



Broomehill Offset Site

**Vegetation, flora and Black Cockatoo
assessment**

CBH Group

01 November 2022



→ **The Power of Commitment**

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1. Introduction

1.1 Background

CBH Group (CBH) is proposing to construct and operate a new fixed rail loading project at CBH's Broomehill site, within the Shire of Broomehill-Tambellup. The planned disturbance area for the project includes clearing of 5.43 ha of native vegetation

CBH require an assessment of a potential suitable offset area to determine flora and vegetation values and the assessment of potential Carnaby Cockatoo foraging and breeding habitat. The area being assessed includes vegetated areas within the following lots, currently owned by CBH (herein referred to as the survey area):

- Lot 1260 on Plan 409752 (5.8679 ha)
- Lot 530 on Plan 222197 (2.0234 ha)
- Lot 148 on Plan 409752 (3.0597 ha).

1.2 Purpose

The purpose of this assessment was to assess and map the extent of Eucalypt Woodlands of the Western Australian Wheatbelt (Wheatbelt Woodlands) TEC and Black Cockatoo values of the proposed offset site.

1.3 Scope of works

GHD undertook the following scope of works:

- A desktop assessment of publicly available data and Department of Biodiversity, Conservation and Attractions (DBCA) database's to assess the potential presence of Environmentally Sensitive Areas (ESAs), significant flora, communities and fauna.
- A site visit by a qualified ecologist to determine flora and vegetation and Black Cockatoo values; including vegetation condition and the presence of Threatened or Priority ecological communities.
- Prepare a letter report summarising the findings of the survey and potential offset value.

1.4 Relevant legislation, conservation codes and background information

In Western Australia significant communities, flora and fauna are protected under both Federal and State legislation. In addition, regulatory bodies also provide a range of guidance and information on expected standards and protocols for environmental surveys.

An overview of key legislation and guidelines, conservation codes and background information relevant to this Project is provided in Appendix A.

1.5 Limitations and assumptions

This memorandum has been prepared by GHD for CBH and may only be used and relied on by CBH for the purpose agreed between GHD and CBH as set out in section 1.2 of this memorandum. GHD otherwise disclaims responsibility to any person other than CBH arising in connection with this memorandum. GHD also excludes implied warranties and conditions, to the extent legally permissible.

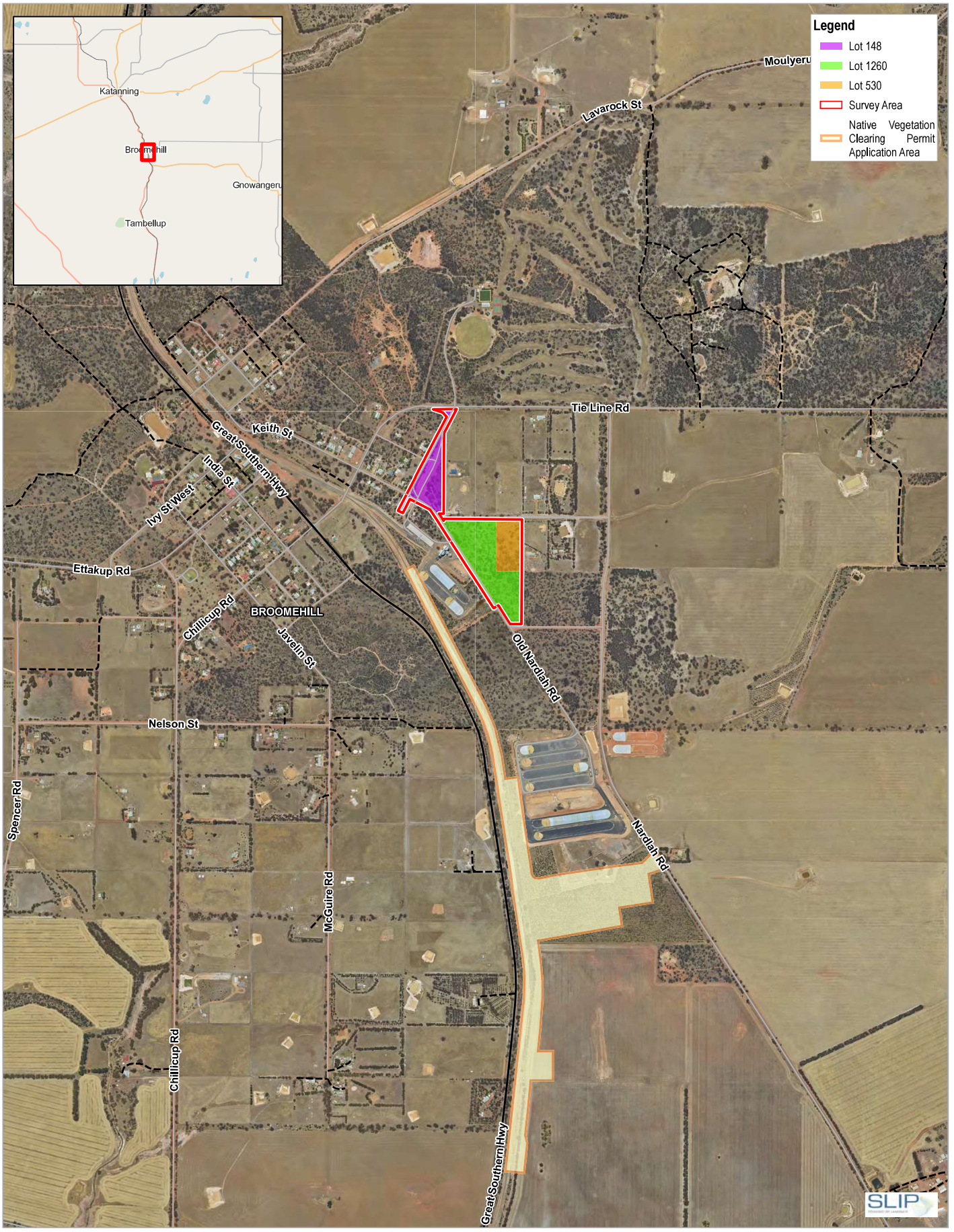
The services undertaken by GHD in connection with preparing this memorandum were limited to those specifically detailed in the memorandum and CBH request correspondence. The opinions, conclusions and any recommendations in this memorandum are based on conditions encountered, locations surveyed and information reviewed at the date of preparation of the memorandum. GHD has no responsibility or obligation to update this memorandum to account for additional sampling locations, events or changes occurring subsequent to the date the survey was completed and memorandum prepared.

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This memorandum has assessed the flora and fauna within the survey area (Figure 1). Should the survey area change or be refined, further assessment may be required.



Legend

- Lot 148
- Lot 1260
- Lot 530
- Survey Area
- Native Vegetation
- Clearing Permit Application Area

Paper Size ISO A3
at Scale: 1:13,000

0 100 200 300 400
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50



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Study and Survey Area Location

FIGURE 1

2. Methodology

2.1 Desktop assessment

A desktop assessment was undertaken to identify relevant environmental information pertaining to the survey area and to assist in survey design. The desktop assessment involved a review of:

- The Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) to identify communities and species listed under the EPBC Act potentially occurring within the survey area (using a 10 km buffer) (DAWE, 2022) (Appendix B)
- The DBCA *NatureMap* database for flora species previously recorded within the survey area using a 10 km buffer (DBCA, 2007-)
- Broad vegetation mapping of the survey area and Black Cockatoo habitat.

2.2 Field surveys

2.2.1 Vegetation and flora

A GHD ecologist (flora licence no FB62000021-3) completed a site assessment and Level 1 vegetation survey of the survey area on 10 May 2022.

The field assessment and survey were undertaken to verify the results of the desktop assessment, identify and describe the dominant vegetation types and assess vegetation condition. Searches for significant ecological communities and flora taxa were also undertaken during the field surveys.

The survey method employed by GHD was undertaken with reference to the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority (EPA) 2016).

Field survey methods involved relevés located in identified vegetation units and traversing the survey area on foot. Two relevés were described throughout the survey area. Site photographs and notes were taken within the survey area.

The vegetation condition was assessed and mapped in accordance with the vegetation condition rating scale (devised by Keighery (1994) and adapted by the EPA (2016)). The scale recognises the intactness of vegetation and consists of six rating levels. The vegetation condition rating scale is outlined in Appendix A.

2.2.2 Black Cockatoo assessment

A Black Cockatoo habitat assessment was undertaken in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral guidelines for three threatened Black Cockatoo species: Carnaby's Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksii naso*, (DSEWPAC, 2012) and the more recent DoEE (2022) 'Revised draft referral guidelines for three threatened Black Cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo' where relevant.

The aim of the habitat assessment was to assess the presence, quality and extent of habitat for Carnaby's Cockatoo within the survey area. The assessment involved visual and aural assessment of the survey area identifying where present, breeding habitat (presence/absence of actual and potential breeding trees), foraging habitat, current activity and any other signs of use by Carnaby's Cockatoo.

This information was used to map and calculate the amount of foraging habitat and potential breeding habitat within the survey area. Any area containing known foraging species or potential nesting trees was considered as habitat for Black Cockatoos.

2.3 Limitations

2.3.1 Field survey limitations

The EPA (2016) Technical Guide state that flora survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table 1.

Table 1 Field survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Nil	Adequate information is available for the survey area including broad vegetation mapping and DBCA Threatened and Priority ecological community and flora data.
Scope (what life forms were sampled etc.)	Nil	Vascular flora and Black Cockatoo habitat were sampled during the survey. Non-vascular flora were not surveyed.
Proportion of flora collected and identified (based on sampling, timing and intensity)	Minor	The single season survey was undertaken in May 2022, which is an out of season survey for flora surveys in the South West Botanical Province (EPA, 2016). The survey timing was considered appropriate for the purpose of the assessment. The portion of flora collected and identified was considered suitable for the purposes of the assessment.
Flora determination	Minor	Flora determination was undertaken by GHD botanist in the field and at the WA Herbarium. The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time report development, but it should be noted this may change in response to ongoing research and review of International Union for Conservation Nature criteria.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed)	Nil	The survey area was accessed and traversed on foot. The survey area was adequately surveyed for the purpose of the assessment.
Mapping reliability	Minor	The survey was conducted using high-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous vegetation mapping (Beard, 1979) and field data. Data were recorded in the field using hand-held GPS tools (e.g. Samsung tablet and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The Garmin GPS units used for this survey are accurate to within ± 5 metres on average. Therefore, the data points consisting of coordinates recorded from the GPS may contain minor inaccuracies.
Timing/weather/season/cycle	Minor	The field surveys were conducted during Autumn (May 2022). This is considered an out of season survey for flora surveys in the South West Botanical Province. However, as the scope is primarily to determine Black cockatoo habitat and the presence of any TECs or PECs this constraint is considered as minor.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	Portions of the survey area included vehicle tracks. These disturbances did not affect the results of the survey.
Intensity (in retrospect, was the intensity adequate)	Nil	The vascular flora of the survey area was sampled in accordance with EPA (2016) and Black cockatoos sampled in accordance with DSEWPaC (2012). The survey area was sufficiently covered by the GHD botanist.
Resources	Nil	Adequate resources were employed during the field survey. Two person days were spent undertaking the survey.
Access restrictions	Nil	The survey area was accessed by car and on foot. There were no access restrictions.
Experience levels	Nil	The ecologist who executed the survey is suitably qualified and experienced and has over 4 years' experience.

3. Desktop assessment

3.1 Environmentally Sensitive Areas

No Environmentally Sensitive Areas (ESA) are located within the survey area or within 10 km of the survey area (GoWA, 2022). No world heritage properties and no national heritage places were identified within a 20 km buffer of the survey area (DAWE, 2022).

3.2 Broad vegetation types and pre-European vegetation

Broad scale (1:250,000) pre-European vegetation mapping of the survey area has been completed by Beard (1979) at an association level. The mapping indicates the survey area intersects one vegetation association, Broomehill_1085. The Broomehill association is described as Medium woodland; wandoo & blue mallet (*Eucalyptus gardneri*).

The extent of vegetation associations has been determined by the Pre-European vegetation remaining extent calculations (DPIRD-005). The survey area occurs within the Katanning IBRA subregion (AVW02), the proportion of pre – European extent remaining of this subregion is 11.46%, with the proportion of current extent remaining in all DBCA managed lands 0.27% (GoWA, 2022).

3.3 Significant flora and communities

The NatureMap database search (DBCA, 2007-) and an EPBC Protected Matters search (DAWE, 2022) with a 10 km buffer of the survey identified the following (Appendix B) significant flora.

- Three endangered species
- One vulnerable species
- Two priority 3 species
- Two priority 4 species.

A search of the EPBC Protected Matters Search Tool (PMST) (DAWE, 2022) identified one Threatened Ecological Community (TEC) as likely to occur in or within 10 km of the survey area, being the Eucalypt Woodlands of the Western Australian Wheatbelt. This TEC was identified during the desktop as occurring throughout the entire survey area (Figure 2).

3.4 Black Cockatoo habitat

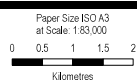
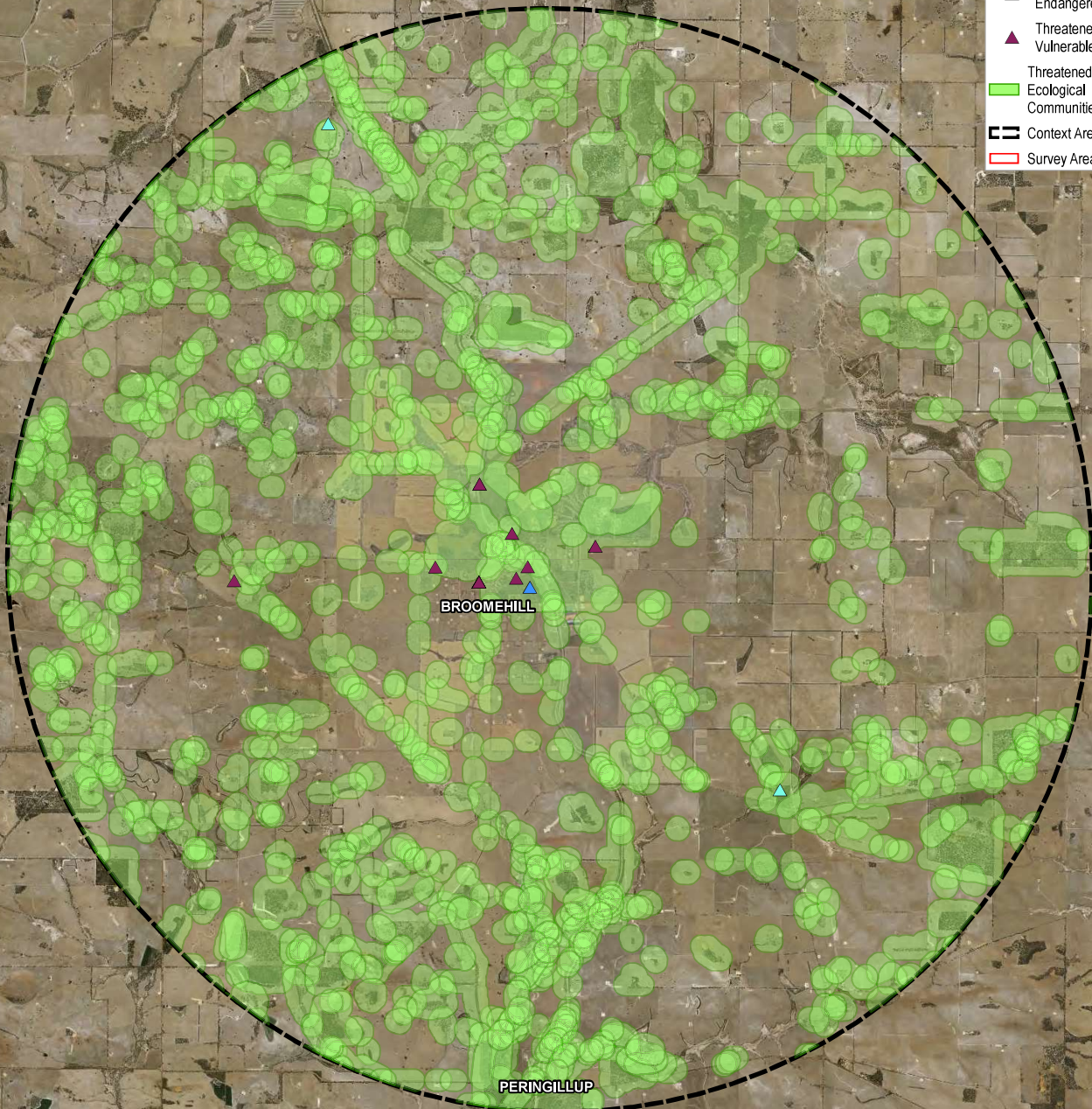
The survey area is situated within a confirmed breeding area for Carnaby's Black Cockatoo (GoWA, 2022). The closest mapped breeding site is approximately 8 km north of the survey area (Black Cockatoo Breeding Sites-Buffered DBCA-063) and the closest mapped roosting site is approximately 9 km south of the survey area (Black Cockatoo Roosting Sites-Buffered DBCA-064) (GoWA, 2022).

KATANNING

Legend

Threatened Priority Fauna

-  Priority Fauna
-  Specially Protected - Conservation Dependent
-  Specially Protected - Migratory Bird
-  Threatened - Endangered
-  Threatened - Vulnerable
-  Threatened Ecological Communities
-  Context Area
-  Survey Area



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50



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Ecological Constraints

FIGURE 2

4. Results

4.1 Flora and vegetation



4.1.1 Vegetation types and condition

Two native vegetation community types were identified within the survey area:

- Vegetation type VT01 *Eucalyptus wandoo* Woodland
- Vegetation type VT02 *Eucalyptus sargentii* subsp. *sargentii* Woodland.

The vegetation types are described in Table 2, and presented in Figure 3.

Table 2 Vegetation community descriptions within the survey area

Vegetation type and description	Extent (Ha)	Sample sites	Representative photograph
Flats brown clay/loam			
VT01 Woodland of <i>Eucalyptus wandoo</i> over isolated clumps of <i>Acacia ?amputata</i> and <i>Gastrolobium ?crassifolium</i> over open sedge and grassland of <i>Lepidosperma</i> sp. and mixed native and introduced Poaceae species.	6.92	REL02	
Low rises brown clay/loam			
VT02 Woodland of <i>Eucalyptus sargentii</i> subsp. <i>sargentii</i> over isolated clumps of <i>Gastrolobium trilobum</i> shrubs and isolated clumps of <i>Austrostipa elegantissima</i> and other mixed Poaceae sp.	1.18	REL01	
Cleared and planted vegetation	2.85	-	
Total	10.95		

4.1.2 Vegetation Condition

The native vegetation within the survey area ranged from Excellent to Completely Degraded condition. Vegetation within Lots 1260 and 530 ranged from Excellent to Very Good condition. Vegetation in Lot 148 ranged from Excellent to Completely Degraded condition (Plate 1). The vegetation condition within the survey area is summarised in Table 3 and illustrated in Figure 4.

Table 3 Vegetation condition within the survey area

Vegetation Condition	Area (ha)	Percentage
Excellent	6.08	55.5
Very Good	1.10	10.0
Degraded	0.93	8.5
Completely Degraded	0.46	4.2
Cleared	2.39	21.8

4.1.3 Threatened and Priority Ecological Community

Eucalypt Woodlands of the Western Australian Wheatbelt was listed in December 2015 as a Critically Endangered TEC under the EPBC Act and is currently listed as a Priority 3 community by DBCA. The Threatened Species Scientific Committee (TSSC) (DoE, 2015) lists key diagnostic characteristics to determine the presence of the ecological community, these include:

- The location of the survey area occurs within the Avon Wheatbelt bioregion and Avon Wheatbelt subregion AVW02 Katanning
- The structure of the community is a woodland, with a minimum tree canopy cover of 10%
- Key Eucalyptus species (for example *Eucalyptus wandoo*) are dominant within the community
- A native understorey is present of variable composition, being a combination of grasses, other herbs and shrubs.
- That vegetation meets the minimum patch size and condition rating thresholds for intact Eucalypt Woodlands, for non-roadside vegetation (as per Table 3 of DoE 2015), these include:
 - A minimum patch size of 2 ha applies where a high-quality understorey remains (no more than 30% total vegetation cover of exotic plants) or exotic plant species account for over 30 to 50% total vegetation understorey cover and mature trees are present, with at least 5 trees per half hectare
 - A minimum patch size of 5 ha applies where exotic plant species account for over 30 to 50% total vegetation understorey cover but there are no less than 5 mature trees present per half hectare, or exotic plant species account for over 50 to 70% total vegetation understorey cover and mature trees are present, with at least 5 such trees per half hectare (DoE, 2015).

The Eucalypt Woodlands of the Western Australian Wheatbelt TEC is considered present within Lot 530 and Lot 1260, as the vegetation types VT01 and VT02 both meet the key characteristic criteria for this TEC (Figure 3).

Vegetation within Lot 148 (3.06 ha) has a high percentage cover (<80%) of exotic species and due to the cover of exotics and does not currently meet the TEC condition criteria.

A summary of the assessment against the key characteristics and criteria is provided in Table 4.

Table 4 Summary of Eucalypt Woodlands of the Western Australian Wheatbelt Assessment

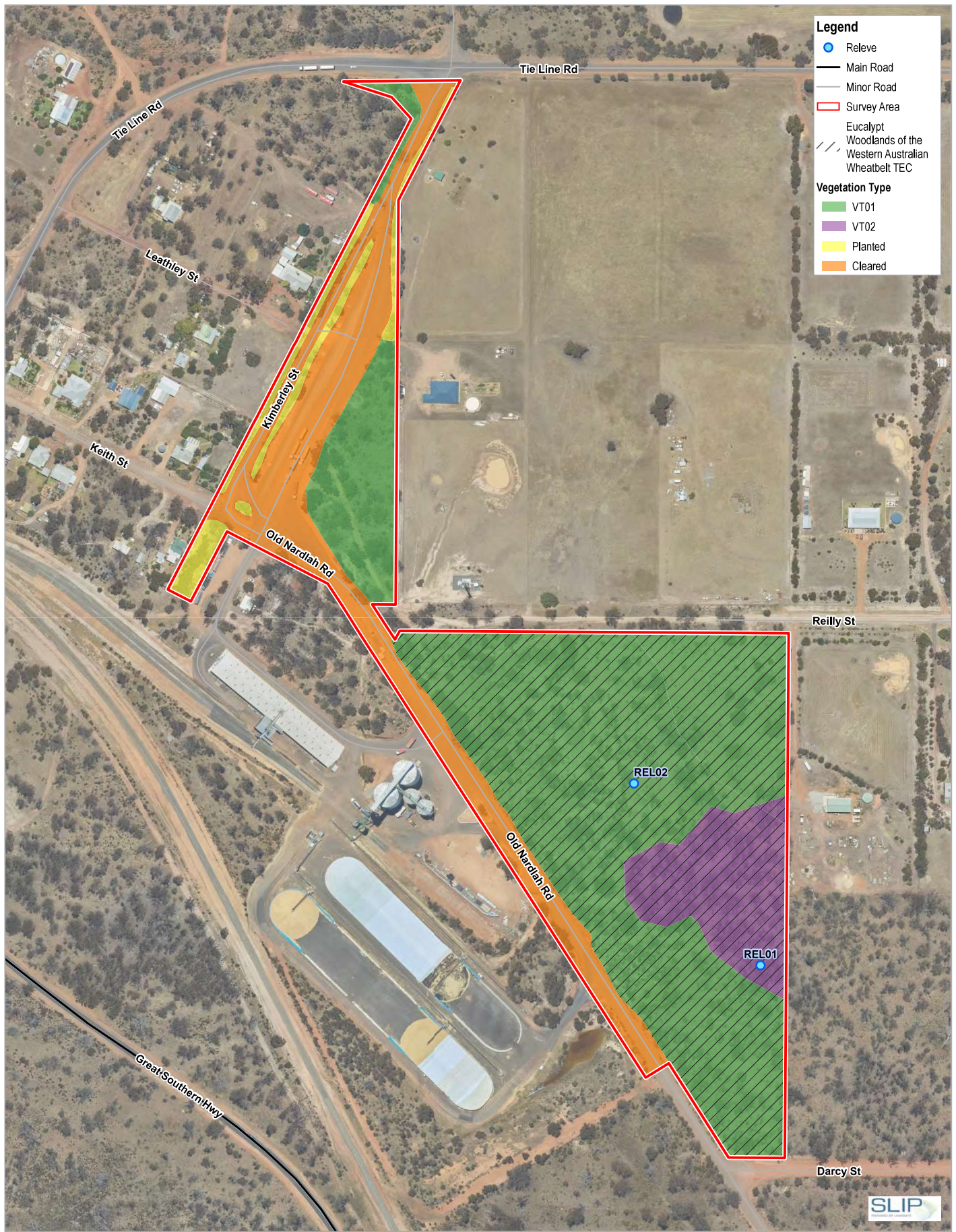
TEC Criteria	Lot 530 / Lot 1260	Lot 148
Location within the Avon Wheatbelt bioregion	Criteria met: located within the Avon Wheatbelt subregion	
Community structure is a woodland with at least 10 % canopy tree cover	Criteria met: woodland with tree cover of at least 10 %	
Key Eucalyptus species are dominant these are listed in Table 2a of DotE 2015	Criteria met: <i>Eucalyptus wandoo</i> and <i>E. sargentii</i> subsp <i>sargentii</i> are dominant across the community and are key species listed in Table 2a of DotE 2015	
Native understorey present of variable composition, being a combination of grasses, other herbs and shrubs	Criteria met: native understorey present	Criteria not met: high presence of introduced species
Patch size (2 ha / 5 ha): discrete and mostly continuous area of TEC, can include small – scale variations (such as tracks). A break of 50 m or more is likely to indicate separate patches.	Criteria met: Combined area of 7.89 ha with a 7.07 ha patch of native vegetation in Very Good to Excellent condition. This patch is also connected to vegetation in adjacent properties.	Criteria partially met: Patches do not meet size requirements within the Lot. However, the patch in the southern portion of the Lot (0.93 ha in Degraded condition) could be considered part of broader patch in Lot 1260 (less than a 40 m gap). Small area of vegetation (0.11 ha) forms part of a larger patch in the adjacent property but combined the total area is less than 1 ha. Separated from vegetation to the north by Tie Line Road. Does not meet patch size.
Condition threshold	Criteria met: Very Good to Excellent condition with between 5 and 30 % weed cover (Plate 1).	Criteria not met: high percentage (< 80 % cover) of exotic species (Plate 2).
Mature tree's present (at least 5 trees per half ha)	Criteria met: mature tree's present at greater than 5 per half ha	



Plate 1 Patch of TEC



Plate 2 Vegetation within Lot 148 in Degraded condition with greater than 80 % weed cover



Legend

- Releve
- Main Road
- Minor Road
- Survey Area
- Eucalypt
- Woodlands of the Western Australian Wheatbelt TEC

Vegetation Type

- VT01
- VT02
- Planted
- Cleared

Paper Size ISO A3
at Scale: 1:2,600

0 25 50 75 100
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

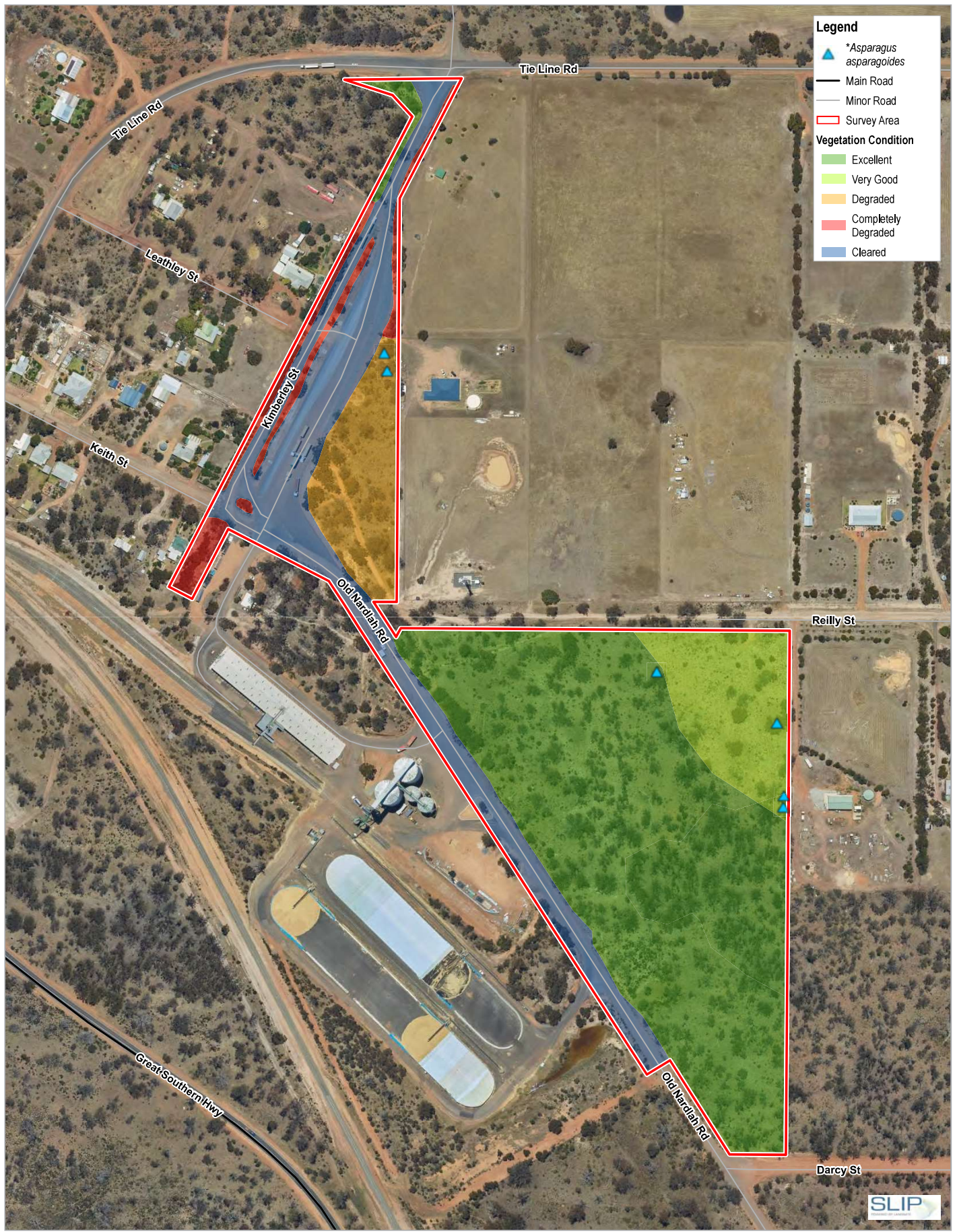


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Vegetation Types and Releve Locations

FIGURE 3



Legend

- ▲ *Asparagus asparagoides
- Main Road
- Minor Road
- ▭ Survey Area

Vegetation Condition

- Excellent
- Very Good
- Degraded
- Completely Degraded
- Cleared

Paper Size ISO A3
at Scale: 1:2,600

0 25 50 75 100
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50



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**Vegetation Condition
and Weeds of National Significance**

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FIGURE 4

4.1.4 Flora diversity

Thirty-four flora taxa (including subspecies and varieties) representing 23 genera and 14 families were recorded from the survey area during the field survey. This total comprised of 28 native taxa and six introduced flora taxa.

Dominant families recorded from the survey area included:

- Fabaceae (8 taxa)
- Poaceae (8 taxa)
- Myrtaceae (4 taxa)

A taxa list for the survey area is provided in Appendix C.

4.1.5 Significant flora

No significant flora were identified during the survey. Targeted searches were not undertaken as part of this survey.

4.1.6 Introduced flora

Six introduced flora taxa were recorded in the survey area. One of these species, **Asparagus asparagoides* is listed as a Declared Pest under the *Biosecurity and Management Act 2007* and a Weed of National Significance (WoNS) (Weeds Australia, 2022). **Asparagus asparagoides* (Bridle creeper) was found within the survey area from six locations with a total of 88 individuals recorded (Figure 4).

4.2 Black Cockatoos habitat assessment

In the south-west of Western Australia, the Carnaby's Cockatoo (*Zanda latirostris*) mostly occurs in the Wheatbelt, where the species breeds between July/August to January/February. The Carnaby's Cockatoo is highly mobile and displays a seasonal migratory pattern that is linked to breeding, with the majority of birds moving to the higher rainfall coastal areas to forage during the non-breeding season (DSEWPAC, 2012).

The survey area falls within the breeding range of the Carnaby's Cockatoo (DSEWPAC, 2012). The habitat within the survey area is located towards the outer (eastern) breeding range for Carnaby's Cockatoo. Roosting, breeding and foraging habitat was recorded within the extent of the survey area (8.1 ha) (Figure 5).

No Black Cockatoo species were observed or heard during the field assessment and no evidence of recent activity (e.g. foraging residue) was recorded within the survey area.

Table 5 provides a summary and extent of Carnaby's Cockatoo habitat within the survey area.

Table 5 Summary and extent of Carnaby's Black Cockatoo habitat within the survey area

Habitat type	Presence within the surveyarea	Evidence
Sightings	None	None
Foraging	Approximately 8.1 ha of Eucalyptus woodland was recorded from the survey area and considered to be potential foraging habitat.	No evidence of recent foraging activity was recorded.
Actual breeding habitat	The survey area falls within the modelled breeding range.	No evidence of breeding was recorded within the survey area during the field survey.
Potential breeding	Approximately 8.1 ha of Eucalyptus woodland was recorded from the survey area and considered to be potential breeding habitat.	180 potential breeding trees (<i>Eucalyptus wandoo</i> with a DBH of >300 mm) were recorded in the survey area. Including ten trees with medium hollows (<10cm) considered suitable for Black Cockatoo breeding.
Roosting habitat	The Wandoo woodland (6.92 ha) represents potential roosting and breeding habitat for the Carnaby's Cockatoo.	None

Potential breeding tree assessment within survey area: 180 potential Black Cockatoo breeding trees were identified within the survey area. These trees were identified as *Eucalyptus wandoo*. Of the 180 trees, 15 contained hollows, with 10 trees containing medium hollows considered potentially suitable for Black Cockatoo breeding (Figure 5).

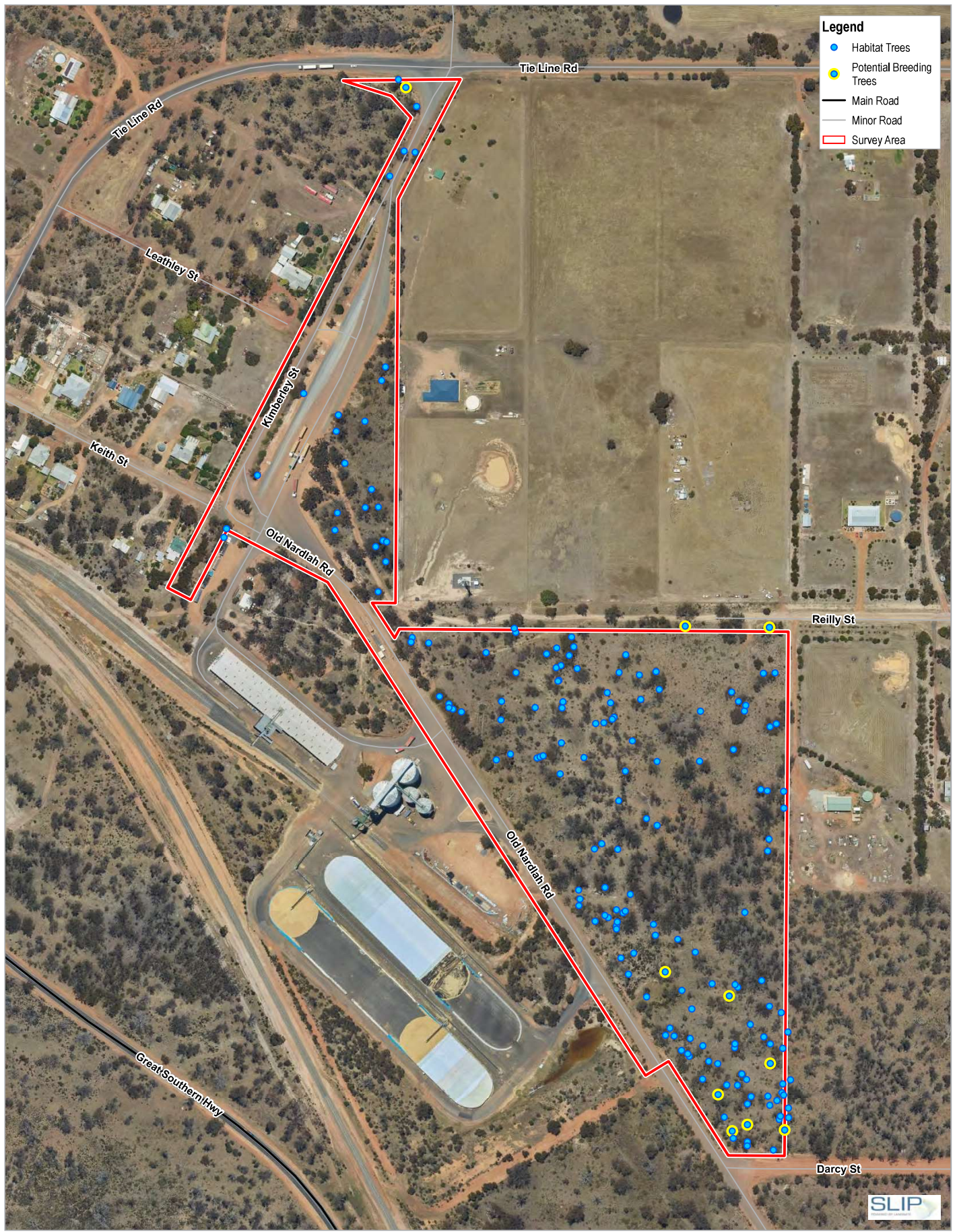
Eucalyptus sargentii subsp. *sargentii* was also recorded within the survey area, however this tree is not listed as a Black Cockatoo breeding or foraging tree (DEC, 2011). There is potential that this tree is used for opportunistic foraging, however further research is required for this to be confirmed.

Foraging quality score

Based on the *Referral guideline for 3 WA threatened black cockatoo species* (DAWE, 2022) a foraging habitat score has been assigned to the survey area (Table 6). Based on the guidelines the survey area meets a score of over 10, which equates to very high-quality foraging habitat. No subtractions were made as the closest mapped breeding site is approximately 8 km north of the survey area and the closest mapped roosting site is approximately 9 km south of the survey area. Foraging habitat is deemed present within 12 km of the site based on aerial imagery and the presence of DBCA Nature Reserves within 12 km of the survey area. No evidence of disease was noted during the survey.

Table 6 Foraging habitat score for Carnaby's Cockatoo within the survey area

Criteria	Score
Start at a score of 10 if your site is native shrubland, Kwongan heathland or woodland, dominated by proteaceous plant species such as Banksia spp. (including Dryandra spp.), Hakea spp. and Grevillea spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.	10
Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	No subtractions
Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat	No subtractions
Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	No subtractions
Subtract 1 if your site has disease present (e.g. Phytophthora spp. or Marri canker) and the disease is affecting more than 50% of the	No subtractions
Total foraging habitat score	10



- Legend**
- Habitat Trees
 - Potential Breeding Trees
 - Main Road
 - Minor Road
 - ▭ Survey Area

Paper Size ISO A3
at Scale: 1:2,600

0 25 50 75 100
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50



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Black Cockatoo Habitat Trees

FIGURE 5

5. Key findings and conclusions

5.1 Key findings

Vegetation and flora

Two native vegetation community types were identified within the survey area:

- Vegetation type VT01, dominated by *Eucalyptus wandoo*, in Excellent to Degraded condition
- Vegetation type VT02, dominated by *Eucalyptus sargentii* subsp. *sargentii* in Excellent condition.

These two vegetation types were found to be representative of the Eucalypt Woodlands of the Western Australian Wheatbelt (listed as Critically Endangered under the EPBC Act and DBCA listed Priority 3) TEC. The vegetation within the survey area has a limited representation within the regional area.

Vegetation within Lot 530 and Lot 1260, meets the size and condition criteria for this TEC (7.07 ha). However, vegetation within Lot 148 (0.93 ha) has a high percentage cover (<80%) of exotic species and does not currently meet the TEC condition criteria.

The vegetation within the survey area ranged from Excellent to Degraded, with the majority of the survey area (55.5%) in Excellent Condition.

Species recorded within the survey area were typical for *Eucalyptus wandoo* woodland.

Black Cockatoos

The survey area contained roosting, breeding and foraging habitat suitable for Carnaby's Cockatoo (*Zanda latirostris*) including:

- 8.1 ha of roosting, breeding and foraging habitat
- 180 potential Black Cockatoo breeding trees (*Eucalyptus wandoo* with a DBH of >300 mm) present within the survey area, of which 10 trees had medium hollows (<10 cm) considered likely to be suitable for Black Cockatoo breeding
- High-quality foraging habitat (DAWE (2022) guideline foraging habitat score of 10)
- No evidence of roosting, breeding or foraging was observed during the field survey.

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Appendix A

Relevant legislation

Relevant legislation

Federal Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

- Nationally threatened flora and fauna species and ecological communities
- Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of Agriculture, Water and the Environment (DAWE).

State Environmental Protection Act 1986

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

1. Native vegetation should not be cleared if it comprises a high level of biodiversity.
2. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.
3. Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
4. Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
5. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
6. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
7. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
8. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
9. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State Biodiversity and Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biodiversity and ecological integrity should be a fundamental consideration in decision-making
- Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State Biosecurity and Agriculture Management Act 2007

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976*. The main purposes of the BAM Act and its regulations are to:

- Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
- Manage the impact and spread of those pests already present in the state
- Safely manage the use of agricultural and veterinary chemicals
- Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

Control class code	Description
C1 (Exclusion)	Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 (Eradication)	Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 (Management)	Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the <i>Australian Heritage Commission Act 1975</i> of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in “Bush Forever” Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the <i>Environmental Protection (Gnangara Mound Crown Land) Policy 1992</i> .
The areas covered by the <i>Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002</i> .
The areas covered by the lakes to which the <i>Environmental Protection (Swan Coastal Plain Lakes) Policy 1992</i> (EPP Lakes) applies.
Protected wetlands as defined in the <i>Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998</i> .

Reserves and conservation areas

Department of Biodiversity, Conservation and Attractions managed lands and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

Wetlands

Ramsar Wetlands (Wetlands of International Importance)

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are “sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity ... because of their ecological, botanical, zoological, limnological or hydrological importance” (DAWE 2020b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use.

Under the Convention, wise use is broadly defined as “maintaining the ecological character of a wetland” (DAWE 2020b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DAWE 2020a):

- It is a good example of a wetland type occurring within a biogeographic region in Australia
- It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
- The wetland supports one percent or more of the national populations of any native plant or animal taxa
- The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
- The wetland is of outstanding historical or cultural significance.

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia’s biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia’s Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2019), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated every 2-3 years.

Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating and scale for the South West and Interzone Botanical Provinces

Condition	South West and Interzone Botanical Provinces description
Pristine	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.

Condition	South West and Interzone Botanical Provinces description
Completely Degraded	The structure of vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Conservation codes

Species of significant flora, fauna and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Codes and definitions for TECs listed under the EPBC Act and/or BC Act

Categories	Definition
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Endangered (EN)	An ecological community if, at that time: <ul style="list-style-type: none"> – is not critically endangered; and – is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Vulnerable (VU)	An ecological community if, at that time: <ul style="list-style-type: none"> – is not critically endangered or endangered; and – is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Western Australia Conservation Categories (BC Act)	
<u>Threatened Ecological Communities</u>	
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Categories	Definition
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.
<u>Collapsed ecological communities</u>	
<p>An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time –</p> <ul style="list-style-type: none"> – there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or – the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover – <ul style="list-style-type: none"> • its species composition or structure; or • its species composition and structure. <p>Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.</p>	

Categories and definitions for PECs as listed by the DBCA

Category	Definition
Priority 1	<p>Poorly known ecological communities.</p> <p>Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.</p>
Priority 2	<p>Poorly known ecological communities.</p> <p>Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.</p>
Priority 3	<p>Poorly known ecological communities.</p> <ul style="list-style-type: none"> – Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: – communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; – communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. <p>Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.</p>
Priority 4	<p>Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.</p> <ul style="list-style-type: none"> – Rare. Ecological communities known from few occurrences 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 communities are usually represented on conservation lands.

Category	
	<ul style="list-style-type: none"> - Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. - Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	<p>Conservation Dependent ecological communities.</p> <p>Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.</p>

Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016a, b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- A role as a refuge
- Providing an important function required to maintain ecological integrity of a significant ecosystem
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in 'pristine' condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora and fauna

Significant flora and fauna

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to the DEE and/or the EPA.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for flora and fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China-Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of flora and fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora and fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

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

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

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

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered significant.

Categories and definitions for EPBC Act and BC Act listed flora and fauna species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	Threatened species considered to be “facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.
Endangered (EN)	Threatened species considered to be “facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.
Vulnerable (VU)	Threatened species considered to be “facing a high risk of extinction in the wild in the medium term future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.
Extinct species	
Extinct (EX)	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).
Extinct in the Wild (EW)	Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).
Specially protected species	
Migratory (MI)	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.
Species of special conservation interest (conservation dependent fauna) (CD)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Other specially protected fauna (OS)	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).

Codes for DBCA listed Priority flora and fauna

Priority category	Definition
Priority 1	Poorly-known taxa 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

Priority category	Definition
	of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2	<p>Poorly-known taxa</p> <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>
Priority 3	<p>Poorly-known taxa</p> <p>Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.</p>
Priority 4	<p>Rare, Near Threatened and other taxa in need of monitoring</p> <ul style="list-style-type: none"> – Rare: Taxa 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 taxa are usually represented on conservation lands. – Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant flora

Flora species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than a statutory listing. The EPA (2016a, b) states that significant flora may include taxa that have/are:

- A keystone role in a particular habitat for Threatened or Priority flora or fauna species, or large populations representing a considerable proportion of the local or regional total population of a species
- Relictual status, being representation of taxonomic or physiognomic groups that no longer occur widely in the broader landscape
- New species or anomalous features that indicate a potential new species
- Being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
- Unusual species, including restricted subspecies, varieties, or naturally occurring hybrids
- Local endemism (a restricted distribution) or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems).

Other significant fauna

Fauna species may be significant for a range of reasons other than those protected by international agreement or treaty, Specially Protected or Priority Fauna. Significant fauna may include short-range endemic species, species that have declining populations or declining distributions, species at the extremes of their range, or isolated outlying populations, or species which may be undescribed (EPA 2010).

Introduced plants (weeds)

Declared Pests

Information on species considered to be Declared Pests is provided under *State Biosecurity and Agriculture Management Act 2007*.

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

- Invasiveness
- Impacts
- Potential for spread
- Socio-economic and environmental values.

Australian state and territory governments have identified thirty-two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

References

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Appendix B

Desktop searches



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. Please see the caveat for interpretation of information provided here.

Report created: 18-May-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment 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 (Ramsar)	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	13
Listed Migratory Species:	7

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

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 Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	11
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species

[\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding likely to occur within area	In feature area

MAMMAL

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area	In feature area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat may occur within area	In buffer area only
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat likely to occur within area	In feature area

PLANT

Adenanthos pungens subsp. effusus Sprawling Spiky Adenanthos [10742]	Endangered	Species or species habitat may occur within area	In feature area
Adenanthos pungens subsp. pungens Spiky Adenanthos [19429]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Banksia pseudoplumosa False Plumed-Banksia [82760]	Endangered	Species or species habitat may occur within area	In buffer area only
Roycea pycnophylloides Saltmat [21161]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species

[[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [\[Resource Information \]](#)

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.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [51624]	WA	In buffer area only

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Broomehill	Nature Reserve	WA	In buffer area only
Peringillup	Nature Reserve	WA	In buffer area only

EPBC Act Referrals

[\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
CBH Broomehill Fixed Rail Outloading Facility	2021/9038	Controlled Action	Referral Decision	In feature area
Not controlled action				
Construction of Additional Grain Storage and Associated Infrastructure at an Exi	2008/4477	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Northam Cranbrook Road widening, Katanning, WA	2018/8238	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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

Flora results

Family	Status	Species
Asparagaceae	*	<i>Asparaus asparagoides</i>
Boryaceae		<i>Borya</i> sp.
Casuarinaceae		<i>Allocasuarina huegeliana</i>
Cyperaceae		<i>Lepidosperma</i> sp.
Droseraceae		<i>Drosera</i> sp.
Fabaceae		<i>Acacia erinacea</i>
Fabaceae		<i>Acacia lasiocarpa</i> var. <i>bracteolata</i>
Fabaceae		<i>Acacia saligna</i> subsp. <i>Wheatbelt</i> (B.R. Maslin 8602)
Fabaceae		<i>Acacia saligna</i>
Fabaceae		<i>Bossiaea eriocarpa</i>
Fabaceae		<i>Gastrolobium parviflorum</i>
Fabaceae		<i>Gastrolobium trilobum</i>
Fabaceae		<i>Jacksonia sternbergiana</i>
Hemerocallidaceae		<i>Dianella revoluta</i>
Iridaceae	*	<i>Watsonia</i> sp.
Myrtaceae		<i>Calytrix tetragona</i>
Myrtaceae		<i>Eucalyptus sargentii</i>
Myrtaceae		<i>Eucalyptus</i> sp. (planted non-native)
Myrtaceae		<i>Eucalyptus wandoo</i>
Orchidaceae		<i>Eriochilus dialatatus</i>
Pittosporaceae		<i>Billardiera fusiformis</i>
Poaceae		<i>Austrostipa elegantissima</i>
Poaceae	*	<i>Avena barbata</i>
Poaceae	*	<i>Briza maxima</i>
Poaceae	*	<i>Erhata calycina</i>
Poaceae		<i>Neurachne alopecuroidea</i>
Poaceae		<i>Austrostipa</i> sp.
Poaceae		<i>Austrostipa</i> sp.
Poaceae	*	<i>Digitaria ciliaris</i>
Protaceae		<i>Hakea prostrata</i>
Restionaceae		<i>Desmocladus asper</i>



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