10km southwest of the site collected in 2007.
<i>Caladenia excelsa</i>	Herb	White, grey or brown sands, sandy loams, loam, clay, laterite and granite. Hilltops, ridges, slopes, swales and low plains in deep pale yellow or grey sandy soils.	Threatened		Naturemap database closest record is approximately 13.4km southwest of the site collected in 2011.
<i>Hemigenia ramosissima</i>	Shrub	Lactric soils, clay. Granite Outcrops	Threatened		Naturemap database closest record is approximately 10.7km east of the site collected in 1992.
<i>Brachyscias verecundus</i>	Herb	Winter-wet clays over ironstone		Critically Endangered	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 26.2km east of the site.
<i>Lambertia echinata</i> <i>subsp. occidentalis</i>	Shrub	White sandy soils over laterite, orange/brown-red clay over ironstone. Flat to foothills, winter wet sites		Critically Endangered	Species or species habitat known to occur within area. Naturemap database closest record is approximately 9.6km northeast of the site.
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)	Shrub	Sandy with lateritic pebbles. Near winter wet flats, in low woodland with weedy grasses		Critically Endangered	Species or species habitat may occur within area. Naturemap database closest record is approximately 34km northeast of the site.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Caladenia hoffmanii</i>	Herb	Dense heath in clay loams on hillslopes and near breakaways and granite outcrops (Hopper & Brown, 2000).		Endangered	Species or species habitat may occur within area. Naturemap database closest record is approximately 40.3km southeast of the site collected in 1984.
<i>Caladenia huegelii</i>	Herb	Grey or brown sand, clay loam		Endangered	Species or species habitat may occur within area. Naturemap database closest record is approximately 4.2km northeast of the site collected in 1982.
<i>Drakaea elastica</i>	Herb	White or grey sand, low lying situations adjoining winter-wet swamps.		Endangered	Species or species habitat may occur within area. Naturemap database closest record is approximately 12km east of the site collected in 2009.
<i>Eucalyptus x phylacis</i>	Tree	Laterite, loam over granite. Coastal areas.		Endangered	Species or species habitat may occur within area. Naturemap database closest record is approximately 17km northwest of the site collected in 1988.
<i>Gastrolobium papilio</i>	Shrub	Sandy clay over ironstone and laterite. Flat plains		Endangered	Species or species habitat may occur within area. Naturemap database closest record is approximately 17.6km east of the site.
<i>Petrophile latericola</i>	Shrub	Winter-wet flats on red sandy clay over ironstone		Endangered	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 26.1km east of the site collected in 2019.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Diuris micrantha</i>	Herb	Dark, grey to blackish, sandy clay loams in winter wet depressions or swamps.		Vulnerable	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 68.5km northeast of the site collected in 2011.
<i>Tetraria australiensis</i>	Herb	Sand / sandy loam		Vulnerable	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 7.7km southeast of the site.
<i>Andersonia ferricola</i>	Shrub	White sand or red-brown loam over ironstone, seasonally wet flats	P1		Naturemap database closest record is approximately 11.8km southwest of the site collected in 1992.
<i>Schoenus sp. Jindong</i> (R.D. Royce 2485)	Sedge	Red loamy soils. Stream banks.	P1		Naturemap database closest record is approximately 6.8km southwest of the site.
<i>Actinotus whicheranus</i>	Shrub	White sand pockets over laterite	P2		Naturemap database closest record is approximately 11.6km southwest of the site collected in 2007.
<i>Leucopogon sp.</i> <i>Busselton</i> (D. Cooper 243)	Shrub	Variety of habitats.	P2		Naturemap database closest record is approximately 7.6km southeast of the site.
<i>Acacia inops</i>	Shrub	Black peaty sand, clay, swamps, creeks. Grows along watercourses and swamps	P3		Naturemap database closest record is approximately 24.5km west of the site.
<i>Acacia lateriticola</i> var. <i>Glabrous variant</i> (B.R.Maslin 6765)	Shrub	Lateritic soils	P3		Naturemap database closest record is approximately 6.9km east of the site.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Boronia capitata</i> subsp. <i>gracilis</i>	Shrub	White/grey or black sand. Winter wet swamps or hillslopes	P3		Naturemap database closest record is approximately 6.8km southwest of the site.
<i>Calothamnus lateralis</i> var. <i>crassus</i>	Shrub	Clay, winter wet areas	P3		Naturemap database closest record is approximately 11.6km southwest of the site collected in 1997.
<i>Chordifex gracillior</i>	Herb	Wet heathlands and sedgelands. Peaty sand. Swamps.	P3		Naturemap database closest record is approximately 4.3km south of the site.
<i>Cyathochaeta teretifolia</i>	Sedge	Grey sand, sandy clay, swamps, creek edges.	P3		Naturemap database closest record is approximately 4.5km south of the site.
<i>Grevillea brachystylis</i> subsp. <i>brachystylis</i>	Shrub	Black sand, sandy clay. Swampy situations.	P3		Naturemap database closest record is approximately 1.7km north of the site.
<i>Hakea oldfieldii</i>	Shrub	Red clay or sand over laterite seasonally wet flats. Ironstone.	P3		Naturemap database closest record is approximately 4.3km south of the site.
<i>Isopogon formosus</i> subsp. <i>dasylopes</i>	Shrub	Sand, sand clay, gravelly sandy soils over laterite. Swampy areas	P3		Naturemap database closest record is approximately 3.1km north of the site.
<i>Johnsonia inconspicua</i>	Herb	White-grey or black sand. Low dunes, winter wet flats	P3		Naturemap database closest record is approximately 9.1km southwest of the site collected in 1987.
<i>Lasiopetalum laxiflorum</i>	Shrub	White grey sand, clay over laterite	P3		Naturemap database closest record is approximately 4.6km southwest of the site.
<i>Lepyrodia heleocharoides</i>	Herb	Moist peaty sand. Dry or seasonally inundated heath or woodland, swamps.	P3		Naturemap database closest record is approximately 5.2km southwest of the site collected in 1993.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Loxocarya magna</i>	Herb	Sand, loam, clay, ironstone, seasonally inundated or damp habitats.	P3		Naturemap database closest record is approximately 2.6km south of the site collected in 2000.
<i>Pimelea ciliata</i> subsp. <i>longituba</i>	Shrub	Grey sand over clay loam	P3		Naturemap database closest record is approximately 6.5km south of the site collected in 1950.
<i>Pultenaea pinifolia</i>	Shrub	Loams or clay, floodplains, swampy areas	P3		Naturemap database closest record is approximately 1.1km northeast of the site.
<i>Schoenus benthamii</i>	Herb	White grey sand, winter-wet flats, swamps	P3		Naturemap database closest record is approximately 7.8km southeast of the site.
<i>Synaphea decumbens</i>	Shrub	Sand over laterite	P3		Naturemap database closest record is approximately 9.6km northwest of the site collected in 1999.
<i>Synaphea hians</i>	Shrub	Sandy soils	P3		Naturemap database closest record is approximately 4.6km south of the site.
<i>Synaphea petiolaris</i> subsp. <i>simplex</i>	Shrub	Sandy soils, flats, winter wet areas	P3		Naturemap database closest record is approximately 2.9km south of the site collected in 1997.
<i>Acacia flagelliformis</i>	Shrub	Sandy soils and winter-wet areas	P4		Naturemap database closest record is approximately 2.9km north of the site.
<i>Acacia semitrullata</i>	Shrub	White/grey sands, sandplains and swampy areas	P4		Naturemap database closest record is approximately 5.5km west of the site collected in 1993.

Species	Lifeform	Habitat	DCBA Conservation Code	EPBC Act Status	Likelihood of occurrence in the proposed development area
<i>Calothamnus quadrifidus subsp. teretifolius</i>	Shrub	Winter-wet areas	P4		Naturemap database closest record is approximately 2.8km south of the site collected in 1997.
<i>Ornduffia submersa</i>	Aquatic Herb	Heavy clay soils that are generally inundated from winter to mid-summer	P4		Naturemap database closest record is approximately 3.4km northeast of the site collected in 1985.
<i>Stylidium leeuwinense</i>	Herb	Grey to black, peaty sand. Winter-wet habitats and depressions. Shrubland, heath, sedgeland, or low woodland	P4		Naturemap database closest record is approximately 8.2km southwest of the site.
<i>Thysanotus glaucus</i>	Herb	White, grey or yellow sand, sandy gravel	P4		Naturemap database closest record is approximately 9.2km northeast of the site.
<i>Verticordia lehmannii</i>	Shrub	Sandy clay, winter wet flats	P4		Naturemap database closest record is approximately 3.7km south of the site.

There were no Threatened flora species recorded during the field surveys. Seven *Loxocarya* sp. within the Site was unable to be confidently identified as either *L. cinerea*, or *L. magna* (Priority 3). There is difficulty in identifying *L. magna* from *L. cinerea*, in part due to the dioecious nature of this genus. The critical distinguishing features are present only in the female inflorescence although height difference can be used, with *L. cinerea* described as being 40-80cm in height and *L. magna* 70-100cm. Both the WA Herbarium (M. Hislop, pers comm 20/10/2021) and the DBCA Southwest Regional Botanist (A. Webb, pers comm 26/10/2021) agree specimens and photographs **provided are ‘most likely’** *L. magna*, based on the height (125 and 130 cm) and ironstone occurrence in proximity to the Site (Figure 6). Locations are illustrated in Figures 7 to 9.



Figure 6 *Loxocarya magna* (Priority 3 Flora) populations identified along North Jindong Road, Jindong



Figure 7 Possible Conservation Significant Flora locations - *Loxocarya* sp., most likely *L. magna* (Priority 3).



Figure 8 Possible Conservation Significant Flora locations - *Loxocarya* sp., most likely *L. magna* (Priority 3).



Figure 9 Possible Conservation Significant Flora locations - *Loxocarya* sp., most likely *L. magna* (Priority 3).

3.2.2 Vegetation Communities

The Protected Matters Search Tool and DBCA database search identified four EBPC Act listed Threatened Ecological Communities as occurring within 10km of the Site;

- Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered)
- Shrublands on southern Swan Coastal Plain ironstones (Endangered)
- Subtropical and Temperate Coastal Saltmarsh (Vulnerable)
- Tuart (*Eucalyptus gomphocephala*) Woodlands and Forest of the Swan Coastal Plain ecological community (Critically Endangered)

An extract of the Threatened and Priority Ecological Community dataset was also obtained from DBCA, which included an additional Threatened Ecological Community listed under the BC Act and a Priority Ecological Community, not listed under the Act:

- SCP1b - *Corymbia calophylla* woodlands on heavy soils of the Swan Coastal Plain (TEC)
- Whicher Scarp B2 - West Whicher Scarp Banksia attenuata woodland (PEC)

It is likely the Site contains areas of the Threatened Ecological Community (Vulnerable) SCP1b, *Corymbia calophylla* woodlands on heavy soils of the Swan Coastal Plain (SCP1b). The TEC is known to occur <1km from the Site and some associated species of this TEC have been observed within the Site. Confirmation of the TEC presence and TEC boundaries so cannot be confirmed at this time due to the degraded condition of the vegetation.

The vegetation within the Site is not characteristic of any other Threatened or Priority Ecological Community.

3.2.3 Vegetation Condition

Utilising the scale of condition developed by Keighery (1994, Table 4), vegetation within the Site was ranked from Degraded to Completely Degraded. The vegetation within the road reserve has been severely impacted by disturbance, with signs of clearing, historic grazing and the presence of invasive weeds.

3.3 Field Survey

Site surveys were undertaken on 14 September, 5 and 14 October, 1 and 2 November by Kelly Lamp (B.Sc Hons. Nat Rs Mgmt. , FB62000182, TFL 54-2021), Lorraine Duffy (B.Sc Env Biology, B.Arts Geo, FB62000280, TFL 53-2021), Danae Plowman (B.Sc Pst Grad Dip. Engy & Env, FB62000342) and Dani Cuthbert (Dip Bus & Dip TM) to record all significant trees and any conservation significant species.

The Site was walked in a systematic manner, focusing on the proposed areas of disturbance. Zones with consistent vegetation structure and composition were noted and the main species in each of the strata were identified and recorded through relevés (Figure 10, Appendix D). All potentially suitable habitats within the Site were systematically searched for significant flora or vegetation, with specific targets being based on the Department of Biodiversity Conservation and Attractions database records.



Figure 10 Releve locations at North Jindong Road, Jindong

4 Fauna

4.1 Desktop Analysis

The conservation status of fauna within Western Australia is determined by criteria outlined within two acts of legislation: Commonwealth EPBC Act 1999 and the State-based Western Australian *Biodiversity Conservation Act 2016* (WA). The conservation codes for fauna under the *Biodiversity Conservation Act (2016)* which was previously the *Wildlife Conservation Act 1950* are presented in Appendix C. These categories are consistent with the International Union for Conservation of Nature (IUCN) classifications and therefore link into a global ranking system for taxa at risk of extinction.

A desktop study and analysis of the records of DBCA's Threatened Fauna Database, NatureMap and the Protected Matters Search Tool (PMST) (Appendix A & B) were made to determine the presence or likely presence of fauna or faunal assemblages within the Site. The analysis targets terrestrial threatened vertebrate species listed under the *Biodiversity Conservation Act 2016* (WA) and *Environmental Protection Biodiversity Conservation Act 1999* (Commonwealth). A list of fauna expected to occur within a 10-kilometre radius of the Site was compiled from searches conducted on the DBCA database (NatureMap) and the Commonwealth EPBC Protected Matters Search Tool (Table 2).

Marine species and freshwater fish have been excluded due to the location of the Site. Invertebrates have also been excluded as this is a specialist area not covered under the Scope of this report.

The results of the native fauna database search for species likely to be within or utilising the Site are listed below (Table 2).

Table 2 Conservation significant fauna species recorded within 10 km of the Site.

Species	Conservation Status		Preferred Habitat	Likelihood of occurrence within the proposed development area.
	DBCAs Conservation Code	EPBC Act Status		
<i>Pseudocheirus occidentalis</i> Western Ringtail Possum	Threatened	Critically Endangered	Coastal Areas of Peppermint woodland and peppermint woodland and peppermint / tuart associations	Breeding known to occur within area. Naturemap database has multiple close records approximately 1.1km north of the site collected in 2006 and 2012.
<i>Calyptorhynchus baudinii</i> Baudin's Cockatoo	Threatened	Endangered	Dense Jarrah, Karri and Marri forests. Species nest in large hollows in these species	Breeding known to occur within area. Naturemap database closest record is approximately 2.1km north of the site collected in 2006.
<i>Calyptorhynchus latirostris</i> Carnaby's Cockatoo	Threatened	Endangered	Dense Jarrah, Karri and Marri forests. Species nest in large hollows in these species	Species or species habitat known to occur within area. Naturemap database closest record is approximately 0.7km north of the site collected in 2007.
<i>Calyptorhynchus banksii subsp. naso</i> Forest Red-tailed Black Cockatoo	Threatened	Vulnerable	Dense Jarrah, Karri and Marri forests. Species nest in large hollows in these species.	Species or species habitat known to occur within area. Naturemap database closest record is approximately 2.6km east of the site collected in 2009.
<i>Dasyurus geoffroii</i> Chuditch	Threatened	Vulnerable	Variety, most dense in riparian jarrah forests. Require large, unfragmented habitats.	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 8.7km northeast of the site collected in 1987.

Species	Conservation Status		Preferred Habitat	Likelihood of occurrence within the proposed development area.
	DBCA Conservation Code	EPBC Act Status		
<i>Botaurus poiciloptilus</i> Australasian Bittern		Endangered	Permanent freshwater wetlands with tall, dense vegetation, especially <i>Typha</i> spp. and rushes.	Species or species habitat likely to occur within area. Naturemap database closest record is approximately 17.9km northeast of the site.
<i>Falco hypoleucos</i> Grey Falcon		Vulnerable	Areas where annual rainfall is less than 500 mm. Known to frequent timbered lowland plains and acacia shrublands crossed by tree lined water courses. Hunts in open areas, grassland, and open woodland.	Species or species habitat may occur within area. Naturemap database closest record is over 200km northeast of the site collected in 1929.
<i>Hydromys chrysogaster</i> Water-rat, Rakali	Priority 4		Found Near permanent fresh or brackish waters, Areas of permanent fresh or brackish water, drainage swamps.	Naturemap database closest record is approximately 1.2km north of the site.
<i>Isoodon fusciventer</i> Quenda, southwestern brown bandicoot	Priority 4		Forest, woodland, shrub and heath, usually in sandy soils with dense healthy vegetation in lower stratum	Naturemap database closest record is approximately 3.2km northwest of the site collected in 1967.
<i>Notamacropus irma</i> Western Brush Wallaby	Priority 4		Some areas of mallee and heathland and are uncommon in wet sclerophyll forests. Preferred habitat is Banksia woodlands.	Naturemap database closest record is approximately 7.4km northwest of the site collected in 1999.

Species	Conservation Status		Preferred Habitat	Likelihood of occurrence within the proposed development area.
	DBCA Conservation Code	EPBC Act Status		
<i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> South-western Brush-tailed Phascogale	Specially Protected		Highly arboreal, prefers open forest with sparse groundcover	Naturemap database closest record is approximately 3.8km north of the site collected in 2018.

The Database identified five Threatened species, which are rare or are likely to become extinct, three Priority listed species and one other specifically protected species within a 10 km radius of the Site. The Protected Matters Search Tool identified seven threatened species, within a 10 km radius of the Site. One of which is a Critically endangered species, three Endangered species and three Vulnerable species.

Analysis of the results of the database searches show that conservation significant fauna species likely to be within or utilising the Site include *Pseudocheirus occidentalis* (Western Ringtail Possum) and *Phascogale tapoatafa* subsp. *wambenger* (South-western Brush-tailed Phascogale).

The three Black Cockatoo species, *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo), *Calyptorhynchus baudinii* (**Baudin's Cockatoo**) and *Calyptorhynchus latirostris* (**Carnaby's Cockatoo**) or species habitat are also likely to occur within the area.

Other fauna of conservation significance may use the site infrequently or as part of a larger patch, such as birds listed on International Agreements. Impacts to these species are considered negligible due to the small area of vegetation to be managed.

4.2 Field Survey

A field study of the Site was conducted, with a focus on the species identified in the desktop analysis. The approach adopted for this survey was:

- A Satellite Image of the Site was acquired.
- A daytime visual inspection of the property and adjoining vegetation for any signs of fauna (e.g., scats, diggings, dreys, nests, burrows, feeding signs) was conducted.
- Hollow bearing trees or trees suitable for Black Cockatoos were recorded.
- Direct observations of fauna and signs of fauna were recorded using a Trimble Global Positioning System (GPS) and ArcPad® (Version 8- ESRI).
- Two, non-consecutive, nighttime spotlight surveys were conducted to determine fauna activity. A 40 w LightForce hand-held spotlight was used with white light. Observations were recorded using GPS and ArcPad®.
- Two pre-dawn and two dusk surveys were conducted to determine Black Cockatoo activity. A spotting scope was used in these surveys to identify any other birds within the Site.
- Field observations were analysed and mapped with ArcGis (ArcMap V10.6®).

The Site was traversed, and trees inspected via a physical inspection for hollows or signs of fauna usage.

All trees with large hollows were inspected for any signs of use by cockatoos. These include wear around the hollow, chewing, scarring and scratch marks on the trunks or branches. Old or recent **evidence of cockatoo's feeding**, nesting or roosting sites (feathers, droppings etc.) were also searched for.

This type of survey has minimal impact on the fauna within the Site and provides sufficient data on the presence and relative abundance and distribution of taxa. During the field surveys, the habitat at the Site was assessed to determine its potential suitability to host any of the anticipated threatened or priority **species**. **This approach is consistent with a Level 1 survey under the EPA's Technical Guide: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (2010)** which specifies a minimum requirement of background research or desktop study to gather information on the subject site and a reconnaissance survey to verify the accuracy of the background study and delineate fauna and faunal assemblages.

The survey's protocol is also consistent with the requirements outlined in the Development Planning Guidelines for Western Ringtail Possums (CALM 2003, now DBCA).

Guidelines for the three Black Cockatoo species (Department of Sustainability, Environment, Water,

Populations and Communities, 2011) outline requirements for appropriate level of surveys for these species. This survey's intensity and design comply with these guidelines.

4.3 Results

The Site was surveyed for fauna over multiple days in October and November by Ecosystem Solutions staff Dani Cuthbert (Dip Bus & Dip TM) and Gary McMahon (B.Sc. M. Env Mgmt). The Site was traversed in a systematic manner to cover the whole area.

Dawn and dusk / nocturnal surveys were conducted for any sign of Black Cockatoos, Western Ringtail Possums and any other conservation listed species, as described in Table 3.

Table 3 Fauna survey times and observations

Survey Type	Date and Time	Sunrise / Sunset Time	Observations
Dawn	18 October 2021 4:20 am to 6:30 am	Sunrise 5:32 am	No Black Cockatoos, Western Ringtail Possums or other significant fauna were observed during this survey.
Dawn	1 November 2021 4:15 am to 6.20 am	Sunrise 5:17 am	No Black Cockatoos, Western Ringtail Possums or other significant fauna were observed during this survey.
Dusk Nocturnal	13 October 2021 5:30 pm to 8:45 pm	Sunset 6:30 pm	Seven Western Ringtail Possums and one Brush Tail Possum were observed. No Black Cockatoos or other significant fauna were observed during this survey.
Dusk Nocturnal	31 October 2021 5:45 pm to 8:45 pm	Sunset 6:45 pm	Five Western Ringtail Possums were observed. No Black Cockatoos were observed during this survey.
Day	2 nd November 2021	N/A	One Western Ringtail Possum observed within the canopy of a Marri Tree.

Daytime fauna surveys were conducted in September (14th), October (5th, 13th, 14th and 31st) and November (1st and 2nd).

The canopy of the vegetation within the Site was thoroughly inspected and eight potential drey were

observed (Figures 11 & 12). Dreys were located predominantly within remnant Peppermint woodland to the north of the Site and adjacent to Minchin Road and the soak to the east.

Trees on site with a diameter at breast height (DBH) over 500 mm and having capacity to support nesting of any Black Cockatoo species were recorded (Figures 13 to 24). A total of 1,284 of potentially significant trees were recorded, with 14 having hollows and 44 having potential hollows. No animals were observed utilising these trees during the dawn or dusk/nocturnal surveys.

Two Forest Red-tailed black cockatoos (*Calyptrorhynchus banksii naso*) were observed foraging on Marri trees close to Revele 1 and an intersecting road to the west of North Jindong Road on 14 September. While three White tailed black cockatoos (*Calyptrorhynchus baudinii/ latirostris*) were also observed on the same day within the Site (Figure 20).

All local species of Black cockatoos can forage over extensive areas (up to 15-20 kms from their nesting sites (Saunders, 1980)) and given that there are larger areas of preferred habitat within their range, it could be assumed that Black Cockatoo species are not relying on the Site for habitat or food source.

Twelve Western Ringtail Possums were observed during the two nocturnal surveys on the 13th and 31st October and one Western Ringtail Possum was observed on the 2 November during a day survey. The locations of the Western Ringtail Possums are shown in Figures 11 and 12.

While no other animals of significance were observed, either directly or through signs, the lack of this data should not be taken directly as an indication that those species are absent from the Site. No trapping or seasonal sampling was conducted.

Table 5 and Table 6 discuss the likely presence and impact on Black Cockatoos.

The bird species protected under international agreements were not seen during the surveys.

The Carter's Freshwater Mussel, Dunsborough and Margaret River Burrowing Crayfish, Blue Billed Duck, and Rakali were not observed nor was the species habitat observed within the site. There are no wetlands or permanent water body within the Site. It is unlikely these species are within the Site



Figure 11 Western Ringtail Possum and Drey Locations - Northern Extent



Figure 12 Western Ringtail Possum and Drey Locations - Southern Extent



Figure 13 Potential Significant Trees surveyed & Black Cockatoos at North Jindong Road



Figure 14 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road

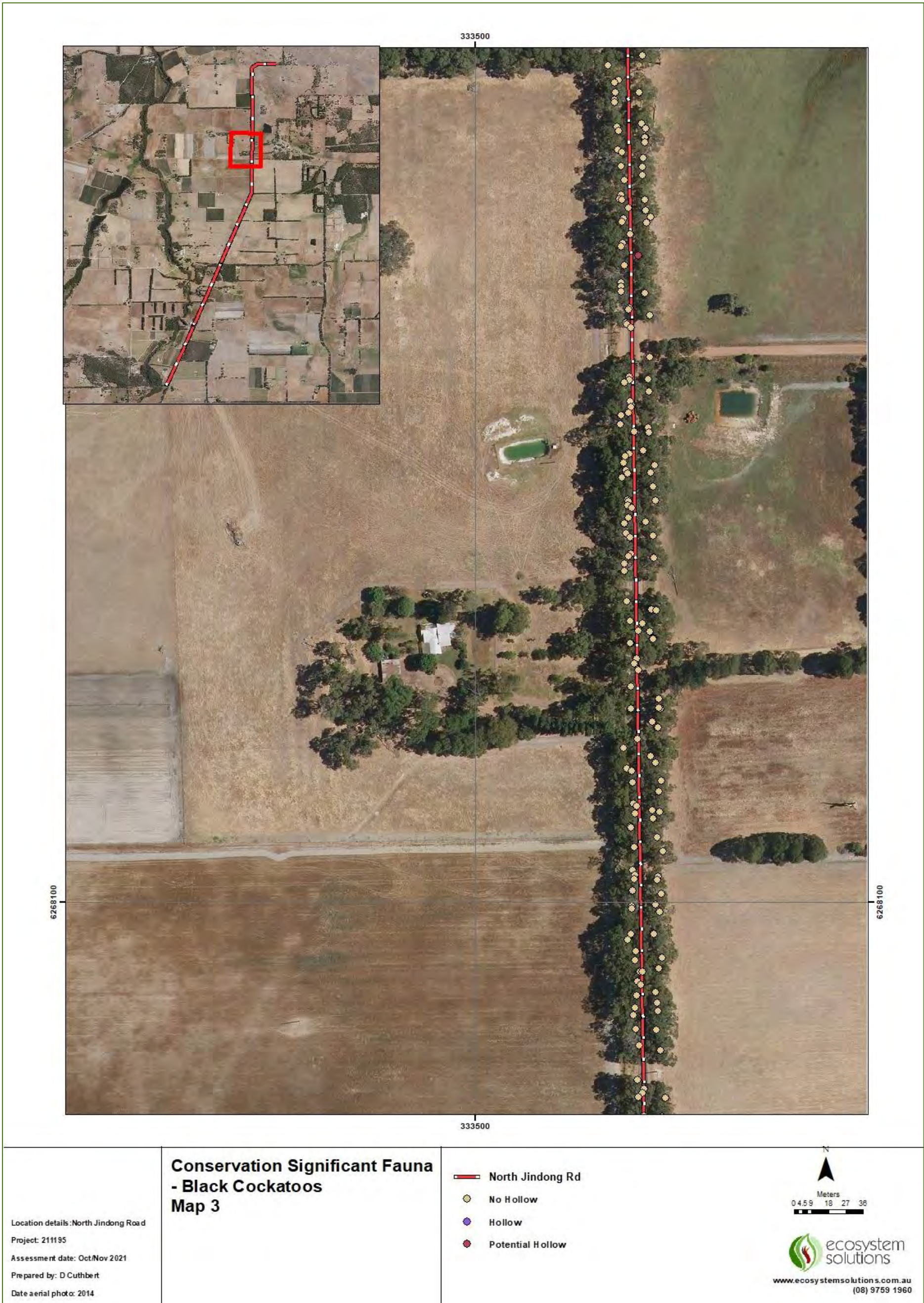


Figure 15 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road



Figure 16 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road



Figure 17 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road

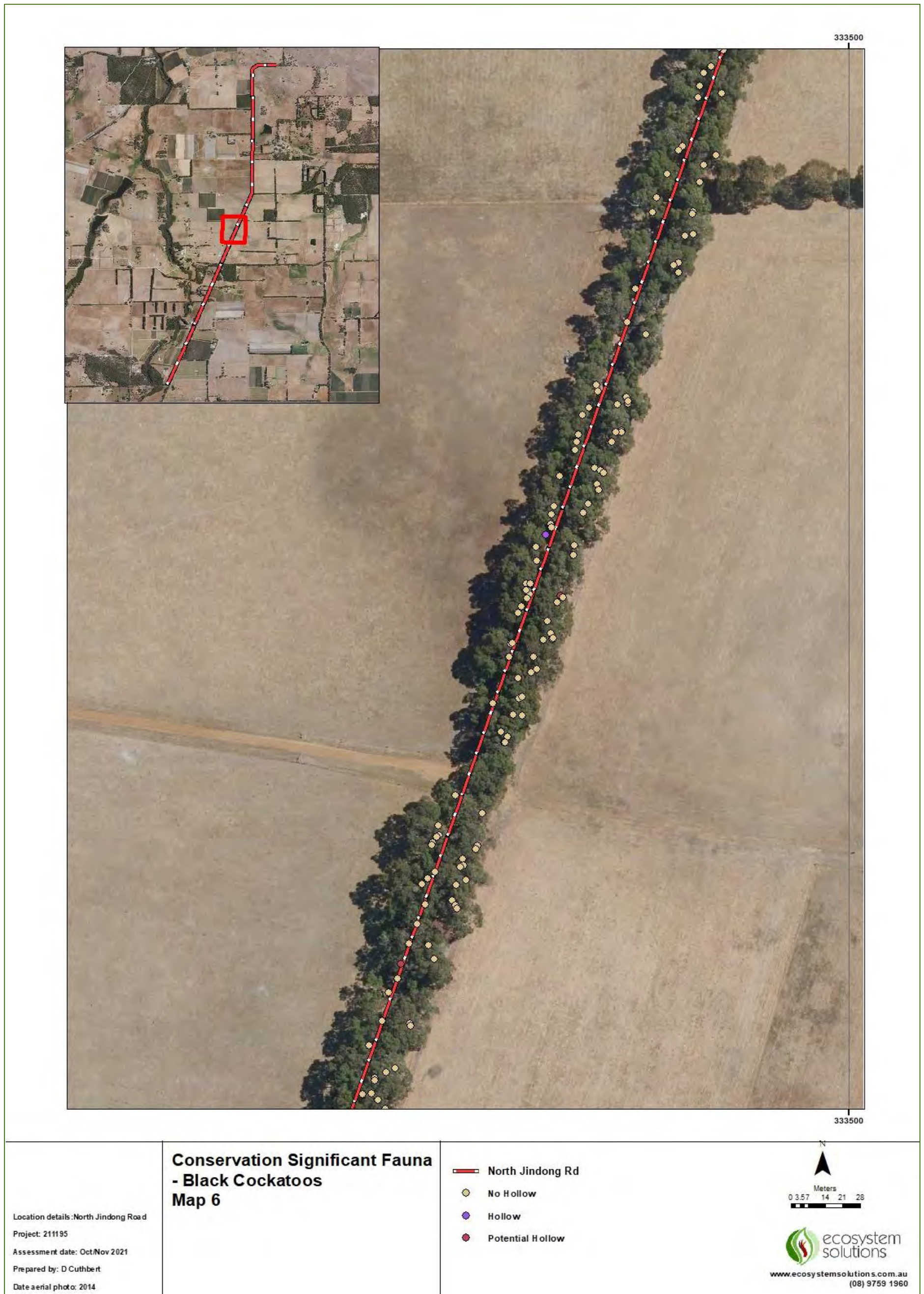


Figure 18 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road



Figure 19 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road



Figure 20 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road

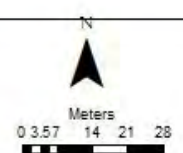


Figure 21 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road



Conservation Significant Fauna - Black Cockatoos Map 10

- North Jindong Rd
- No Hollow
- Hollow
- Potential Hollow



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solutions
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(08) 9759 1960

Location details: North Jindong Road
Project: 211195
Assessment date: Oct/Nov 2021
Prepared by: D Cuthbert
Date aerial photo: 2014

Figure 22 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road



Figure 23 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road

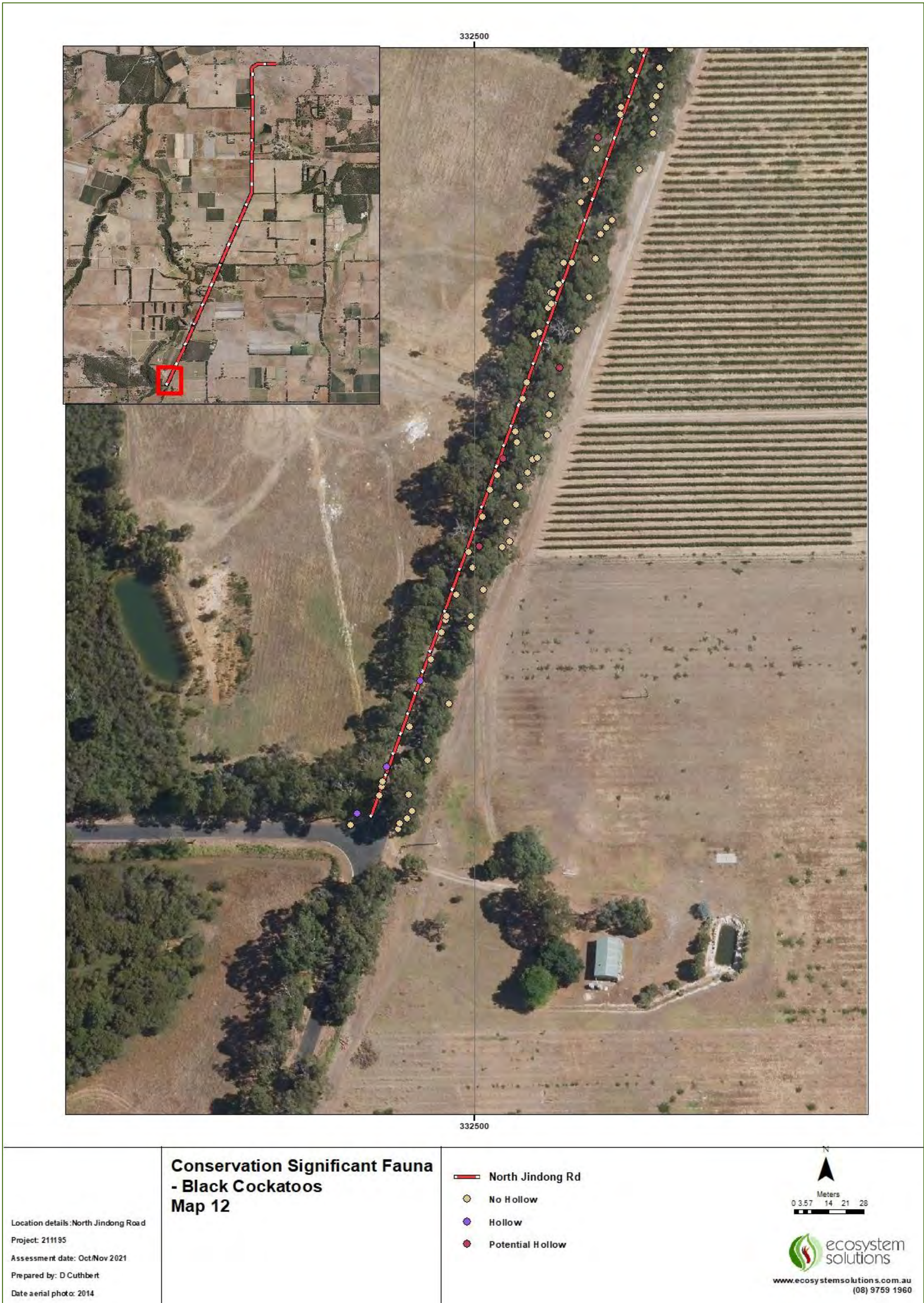


Figure 24 Potential Significant Trees surveyed & Black Cockatoos continued at North Jindong Road

5 Survey Constraints

Field surveys were confined to five-day flora surveys, two dawn fauna surveys and two dusk / nocturnal fauna spotlight surveys conducted over non-consecutive night. These were conducted to assess for Black Cockatoo and Western Ringtail Possum activity, along with any other conservation significant fauna and flora. All surveys were conducted using an experienced ecologist, with a head torch and a single hand-held spotlight used for the dusk and dawn / nocturnal fauna surveys.

The Site was traversed by foot in systematically.

All large trees of suitable size were examined from the ground for the presence of hollows. Guidelines for the survey techniques for Black Cockatoo species (Dept. of Sustainability, Environment, Water Populations and Communities, 2011) state that all trees with a DBH of over 500 m should be inspected. It should be noted however, that all the prerequisites that determine the suitability of a hollow for use by cockatoos is difficult to assess. In addition to entrance size, the depth, floor, and orientation of the hollow are important factors. The presence of suitable hollows, even in breeding areas, does not make them available for breeding as hollows must be spatially, structurally, and temporally correct (Johnstone and Johnston, 2004). The listing of potential nesting hollows is therefore likely to be an over estimation of those suitable.

Short term surveys for Black Cockatoo presence are unlikely to give a true representation of habitat use by black cockatoos due to the mobile nature of these birds and their reliance on different areas of habitat at different times of the year and between years (Commonwealth of Australia, 2012).

Western Ringtail Possums are arboreal nocturnal species (DBCA, 2017). They use up to 2-7 rest sites and up to 20 throughout the year. Rest sites can be within a tree hollow or drey, built in various tree canopies. In suburban areas, they may also rest in roof spaces and other dark cavities. Their home range is less than 5 ha. There are constraints in surveying Western Ringtail Possums due to the time they may arise from their rest site. Their home range may also overlap the survey area, with a rest site being used outside the Site during survey times.

Constraints in flora monitoring include annual species that do not appear every season or every year, with survey limited to identifying only those flora that appear during survey times.

Flora surveys were completed in September and October, an optimal time for many flowering species however this timing may have been outside the predominate flowering time for other flora species, which limits identification of all flora within the Site.

6 Significance

Under the EPBC Act, an action that has, will have, or is likely to have, a significant impact on a matter of national environmental significance, requires approval from the Minister. A significant impact is defined as an impact which is important or of consequence, having regard for its context or intensity (Commonwealth of Australia, 2009).

Matters of environmental significance are:

- Listed threatened species and ecological communities
- Migratory species protected under international agreements
- Ramsar wetlands of international importance
- The Commonwealth marine environment
- World Heritage properties
- National Heritage places
- Great Barrier Reef Marine Park, and
- Nuclear actions.

For this development, there is a limited potential for impact on threatened species. Significant Impact Guidelines 1.1 (Commonwealth of Australia, 2009) lists significant impact criteria for the assessment for activities which may impact on threatened species. Table 4 below describes these criteria as they relate to the Site and the vulnerable species that may potentially be impacted within the Site.

Table 4 Significant Impact Criteria for Key Protected Species

Significant Impact Criterion	Discussion		Meets Criterion
	Black Cockatoo Species	Western Ringtail Possum (WRP)	
Lead to a long-term decrease in the size of an important population ¹ of a species	Black Cockatoos were heard during survey and foraging was identified at two locations within the Site. No Cockatoos were observed nesting or roosting within the Site. It is unlikely the Site, independently, is critical to survival of the species. Any trees to be removed can be selected to retain those with observed or potential hollows.	A population of Western Ringtail Possums reside on the Site, with twelve individuals and eight potential dreys sighted within the road reserve. During the clearing works, an approved DBCA fauna handler will be engaged to relocate any captured fauna within 200m of a capture point. This will reduce the likelihood of a long-term decline in population.	No
Reduce the area of occupancy of an important population	No Black Cockatoos were observed nesting or roosting within the Site. A slight reduction in foraging habitat will occur, however trees with DBH >500mm will be retained wherever possible within the road reserve, with a focus on the trees with observed or potential hollows.	A slight reduction of remnant vegetation will occur; however, there will still be connectivity within the road verge.	No

¹ An 'important population' is a population that is necessary for a species' long-term survival and recovery.

Fragment an existing important population into two or more populations	No population was observed nesting or roosting within the Site. Trees will be retained wherever possible within the road verge, with a focus on the trees with observed or potential hollows.	It is unlikely any actions will fragment the current population. There will still be connectivity within the road verge. With the presence of an approved DBCA Fauna Handler during any vegetation modification the likelihood of a long-term decline in population in the Site is low as any captured animal will be released within 200 m of capture point.	No
Adversely affect habitat critical to the survival of a species	No population was observed nesting or roosting within the Site. Trees will be retained wherever possible within the road verge, with a focus on the trees with observed or potential hollows.	Unlikely to significantly affect critical habitat.	No
Disrupt the breeding cycle of an important population	No Black Cockatoos were observed nesting or roosting within the Site. Trees will be retained wherever possible within the road verge, with a focus on the trees with observed or potential hollows.	Western Ringtail Possums breed year-round with breeding peaks in April to July and September to November (Jones <i>et al.</i> 1994b). Any disturbance within the Site will attempt to avoid the peak breeding periods. A population of Western Ringtail Possums reside within the Site, with the presence of an approved DBCA Fauna Handler during any vegetation modification the likelihood of any disruption to breeding is low and will be minimised with timing of any vegetation removal.	No

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Black Cockatoos appear to forage at the Site opportunistically. The species will be impacted through a reduction in available foraging material. This can be minimised by retaining significant trees where possible.	A population of Western Ringtail Possums No reside within the Site. The vegetation modification needed will not likely cause the population to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No introductions are likely to occur with good Dieback hygiene measures for vehicles utilised at the Site.	No introductions are likely to occur with good Dieback hygiene measures for vehicles utilised at the Site.
Introduce disease that may cause the species to decline	Highly unlikely to occur.	Highly unlikely to occur. No
Interfere substantially with the recovery of the species.	Development will not impact substantially on the recovery of the species. Where possible, the retention of significant trees with hollows or potential hollows, with DBH >500mm will minimise impact.	Development will not impact substantially on the recovery of the species. No

Using these criteria, the proposed development will not significantly impact on any significant species to a point where a referral is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Referral guidelines for three threatened Black Cockatoo species (Commonwealth of Australia. 2011) uses a decision tree and a set of criteria to determine whether actions significantly impact on Black Cockatoos. These are set out in Table 5, based on the details of the development and the data obtained from the surveys.

Table 5 Assessment of Significant Impact to Black Cockatoo

Question	
1. Could the impacts of your action occur within the modelled distribution of the Black Cockatoos?	Yes - Action occurs within the distribution area of all three species. Trees within the road verge will be retained wherever possible, with a focus on retaining trees with a DBH >500mm with observed or potential hollows.
2. Could the impacts of your action affect any Black Cockatoo habitat or individuals?	No signs of animals nesting or roosting within the Site. Trees with a DBH greater than 500mm with identified or potential hollows will be retained within the road verge wherever possible.
3. Have you surveyed for Black Cockatoos using the recommended methods?	Yes.
4. Could your actions have an impact on Black Cockatoos or their habitats?	Unlikely impact. No signs of animals roosting or nesting were observed within the Site.
5. Is your impact mitigation best practice so that it may reduce the significance of your impacts on Black Cockatoos?	Yes. No 'significant impact' is anticipated due to lack of evidence of roosting or nesting within the proposed areas of impact within Site.

Question

6. Could your action require a referral to the federal environmental Minister for significant impact on Black Cockatoos?

No, as there are no direct signs of any of the three species breeding or roosting within the Site. It is unlikely that the species is dependent on the Site.

The summary of these responses is:

- The development is within the area of modelled distribution of Black Cockatoo and Western Ringtail Possums.
- The Site has been surveyed using the recommended methods from the guideline.
- Two Black cockatoos were observed foraging within the site and Black Cockatoos were heard passing over the Site at the time of survey.
- There were eight potential dreys and twelve Western Ringtail Possums observed within the Site.
- 1284 Significant trees with a DBH greater than 500mm, 14 with observable hollows and 44 with potential hollows were recorded in the Site. These should be prioritised for conservation wherever possible.

Using the flow chart and criteria it is determined that there is a low risk of actions resulting in an impact upon Black Cockatoos and Western Ringtail Possums within the Site.

7 Summary and Recommendations

Based on the results of the analysis of Site, the following conclusions and recommendations are made.

- It is likely the Site contains areas of the Threatened Ecological Community (Vulnerable) *Corymbia calophylla* woodlands on heavy soils of the Swan Coastal Plain (SCP1b). The TEC is known to occur <1km from the Site and some associated species of this TEC have been observed within the Site. Confirmation of the TEC presence and TEC boundaries are outside the scope of this report so cannot be confirmed at this time.
- One Priority 3 species, *Loxocarya magna* was observed during the flora surveys.
- Two new populations likely to be *Loxocarya magna* (Priority Three) were identified within the road reserves of North Jindong Road. (Figure 7).
- Two Black cockatoos were observed foraging within the Site and Black Cockatoos were also heard passing over the Site at the time of survey (Figure 19). There were no signs of nesting or roosting within the Site.
- A total of 1284 Significant trees with hollows or sufficient diameter at breast height (DBH) to develop future hollows suitable for Black Cockatoos were identified within the Site. It is recommended the trees with hollows or potential hollows (Figures 11 - 22, Appendix E) be retained where possible.
- Under Table 3: Referral guidelines of the currently endorsed Black Cockatoo Guidelines (2012), a referral under the EPBC Act is not required.
- Under Commonwealth Significant Impact Guidelines for Threatened Species (2013), it is determined that there is a low risk of actions resulting in an impact upon Western Ringtail Possums, a referral under the EPBC Act is not required.
- Should any disturbance of the vegetation within the site be required, an authorised Fauna Spotter with a Section 40 Authorisation under the Biodiversity Conservation Act 2016 should be on site to manage any fauna that may be present to ensure their effective and safe management during the disturbance.

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Appendix A NatureMap Extract

NatureMap Species Report

Created By Guest user on 02/09/2021

Method 'By Circle'

Centre 115° 11' 56" E, 33° 43' 48" S

Buffer 10km

Group By Conservation Status

Conservation Status	Species	Records
Priority 1	2	6
Priority 2	2	2
Priority 3	19	96
Priority 4	7	41
Rare or likely to become extinct	14	118
TOTAL	44	263

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Rare or likely to become extinct				
1.	32204 <i>Banksia nivea</i> subsp. <i>uliginosa</i>		T	
2.	32046 <i>Banksia squarrosa</i> subsp. <i>argillacea</i>		T	
3.	13615 <i>Caladenia busselliana</i>		T	
4.	13619 <i>Caladenia excelsa</i>		T	
5.	18038 <i>Caladenia procera</i>		T	
6.	13622 <i>Caladenia viridescens</i>		T	
7.	43980 <i>Chamelauicum</i> sp. <i>S coastal plain (R.D. Royce 4872)</i>		T	
8.	3808 <i>Daviesia elongata</i>		T	
9.	13635 <i>Drakaea micrantha</i>		T	
10.	19414 <i>Grevillea brachystylis</i> subsp. <i>grandis</i>		T	
11.	6867 <i>Hemigenia ramosissima</i>		T	
12.	12412 <i>Verticordia densiflora</i> var. <i>pedunculata</i>		T	
13.	12448 <i>Verticordia plumosa</i> var. <i>ananeotes</i>		T	
14.	12453 <i>Verticordia plumosa</i> var. <i>vassensis</i>		T	
Priority 1				
15.	18102 <i>Andersonia ferricola</i>		P1	
16.	16258 <i>Schoenus</i> sp. <i>Jindong (R.D. Royce 2485)</i>		P1	
Priority 2				
17.	19258 <i>Actinotus whicheanus</i>		P2	
18.	29492 <i>Leucopogon</i> sp. <i>Bussetton (D. Cooper 243)</i>		P2	
Priority 3				
19.	3386 <i>Acacia inops</i>		P3	
20.	14930 <i>Acacia lateritcola</i> var. <i>Glabrous variant (B.R. Maslin 6765)</i>		P3	
21.	11612 <i>Boronia capitata</i> subsp. <i>gracilis</i>		P3	
22.	35799 <i>Calothamnus lateralis</i> var. <i>crassus</i>		P3	
23.	17686 <i>Chordifex gracilior</i>		P3	
24.	16245 <i>Cyathochaeta teretifolia</i>		P3	
25.	14011 <i>Grevillea brachystylis</i> subsp. <i>brachystylis</i>		P3	
26.	2190 <i>Hakea oldfieldii</i>		P3	
27.	16522 <i>Isopogon formosus</i> subsp. <i>dasyplepis</i>		P3	
28.	1296 <i>Johnsonia inconspicua</i>		P3	
29.	45084 <i>Lasiopetalum laxiflorum</i>		P3	
30.	1086 <i>Lepyrodia heleocharoides</i>		P3	
31.	13779 <i>Loxocarya magna</i>		P3	
32.	12077 <i>Pimelea ciliata</i> subsp. <i>longituba</i>		P3	
33.	4179 <i>Puttenaea pinifolia</i>		P3	
34.	974 <i>Schoenus benthamii</i>		P3	
35.	16937 <i>Synaphea decumbens</i>		P3	
36.	16769 <i>Synaphea hians</i>		P3	
37.	16862 <i>Synaphea petiolaris</i> subsp. <i>simplex</i>		P3	
Priority 4				
38.	3339 <i>Acacia flagelliformis</i>		P4	

NatureMap is a collaborative project of the Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.



Department of Biodiversity,
Conservation and Attractions



	Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
39.	3537	<i>Acacia semitrilata</i>		P4	
40.	35796	<i>Calothamnus quadrifidus subsp. teretifolius</i>		P4	
41.	36200	<i>Ornduffia submersa</i>		P4	
42.	17411	<i>Stylidium leeuwinense</i>		P4	
43.	1334	<i>Thysanotus glaucus</i>		P4	
44.	6093	<i>Verticordia lehmannii</i>		P4	

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap Species Report

Created By Guest user on 02/09/2021

Kingdom Animalia
Conservation Status Conservation Taxon (T, X, IA, S, P1-P5)
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 11' 56" E, 33° 43' 48" S
Buffer 10km
Group By Species Group

Species Group	Species	Records
Bird	11	43
Invertebrate	4	50
Mammal	7	463
TOTAL	22	556

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Bird				
1.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
2.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
3.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
4.	24733 <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
5.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
6.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
7.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
8.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
9.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
10.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
11.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
Invertebrate				
12.	33945 <i>Engaewa pseudoreducta</i> (Margaret River Burrowing Crayfish)		T	
13.	33946 <i>Engaewa reducta</i> (Dunsborough Burrowing Crayfish)		T	
14.	33989 <i>Pachysaga strobila</i> (Vasse Pachysaga (Busselton-Donnybrook), cricket)		P1	
15.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	
Mammal				
16.	24092 <i>Dasyurus geoffroii</i> (Chuditch, Western Quoll)		T	
17.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
18.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		P4	
19.	48588 <i>Isodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
20.	48022 <i>Notamacropus irma</i> (Western Brush Wallaby)		P4	
21.	48070 <i>Phascogale tapoatafa</i> subsp. <i>wambengeri</i> (South-western Brush-tailed Phascogale, Wambenger)		S	
22.	24166 <i>Pseudocheirus occidentalis</i> (Western Ringtail Possum, ngwayir)		T	

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.



Appendix B EPBC Act Protected Matters Report



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 02/09/21 15:21:04

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

Buffer: 10.0Kms



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	63
Listed Migratory Species:	43

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	62
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	9
Regional Forest Agreements:	1
Invasive Species:	25
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Vasse-wonnerup system	Within 10km of Ramsar

Listed Threatened Ecological Communities [\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Shrublands on southern Swan Coastal Plain ironstones	Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community may occur within area

Listed Threatened Species [\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Botaurus poeciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso		
Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Calyptorhynchus baudinii		
Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Breeding known to occur within area
Calyptorhynchus latirostris		
Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena		
Tristan Albatross [66471]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
<u>Diomedea epomophora</u> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Diomedea exulans</u> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Diomedea sanfordi</u> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<u>Falco hypoleucos</u> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
<u>Limosa lapponica menzbieri</u> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat likely to occur within area
<u>Macronectes giganteus</u> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<u>Macronectes halli</u> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<u>Numenius madagascariensis</u> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<u>Pachyptila turtur subantarctica</u> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
<u>Phoebastria fusca</u> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
<u>Sternula nereis nereis</u> Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
<u>Thalassarche cauta</u> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<u>Thalassarche impavida</u> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche melanophris</u> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche steadyi</u> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Crustaceans		
<u>Engaewa reducta</u> Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat known to occur within area
Fish		
<u>Nannatherina balstoni</u> Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
Mammals		

Name	Status	Type of Presence
<u>Balaenoptera musculus</u> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<u>Dasyurus geoffroi</u> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
<u>Eubalaena australis</u> Southern Right Whale [40]	Endangered	Breeding known to occur within area
<u>Megaptera novaeangliae</u> Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
<u>Neophoca cinerea</u> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
<u>Pseudocheirus occidentalis</u> Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area
Other		
<u>Westralunio carteri</u> Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
Plants		
<u>Banksia nivea subsp. uliginosa</u> Swamp Honey-pot [82766]	Endangered	Species or species habitat known to occur within area
<u>Banksia squarrosa subsp. argillacea</u> Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat known to occur within area
<u>Brachyscias verecundus</u> Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat likely to occur within area
<u>Caladenia busselliana</u> Bussell's Spider-orchid [24369]	Endangered	Species or species habitat known to occur within area
<u>Caladenia hoffmanii</u> Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
<u>Caladenia huegelii</u> King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area
<u>Caladenia procera</u> Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat known to occur within area
<u>Caladenia viridescens</u> Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat known to occur within area
<u>Chamelaucium sp. S coastal plain (R.D.Royce 4872)</u> Royce's Waxflower [87814]	Vulnerable	Species or species habitat known to occur within area
<u>Daviesia elongata subsp. elongata</u> Long-leaved Daviesia [64883]	Vulnerable	Species or species habitat known to occur within area
<u>Diuris micrantha</u> Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
<u>Drakaea elastica</u> Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat may occur within area
<u>Drakaea micrantha</u> Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
<u>Eucalyptus x phylacis</u> Meelup Mallee [87817]	Endangered	Species or species habitat may occur within area
<u>Gastrolobium papilio</u> Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
<u>Grevillea brachystylis subsp. grandis</u> Large-flowered Short-styled Grevillea [85001]	Critically Endangered	Species or species habitat known to occur within area
<u>Lambertia echinata subsp. occidentalis</u> Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat likely to occur within area
<u>Petrophile latericola</u> Laterite Petrophile [64532]	Endangered	Species or species habitat likely to occur within area
<u>Synaphea sp. Fairbridge Farm (D. Papenfus 696)</u> Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area
<u>Tetraria australiensis</u> Southern Tetraria [10137]	Vulnerable	Species or species habitat likely to occur within area
<u>Verticordia densiflora var. pedunculata</u> Long-stalked Featherflower [55689]	Endangered	Species or species habitat likely to occur within area
<u>Verticordia plumosa var. ananeotes</u> Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat known to occur within area
<u>Verticordia plumosa var. vassensis</u> Vasse Featherflower [55804]	Endangered	Species or species habitat likely to occur within area
Reptiles		
<u>Caretta caretta</u> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<u>Chelonia mydas</u> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<u>Dermochelys coriacea</u> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<u>Natator depressus</u> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
<u>Carcharias taurus (west coast population)</u> Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
<u>Carcharodon carcharias</u> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Migratory Marine Species		
<u>Balaena glacialis australis</u> Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
<u>Balaenoptera edeni</u> Bryde's Whale [35]		Species or species habitat may occur within area
<u>Balaenoptera musculus</u> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<u>Caperea marginata</u> Pygmy Right Whale [39]		Species or species habitat may occur within area
<u>Carcharhinus longimanus</u> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
<u>Carcharodon carcharias</u> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<u>Caretta caretta</u> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<u>Chelonia mydas</u> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<u>Dermochelys coriacea</u> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<u>Lagenorhynchus obscurus</u> Dusky Dolphin [43]		Species or species habitat may occur within area
<u>Lamna nasus</u> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
<u>Manta alfredi</u> Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
<u>Manta birostris</u> Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
<u>Megaptera novaeangliae</u> Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
<u>Natator depressus</u> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<u>Orcinus orca</u> Killer Whale, Orca [46]		Species or species habitat may occur within area
<u>Rhincodon typus</u> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
<u>Motacilla cinerea</u> Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Other Matters Protected by the EPBC Act		
Commonwealth Land		[Resource Information]
The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.		
Name		
Commonwealth Land -		
Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur

Name	Threatened	Type of Presence within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known

Name	Threatened	Type of Presence to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Haag	WA
Locke	WA
NTWA Bushland covenant (0116A)	WA
NTWA Bushland covenant (0116B)	WA
NTWA Bushland covenant (0148)	WA
NTWA Bushland covenant (0149)	WA
NTWA Bushland covenant (0173)	WA
Sussex Location 2561	WA
Unnamed WA45533	WA

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included.

Name	State
South West WA RFA	Western Australia

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
<i>Felis catus</i> Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
<i>Mus musculus</i> House Mouse [120]		Species or species habitat likely to occur within area
<i>Oryctolagus cuniculus</i> Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
<i>Rattus rattus</i> Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
<i>Sus scrofa</i> Pig [6]		Species or species habitat likely to occur within area
<i>Vulpes vulpes</i> Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
<i>Asparagus asparagoides</i> Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
<i>Brachiaria mutica</i> Para Grass [5879]		Species or species habitat may occur within area
<i>Cenchrus ciliaris</i> Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
<i>Chrysanthemoides monilifera</i> Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i> Boneseed [16905]		Species or species habitat likely to occur within area
<i>Genista monspessulana</i> Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
<i>Genista</i> sp. X <i>Genista monspessulana</i> Broom [67538]		Species or species habitat may occur within area
<i>Lycium ferocissimum</i> African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
<i>Olea europaea</i> Olive, Common Olive [9160]		Species or species habitat may occur within area
<i>Pinus radiata</i> Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
<i>Rubus fruticosus</i> aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Tamarix aphylla		
Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.73003 115.19895

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [Office of Environment and Heritage, New South Wales](#)
- [Department of Environment and Primary Industries, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment, Water and Natural Resources, South Australia](#)
- [Department of Land and Resource Management, Northern Territory](#)
- [Department of Environmental and Heritage Protection, Queensland](#)
- [Department of Parks and Wildlife, Western Australia](#)
- [Environment and Planning Directorate, ACT](#)
- [Birdlife Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Museum Victoria](#)
- [Australian Museum](#)
- [South Australian Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [Geoscience Australia](#)
- [CSIRO](#)
- [Australian Tropical Herbarium, Cairns](#)
- [eBird Australia](#)
- [Australian Government – Australian Antarctic Data Centre](#)
- [Museum and Art Gallery of the Northern Territory](#)
- [Australian Government National Environmental Science Program](#)
- [Australian Institute of Marine Science](#)
- [Reef Life Survey Australia](#)
- [American Museum of Natural History](#)
- [Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Appendix C Conservation Codes for Western Australian Flora and Fauna (DBCA, Jan 2018)

CONSERVATION CODE	CATEGORY
<u>Threatened species (T)</u>	<p>Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under Section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the <i>Biodiversity Conservation Act 2016</i> (BC Act).</p> <p><i>Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under Schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna.</i></p> <p><i>Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora.</i></p> <p>The Assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below</p>
Critically endangered species (CR)	<p>Threatened species considered to be <i>“facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the criteria set out in the ministerial guidelines”</i>.</p> <p>Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for critically endangered fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for critically endangered flora.</p>
Endangered species (EN)	<p>Threatened species considered to be <i>“facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”</i>.</p> <p>Listed as endangered under Section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for endangered fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for endangered flora.</p>

CONSERVATION CODE	CATEGORY
Vulnerable species (VU)	<p>Threatened species considered to be “facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as endangered under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for vulnerable fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for vulnerable flora.</p>
Extinct species (EX)	<p>Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).</p> <p>Published as presumed extinct under schedule 4 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for extinct fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for extinct flora.</p>
Extinct in the wild species (EW)	<p>Species that “is known only to survive in cultivation, captivity or as a naturalised population well outside its part range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).</p> <p>Currently there are no threatened fauna or flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.</p>
<u>Specially protected species</u>	<p>Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.</p> <p>Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.</p>

CONSERVATION CODE	CATEGORY
Migratory species (MI)	<p>Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (Section 15 of the BC Act).</p> <p>Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), and fauna subject to the <i>Convention on the Conservation of Migratory Species of Wild Animals</i> (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements of treaties, excluding species that are listed as Threatened species.</p> <p>Published as migratory birds protected under an international agreement under schedule 5 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i>.</p>
Species of special conservation interest (conservation dependent fauna) (CD)	<p>Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).</p> <p>Published as conservation dependent fauna under schedule 6 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i>.</p>
Other specially protected species (OS)	<p>Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).</p> <p>Published as other specially protected fauna under schedule 7 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i>.</p>

CONSERVATION CODE	CATEGORY
<u>Priority species</u> <u>(P)</u>	<p>Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.</p> <p>Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.</p> <p>Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.</p>
Priority 1 Poorly-known species	<p>- Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases, or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.</p>
Priority 2 Poorly-known species	<p>- Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>

CONSERVATION CODE	CATEGORY		
Priority 3 Poorly-known species		-	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4 Rare, Threatened and other species in need of monitoring		-	<p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

Appendix D Relevé Field Sheets

STRUCTURAL VEGETATION, FLORA - Relevé										SITE_ID: R01	
Date:	GPS:									E	Structural comm. type <i>Marri open forest over Marri -</i>
14/09/2021										N	
Recorder: DP	Photo no. + direction:									Peppermint low woodland	
Location: North Jindong Road, North Jindong											
Condition: Pristine Excellent Very Good Good <u>Degraded</u> Completely Degraded (Weeds, partial clearing but has basic veg structure)											
Aspect: N NE E SE <u>S</u> SW W NW						Slope: Flat <u>Gentle</u> Mod Steep					
Geology: Gran Lat Lime Other						Rock: 0 <2 2-10 10-20 20-50 >50					
Soil Colour: Grey Dark Brown Light Brown Orange/Brown <u>Red/Brown</u> White Yellow						Soil Type: C <u>CL</u> CLS CS L LS S SCL SL SP ZCL ZL ZS					
Litter (% cover & depth): 10%, 5cm						Bare Ground (% cover): <2%					
Hydrology: <u>Good drain</u> Poor drain Wet all year Seas wet						Topographic position: Upland Wetland Rock Outcrop Drainage Depression (road verge) Creekline Riparian Bank Gully Plain Slope Lower <u>Slope Middle</u> Slope Upper Valley					
Layer	Height (m)	Cover	Plant Species (Dominant 3 first)								
Tree (T2)	10-30	30-70	<i>Corymbia calophylla</i>								
Tree (T3)	< 10	10-30	<i>Corymbia calophylla</i> , <i>Agonis flexuosa</i> , <i>Xylomelum occidentale</i>								
Shrub (S1)	> 2	10-30	<i>Acacia saligna</i> , <i>Bossiaea linophylla</i> , <i>Agonis flexuosa</i> , <i>Corymbia calophylla</i> , <i>Hakea amplexicaulis</i> .								
Shrub (S2)	1-2	<2	<i>Agonis flexuosa</i> , <i>Corymbia calophylla</i>								
Shrub (S3)	0-1	<2	<i>Loxocarya cinerea</i> , <i>Corymbia calophylla</i> , <i>Xanthorrhoea preissii</i> , <i>*Zantedeschia aethiopica</i> , <i>Bossiaea linophylla</i> , <i>*Fumaria capreolata</i>								
Sedge/Rush (VR)		<2	<i>Lepidosperma sp.</i> , <i>Lomandra sp.</i> , <i>*Unknown bulb</i>								
Herb (H)		10-30	<i>*Oxalis pes caprea</i> , <i>*Fumaria capreolata</i> , <i>*Anagallis arvensis</i> , <i>*Hypochaeris radicata</i> , <i>*Rumex sp.</i>								
Grass (G)		30-70%	<i>*Avena sp.</i> , <i>*Cynodon dactylon</i>								
Other (climbers) (C)											

Cover Codes: D >70% M 30-70% S 10-30% V 2-10% VV <2% E <5% Emergent

* = Introduced

Surrounding plants: *Kennedia coccinea*

STRUCTURAL VEGETATION, FLORA - Relevé										SITE_ID: R02	
Date: 14/09/2021	GPS:								E	Structural comm. Marri - Jarrah woodland over Marri-Banksia low woodland	
									N		
Recorder: DP	Photo no. + direction:										
Location: North Jindong Road, 50m south of intersection with Hairpin Road, North Jindong.											
Condition: Pristine Excellent <u>Very Good</u> Good Degraded Completely Degraded											
Aspect: N NE E SE S SW W NW NA								Slope: Flat Gentle Mod Steep			
Geology: <u>Gran</u> Lat Lime Other								Rock: <u>0</u> <2 2-10 10-20 20-50 >50			
Soil Colour: Grey <u>Dark Brown</u> Light Brown Orange/Brown Red/Brown White Yellow								Soil Type: C <u>CL</u> CLS CS L LS S SCL SL SP ZCL ZL ZS			
Litter (% cover & depth): 4cm								Bare Ground (% cover): 0%			
Hydrology: <u>Good drain</u> Poor drain Wet all year Seas wet winter/spring				Topographic position: Upland Wetland Rock Outcrop Drainage Depression Creekline Riparian Bank Gully Plain Slope Lower Slope Middle Slope Upper Valley <u>Flat</u>							
Layer	Height (m)	Cover	Plant Species (Dominant 3 first)								
Tree (T2)	10-30	10-30	<i>Corymbia calophylla</i> , <i>Eucalyptus marginata</i>								
Tree (T3)	< 10	10-30	<i>*Acacia longifolia</i> , <i>Corymbia calophylla</i> , <i>*Chamaecytisus palmensis</i> , <i>Banksia grandis</i> , <i>Xylomelum occidentale</i> , <i>Persoonia elliptica</i>								
Shrub (S1)	> 2	10-30	<i>Podocarpus drouynianus</i> , <i>Persoonia longifolia</i> , <i>*Dodonaea viscosa</i> , <i>Leucopogon verticillatus</i> , <i>Cytisus proliferus</i> , <i>Corymbia calophylla</i> , <i>Hakea ruscifolia</i> , <i>Xylomelum occidentale</i> , <i>Kingia australis</i> , <i>Acacia longifolia</i> .								
Shrub (S2)	1-2	2-10	<i>Loxocarya cinerea</i> , <i>Bossiaea ornata</i> , <i>Grevillia trifida</i> , <i>*Acacia longifolia</i> , <i>*Cytisus proliferus</i> , <i>*Lycium? sp.</i> , <i>Xylomelum occidentale</i> , <i>Hibbertia hypericoides</i>								
Shrub (S3)	0-1	10-30	<i>Adenanthos barbigier</i> , <i>Loxocarya cinerea</i> , <i>Banksia dallanneyi</i> , <i>Podocarpus drouynianus</i> , <i>Xanthorrhoea gracilis</i> , <i>Hibbertia hypericoides</i> , <i>Persoonia elliptica</i> , <i>Acacia pulchella</i> , <i>Dampiera pedunculata</i> , <i>Stirlingia latifolia</i> .								
Sedge/Rush (VR)		10-30	<i>Lepidosperma sp.</i> , <i>Patersonia umbrosa</i> , <i>Gompholobium knightianum</i> , <i>*Watsonia sp.</i> , <i>Hypolaena exsulca</i> , <i>Lomandra sp.</i>								
Herb (H)		<2	<i>Burchardia umbrosa</i> , <i>Romulea rosea</i> , <i>Rumex sp.</i> , <i>Drosera sp.</i> , <i>*Hypochaeris glabra</i> , <i>*Orobancha minor</i> , <i>*Lupinus angustifolius</i>								
Grass (G)		10-30	<i>*Briza maxima</i> , <i>*Cynodon dactylon</i> , Unknown grass, <i>*Stenotaphrum secundatum</i> ,								
Other (climbers) (C)		<2	<i>*Asparagus asparagoides</i>								

Cover Codes: D >70% M 30-70% S 10-30% V 2-10% VV <2% E <5% Emergent * = Introduced

Surrounding plants: *Mesomelaena tetragona*, **Acacia dealbata*

STRUCTURAL VEGETATION, FLORA - Relevé										SITE_ID: R03
Date: 14/10/2021	GPS:								E	Structural comm. type <i>Marri open forest over Marri-Sheoak low open woodland</i>
									N	
Recorder: KL	Photo no. + direction:									
Location: North Jindong Road, North Jindong										
Condition: Pristine Excellent Very Good <u>Good</u> Degraded Completely Degraded										
Aspect: N NE E SE S SW W NW NA										Slope: <u>Flat</u> Gentle Mod Steep
Geology: Gran <u>Lat</u> Lime Other					Rock: <u>0</u> <2 2-10 10-20 20-50 >50					
Soil Colour: Grey Dark Brown Light Brown Orange/Brown Red/Brown White Yellow					Soil Type: C CL CLS CS <u>L</u> LS S SCL SL SP ZCL ZL ZS					
Litter (% cover & depth): 80% patchy, 4cm					Bare Ground (% cover): 0%					
Hydrology: <u>Good drain</u> Poor drain Wet all year Seas wet winter/spring					Topographic position: Upland Wetland Rock Outcrop Drainage Depression Creekline Riparian Bank Gully Plain Slope Lower Slope Middle Slope Upper Valley <u>Flat</u>					
Layer	Height (m)	Cover	Plant Species (Dominant 3 first)							
Tree (T2)	10-30	30-70	<i>Corymbia calophylla</i>							
Tree (T3)	< 10	2-10	<i>Corymbia calophylla</i> , <i>Allocasuarina fraseriana</i> , <i>Eucalyptus marginata</i> (Dead)							
Shrub (S1)	> 2	<2	<i>Dasypogon hookeri</i> , <i>Corymbia calophylla</i> , <i>Allocasuarina fraseriana</i> , <i>Persoonia longifolia</i>							
Shrub (S2)	1-2	<2%	<i>Dasypogon hookeri</i> , <i>Kingia australis</i> , <i>Xylomelum occidentale</i>							
Shrub (S3)	0-1	2-10	<i>Xanthorrhoea gracilis</i> , <i>Bossiaea ornate</i> , <i>Bossiaea sp.</i> , <i>Xylomelum occidentale</i> , <i>Hibbertia sp.</i> , <i>Hakea amplexicaulis</i>							
Sedge/Rush (VR)		30-70	<i>Netrostylis sp.</i> Jarrah Forest, <i>Lepidosperma sp.</i> , <i>Lomandra odora</i> , <i>Loxocarya sp.</i> sterile, <i>Lepidosperma sp.</i> , <i>Juncus pallidus</i> , <i>Loxocarya cinerea</i>							
Herb (H)		<2	<i>*Hypochaeris radicata</i> , <i>*Sterile bulb</i>							
Grass (G)		30-70%	<i>*Cenchrus clandestinus</i> , <i>*Tetrarrhena laevis</i> , <i>Ehrharta longiflora</i> , <i>Briza major</i> , <i>*Phalaris aquatica</i>							
Other (climbers) (C)		NA								

Cover Codes: D >70% M 30-70% S 10-30% V 2-10% VV <2% E <5% Emergent * = Introduced

Surrounding plants: **Acacia pulchella*, *Leucopgon verticillatus*



Relevé Location R01



Relevé Location R02



Relevé Location R03



Appendix E Significant Trees

DBH (cm)	Species	Height (m)	Easting	Northing	Notes
>50	Marri	16	333307.6875	6266726	No Hollow
>50	Marri	15	333307.4375	6266725	No Hollow
>50	Marri	14	333302.6563	6266719.5	No Hollow
>50	Marri	16	333306.25	6266719.5	No Hollow
>50	Marri	15	333304.625	6266709	No Hollow
>50	Marri	8	333298.9688	6266708.5	No Hollow
>50	Marri	14	333294.125	6266705.5	No Hollow
>50	Marri	15	333296.4375	6266706	No Hollow
>50	Marri	16	333295.875	6266694	No Hollow
>50	Marri	15	333294.0938	6266693	No Hollow
>50	Marri	18	333295.4063	6266691	No Hollow
>50	Marri	17	333294.1875	6266687.5	No Hollow
>50	Marri	18	333294.2188	6266686	No Hollow
>50	Marri	17	333291.1875	6266683.5	No Hollow
>50	Marri	14	333289.9688	6266679.5	No Hollow
>50	Marri	15	333289.125	6266669	No Hollow
>50	Marri	14	333282.375	6266657	No Hollow
>50	Marri	13	333282.125	6266655.5	No Hollow Dead
>50	Marri	16	333278	6266641.5	No Hollow
>50	Marri	8	333267.7813	6266622.5	No Hollow
>50	Marri	14	333264.1875	6266607.5	No Hollow
>50	Marri	16	333264.0938	6266598.5	No Hollow
>50	Marri	15	333256	6266575	Hollow
>50	Marri	16	333253.5938	6266565.5	No Hollow
>50	Marri	15	333248.625	6266554	No Hollow
>50	Marri	15	333244.3125	6266550.5	No Hollow
>50	Marri	16	333244.125	6266547.5	No Hollow
>50	Marri	14	333243.9375	6266543.5	No Hollow
>50	Marri	15	333244.7188	6266542	No Hollow
>50	Marri	17	333240.375	6266539.5	No Hollow
>50	Marri	15	333239.2188	6266532	No Hollow Dead
>50	Marri	17	333234.8438	6266532	No Hollow
>50	Marri	17	333229.3125	6266525	No Hollow
>50	Marri	14	333236.3438	6266521	No Hollow
>100	Marri	18	333233.1875	6266509	No Hollow
>50	Marri	16	333227.5313	6266508.5	No Hollow
>50	Marri	15	333224.0313	6266503	No Hollow
>50	Marri	13	333218.6875	6266484	No Hollow
>50	Marri	15	333217.4063	6266470.5	No Hollow
>50	Marri	15	333213.1563	6266463	No Hollow
>50	Marri	18	333209.125	6266457.5	No Hollow
>50	Marri	17	333212.5625	6266451.5	No Hollow

>50	Marri	14	333206.7813	6266443.5	No Hollow
>50	Marri	15	333204.7813	6266441	No Hollow
>50	Marri	17	333199.9375	6266423	No Hollow
>50	Marri	14	333200.7188	6266422	No Hollow
>50	Marri	15	333199.2813	6266417	No Hollow
94	Marri	18	333199.375	6266411.5	No Hollow
>50	Marri	14	333191.7188	6266408	No Hollow
>50	Marri	17	333192.1875	6266396	No Hollow
>50	Marri	15	333186.2813	6266395	No Hollow
>50	Marri	16	333184.6875	6266382.5	No Hollow
>50	Jarrah	16	333181.4688	6266375	No Hollow
>50	Marri	18	333180.25	6266371	No Hollow
>50	Marri	16	333176.0625	6266360	No Hollow
>50	Marri	17	333169.2813	6266350.5	No Hollow
>50	Marri	15	333169.8438	6266347.5	No Hollow
>50	Marri	15	333156.875	6266297	No Hollow
>50	Jarrah	15	333153.125	6266294	No Hollow
>50	Jarrah	15	333141.1875	6266266	No Hollow
>50	Unknown	10	333139.7813	6266261.5	No Hollow Dead
>50	Marri	8	333136.125	6266248.5	No Hollow Dead
>50	Jarrah	15	333132.4688	6266240	No Hollow
>50	Jarrah	18	333131.3438	6266234.5	No Hollow
>50	Jarrah	15	333130.75	6266221.5	No Hollow
>100	Marri	20	333129.3125	6266219	No Hollow
>50	Jarrah	20	333124.6563	6266204	No Hollow
>50	Jarrah	20	333122.875	6266200	No Hollow
>50	Marri	10	333120.5313	6266197	No Hollow Dead
>50	Marri	15	333120.4063	6266193.5	No Hollow
>50	Jarrah	15	333116.4375	6266186	Potential Hollows Dead
>50	Jarrah	15	333111.0938	6266169.5	No Hollow Dead
>100	Marri	20	333106.4375	6266154	No Hollow
>50	Marri	20	333101.625	6266137.5	No Hollow
>50	Marri	20	333099.5938	6266132	No Hollow
>50	Marri	18	333097.75	6266126	Potential Hollows
>50	Marri	20	333095.125	6266118	No Hollow
>50	Marri	18	333093.2188	6266109	No Hollow
>50	Marri	18	333081.2188	6266086	No Hollow
>50	Marri	20	333078.3125	6266066	No Hollow
>50	Marri	15	333077.5938	6266065	No Hollow
>50	Marri	20	333075.375	6266064.5	No Hollow
>50	Marri	12	333074.375	6266059	No Hollow
>50	Marri	22	333073.1875	6266057.5	No Hollow
>50	Marri	20	333070.3438	6266050	No Hollow
>50	Marri	20	333071.5313	6266046	No Hollow
>50	Marri	18	333058.4688	6266013.5	No Hollow
>50	Marri	20	333056.0938	6266012.5	No Hollow

>50	Marri	10	333054.75	6266009	Potential Hollow Dead
>50	Marri	15	333053.5625	6266008	No Hollow
>50	Marri	20	333052.5	6265995	No Hollow
>50	Marri	22	333050.4063	6265988	No Hollow
>50	Marri	15	333042.4375	6265965.5	No Hollow
>50	Marri	18	333034.4063	6265953	No Hollow
>50	Marri	20	333032.25	6265938.5	No Hollow
>50	Marri	12	333031.3125	6265939.5	No Hollow
>50	Marri	25	333027.1875	6265926	No Hollow
>50	Marri	18	333025.6875	6265922	No Hollow
>50	Marri	18	333020.1875	6265903.5	No Hollow
>50	Marri	15	333018.3125	6265899	No Hollow
>50	Marri	12	333016.3438	6265900	No Hollow Dead
>50	Marri	6	333013.5625	6265894.5	No Hollow
>50	Marri	20	333014.7188	6265893	No Hollow
>100	Marri	22	333009.7188	6265871.5	No Hollow
>50	Marri	20	333008.5625	6265867.5	No Hollow
>50	Jarrah	18	333004.25	6265855	No Hollow Dead
>50	Marri	15	332999.5	6265850.5	No Hollow
>50	Marri	12	333001	6265844.5	No Hollow Dead Bees
>50	Marri	18	332992.8125	6265830	No Hollow
>50	Marri	18	332979.0938	6265789	No Hollow
>50	Marri	18	332978.7813	6265785.5	No Hollow
>50	Marri	20	332970.875	6265760.5	No Hollow
>50	Marri	20	332969.8438	6265755	No Hollow
>50	Marri	16	332960.1875	6265730.5	No Hollow
>50	Marri	20	332950.2813	6265702.5	No Hollow
>50	Marri	22	332949.1563	6265703	No Hollow
>50	Jarrah	18	332947.0938	6265699.5	No Hollow
>50	Marri	18	332946.75	6265693.5	No Hollow
>50	Marri	18	332933.25	6265659	No Hollow
>50	Marri	10	332924	6265631.5	No Hollow
>50	Marri	15	332922.375	6265630	No Hollow
>50	Marri	15	332919.9688	6265618.5	No Hollow
>50	Marri	18	332918.8125	6265616.5	No Hollow
>50	Marri	18	332917.5938	6265605.5	No Hollow
>50	Marri	10	332914.8438	6265605	No Hollow
>50	Marri	20	332916.625	6265603	No Hollow Possible WRP in canopy
>50	Marri	22	332914.5313	6265595	No Hollow
>50	Marri	16	332905.0313	6265582	No Hollow
>50	Marri	18	332904.9063	6265573.5	No Hollow
>50	Marri	20	332893.2813	6265538.5	Potential Hollow Dead
>50	Marri	6	332890.0938	6265531	Potential Hollow Dead
>50	Marri	12	332888.4375	6265525	No Hollow
>50	Marri	10	332879.125	6265500	No Hollow
>50	Marri	15	332876.7188	6265495	No Hollow

>50	Marri	16	332873.9375	6265490	No Hollow
>50	Marri	8	332873.5	6265488	No Hollow
>50	Marri	18	332874.4063	6265484.5	No Hollow
>50	Marri	20	332873.6875	6265471.5	No Hollow
>50	Marri	22	332869.2813	6265460	No Hollow
>50	Marri	15	332867.3438	6265459	Potential Hollow Dead
>50	Marri	20	332861.75	6265449.5	No Hollow
>50	Marri	20	332861.5625	6265449.5	No Hollow
>50	Marri	15	332860.7813	6265446.5	No Hollow
>50	Marri	18	332854.6875	6265430.5	Potential Hollows
>50	Marri	20	332854.9063	6265423	No Hollow
>50	Marri	22	332842.5313	6265398.5	No Hollow
>50	Marri	18	332832.2188	6265373	Hollow
>50	Marri	18	332833.5938	6265369	No Hollow
>50	Marri	18	332826.6875	6265351.5	No Hollow
>50	Marri	20	332819	6265329.5	No Hollow
>50	Marri	15	332807	6265296	No Hollow
>100	Marri	25	332807.0313	6265293	No Hollow
>50	Marri	20	332805.25	6265289	No Hollow
>50	Marri	16	332767.1563	6265167	No Hollow
>50	Unknown	15	332760.125	6265156.5	Hollow Dead
>50	Marri	22	332758.8125	6265151.5	No Hollow
>50	Marri	15	332758.5313	6265152	No Hollow
>50	Marri	18	332759.2188	6265139.5	No Hollow
>50	Marri	15	332749.4063	6265116.5	Potential Hollow Dead
>50	Marri	20	332746.3438	6265113	No Hollow
>50	Marri	18	332741.5625	6265099.5	No Hollow
>50	Marri	16	332738.125	6265084	Potential Hollow Dead branch
>50	Marri	18	332737.125	6265083.5	No Hollow
>50	Marri	18	332733.7188	6265076	Potential Hollow Dead branch
>50	Jarrah	18	332450.0938	6264282	No Hollow
>50	Jarrah	17	332452.6875	6264286.5	2 Hollows, chew marks
>50	Marri	18	332461.8438	6264294	No Hollow
>50	Jarrah	17	332462.5938	6264297.5	No Hollow Dead
>50	Jarrah	16	332463.0313	6264299	No Hollow
>50	Jarrah	16	332464.5938	6264305.5	Hollow
>50	Marri	17	332473.9375	6264321.5	No Hollow
>50	Marri	18	332478.3438	6264340	Hollow Bees
>50	Marri	18	332482.4688	6264348.5	No Hollow
>50	Marri	17	332486.7188	6264359.5	No Hollow
>50	Marri	16	332488.4688	6264364.5	No Hollow
>50	Marri	15	332489	6264366.5	No Hollow
>50	Marri	17	332492.75	6264375	No Hollow
>50	Marri	17	332499.4063	6264385.5	No Hollow
>50	Marri	17	332497.8125	6264392	No Hollow
>50	Marri	18	332502.2188	6264394.5	Potential Hollows

>50	Marri	18	332503.4063	6264406	No Hollow
>50	Marri	18	332506.375	6264417	No Hollow
>50	Marri	16	332509.25	6264423	No Hollow
>50	Jarrah	16	332511.625	6264430	Hollows, potential trunk hollow
>50	Marri	18	332517.4375	6264436.5	No Hollow
>50	Marri	17	332516.5313	6264440.5	No Hollow
>50	Marri	18	332519.5313	6264454	No Hollow
>50	Marri	18	332521.1875	6264460.5	No Hollow
>50	Marri	16	332526.2188	6264480.5	No Hollow
>50	Unknown	14	332524.375	6264479.5	No Hollow Dead
>50	Marri	18	332529.8125	6264490.5	No Hollow
>50	Marri	16	332531.2813	6264492	No Hollow
>50	Marri	17	332531	6264497	No Hollow
>50	Marri	18	332531.8438	6264496.5	No Hollow
>100	Marri	17	332534.0938	6264500.5	No Hollow
>50	Marri	18	332539.4375	6264509	No Hollow
>50	Marri	18	332536.2813	6264509	No Hollow
>50	Marri	17	332543.0625	6264533.5	No Hollow
>50	Marri	18	332544.9688	6264542.5	No Hollow
>50	Marri	16	332549.5625	6264554.5	No Hollow
>50	Marri	17	332550.2188	6264559.5	Potential Hollows
>50	Unknown	18	332558.9375	6264569	No Hollow Dead
>50	Marri	18	332559.4375	6264571.5	No Hollow
>50	Marri	17	332563.3438	6264586.5	No Hollow
>50	Marri	16	332564.3438	6264594.5	No Hollow
>50	Marri	18	332567.4688	6264595.5	No Hollow
>50	Marri	17	332567.875	6264604	No Hollow
>50	Marri	18	332579.375	6264624.5	No Hollow
>50	Marri	18	332576.9063	6264628	No Hollow
>50	Marri	17	332585.8438	6264635.5	No Hollow
>50	Marri	16	332582.5	6264636	No Hollow
>50	Marri	17	332586.0938	6264637.5	No Hollow
>50	Marri	18	332587.9063	6264645	No Hollow
>50	Marri	18	332592.9063	6264655.5	No Hollow
>50	Marri	18	332589.75	6264656.5	No Hollow
>50	Marri	16	332592.0938	6264665.5	No Hollow
>50	Unknown	17	332594.1563	6264670	Trunk Hollow - Branch end
>50	Marri	17	332594.8438	6264672.5	No Hollow
>50	Marri	18	332596.5938	6264672.5	No Hollow
>50	Marri	17	332600.125	6264678	No Hollow
>50	Marri	17	332600.6875	6264688	No Hollow
>50	Marri	19	332605.3125	6264693	No Hollow
>50	Marri	19	332606.5625	6264695.5	No Hollow
>50	Marri	18	332603.5313	6264695.5	No Hollow
>50	Marri	18	332603.125	6264696.5	No Hollow
>50	Marri	17	332604.875	6264697.5	No Hollow Dead

>50	Marri	17	332608.375	6264709	No Hollow
>50	Marri	17	332609.0938	6264710	No Hollow
>50	Marri	18	332610.9375	6264728	No Hollow
>50	Jarrah	18	332612.125	6264727	No Hollow
>50	Jarrah	17	332613.25	6264732	No Hollow
>50	Marri	17	332616.1563	6264736	Potential Hollow
>100	Marri	19	332618.9375	6264746	No Hollow
>50	Marri	19	332618.4063	6264755.5	No Hollow
>50	Marri	7	332621.3125	6264760	No Hollow
>50	Marri	16	332627	6264763	No Hollow
>50	Marri	17	332625.8125	6264766.5	No Hollow
>50	Marri	17	332629.8125	6264770.5	No Hollow
>50	Marri	17	332631.9688	6264774	No Hollow
>50	Marri	17	332632.125	6264782.5	No Hollow
>50	Marri	16	332633.875	6264792.5	No Hollow
>50	Marri	16	332636.5313	6264788.5	3 small knot hollows, chewed
>50	Jarrah	16	332640.4688	6264803	No Hollow
>50	Marri	16	332641.8125	6264804.5	No Hollow
>50	Marri	17	332639.1875	6264807.5	No Hollow
>50	Marri	16	332648.2188	6264830.5	No Hollow
>50	Marri	16	332654.4688	6264839	No Hollow
>50	Marri	17	332655	6264851	No Hollow
>50	Marri	15	332654.4063	6264853.5	Nearly dead
>50	Marri	17	332660.7813	6264860	No Hollow
>50	Marri	17	332664.9688	6264874.5	No Hollow
>50	Marri	16	332665.875	6264876.5	No Hollow
>50	Marri	18	332673.8438	6264891.5	No Hollow
>50	Marri	18	332671.3125	6264893	No Hollow
>50	Marri	17	332672.8438	6264896.5	No Hollow
>50	Marri	19	332672.6563	6264906	No Hollow
>50	Marri	16	332679.5	6264918.5	No Hollow
>50	Marri	17	332706.7188	6264989	No Hollow
>50	Marri	15	332705.6875	6264995	No Hollow
>50	Marri	17	332711.5938	6265012	No Hollow
>50	Marri	17	332709.4375	6265014	No Hollow
>50	Marri	15	332713.375	6265032	No Hollow
>50	Marri	16	332719.125	6265037	No Hollow
>50	Marri	17	332723.1875	6265048	No Hollow
>50	Marri	18	332726.375	6265056.5	No Hollow
>50	Marri	15	332726.9688	6265064.5	Potential Hollow
>50	Marri	10	325287.8438	6276889.5	No Hollow
>50	Marri	10	325287.8438	6276889.5	No Hollow
>50	Jarrah	15	333136.1563	6266288	No Hollow
>50	Marri	15	333133.0313	6266266.5	No Hollow
>50	Marri	10	333133.4375	6266232	No Hollow
>50	Marri	12	333134.9063	6266217.5	No Hollow Dead

>50	Jarrah	12	333132.6563	6266208.5	No Hollow
>50	Jarrah	14	333126.6875	6266188.5	No Hollow
>50	Jarrah	14	333127.875	6266184	No Hollow
120	Jarrah	14	333123	6266171.5	Hollow at 8m
>50	Marri	16	333116.5625	6266154	No Hollow
>50	Jarrah	12	333110.3438	6266132.5	No Hollow
>50	Jarrah	13	333105.75	6266124.5	No Hollow
>50	Marri	14	333103	6266117	No Hollow
>50	Jarrah	12	333100.0625	6266110	No Hollow
>50	Marri	14	333098.9688	6266104.5	No Hollow
>50	Marri	12	333090.5938	6266079.5	No Hollow
>50	Marri	12	333090.5	6266069.5	No Hollow
>50	Marri	12	333090.2813	6266070.5	No Hollow
>50	Marri	15	333086	6266062	No Hollow
>50	Marri	12	333081.5	6266054	No Hollow
>50	Marri	16	333075.5625	6266033.5	No Hollow
>50	Marri	16	333073.8125	6266032.5	No Hollow
>50	Marri	12	333069.75	6266015.5	No Hollow Dead
>50	Marri	10	333062.4063	6266001.5	No Hollow
>50	Marri	10	333057.4375	6265983	No Hollow
>50	Marri	10	333045.2188	6265951	No Hollow
>50	Marri	8	333044.625	6265947.5	No Hollow
>50	Marri	10	333045.5313	6265938.5	No Hollow
>50	Marri	10	333039.6563	6265923	No Hollow
>50	Marri	10	333031.7813	6265912.5	No Hollow
>50	Marri	10	333033.25	6265908	No Hollow
>50	Marri	10	333034.25	6265904	No Hollow
>50	Marri	10	333030.2188	6265901.5	No Hollow
>50	Marri	10	333020.1563	6265879	No Hollow
>50	Marri	10	333010.6563	6265854.5	No Hollow
>50	Marri	8	333009.7813	6265841	No Hollow
>50	Marri	10	333002.4688	6265819.5	No Hollow
>50	Marri	10	332990.25	6265792	No Hollow
>50	Jarrah	8	332976.375	6265753.5	No Hollow
>50	Marri	10	332976.125	6265751	No Hollow
>50	Marri	14	332975.9688	6265734.5	No Hollow
>50	Marri	12	332973.75	6265727.5	No Hollow
>50	Marri	12	332972.2188	6265726.5	No Hollow
>50	Marri	10	332972.125	6265720	No Hollow
>50	Marri	10	332967.125	6265714	No Hollow
>50	Marri	10	332966.8438	6265715	No Hollow
>50	Marri	10	332959.5625	6265708	No Hollow
>50	Marri	12	332956.5313	6265695.5	No Hollow
>50	Marri	14	332958.3125	6265689.5	No Hollow
>50	Marri	12	332951.7813	6265680.5	No Hollow
>50	Marri	8	332951.0938	6265678.5	No Hollow

>50	Marri	10	332938.0625	6265639	No Hollow
>50	Marri	10	332938.75	6265637	No Hollow
>50	Marri	12	332938.5	6265635.5	No Hollow
>50	Marri	14	332935.1875	6265628	No Hollow
>50	Marri	14	332936.3438	6265626	No Hollow
>50	Marri	12	332935.5625	6265622	No Hollow
>50	Marri	4	332931.0938	6265618	No Hollow
>50	Marri	10	332930.6563	6265616.5	No Hollow
>50	Marri	14	332928.0313	6265596.5	No Hollow
>50	Marri	10	332925.875	6265593.5	No Hollow
>50	Marri	10	332926.5	6265595	No Hollow
>50	Marri	12	332915.1563	6265570.5	No Hollow
>50	Marri	12	332914.7813	6265570	No Hollow
>50	Marri	12	332917.2813	6265571	No Hollow
>50	Marri	14	332915.125	6265561.5	No Hollow
>50	Marri	8	332902.9063	6265529	No Hollow
>50	Marri	12	332898.375	6265522.5	No Hollow
>50	Marri	10	332895.9688	6265517.5	No Hollow
>50	Marri	10	332894.4688	6265513	No Hollow
>50	Marri	12	332892.5	6265509.5	No Hollow
>50	Marri	12	332890.4688	6265499	No Hollow
>50	Marri	12	332880.5625	6265470.5	No Hollow
>50	Marri	12	332875.2188	6265463	No Hollow
>50	Marri	14	332874.4375	6265455.5	No Hollow
>50	Marri	10	332869.8438	6265442	No Hollow
104	Marri	12	332869.375	6265432.5	Potential Hollows at +10m
>50	Marri	8	332866.0625	6265416	No Hollow
>50	Marri	14	332861.875	6265411	No Hollow
>50	Marri	8	332859.8125	6265412	No Hollow
>50	Marri	14	332856.7188	6265403	No Hollow
>50	Marri	10	332855.5938	6265393.5	No Hollow
>50	Marri	12	332855.4063	6265388.5	No Hollow
>50	Marri	10	332855.6563	6265385	No Hollow
>50	Marri	12	332854.5938	6265387	No Hollow
>50	Marri	10	332852.1875	6265381.5	No Hollow
>50	Marri	12	332848.875	6265375	No Hollow
>50	Marri	12	332848.2188	6265370.5	No Hollow
>50	Marri	10	332830.2188	6265323.5	No Hollow
>50	Marri	10	332806.5	6265260.5	No Hollow
>50	Marri	10	332805.0938	6265255.5	No Hollow
>50	Marri	12	332793.125	6265213.5	No Hollow
>50	Marri	12	332783.4063	6265186	No Hollow
>50	Marri	12	332780.875	6265178	No Hollow
>50	Marri	12	332765.5625	6265153	No Hollow
>50	Unknown	12	332769.0313	6265150.5	No Hollow Dead
>50	Marri	8	332769.7813	6265149	No Hollow

>50	Unknown	12	332765.0625	6265139	No Hollow Dead
>50	Marri	10	332766.125	6265136.5	No Hollow
>50	Marri	10	332761.5	6265124.5	No Hollow
>50	Marri	10	332760.9063	6265117.5	No Hollow
>50	Marri	12	332759.7188	6265111.5	No Hollow
>50	Marri	12	332755.9063	6265102	No Hollow
>50	Marri	10	332469.4688	6264280.5	No Hollow
>50	Marri	10	332470	6264282.5	No Hollow
>50	Marri	18	332472.8438	6264284.5	No Hollow
>50	Marri	10	332475	6264287.5	No Hollow
>50	Marri	10	332473.7813	6264294	No Hollow
>50	Marri	10	332481.125	6264308	No Hollow
>50	Marri	10	332489.9063	6264330.5	No Hollow
>50	Marri	12	332498.7188	6264361.5	No Hollow
>50	Marri	10	332498.8438	6264366	No Hollow
>50	Marri	11	332503.8438	6264376.5	No Hollow
>50	Jarrah	10	332511.4063	6264394	No Hollow
>50	Marri	12	332514.3438	6264396.5	No Hollow
>50	Marri	10	332513	6264404.5	No Hollow
>50	Marri	12	332517.0313	6264411.5	No Hollow
>50	Marri	12	332518.4063	6264418.5	No Hollow
>50	Marri	8	332521.625	6264424	No Hollow
>50	Marri	10	332523.6563	6264429.5	No Hollow
>50	Marri	10	332525.4063	6264430	No Hollow
>50	Marri	15	332529.4375	6264439.5	No Hollow
>50	Marri	12	332530.3125	6264447.5	No Hollow
>50	Marri	10	332531.2813	6264455.5	No Hollow
93	Jarrah	14	332534.5938	6264466.5	Potential Hollow at 12m
>50	Marri	14	332541.75	6264481.5	No Hollow
>50	Marri	16	332546.4375	6264495	No Hollow
>50	Marri	12	332549.0313	6264510.5	No Hollow
>50	Marri	6	332551	6264520.5	No Hollow
>50	Marri	10	332553.25	6264523	No Hollow
>50	Jarrah	10	332555.625	6264526	No Hollow
>50	Marri	10	332566.4688	6264546.5	No Hollow
>50	Marri	12	332572.25	6264561.5	No Hollow Dead
>50	Marri	14	332572.7813	6264567	No Hollow
>50	Marri	14	332571.9375	6264572.5	No Hollow
>50	Jarrah	10	332573.6563	6264576	No Hollow
>50	Marri	8	332575.1563	6264580	No Hollow
>50	Marri	12	332575.1563	6264580	No Hollow
>50	Marri	10	332574.75	6264587.5	No Hollow Dead
>50	Jarrah	12	332579.0625	6264595	No Hollow
>50	Marri	12	332582.125	6264599.5	No Hollow
>50	Marri	12	332584.2813	6264608.5	No Hollow
>50	Marri	16	332588.3438	6264626.5	No Hollow

96	Jarrah	16	332586.1563	6264628.5	Potential Hollows at +14m Dead
>50	Marri	15	332592.5313	6264636	No Hollow
>50	Marri	14	332596.125	6264641	No Hollow
>50	Marri	16	332593.9063	6264641	No Hollow
>50	Marri	12	332594.25	6264647.5	No Hollow
70	Unknown	14	332600.1875	6264658.5	Potential Hollows Dead
>50	Marri	15	332600.0313	6264662.5	No Hollow
>50	Marri	16	332605.5313	6264670.5	No Hollow
90	Unknown	15	332607.125	6264670	Potential Hollow at 14m Dead
>50	Marri	15	332605.7813	6264667	No Hollow
>50	Marri	16	332605.9063	6264671	No Hollow
>50	Marri	16	332609.375	6264684.5	No Hollow
>50	Marri	15	332609.5313	6264685	No Hollow
>50	Marri	16	332611.625	6264692.5	No Hollow
>50	Marri	16	332614.75	6264700	No Hollow
>50	Marri	16	332613.4063	6264702	No Hollow
>50	Marri	16	332616.75	6264702.5	No Hollow
>50	Marri	16	332618.4688	6264704.5	No Hollow
>50	Marri	16	332618.0938	6264704.5	No Hollow
>50	Marri	15	332621.2188	6264711	No Hollow
>50	Marri	16	332620.9063	6264713.5	No Hollow
>50	Marri	16	332623.5313	6264718	No Hollow
>50	Marri	16	332627	6264726	No Hollow
>50	Marri	14	332639.1563	6264772.5	No Hollow
>50	Marri	12	332645.7813	6264780	No Hollow
>50	Marri	14	332646.5938	6264781.5	No Hollow
>50	Marri	12	332645.625	6264784	No Hollow
>50	Marri	16	332645.125	6264785	No Hollow
>50	Marri	14	332650.6875	6264800.5	No Hollow
>50	Marri	12	332652.9688	6264808.5	No Hollow
>50	Marri	14	332652.7813	6264815	No Hollow
>50	Marri	16	332660.6875	6264839.5	No Hollow
>50	Marri	12	332671.5313	6264860.5	No Hollow
>50	Marri	12	332672.0313	6264869	No Hollow
60	Unknown	15	332674.7813	6264871	Potential Hollow at +12m Dead
>50	Marri	15	332676.6875	6264872.5	No Hollow
>50	Marri	14	332673.5	6264879	No Hollow
>50	Marri	14	332680.0313	6264887.5	No Hollow
>50	Marri	12	332681.0313	6264889.5	No Hollow
>50	Marri	12	332681.0625	6264891.5	No Hollow
>50	Marri	15	332683.625	6264899.5	No Hollow
>50	Marri	14	332684.0313	6264909	No Hollow
>50	Marri	12	332687.5	6264911	No Hollow
>50	Marri	14	332689.0938	6264920	No Hollow
>50	Marri	10	332696.75	6264944.5	No Hollow
>50	Marri	10	332699.7813	6264946	No Hollow

>50	Marri	14	332701.4063	6264947.5	No Hollow
>50	Marri	14	332703.8438	6264951	No Hollow
60	Unknown	14	332703.4063	6264961	Potential Hollows at 14m Dead
>50	Marri	10	332705.3438	6264966.5	No Hollow
>50	Marri	8	332708.2813	6264967.5	No Hollow
>50	Marri	12	332707.0313	6264971.5	No Hollow
>50	Marri	14	332710.125	6264985	No Hollow
>50	Marri	12	332716.5	6264991	No Hollow
>50	Marri	12	332717.2813	6264999.5	No Hollow
>50	Marri	12	332720.2188	6265001.5	No Hollow
>50	Marri	12	332720.8438	6265002.5	No Hollow
>50	Marri	12	332727.375	6265026	No Hollow
>50	Marri	10	332728.1875	6265027	No Hollow
>50	Marri	10	332729.5313	6265029.5	No Hollow
>50	Marri	10	332731.4375	6265031.5	No Hollow
>50	Marri	12	332733.75	6265044	No Hollow
>50	Marri	14	332734.2813	6265049	No Hollow
>50	Marri	14	332735.2813	6265056	No Hollow
>50	Marri	10	332745.4688	6265078	No Hollow
>50	Marri	8	332745.6563	6265078	No Hollow
>50	Marri	18	333502.3438	6267300.5	No Hollow
>50	Marri	17	333503.75	6267305.5	No Hollow
>50	Marri	17	333504.5938	6267310	No Hollow
>50	Marri	18	333505.9375	6267311.5	No Hollow
>50	Marri	17	333510.5625	6267324.5	No Hollow
>50	Marri	16	333506.5313	6267325.5	No Hollow
>50	Marri	18	333508.5313	6267328	No Hollow
>50	Marri	19	333513.4375	6267333.5	No Hollow
>50	Marri	16	333510.6563	6267339	No Hollow
>50	Jarra	17	333512.8438	6267341.5	No Hollow
>50	Marri	17	333516.375	6267347	No Hollow
>50	Marri	18	333518.0938	6267359	No Hollow
>50	Marri	17	333521.3125	6267372	No Hollow
>50	Marri	18	333525.25	6267368	No Hollow
>50	Marri	17	333529.75	6267377	No Hollow
>50	Marri	15	333527.3125	6267377.5	No Hollow
>50	Marri	16	333529.6563	6267382.5	No Hollow
>50	Marri	18	333535.1875	6267400	No Hollow
>50	Marri	8	333534.5	6267402	No Hollow
>50	Jarra	17	333536.4063	6267403.5	No Hollow
>50	Marri	18	333540.8125	6267417	No Hollow
>50	Marri	17	333540.5313	6267417.5	No Hollow
>50	Marri	18	333544.2188	6267423.5	No Hollow
>50	Marri	16	333543.3438	6267431.5	No Hollow
>50	Marri	17	333548.625	6267443	No Hollow
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>50	Marri	20	333554.1563	6267454.5	No Hollow
>50	Marri	16	333557.5	6267460.5	No Hollow
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>50	Marri	17	333564.9063	6267481.5	Dead
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>50	Marri	14	333568.9688	6267493.5	No Hollow
>50	Jarrah	18	333570.75	6267503.5	No Hollow
>50	Marri	18	333572.75	6267510.5	No Hollow
>50	Marri	16	333574.75	6267517.5	No Hollow
>100	Marri	20	333575.0313	6267518.5	Potential Hollow
>50	Marri	18	333579.1563	6267537	No Hollow
>50	Jarrah	18	333581.9375	6267542	No Hollow
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>50	Marri	20	333489.0938	6267268.5	No Hollow
>50	Marri	18	333488.7188	6267263.5	No Hollow
>50	Jarrah	19	333488.4375	6267263	No Hollow
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>50	Marri	16	333480.4063	6267250	No Hollow
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>50	Jarrah	17	333477.0938	6267238	No Hollow
>50	Marri	16	333478.5	6267237	No Hollow
>50	Marri	18	333475.0938	6267232	No Hollow
>50	Marri	11	333474.75	6267224.5	No Hollow
>50	Marri	14	333470.5	6267217.5	No Hollow
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>50	Marri	8	333459.2188	6267184.5	No Hollow
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>50	Marri	16	333454.4688	6267164	No Hollow
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>50	Jarrah	17	333448.5938	6267151	No Hollow
>50	Marri	18	333449.1875	6267144	No Hollow
>50	Marri	16	333447.5938	6267144.5	No Hollow
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>50	Marri	16	333439.6875	6267129	No Hollow
>50	Marri	15	333439.0313	6267124.5	No Hollow
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>50	Marri	18	333422.125	6267083.5	No Hollow
96	Jarrah	17	333420.2813	6267078	No Hollow
>50	Marri	16	333413.3438	6267046.5	No Hollow

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>50	Marri	16	333369.6875	6266924	No Hollow
>50	Marri	16	333370.4375	6266922.5	No Hollow
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>50	Marri	14	333363.2813	6266902.5	No Hollow Dead
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>50	Marri	17	333355.4688	6266878.5	No Hollow
>50	Marri	16	333340.3438	6266840.5	No Hollow
>50	Marri	17	333333.4375	6266828.5	No Hollow
>50	Marri	18	333333.7813	6266824.5	No Hollow
>50	Marri	9	333332.7813	6266824	No Hollow Dead
>50	Marri	17	333331.1563	6266821.5	No Hollow
>50	Marri	16	333330.6875	6266820.5	No Hollow
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>50	Marri	14	333329.1563	6266807	No Hollow Dead
>100	Marri	18	333326.8125	6266805	No Hollow
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>50	Marri	17	333324.7813	6266788.5	No Hollow
>50	Marri	16	333321.375	6266780.5	No Hollow
>50	Marri	13	333318.0938	6266772.5	Potential Hollow
>50	Marri	8	333316.8125	6266766.5	No Hollow Dead
>50	Marri	14	333313.0938	6266761	No Hollow
>50	Marri	17	333310.3438	6266749	No Hollow
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>50	Marri	15	363606.5313	6284023	No Hollow
>50	Marri	15	363606.5313	6284023	No Hollow
>50	Marri	14	363606.5313	6284023	No Hollow
>50	Marri	10	363606.5313	6284023	No Hollow
>50	Marri	15	363606.5313	6284023	No Hollow
>50	Marri	12	336292.5	6267918.5	No Hollow Dead
>50	Marri	10	333525.6875	6267316.5	No Hollow Dead
>50	Marri	16	333525.4375	6267326.5	No Hollow
>50	Marri	15	333523.8125	6267335	No Hollow
>50	Marri	15	333525.3125	6267344.5	No Hollow
133	Jarra	18	333531.3125	6267350.5	Potential Chimney Hollow
>50	Marri	15	333533.75	6267355.5	No Hollow
>50	Marri	15	333534.5	6267359.5	No Hollow
>50	Marri	15	333532.1875	6267358.5	No Hollow
>50	Marri	12	333535.4063	6267361.5	No Hollow
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>50	Marri	10	333540.9375	6267388.5	No Hollow
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>50	Marri	12	333551.0938	6267407.5	No Hollow
60	Marri	4	333554	6267416	Chimney Hollow
>50	Marri	8	333554.7188	6267422.5	No Hollow
>50	Marri	15	333557.7188	6267430.5	No Hollow
>50	Marri	10	333558.0625	6267438	No Hollow
>50	Marri	12	333560.0625	6267439.5	No Hollow
>50	Marri	12	333563.3438	6267449.5	No Hollow
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>50	Marri	12	333571.9688	6267464	No Hollow
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>50	Marri	12	333584.8438	6267502	No Hollow
>50	Marri	14	333585.9375	6267508.5	No Hollow
>50	Marri	5	333588	6267512	Dead
>50	Marri	15	333587	6267517.5	No Hollow
>50	Jarra	14	333587.375	6267523	No Hollow
>50	Marri	10	333591.5	6267530.5	No Hollow
>50	Marri	14	333592.4688	6267532.5	No Hollow
>50	Marri	15	333591.5	6267535	No Hollow
>50	Marri	12	333510.1875	6267287.5	No Hollow
>50	Marri	14	333504.5	6267278	No Hollow

>50	Marri	14	333501.7813	6267268.5	No Hollow
>50	Marri	12	333498.4063	6267261	No Hollow
>50	Marri	15	333496.125	6267248	No Hollow
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>50	Marri	15	333485.0938	6267222	No Hollow
>50	Marri	15	333476.1875	6267195.5	No Hollow
>50	Marri	14	333471.7813	6267186.5	No Hollow
>50	Marri	12	333469.875	6267180.5	No Hollow
>50	Marri	14	333464.2188	6267159	No Hollow
>50	Marri	14	333464.4375	6267156.5	No Hollow
>50	Marri	14	333460.3125	6267148.5	Potential Chimney Hollow
>50	Marri	13	333448.375	6267126	No Hollow
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>50	Marri	15	333439.5313	6267090	No Hollow
>50	Marri	14	333436.9688	6267078	No Hollow
>50	Marri	14	333436.5313	6267077	No Hollow
>50	Marri	15	333436.9375	6267068.5	No Hollow
>50	Jarrah	12	333433.5313	6267068.5	No Hollow
>50	Marri	15	333430.8438	6267057	No Hollow
>50	Marri	15	333430.8125	6267053.5	No Hollow
>50	Marri	16	333428.9375	6267056	No Hollow
>50	Marri	12	333417.625	6267028	No Hollow
>50	Marri	16	333409.8438	6267003	No Hollow
>50	Marri	10	333410.4375	6267000	No Hollow
>50	Marri	10	333410.5	6267001	No Hollow Dead
>50	Jarrah	11	333406.1875	6266999.5	No Hollow Dead
>50	Marri	18	333407.8438	6266989	No Hollow
>50	Marri	13	333407.6875	6266988.5	No Hollow
>50	Jarrah	10	333405.625	6266988.5	No Hollow
>50	Jarrah	13	333403.8438	6266984.5	No Hollow
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>50	Marri	17	333399.125	6266973	No Hollow
>50	Jarrah	13	333400.4375	6266972	No Hollow
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>50	Marri	16	333392.4063	6266955.5	No Hollow
>50	Marri	14	333388.4375	6266942.5	No Hollow
>50	Marri	15	333388.25	6266938.5	No Hollow
>50	Marri	5	333382.875	6266922	Potential Hollow
>50	Marri	14	333381.7188	6266919.5	No Hollow
>50	Marri	12	333384.0938	6266921	No Hollow
>50	Marri	12	333378.875	6266906.5	No Hollow
>50	Marri	12	333379.5625	6266904.5	No Hollow

>50	Marri	12	333379.8438	6266905	No Hollow
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>50	Marri	16	333372.0938	6266897	No Hollow
>50	Marri	14	333371.1875	6266891	No Hollow
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>50	Marri	15	333366	6266880.5	No Hollow
>50	Marri	14	333367.2813	6266881	No Hollow
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>50	Marri	16	333363.7813	6266874	No Hollow
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>50	Marri	14	333361.5313	6266864.5	No Hollow
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>50	Marri	18	333348.4375	6266819	No Hollow
>50	Marri	16	333343.3125	6266815	No Hollow
>50	Marri	10	333343.625	6266812.5	No Hollow
>50	Marri	16	333342.3438	6266811.5	No Hollow
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>50	Marri	18	333340.7188	6266804.5	No Hollow
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>50	Marri	13	333312.1875	6266728.5	No Hollow
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>50	Jarra	14	333304.2188	6266696.5	No Hollow
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>50	Marri	12	333299.5313	6266683	No Hollow
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>50	Jarra	18	333290.375	6266660.5	No Hollow
>50	Marri	14	333283.875	6266651.5	No Hollow
>50	Marri	14	333280.1563	6266636	No Hollow

>50	Marri	14	333273.6875	6266619.5	No Hollow
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>50	Marri	14	333271.5625	6266602.5	No Hollow
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>50	Marri	12	333264.1875	6266584	No Hollow
>50	Marri	12	333262.3125	6266581	No Hollow
>50	Marri	14	333264.4063	6266576.5	No Hollow
>50	Marri	16	333254.0313	6266561.5	No Hollow
>50	Marri	18	333255.0313	6266551	No Hollow
>50	Marri	16	333250.5625	6266547	No Hollow
>50	Marri	14	333250.0625	6266544	No Hollow
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>50	Marri	16	333245.5625	6266525	No Hollow
>50	Marri	18	333236.9688	6266513	No Hollow
>50	Marri	14	333234.9688	6266506	No Hollow
>50	Jarrah	8	333235.5313	6266500	No Hollow Dead
>50	Marri	14	333228.9063	6266487	No Hollow
>50	Marri	16	333225.6875	6266480	No Hollow
>50	Marri	16	333218.8125	6266455.5	No Hollow
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>50	Marri	14	333199.4688	6266383.5	No Hollow
77	Marri	20	333561.4688	6269208	No Hollow
>50	Marri	12	333564.1563	6269245.5	No Hollow
>50	Marri	15	333565.4688	6269250	No Hollow
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121	Marri	20	333557.0625	6269419	No Hollow
>50	Marri	22	333560.1875	6269452	No Hollow
>50	Marri	20	333560.875	6269471	No Hollow
>50	Marri	20	333557.75	6269485.5	No Hollow
79	Marri	23	333560.125	6269492.5	No Hollow
>50	Marri	25	333558.375	6269507.5	No Hollow
>50	Marri	25	333556.7813	6269515	No Hollow

87	Marri	20	333557.25	6269525	No Hollow
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>50	Marri	22	333557.3438	6269535.5	No Hollow
>50	Marri	20	333558.9688	6269554.5	No Hollow
>50	Marri	12	333558.8438	6269555.5	No Hollow
>50	Marri	18	333558.8438	6269571.5	No Hollow
>50	Marri	18	333554.8438	6269593	No Hollow
>50	Marri	20	333557.4688	6269608.5	No Hollow
>50	Marri	15	333557.1875	6269620	No Hollow
>50	Marri	18	333557.3438	6269637	No Hollow
110	Marri	22	333556.5313	6269651	Hollow
75	Marri	20	333556.2188	6269658.5	Hollow
>50	Marri	18	333559.5938	6269710	No Hollow
>90	Marri	20	333575.4063	6269691	Hollow (Point is approx 7m NW of waypoint (no access))
>50	Marri	25	333580.4375	6269690	No Hollow
100	Marri	30	333580.25	6269685.5	Potential Hollow (Tree senescing at top)
>50	Marri	30	333570.6563	6269681.5	Potential Hollow
>50	Marri	25	333567.1875	6269669	No Hollow
>50	Marri	20	333572.0938	6269657	No Hollow
>50	Marri	20	333571.375	6269655.5	No Hollow
>50	Marri	20	333620.4375	6269719	No Hollow
>50	Marri	20	333624.2813	6269717.5	No Hollow
>50	Marri	25	333639.7813	6269716.5	No Hollow
>50	Marri	25	333639.5	6269717	No Hollow
>50	Marri	18	333663.375	6269718.5	Dead
>50	Marri	15	333719.5625	6269719	No Hollow
>50	Marri	15	333722.0625	6269718.5	No Hollow
75	Marri	25	333726.4375	6269719	No Hollow
>50	Marri	22	333734.5625	6269715.5	No Hollow
69	Marri	20	333790.4063	6269718.5	Potential Hollow
>50	Marri	20	333823.625	6269722	No Hollow
>50	Marri	23	333831.125	6269723.5	No Hollow
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>50	Marri	20	333564	6269099	No Hollow
>50	Marri	20	333565.4375	6269092	No Hollow
>50	Marri	20	333565.8125	6269085.5	No Hollow
>50	Marri	20	333564.1563	6269075.5	No Hollow
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>50	Marri	20	333564.6875	6269039	No Hollow

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>50	Marri	25	333569.4375	6269017	No Hollow
>50	Marri	20	333568.4063	6269012	No Hollow
>50	Marri	25	333566.1875	6269000	No Hollow
>50	Marri	12	333566.3438	6268991.5	Dead
>50	Marri	20	333570.0625	6268965	No Hollow
>50	Marri	20	333566.625	6268954.5	No Hollow
104	Marri	25	333568.9375	6268949	No Hollow
>50	Marri	20	333567.2188	6268947	No Hollow
>50	Marri	20	333568.4375	6268941	Dead
>50	Marri	23	333569.375	6268935.5	No Hollow
>50	Marri	20	333571.5313	6268933.5	No Hollow
>50	Marri	20	333569.7188	6268931	No Hollow
114	Marri	25	333571.8125	6268922	No Hollow
>50	Marri	15	333569.25	6268915.5	No Hollow
>50	Marri	5	333567.4375	6268912.5	No Hollow
>50	Marri	20	333570.6875	6268906.5	No Hollow
>50	Marri	20	333570.5938	6268902.5	No Hollow
>50	Marri	20	333570.375	6268893.5	No Hollow
>50	Marri	20	333569.3438	6268893	No Hollow
90	Marri	20	333568	6268881	No Hollow
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110	Marri	20	333564.5625	6268860	No Hollow
82	Marri	20	333573.2813	6268853.5	No Hollow
>50	Marri	18	333569.875	6268847.5	No Hollow
97	Marri	25	333571.75	6268841	No Hollow
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>50	Marri	18	333570.375	6268813	No Hollow
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102	Marri	20	333569.0938	6268807.5	No Hollow
72	Marri	20	333570.3125	6268801	No Hollow
71	Marri	12	333571.25	6268785	Dead
92	Marri	18	333570.1563	6268782.5	No Hollow
118	Marri	15	333571.5625	6268772	No Hollow
>50	Marri	17	333568.1875	6268768	No Hollow
113	Marri	22	333570.8125	6268751.5	No Hollow
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83	Marri	22	333573.4688	6268710	No Hollow

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121	Marri	20	333576.625	6268625	No Hollow
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95	Marri	20	333574.4063	6268507.5	No Hollow
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53	Marri	20	333574.875	6268495.5	No Hollow
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80	Marri	20	333576.625	6268487	No Hollow
96	Marri	22	333578.4063	6268479.5	No Hollow
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140	Marri	22	333581.2188	6268451	No Hollow
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>50	Marri	20	333578.4063	6268277.5	No Hollow
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>50	Marri	23	333587.9375	6268246.5	Beehive in base
>50	Marri	23	333585.7813	6268242.5	No Hollow
>50	Marri	19	333582	6268236	No Hollow
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>50	Jarrah	17	333581.75	6268213	Senescing
>50	Marri	20	333581.8438	6268201.5	No Hollow
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>50	Jarrah	14	333582.9063	6268163	No Hollow
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>50	Marri	22	333582.375	6268096.5	No Hollow
108	Marri	22	333581.6875	6268083	No Hollow
130	Marri	22	333580.0938	6268080	No Hollow
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>50	Marri	23	333587.875	6268063.5	Drey/Nest
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>50	Marri	12	333583.9375	6268044	No Hollow
>50	Marri	18	333583.1875	6268040.5	No Hollow
98	Marri	17	333584.4063	6268033	No Hollow
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>50	Jarrah	18	333588.4375	6267801.5	No Hollow
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>50	Marri	18	333593.7813	6267654.5	No Hollow
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>50	Marri	15	333596.4688	6267612.5	No Hollow
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110	Marri	20	323540.125	6240264	Potential Hollow
>50	Marri	20	323540.125	6240264	No Hollow
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112	Marri	23	333569.3438	6269341	Potential Hollow
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60	Marri	17	333574	6269377	Potential Hollow
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58	Marri	12	333572.5313	6269398.5	Potential Hollow
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>50	Marri	13	333570.8438	6269432	No Hollow
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>50	Marri	13	333569.6563	6269483	No Hollow
>50	Marri	12	333568.75	6269492.5	No Hollow
>50	Marri	12	333569.5313	6269496.5	No Hollow
115	Marri	15	333570	6269517.5	Potential Hollow
>50	Marri	14	333568.8438	6269536	No Hollow
107	Marri	18	333569.0938	6269537.5	Potential Hollow
>50	Marri	14	333572.1875	6269535	No Hollow
>50	Marri	15	333568.3125	6269555	(On fence line move \point)
>50	Marri	14	333630.4375	6269699	No Hollow
104	Marri	20	333668.75	6269708	Hollow at base
>50	Marri	14	333675.4688	6269710.5	No Hollow
59	Marri	12	333683.4688	6269709.5	Potential Hollow
>50	Marri	16	333695.7188	6269709	No Hollow
>50	Marri	14	333702.2813	6269710.5	No Hollow
>50	Marri	14	333704.6875	6269711.5	No Hollow
>50	Marri	15	333738.4063	6269712	No Hollow
>50	Marri	16	333748.125	6269707.5	No Hollow
>50	Marri	16	333756.9063	6269709.5	No Hollow
>50	Marri	17	333759.5313	6269708	No Hollow
>50	Marri	13	333775.625	6269709	No Hollow
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>50	Marri	12	333815.75	6269711.5	No Hollow
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>50	Marri	12	333573.875	6269171	No Hollow
62	Dead	10	333576.6875	6269159.5	Potential Hollow
>50	Marri	12	333571.5313	6269152	No Hollow
>50	Marri	16	333575.4375	6269141	No Hollow
>50	Marri	18	333578.4688	6269126.5	No Hollow
>50	Marri	18	333575.7188	6269124	No Hollow

100	Dead	12	333580.4375	6269113.5	Potential Hollow
>50	Marri	16	333576.375	6269109	No Hollow
>50	Marri	18	333577.6875	6269097	No Hollow
>50	Marri	18	333577.0938	6269083.5	No Hollow
>50	Marri	16	333578.7813	6269071.5	No Hollow
>50	Marri	16	333578.875	6269071	No Hollow
>50	Marri	16	333578	6269068	No Hollow
>50	Marri	16	333578.9375	6269067	No Hollow
>50	Marri	13	333578.1875	6269057	No Hollow
96	Marri	18	333579.7813	6269039.5	Hollow(s)
>50	Marri	10	333578.7188	6269032.5	No Hollow
94	Jarrah	15	333579.5313	6269027.5	Potential Hollow
>50	Marri	10	333577.9688	6269033	Potential Hollow
108	Marri	20	333580.5625	6269015.5	Potential Hollow
>50	Marri	16	333578.9375	6268998.5	No Hollow
>50	Marri	25	333579.9063	6268979.5	No Hollow
>50	Marri	20	333580.125	6268972	No Hollow
>50	Marri	18	333577.9063	6268967.5	No Hollow
>50	Marri	18	333579.2188	6268960.5	No Hollow
>50	Marri	17	333577.8438	6268960	No Hollow
>50	Marri	15	333579.125	6268955	No Hollow
70	Dead	12	333579.125	6268950	No Hollow
>50	Marri	12	333582.625	6268946	No Hollow
>50	Marri	14	333578.8438	6268934.5	No Hollow
>50	Marri	14	333580.9375	6268920.5	No Hollow
103	Marri	12	333580.5625	6268905	No Hollow
>50	Jarrah	12	333581.3125	6268904	No Hollow
>50	Marri	13	333578.3438	6268894	No Hollow
>50	Marri	13	333581.125	6268883	No Hollow
>50	Marri	12	333582.3125	6268884	No Hollow
>50	Marri	6	333581.3125	6268856.5	No Hollow
>50	Marri	14	333579.4063	6268854	No Hollow
>50	Marri	14	333581.0625	6268854	No Hollow
>50	Marri	15	333582.75	6268843.5	No Hollow
>50	Marri	15	333582.9688	6268820	Potential Hollow
>50	Marri	15	333581.2813	6268821	No Hollow
>50	Marri	12	333581.2188	6268819	No Hollow
>50	Marri	16	333581.75	6268809	No Hollow
>50	Marri	15	333582.4375	6268802.5	No Hollow
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>50	Marri	12	333584.2813	6268796.5	No Hollow
>50	Marri	8	333581.8438	6268787.5	No Hollow
>50	Marri	10	333581.4375	6268779.5	No Hollow
>50	Marri	10	333582.4063	6268776.5	No Hollow
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>50	Marri	15	333587.0938	6268726	No Hollow
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>50	Marri	18	333582.25	6268711.5	No Hollow
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>50	Marri	18	333584.9063	6268697.5	No Hollow
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155	Marri	20	333584.125	6268646.5	Potential Hollow
>50	Marri	12	333585.5625	6268633.5	No Hollow
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>50	Marri	14	333589.4375	6268506.5	No Hollow
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>50	Dead	12	333589.0938	6268499.5	No Hollow
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>50	Marri	10	333587.9375	6268486.5	No Hollow
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>50	Marri	10	333589.25	6268469	No Hollow
>50	Marri	12	333589.625	6268463.5	No Hollow
>50	Marri	13	333592.375	6268460	No Hollow
>50	Marri	13	333589.9375	6268457	No Hollow
>100	Marri	20	333585.875	6268439.5	Potential Hollow (Bees)
>50	Marri	16	333589.375	6268420	No Hollow
>50	Marri	12	333591.5938	6268408.5	No Hollow
>50	Marri	13	333591.8125	6268386	No Hollow
>50	Marri	14	333590.7188	6268374.5	No Hollow
>50	Jarrah	13	333591.4688	6268368.5	No Hollow
>50	Marri	13	333590.7813	6268349.5	No Hollow

>50	Marri	15	333591.1875	6268347	No Hollow
>50	Marri	15	333588.3125	6268337.5	No Hollow
>50	Marri	12	333594.375	6268329.5	No Hollow
>50	Marri	16	333592.125	6268325.5	No Hollow
>50	Marri	16	333593.2813	6268318.5	No Hollow
>50	Marri	14	333594.9688	6268311	No Hollow
>50	Marri	14	333589.6875	6268300	No Hollow
>50	Marri	14	333593.25	6268292.5	No Hollow
>50	Marri	12	333593.75	6268280.5	No Hollow
>50	Marri	18	333592.7188	6268254	No Hollow
>50	Marri	4	333595.0313	6268253.5	No Hollow
>50	Marri	16	333591.9063	6268242	No Hollow
>50	Marri	16	333593.25	6268238.5	No Hollow
>50	Marri	12	333593.375	6268238	No Hollow
>50	Marri	16	333596.6875	6268207	No Hollow
>50	Marri	16	333597.5313	6268202	No Hollow
>50	Marri	6	333596.3125	6268202	No Hollow
>50	Marri	12	333593	6268194.5	No Hollow
>50	Marri	12	333596.2188	6268192	No Hollow
>50	Marri	18	333592.125	6268176.5	No Hollow
>50	Marri	16	333594.6875	6268173	No Hollow
>50	Marri	14	333597.9063	6268163.5	No Hollow
>50	Marri	12	333596.4063	6268158.5	No Hollow
>50	Marri	12	333593.0625	6268148	No Hollow
>50	Marri	13	333596.7813	6268147.5	No Hollow
>50	Jarrah	10	333593.625	6268143.5	No Hollow
>50	Marri	11	333595.5625	6268134	No Hollow
>50	Marri	14	333598.8125	6268126.5	No Hollow
>50	Marri	12	333596.1875	6268113	No Hollow
>50	Marri	12	333595.6563	6268111.5	No Hollow
>50	Marri	14	333597.625	6268104.5	No Hollow
>50	Marri	16	333594.9688	6268098.5	No Hollow
>50	Marri	14	333596.875	6268095	No Hollow
>50	Marri	14	333594.0313	6268083	No Hollow
>50	Marri	14	333598.125	6268070.5	No Hollow
>50	Marri	14	333596.5625	6268065	No Hollow
>50	Marri	16	333594.5625	6268052.5	No Hollow
>50	Marri	18	333595.6563	6268047	No Hollow
>50	Marri	18	333596.125	6268043	No Hollow
>50	Marri	18	333595.2813	6268033	No Hollow
>50	Marri	12	333597.5	6268022	No Hollow
>50	Marri	18	333599.9688	6267997	No Hollow
>50	Marri	16	333598.0938	6267987	No Hollow
>50	Marri	14	333597.2188	6267984	No Hollow
>50	Marri	12	333595.9375	6267978	No Hollow
>50	Marri	10	333598.9063	6267968	No Hollow

>50	Marri	12	333596.8438	6267962.5	No Hollow
>50	Marri	12	333597.1563	6267935	No Hollow
>50	Marri	12	333597.9375	6267890.5	No Hollow
>50	Marri	16	333599.2188	6267881	No Hollow
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>50	Marri	15	333597.1875	6267869	No Hollow
>50	Marri	16	333601.5	6267866.5	No Hollow
>50	Marri	13	333597.5938	6267846.5	No Hollow
>50	Marri	16	333598.5625	6267833.5	No Hollow
>50	Marri	15	333599.2813	6267828.5	No Hollow
>50	Marri	16	333598.9688	6267815.5	No Hollow
>50	Marri	16	333602.1875	6267811.5	No Hollow
>50	Marri	15	333601.2188	6267797.5	No Hollow
>50	Marri	14	333600.625	6267788.5	No Hollow
>50	Marri	14	333602.125	6267788	No Hollow
>50	Marri	14	333601.375	6267783.5	No Hollow
>50	Marri	16	333601.375	6267773	No Hollow
>50	Marri	16	333602.125	6267772	No Hollow
>50	Marri	12	333603.2188	6267767	No Hollow
>50	Marri	14	333602.5	6267766	No Hollow
>50	Marri	15	333603.625	6267760	No Hollow
>50	Marri	12	333600.25	6267747.5	No Hollow
>50	Marri	10	333602	6267746.5	No Hollow
>50	Marri	12	333604.4375	6267729.5	No Hollow
>50	Marri	10	333603.5	6267725	No Hollow
>50	Marri	10	333604.0938	6267706.5	No Hollow
>50	Marri	12	333602.25	6267694.5	No Hollow
>50	Marri	12	333602.7813	6267686	No Hollow
>50	Marri	16	333601.25	6267679	No Hollow
>50	Marri	16	333600.3438	6267667.5	No Hollow
>50	Marri	16	333605.0313	6267662.5	No Hollow
>50	Marri	12	333602.5625	6267657	No Hollow
>50	Marri	14	333601.875	6267648	No Hollow
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>50	Marri	12	333604.8125	6267618.5	No Hollow
>50	Marri	14	333604.5313	6267612.5	No Hollow
>50	Marri	16	333604.6875	6267609.5	No Hollow
>50	Marri	16	333605.2188	6267605.5	No Hollow
>50	Marri	10	333603.5938	6267592.5	No Hollow
>50	Marri	12	333604.5313	6267570.5	No Hollow
>50	Marri	12	333604.7188	6267570.5	No Hollow
>50	Marri	14	333601.875	6267568	No Hollow
>50	Marri	12	333603.625	6267558.5	No Hollow