Enclosure 20

Biodiversity Assessment Report, prepared by GeoLink Environmental Management and Design, Revision 2 dated 11 May 2022

Biodiversity Assessment

Lot 104 DP 751388, James Creek Road

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UPR	*Description*	*Date Issued*	*Issued By*
3204-1060	First issue	13/09/2021	ME
3204-1099	Second issue	11/05/2022	ME

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Executive Summary

This Biodiversity Assessment was completed to assess potential biodiversity impacts from a proposed residential subdivision at Lot 104 DP751388 James Creek Road, James Creek. The site has been substantially cleared of all woody vegetation and does not contain any areas of biodiversity value (as per the Biodiversity Values Map and Threshold Tool) and the proposal does not exceed clearing thresholds as per Part 7.2 of the Biodiversity Conservation Regulation 2017; therefore a Biodiversity Development Assessment Report (BDAR) is not required.

Field assessment of the site determined:

- No threatened flora species occur at the site
- No threatened ecological communities occur at the site
- No significant habitat for threatened fauna occurs or would be affected by the proposed development.

The proposed development may result in the following potential biodiversity impacts:

- Loss of three immature native trees
- Noise and disturbance to locally occurring fauna within adjacent habitat areas during the establishment and construction phases
- Light spill into adjacent vegetation to the north of the site
- The occupation of the site would result in ongoing noise and disturbance which has potential to result in:
  - Disturbance of adjacent fauna habitat to the north and west
  - Potential for predation of native fauna from roaming domestic animals
  - Potential for vehicle strike to wandering fauna

Given the degraded and modified vegetation at the site, and low impacts on native vegetation and habitat, biodiversity impacts of the proposal are relatively low.

Statutory assessment was completed for the proposal as follows:

- State Environmental Planning Policy (SEPP) Koala Habitat Protection 2021: requirements have been addressed as required. Core Koala habitat is not present and negligible impacts to Koala habitat would occur.
- *Biodiversity Conservation Act 2016* (BC Act): habitat for threatened species or communities would not be significantly affected by the proposal. Due to the area of vegetation requiring removal being below clearing thresholds, the Biodiversity Offsets Scheme (BOS) in the BC Act is not triggered and a Biodiversity Development Assessment Report (BDAR) is not required.
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act): the proposal is characteristic of declared class action (vii) of the bilateral agreement between the Australian Government and the NSW Government regarding environmental assessment and does not require assessment under part 8 of the EPBC Act.

1. Introduction

1.1 Background

GeoLINK has been engaged by MPD Investments Unit Trust to prepare a Biodiversity Assessment for a proposed residential subdivision at Lot 104 DP751388 James Creek Road, James Creek (refer to **Illustration 1.1)**. The Biodiversity Assessment will support a Statement of Environmental Effects (SEE) for the proposal.

This assessment has been prepared to:

- Identify any ecological constraints to the proposal (e.g. habitat for threatened species or communities listed in the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- Identify trees/native vegetation which may require removal for the proposal
- Assess the impacts of the proposal against relevant statutory requirements.

1.2 The Site

The site comprises Lot 104 DP751388 James Creek Road, James Creek (refer to **Illustration 1.2**), a parcel of vacant land approximately 33 hectares in area which is grazed by cattle. The site has been historically cleared and modified for agriculture and sugar cane production and comprises improved pasture. No natural watercourses or water features occur.

The site is zoned under the Clarence Valley Local Environment Plan 2011 as follows:

- Zone B1 – Neighbourhood Centre
- Zone R1 – General Residential
- Zone R3 – Medium Density Residential

The site occurs on the New Italy (ne) soil landscape (Morand, 2001), characterised by moderately deep, poorly/imperfectly drained Grey Kurosols and moderately deep, imperfectly drained Yellow Kurosols throughout hillslopes and crests. Shallow (<100 cm), moderately well-drained Orthic Tenosols (Siliceous Sands) occur within rolling to steep low hills forming on the Maclean Sandstone Member of the Walloon Coal Measures.

Photographs of the site are provided at **Appendix A**.

1.3 The Proposal

The proposal is for subdivision of the site and associated development, including an internal access road that would connect to James Creek Road (refer to **Appendix B**). The proposal involves:

- Subdivision of the land resulting in 332 residential lots and associated dwelling entitlements
- Two open space lots
- One commercial allotment
- Four drainage reserves; one within each corner of the site
- Infrastructure construction (including service installations/connections and road construction)

The proposal will allow the retention of scattered trees along the north-east, western and southern boundaries of the site.

1.4 Assessment Pathway

This Biodiversity Assessment has been completed to address the requirements of the *Biodiversity Conservation Act 2016* (BC Act) regarding impacts on threatened species and communities listed in the Act. To determine whether the project triggers the Biodiversity Offsets Scheme (BOS), the following steps were taken:

1. Review of the OEH Biodiversity Values Map and Threshold Tool: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap. The Map does not show any areas of biodiversity value as occurring at the site.
2. Review of clearing requirements to determine if the proposal exceeds BOS thresholds. The site is not mapped in the 'minimum lot size map' in the Clarence Valley Local Environmental Plan 2011. The minimum lot size was therefore determined as per Section 7.2 (b) of the Biodiversity Conservation Regulation 2017, whereby the minimum lot size is *"the actual size of the allotment of land on which the proposed development is to be carried out*". On this basis the minimum lot size associated with the site is 33 ha.

   The BOS threshold (as per Part 7.2 of the Biodiversity Conservation Regulation 2017) for a minimum lot size of 33 ha is 0.5 ha. Native vegetation impacted by the proposal comprises improved pasture, three immature native trees and minor regrowth. As such, native vegetation loss would not exceed the minimum clearing threshold of 0.5 ha.

On this basis the proposal does not impact on biodiversity value land or exceed clearing thresholds, therefore a Biodiversity Development Assessment Report (BDAR) is not required.

0 1 Km

Locality Plan - Illustration 1.1

GeoLINK environmental management and design

Lot 104 DP 751388 James Creek Rd, James Creek Biodiversity Assessment
3204-10042

Information shown is for illustrative purposes only
Drawn by: AB Checked by: AB Reviewed by: ILC
Source of base data: OpenStreet Map
Date: 29/09/2020
Revision: A

GDA 1994 MGA Zone 56

LEGEND

- Site boundary
- Cadastre

0 100 Metres

Site Plan - Illustration 1.2

GeoLINK environmental management and design

Lot 104 DP 751388 James Creek Rd, James Creek Biodiversity Assessment
3204-10043

Information shown is for illustrative purposes only
Drawn by: AB Checked by: AB Reviewed by: ILC
Source of base data: ESRI World Imagery
Date: 29/09/2020
Revision: A

2. Methodology

2.1 Desktop Review

Prior to the site assessment, the following desktop analysis was completed:

- A search of the BioNet Wildlife Atlas (10 km x 10 km grid centred on the site); completed 9 July 2021
- A search of the Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES) within a 5 km radius of the site; completed 9 July 2021.

Details of the survey methodology are provided in **Section 2.2**. Results of database searches are attached at **Appendix C**.

2.2 Field Assessment

Field assessment was completed on 1 November 2018 in warm, sunny conditions. Additional field assessment was also competed 30 September 2020 and 20 October 2020 to address requirements of the Koala SEPP. Field assessment utilised the following methodology:

- Walking survey to identify vegetation types and identify threatened flora or ecological communities listed in the BC Act or EPBC Act.
- Completion of flora inventory based on random meander survey.
- Targeted assessment of all impact areas for the project and inventory of native tree loss, based on site plans.
- Identification and survey (by GPS) of any hollow-bearing trees or other significant habitat features.
- Targeted searches for Koala scats using the Spot Assessment Technique (SAT), as per Phillips & Callaghan (2011) with three SAT plots assessed at three locations: in the NE corner of the site, along the southern boundary and along the western boundary.
- Tree counts and identification to determine if high quality Koala habitat (as per the Koala SEPP) occurs.
- Opportunistic survey of all fauna based on visual or aural observations.

Given that the site is mostly cleared and is highly disturbed, the scope of assessment is considered adequate.

3. Vegetation

3.1 Desktop Analysis

BioNet search results identified records of eight threatened flora species (including five species also listed in the EPBC Act) and habitat for nine threatened ecological communities (four of which are listed under the EPBC Act) within the search area (refer to **Appendix C**). PMST results identified habitat for 17 threatened flora species and two threatened ecological communities within the search area.

3.2 Site Assessment

3.2.1 Vegetation Communities

Vegetation at the site has been historically cleared and comprises highly disturbed improved pasture dominated by the introduced species Kikuyu* (*Cenchrus clandestinum*) and Whiskey Grass* (*Andropogon virginicus*). Other common agricultural grasses and herbs include Vasey Grass* (*Paspalum urvillei*), Carpet Grass* (*Axonopus fissifolius*), Spear Thistle* (*Cirsium vulgare*) and Balloon Cotton Bush* (*Gomphocarpus physocarpus*). Infrequent native grasses include Blady Grass (*Imperata cyldindrica*), Couch (*Cynodon dactylon*) and Plumegrass (*Dichelachne crinita*). Grassland at the site is dominated by introduced pasture species and is not characteristic of any plant community type (PCT) in the BioNet Vegetation Classification system:

*Introduced species

Woody vegetation is limited to a small group of trees in the north-east corner of the site and a line of scattered mixed mature eucalypts along the western and southern boundary. Typical species include Grey Ironbark (*Eucalyptus siderophloia*), Grey Gum (*E. propinqua*), Grafton Stringybark (*Eucalyptus tindaliae*), Pink Bloodwood (*Corymbia intermedia*), Tallowwood (*E. microcorys*), and Swamp Box (*Lophostemon suaveolens*). No midstorey occurs and native groundcover is very sparse to absent.

Mixed scattered trees are broadly characteristic of PCT 861 *Grey Gum - Grey Ironbark open forest of the Clarence lowlands of the NSW North Coast Bioregion*.

A vegetation plan is provided at **Illustration 3.1**. A flora inventory is attached at **Appendix D**.

3.2.2 Threatened and Significant Flora

No threatened flora species were confirmed at the site.

3.2.3 Threatened Ecological Communities (TECs)

No TECs occur at the site. The site is not depicted as being prone to one in 100-year flooding in Councils online mapping and the soil landscape is an erosional landscape (not an alluvial landscape); floodplain TECs do not occur.

3.2.4 Condition

The site has been highly modified and disturbed from previous broadscale clearing, sugar cane production and ongoing grazing. Native vegetation is very sparse and limited tree cover is subject to grazing disturbance.

GDA 1994 MGA Zone 56

LEGEND

- Site boundary
- Cadastre
- Hollow-bearing tree
- Tree (PCT 861 Grey Gum - Grey Ironbark open forest of the Clarence lowlands of the NSW North Coast Bioregion)
- Isolated regrowth Forest Red Gum (to be removed)

0 100 Metres

Vegetation Plan - Illustration 3.1

GeoLINK environmental management and design

Lot 104 DP 751388 James Creek Rd, James Creek Biodiversity Assessment
3204-10042

Information shown is for illustrative purposes only
Drawn by: AB Checked by: AB Reviewed by: ILC
Source of base data: ESRI World Imagery
Date: 21/10/2020
Revision: A

4. Fauna Habitat

4.1 Desktop Analysis

BioNet search results identified records of 37 threatened fauna species listed under the BC Act (including four species also listed in the EPBC Act) within the search area (refer to **Appendix C**). PMST results identified habitat for 51 threatened fauna species and 48 migratory fauna species within the search area.

4.2 Habitat Values

4.2.1 Habitat Values

A range of common fauna species were observed during the field assessment (refer **Appendix E**). The site provides habitat for a range of common fauna species which utilise farmland and disturbed vegetation, a common habitat type in the locality which is present on adjacent land parcels. Owing to a lack of native vegetation and poor structural complexity, the site provides relatively poor resources for foraging and breeding.

Two hollow-bearing trees occur at the site (refer to **Illustration 3.1**) containing a number of medium and large limb and trunk hollows (refer to **Table 4.1**). The mature Tallowwood on the western boundary (DBH: 1.2 m, height: 24 m) is a particularly large tree. Tree hollows provide potential breeding sites for common bird species (e.g. Eastern Rosella, Rainbow Lorikeet), tree roosting microchiropteran bats and arboreal mammals. Both trees will be retained in situ.

Table 4.1 Habitat Trees

Species	*Scientific Name*	*Location*	*Easting*	*Northing*	*Hollow Type*	*Hollow Size*
Small-fruited Grey Gum	*Eucalyptus propinqua*	North-east corner	524515	6742294	Trunk x 1	Large
Tallowwood	*Eucalyptus microcorys*	Western boundary	523769	6742176	1 x large limb hollow, 1 x large and 5 x medium limb hollows	Large and medium

4.2.2 Threatened and Significant Fauna Habitat

One threatened fauna species was recorded - three Grey-crowned Babblers (*Pomatostomus temporalis temporalis*) were observed foraging in the road reserve on the eastern side of James Creek Road (opposite the site). While habitat for the species on the site is very poor, birds may forage opportunistically at the site.

There is potential for several species (e.g. Grey-headed Flying-fox, microchiropteran bats) to occur on an opportunistic or seasonal basis. The site provides poor quality habitat for Koala due to the relatively low incidence of preferred feed trees and no signs of Koalas were recorded. Hollow obligate threatened fauna such as Masked Owl (*Tyto novaehollandiae*), Brush-tailed Phascogale (*Phascogale tapoatafa*), Squirrel Glider (*Petaurus norfolcensis*), Large Bent-winged Bat (*Miniopterus orianae oceanensis*), Little Bent-winged Bat (*Miniopterus australis*), Eastern Freetail-bat (*Micronomus*

norfolkensis), Greater Broad-nosed Bat (*Scoteanax rueppellii*) and Hoary Wattled Bat (*Chalinolobus nigrogriseus*) may use the large habitat tree (Tallowwood) as a potential roost, den or nest site.

4.2.3 Wildlife Corridors and Key Habitats

No wildlife corridors or key habitats are depicted at or in proximity to the site. Local agricultural clearing has contributed to increased fragmentation and habitat isolation to patches of vegetation proximate to the site.

4.2.4 Potential for Threatened Species Occurrence

Based on the desktop analysis and habitat present, several threatened fauna species have potential to occur at the site and surrounds on an opportunistic basis (refer to potential occurrence table at **Appendix F**). Tests of significance ('five-part tests') under Section 7.3 of the BC Act have been completed for threatened species considered as having potential to occur at the site (refer to **Appendix G**).

5. Impacts and Mitigation

5.1 Potential Impacts of the Works

The proposed subdivision has been designed to enable the retention of all scattered trees along the property boundaries.

Potential impacts of the proposal may include:

- Loss of three immature paddock trees - all Forest Red Gum (*Eucalyptus tereticornis*) of approximately six metres in height with a typical DBH of ~ 13 cm; minor loss of eucalypt regrowth (less than one metre in height).
- Noise and disturbance to locally occurring fauna within adjacent habitat areas during the establishment and construction phases.
- Light spill into adjacent vegetation to the north of the site.
- The occupation of the site would result in ongoing noise and disturbance which has potential to result in:
  - Disturbance of adjacent fauna habitat to the north and west
  - Potential for predation of native fauna from roaming domestic animals
  - Potential for vehicle strike to wandering fauna.

5.2 Mitigation

To minimise biodiversity impacts which may result from the proposal, the following measures are prescribed:

- Detailed design of stormwater basins shall ensure that suitable setbacks are maintained to allow for the retention of scattered trees along the site boundaries.
- The limit of vegetation clearing must be clearly delineated on site prior to works commencing.
- If proposed, landscaping should aim to utilise endemic native species.
- Measures must be implemented during construction to ensure the potential for the introduction of weed propagules to the site is minimised.
- Erosion and sediment control measures will be implemented (in accordance with the *Landcom/ Department of Housing Managing Urban Stormwater; Soils and Construction Guidelines*) and maintained to prevent sediment moving off-site and sediment laden water entering any water course.

6. Statutory Assessment

The following sections assess the findings of the site assessment with regard to relevant statutory requirements.

6.1 Clarence Valley Residential Zones Development Control Plan

Part E of the Clarence Valley Residential Zones Development Control Plan (DCP) 2011 notes that development consent is required for the actions of ringbarking, cutting down, topping, lopping, removal, injuring or wilfully destroying species of tree(s) or other native vegetation on Residential zoned land. Approval of the DA of which this report form's part will address this issue.

Part Y of the DCP relates to biodiversity and habitat protection. Biodiversity and habitat controls apply to land likely to have existing native vegetation in the Clarence Valley Local Government Area in a number of zones. Residential and business zones are not subject to the requirements of Part Y; hence no further consideration is required.

6.2 State Environmental Planning Policy (SEPP) (Koala Habitat Protection) 2021

6.2.1 Introduction

State Environmental Planning Policy (Koala Habitat Protection) 2021 was made and commenced on 17 March 2021. The Koala SEPP 2021 reinstates the policy framework of SEPP Koala Habitat Protection 2019 to 83 Local Government Areas (LGA) in NSW. At this stage:

- In nine of these LGAs – Metropolitan Sydney (Blue Mountains, Campbelltown, Hawkesbury, Ku-Ring-Gai, Liverpool, Northern Beaches, Hornsby, Wollondilly) and the Central Coast LGA – Koala SEPP 2021 applies to all zones.
- In all other identified LGAs, Koala SEPP 2021 does not apply to land zoned RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry. For all RU1, RU2 and RU3 zoned land outside of the Sydney Metropolitan Area and the Central Coast, Koala SEPP 2020 continues to apply.

As noted, the site has multiple zonings under the Clarence Valley Local Environment Plan 2011 (Zone B1 Neighbourhood Centre, Zone R1 General Residential, Zone R3 Medium Density Residential). On the basis of the zonings the Koala SEPP 2021 applies to the proposal.

As the proposal will impact native vegetation, investigation is required to determine whether 'core Koala habitat' is present. The Policy defines 'core Koala habitat' as:

a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable Koala habitat and where Koalas are recorded as being present at the time of assessment of the land as highly suitable Koala habitat, or

b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable Koala habitat and where Koalas have been recorded as being present in the previous 18 years.

'Highly suitable habitat' is where 15% or greater of the total number of trees within any Plant Community Type (PCT) are the regionally relevant species of those listed in Schedule 2 of the SEPP. The following Schedule 2 tree species (North Coast Koala management area) are present at the site:

- Red Bloodwood (*Corymbia gumiffera*)
- Grey Ironbark (*Eucalyptus siderophloia*)
- Small-fruited Grey Gum (*Eucalyptus propinqua*)
- Tallowwood (*Eucalyptus microcorys*)
- Stringybark (*Eucalyptus tindaliae*)
- Forest Oak (*Allocasuarina torulosa*).

Trees >10 cm dbh along all three main aggregations at the site (NE corner, southern boundary, western boundary) were counted and the number of Schedule 2 trees noted. Results of this assessment were as follows:

- NE corner: 32 trees present, of which 12 are Schedule 2 trees. Proportion of Schedule 2 trees = 37.5%. Highly suitable Koala habitat present.
- Southern boundary: 32 trees present, of which 17 are Schedule 2 trees. Proportion of Schedule 2 trees = 53%. Highly suitable Koala habitat present.
- Western boundary: 40 trees present, of which 20 are Schedule 2 trees. Proportion of Schedule 2 trees = 50%. Highly suitable Koala habitat present.

On this basis all woody vegetation at the site comprises Highly suitable Koala habitat (as defined in the Policy).

6.2.2 Assessment

In the absence of any formalised guidelines to support the Policy, the following assessment process was completed:

1. Analysis of Koala records in BioNET with regard to any Koala records within 2.5 km of the site in the last 18 years (accepted as being three Koala generations) and where records have a locational accuracy < 1,000 metres.
2. Completion of three Koala survey plots using the Spot Assessment Technique ('SAT') as per Phillips & Callaghan 2011, sampling PCT 837 (refer **Illustration 3.1**); targeted searches under 3 x paddock trees (immature Forest Red Gum).

Based on step 1, BioNET records do not indicate any Koala records within 2.5 kms of the site, with the closest record being a rehabilitation record from near Maclean in 2019 (refer **Figure 6.1**), approximately 3 km west of the site. The lack of Koala records in the broader locality supports evidence that a Koala population does not currently reside within or proximate to the locality, as supported by recent Council reporting (Clarence Valley Koalas: Sighting Data Analysis July 2020).

Step 2 (SAT survey plots) did not return any signs of Koalas (faecal pellets, sightings, scratches on smooth-barked trees). Results are reflective of the lack of Koala records in the locality (as per Step 1).

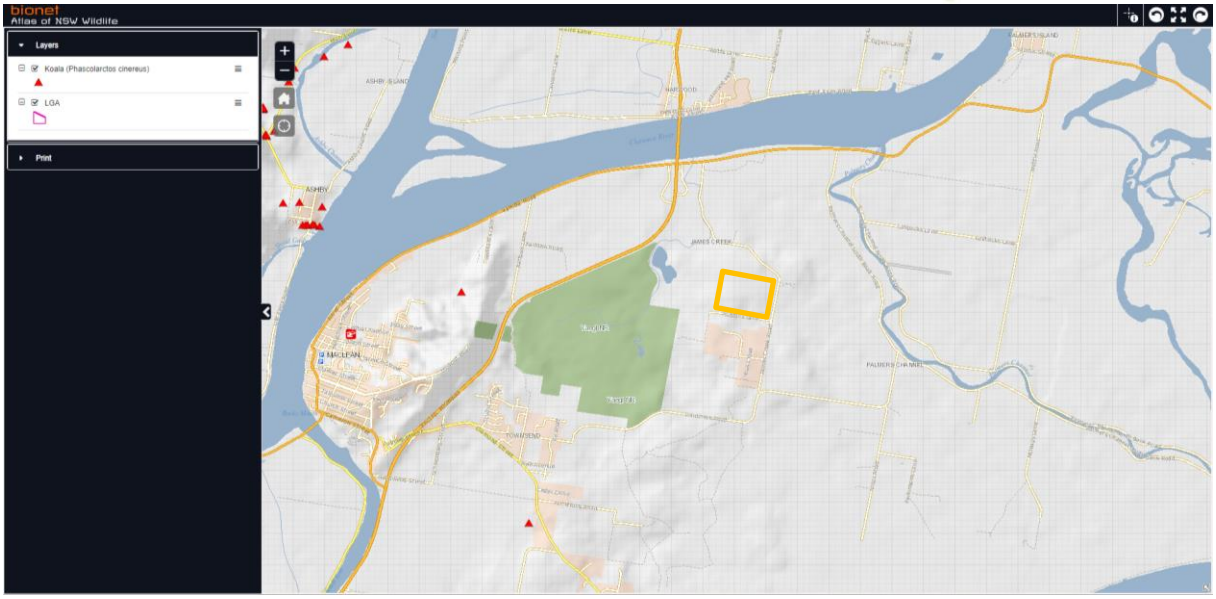

Figure 6.1 BioNet Koala records (site shown in orange)

As native vegetation is being removed for the proposal (three Forest Red Gum), a Koala Assessment Report (KAR) is required which must address five key principles:

1. *Understand Koala habitat values,*
2. *Avoid intensifying land use in Koala habitat areas through appropriate landscape planning and site selection,*
3. *Encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas,*
4. *Minimise potential direct impacts to Koalas though Koala sensitive design, and*
5. *Implement best practice measures for the management of identified risks to Koalas.*

A KAR has been prepared in table format to address the requirements set out in the *Koala SEPP 2021 FAQs — development applications* guideline (DPIE 2021); refer **Table 6.1**.

Table 6.1 Koala Assessment Report

KAR Requirement	***Response***
Principle 1. Understand Koala habitat values	
What is known about the size, health and viability of the Koala population?	There is no evidence of a Koala population currently residing within the locality.
What is known about the generational persistence of the local Koala populations? This should be informed by a record analysis to determine population trends and persistence over time.	There is no evidence of a Koala population currently residing within the locality, as supported by BioNET records.
What is the broader landscape context of the habitat within the site area? For instance, is it contiguous with broader areas of habitat or relatively isolated, and what are the likely regional movement patterns of Koalas using the site area?	Habitat south of the site connects into extensive areas of conservation reserve within Yuraygir National Park. Koala records within this landscape are very few, with a single record from 2004 between Yamba and Brooms Head (BioNET). This supports the theory that there is no Koala population within the Yamba locality

KAR Requirement	Response
	and the likelihood of animals immigrating into the area and establishing a population are extremely low.
Does the site area contain particular values likely to serve an important ecological function for Koalas? For instance, does it provide linkage between other habitats or serve as a habitat buffer to broader areas?	The site provides poor foraging and refuge habitat based on the lack of trees. There is high connectivity values with forested vegetation to the north and west (which adjoins Yaegl Nature Reserve). However, with no resident Koala population, these values are essentially void.
Could the habitat area and/or Koala population using the site area be important to the recovery of the Koala? For instance, does the habitat contain features that might provide refuge during droughts, extreme heat, or fire? Or is the population considered to be healthy, robust or showing relatively low incidence of disease?	There is no evidence of a Koala population currently residing within the locality.
Drawing on evidence presented, what significance are the values of the site to preserving the existing Koala population and supporting recovering and expanding populations?	The site contains relatively poor resources for Koalas, with vegetation being small in area and of reduced quality for foraging or refuge.
Principle 2. Avoid intensifying land use in Koala habitat areas through appropriate landscape planning and site selection	
How has the development footprint avoided core Koala habitat?	Core Koala habitat does not occur. The proposal has been designed to allow for the retention of the scattered trees around the site boundaries.
What feasible alternative site selections were assessed as part of the process?	The proposal has been designed to retain boundary trees where Koala may seek refuge.
Principle 3. Encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas	
Development avoids the direct loss of core Koala habitat within the site area and avoids fragmentation	Core Koala habitat does not occur at the site; no fragmentation of consolidated areas of potential habitat would occur as a result of the proposal.
Core Koala habitat is excluded from the development footprint	Core Koala habitat does not occur at the site; no significant Koala habitat occurs within or will be affected by the proposed development.
Principle 4. Minimise potential direct impacts to Koalas through koala sensitive design	
Development avoids direct impacts to core Koala habitat within the site area.	n/a; core Koala habitat is absent from the site.
Where some loss of core Koala habitat cannot be avoided (and provided it is consistent with all other criteria), development is designed in a way that retains higher value areas across the site and avoids fragmentation of habitat within the site area and more broadly within the region.	n/a; core Koala habitat is absent from the site.
Development is undertaken in a way that maintains the potential function of the core Koala habitat.	Potential Koala refuge areas are maintained around the perimeter of the site outside the development footprint.

KAR Requirement	*Response*
Principle 5. Implement best practice measures for the management of identified risks to Koalas.	
All relevant indirect impacts to Koalas and Koala habitat associated with the development are identified.	Few indirect impacts to Koalas are likely given the lack of a local population.
Development uses best practice management measures to address the potential impacts considered likely to pose an increased risk to Koalas or their habitat.	n/a

Based on BioNET results and site investigations, Koalas are unlikely to occur at the site. The KAR notes that the site does not contain core Koala habitat and impacts to Koalas and their habitats are negligible. On this basis the Policy has been satisfactorily addressed and there are no further requirements.

6.3 Biodiversity Conservation Act 2016 (BC Act)

The BC Act requires a test of significance (five-part test) when assessing whether an action, development or activity is likely to significantly affect threatened species, ecological communities, or their habitats. Based on the potential for several threatened fauna species to occur at the site, tests of significance have been completed (refer to **Appendix G**).

The tests of significance concluded that habitat for threatened species would be unlikely to be significantly affected by the proposal. Native vegetation loss does not exceed clearing thresholds in the Biodiversity Offsets Scheme in the BC Act. On this basis, development of the site (as proposed) does not require a BDAR.

6.4 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environmental significance (MNES) require approval from the Australian Government Minister for the Environment (the Minister).

On 24 March 2020 the Australian Government entered into a new agreement (‘Amending Agreement No. 1’) with the New South Wales Government to amend the bilateral agreement signed in 2015 relating to environmental assessment. The Amending Agreement declares that an action does not require assessment under part 8 of the EPBC Act if it is listed in the declared classes of actions in Schedule 1 of the Amending Agreement. In accordance with declared class of action (vii), the proposal is not classified as State significant development or complying development or designated development and is assessed as development that can be carried out with development consent under Part 4 of the EP&A Act and does not include a species impact statement prepared in accordance with the BC Act or FM Act.

The proposal is characteristic of declared class action (vii) and hence does not require assessment under part 8 of the EPBC Act.

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Copyright and Usage

Appendix A

Photographs

	Plate 1. Typical improved pasture at the site; view from north-east to west.
	Plate 2. Single immature tree to be removed in north-east of site (circled in red). Trees along the site boundary with James Creek Road will be retained in situ. View to south.

	Plate 3. Immature trees to be removed in south-east of site (circled in red); view to north.
	Plate 4. Mature Tallowwood (hollow-bearing tree) on the western boundary - to be retained in situ

Appendix B

Proposed Subdivision

Appendix C

Database Search Results

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) Plants in selected area [North: -29.40 West: 153.20 East: 153.30 South: -29.50] returned a total of 221 records of 8 species.
Report generated on 9/07/2021 10:02 AM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Plantae	Flora	Juncaginaceae	3363	*Maundia triglochinoides*			V		4	
Plantae	Flora	Lauraceae	8480	*Endiandra muelleri subsp. bracteata*		Green-leaved Rose Walnut	E1		6	
Plantae	Flora	Myrtaceae	4283	*Rhodamnia rubescens*		Scrub Turpentine	E4A		5	
Plantae	Flora	Myrtaceae	4284	*Rhodomyrtus psidioides*		Native Guava	E4A		1	
Plantae	Flora	Polygonaceae	5280	*Persicaria elatior*		Tall Knotweed	V	V	199	
Plantae	Flora	Polypodiaceae	8156	*^^Drynaria rigidula*		Basket Fern	E1,3		2	
Plantae	Flora	Proteaceae	5446	*Macadamia tetraphylla*		Rough-shelled Bush Nut	V	V	2	
Plantae	Flora	Simaroubaceae	9497	*Quassia sp. Moonee Creek*		Moonee Quassia	E1	E	2	

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) Animals in selected area [North: -29.40 West: 153.20 East: 153.30 South: -29.50] returned a total of 536 records of 37 species.
Report generated on 9/07/2021 10:04 AM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Amphibia	Myobatrachidae	3137	*Crinia tinnula*		Wallum Froglet	V,P		4	
Animalia	Amphibia	Hylidae	3166	*Litoria aurea*		Green and Golden Bell Frog	E1,P	V	1	
Animalia	Amphibia	Hylidae	3169	*Litoria brevipalmata*		Green-thighed Frog	V,P		1	
Animalia	Aves	Casuariidae	0001	*Dromaius novaehollandiae*		Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E2,P		168	
Animalia	Aves	Columbidae	0025	*Ptilinopus magnificus*		Wompoo Fruit-Dove	V,P		5	
Animalia	Aves	Columbidae	0021	*Ptilinopus regina*		Rose-crowned Fruit-Dove	V,P		1	
Animalia	Aves	Podargidae	0314	*Podargus ocellatus*		Marbled Frogmouth	V,P		1	
Animalia	Aves	Ciconiidae	0183	*Ephippiorhynchus asiaticus*		Black-necked Stork	E1,P		17	
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*		White-bellied Sea-Eagle	V,P		5	
Animalia	Aves	Accipitridae	0230	^^*Lophoictinia isura*		Square-tailed Kite	V,P,3		2	
Animalia	Aves	Accipitridae	8739	^^*Pandion cristatus*		Eastern Osprey	V,P,3		38	
Animalia	Aves	Gruidae	0177	*Grus rubicunda*		Brolga	V,P		6	
Animalia	Aves	Burhinidae	0175	*Esacus magnirostris*		Beach Stone-curlew	E4A,P		4	
Animalia	Aves	Laridae	0117	*Sternula albifrons*		Little Tern	E1,P	C,J,K	1	
Animalia	Aves	Psittacidae	8913	^^*Pezoporus wallicus wallicus*		Eastern Ground Parrot	V,P,3		1	
Animalia	Aves	Strigidae	0248	^^*Ninox strenua*		Powerful Owl	V,P,3		1	
Animalia	Aves	Tytonidae	0252	^^*Tyto longimembris*		Eastern Grass Owl	V,P,3		4	
Animalia	Aves	Tytonidae	0250	^^*Tyto novaehollandiae*		Masked Owl	V,P,3		1	

Animalia	Aves	Pomatostomidae	8388	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V,P		18	
Animalia	Aves	Neosittidae	0549	*Daphoenositta chrysoptera*	Varied Sittella	V,P		2	
Animalia	Aves	Campephagidae	0428	*Coracina lineata*	Barred Cuckoo-shrike	V,P		4	
Animalia	Aves	Estrildidae	0652	*Stagonopleura guttata*	Diamond Firetail	V,P		2	
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	7	
Animalia	Mammalia	Dasyuridae	1017	*Phascogale tapoatafa*	Brush-tailed Phascogale	V,P		4	
Animalia	Mammalia	Dasyuridae	1045	*Planigale maculata*	Common Planigale	V,P		1	
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*	Koala	V,P	V	9	
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*	Squirrel Glider	V,P		5	
Animalia	Mammalia	Potoroidae	1187	*Aepyprymnus rufescens*	Rufous Bettong	V,P		18	
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	162	
Animalia	Mammalia	Molossidae	1329	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V,P		5	
Animalia	Mammalia	Vespertilionidae	1354	*Chalinolobus nigrogriseus*	Hoary Wattled Bat	V,P		2	
Animalia	Mammalia	Vespertilionidae	1372	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V,P		1	
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*	Southern Myotis	V,P		8	
Animalia	Mammalia	Vespertilionidae	1361	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V,P		3	
Animalia	Mammalia	Vespertilionidae	1025	*Vespadelus troughtoni*	Eastern Cave Bat	V,P		1	
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*	Little Bent-winged Bat	V,P		16	
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		7	

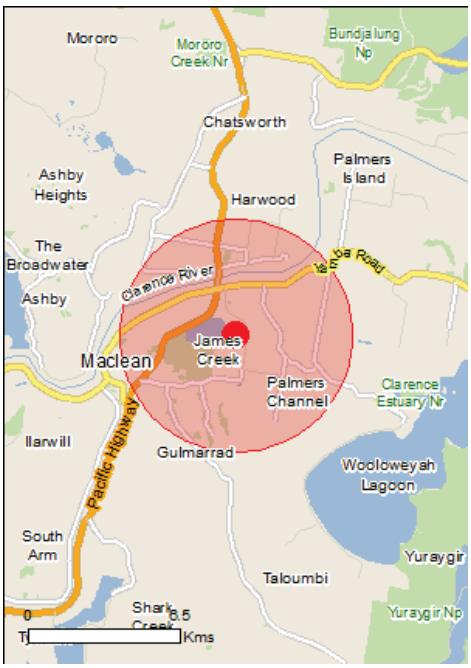
EPBC Act Protected Matters Report

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: 09/07/21 10:07:52



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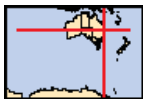

Summary

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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	68
Listed Migratory Species:	48

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	52
Whales and Other Cetaceans:	1
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:	1
Regional Forest Agreements:	1
Invasive Species:	37
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	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.

Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known 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 likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may 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 salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Status	Type of Presence
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat may occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
Fish		
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Nannoperca oxleyana Oxleyan Pygmy Perch [64468]	Endangered	Species or species habitat may occur within area
Frogs		
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area
Litoria olongburensis Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat likely to occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat likely to occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Plants		

Name	Status	Type of Presence
Acronychia littoralis Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
Angophora robur Sandstone Rough-barked Apple [56088]	Vulnerable	Species or species habitat may occur within area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat may occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat may occur within area
Eucalyptus tetrapleura Square-fruited Ironbark [7490]	Vulnerable	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat known to occur within area
Marsdenia longiloba Clear Milkvine [2794]	Vulnerable	Species or species habitat likely to occur within area
Olax angulata Minnie Waters Olax [10666]	Vulnerable	Species or species habitat may occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat known to occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Tylophora woollsii [20503]	Endangered	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to 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		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		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

Name	Threatened	Type of Presence
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may 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 salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi 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
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur

Name	Threatened	Type of Presence within area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area
[Monarcha trivirgatus](#) Spectacled Monarch [610]		Species or species habitat known to occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat known 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 likely to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Charadrius mongolus](#) Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
[Numenius phaeopus](#) Whimbrel [849]		Species or species habitat likely to occur within area
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area
[Pluvialis fulva](#) Pacific Golden Plover [25545]		Species or species habitat likely 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

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 known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		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 known 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 likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Species or species habitat may occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat 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
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		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

Name	Threatened	Type of Presence
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat likely to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may 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 salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable*	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Mammals		
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur

Name	Threatened	Type of Presence within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Yaegl	NSW

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
North East NSW RFA	New South Wales

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		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		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
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known 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
Felis catus 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
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Bundjalung National Park	NSW
Clarence River Estuary	NSW

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

-29.44876 153.24864

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 D

Flora Inventory

Table D1. Flora Inventory

Family	*Scientific name*	*Common name*
Amaranthaceae	*Gomphrena celosioides**	Gomphrena Weed
Apiaceae	*Centella asiatica*	Pennywort
Apiaceae	*Cyclospermum leptophyllum**	Slender Celery
Apocynaceae	*Gomphocarpus physocarpus**	Balloon Cotton Bush
Asteraceae	*Ambrosia artemisiifolia**	Annual Ragweed
Asteraceae	*Baccharis halimifolia**	Groundsel Bush
Asteraceae	*Bidens pilosa**	Cobbler's Pegs
Asteraceae	*Cirsium vulgare**	Spear Thistle
Asteraceae	*Conyza bonariensis**	Flaxleaf Fleabane
Asteraceae	*Hypochaeris radicata**	Catsear
Asteraceae	*Gamochaeta americana**	Cudweed
Asteraceae	*Ozothamnus diosmifolius*	White Dogwood
Asteraceae	*Senecio madagascariensis**	Fireweed
Asteraceae	*Sigesbeckia orientalis subsp. orientalis*	Indian Weed
Asteraceae	*Sonchus asper**	Prickly Sowthistle
Casuarinaceae	*Casuarina glauca*	Swamp Oak
Convolvulaceae	*Dichondra repens*	Kidney Weed
Cyperaceae	*Cyperus brevifolius**	Mullumbimby Couch
Cyperaceae	*Cyperus polystachyos*	Bunchy Sedge
Cyperaceae	*Juncus usitatus*	Pin Rush
Elaeocarpaceae	*Elaeocarpus obovatus*	Hard Quandong
Fabaceae (Faboideae)	*Podolobium scandens*	Netted Shaggy Pea
Fabaceae (Faboideae)	*Pultenaea villosa*	Hairy Bush-pea
Fabaceae (Faboideae)	*Trifolium repens**	White Clover
Fabaceae (Mimosoideae)	*Acacia concurrens*	Curracabah
Fabaceae (Mimosoideae)	*Acacia disparrima subsp. disparrima*	Salwood
Fabaceae (Mimosoideae)	*Acacia falcata*	Hickory Wattle
Fabaceae (Mimosoideae)	*Acacia melanoxylon*	Sally Wattle
Hypericaceae	*Hypericum gramineum*	Small St John's Wort
Lauraceae	*Cinnamomum camphora**	Camphor Laurel
Lomandraceae	*Lomandra longifolia*	Spiny-headed Mat-rush
Lomandraceae	*Lomandra multiflora*	Many-flowered Mat-rush
Luzuriagaceae	*Eustrephus latifolius*	Wombat Berry
Luzuriagaceae	*Geitonoplesium cymosum*	Scrambling Lily
Lythraceae	*Cuphea carthagenensis**	Cuphea
Malvaceae	*Sida rhombifolia**	Paddy's Lucerne
Moraceae	*Maclura cochinchinensis*	Cockspur Thorn
Myrtaceae	*Angophora floribunda*	Rough-barked Apple
Myrtaceae	*Angophora woodsiana*	Smudgy Apple
Myrtaceae	*Corymbia intermedia*	Pink Bloodwood
Myrtaceae	*Eucalyptus carnea*	White Mahogany

Family	*Scientific name*	*Common name*
Myrtaceae	*Eucalyptus microcorys*	Tallowwood
Myrtaceae	*Eucalyptus propinqua*	Small-fruited Grey Gum
Myrtaceae	*Eucalyptus siderophloia*	Grey Ironbark
Myrtaceae	*Eucalyptus tindaliae*	Grafton Stringybark
Myrtaceae	*Lophostemon suaveolens*	Swamp Box
Myrtaceae	*Melaleuca quinquenervia*	Broad-leaved Paperbark
Phormiaceae	*Dianella caerulea*	Blue Flax lily
Phytolaccaceae	*Phytolacca octandra**	Inkweed
Poaceae	*Andropogon virginicus**	Whiskey Grass
Poaceae	*Axonopus fissifolius**	Narrow-leaved Carpet Grass
Poaceae	*Cenchrus clandestinus**	Kikuyu
Poaceae	*Cynodon dactylon*	Common Couch
Poaceae	*Dichelachne crinita*	Longhair Plumegrass
Poaceae	*Echinopogon ovatus*	Forest Hedgehog Grass
Poaceae	*Eragrostis curvula**	African Lovegrass
Poaceae	*Eragrostis leptostachya*	Paddock Lovegrass
Poaceae	*Imperata cylindrica*	Blady Grass
Poaceae	*Lachnagrostis aemula*	Blowngrass
Poaceae	*Microlaena stipoides var. stipoides*	Weeping Grass
Poaceae	*Paspalum mandiocanum**	Broad-leaved Paspalum
Poaceae	*Paspalum urvillei**	Vasey Grass
Poaceae	*Sporobolus africanus**	Parramatta Grass
Polygalaceae	*Polygala paniculata**	Milkwort
Polygonaceae	*Persicaria decipiens*	Slender Knotweed
Polygonaceae	*Rumex crispus**	Curled Dock
Primulaceae	*Lysimachia arvensis**	Scarlet Pimpernel
Ranunculaceae	*Ranunculus inundatus*	River Buttercup
Solanaceae	*Physalis peruviana**	Cape Gooseberry
Solanaceae	*Solanum aviculare*	Kangaroo Apple
Solanaceae	*Solanum mauritianum**	Wild Tobacco Bush
Verbenaceae	*Lantana camara**	Lantana
Verbenaceae	*Verbena bonariensis**	Purpletop

* Introduced species

Appendix E

Fauna Inventory

Table E1. Fauna Inventory

Scientific name	*Common name*	*Record Basis*
Birds		
Ardea ibis	Cattle Egret	O
Chenonetta jubata	Australian Wood Duck	C
Coracina novaehollandiae	Black-faced Cuckoo-shrike	O
Corvus orru	Torresian Crow	O
Cracticus nigrogularis	Pied Butcherbird	O
Cracticus tibicen	Australian Magpie	O
Dacelo novaeguineae	Laughing Kookaburra	O
Eolophus roseicapilla	Galah	O
Eurystomus orientalis	Dollarbird	C
Gerygone olivacea	White-throated Gerygone	C
Grallina cyanoleuca	Magpie Lark	O
Hirundo neoxena	Welcome Swallow	O
Malurus cyaneus	Superb Fairy Wren	O
Manorina melanocephala	Noisy Miner	O
Myzomela sanguinolenta	Scarlet Honeyeater	C
Ocyphaps lophotes	Crested Pigeon	O
Oriolus sagittatus	Olive-backed Oriole	C
Pachycephala rufiventris	Rufous Whistler	C
Pardalotus striatus	Striated Pardalote	C
Platycercus eximius	Eastern Rosella	O
Pomatostomus temporalis temporalis	Grey-crowned Babbler	O
Rhipidura leucophrys	Willie Wagtail	O
Todiramphus sanctus	Sacred Kingfisher	C
Trichoglossus haematodus	Rainbow Lorikeet	O
Vanellus miles	Masked Lapwing	O
Mammals		
Bos taurus	Cow	O
Macropus giganteus	Eastern Grey Kangaroo	O
Trichosurus sp.	Brushtail Possum	Scat

C= Call; O = Observed

Appendix F

Potential for Threatened Fauna Occurrence

Table F.1 Threatened Fauna Potential Occurrence Assessment*

***marine reptiles, mammals and pelagic shorebirds for which no habitat occurs are not included**

Scientific Name	*Common Name*	*Status*		*Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)*	*Suitability of Site Habitat*	*Potential Occurrence and need for Test of Significance*
		BC Act	*EPBC Act*			
INSECTS						
Argynnis hyperbius inconstans	Australian Fritillary	E	CE	Restricted to south-east Queensland and north-east NSW in open swampy coastal areas where the larval food plant Arrowhead Violet *Viola betonicifolia* occurs.	Low	Low. No BioNet records within locality; no further assessment required.
AMPHIBIANS						
Crinia tinnula	Wallum Froglet	V	-	Acid paperbark and sedge swamps known as 'wallum', this is a banksia-dominated lowland heath ecosystem characterised by acidic waterbodies.	Low	Low; no further assessment required.
Litoria aurea	Green and Golden Bell Frog	E	V	Paperbark swamps and sedge swamps of the coastal 'wallum' country amongst sedges and rushes.	Low	Low; no further assessment required.
Litoria brevipalmata	Green-thighed Frog	V	-	Rainforest, moist to dry eucalypt forest and heath, typically where surface water gathers after rain.	Low	Low; no further assessment required.
Litoria olongburensis	Olongburra Frog	V	V	Amongst vegetation in and around permanent swamps, lagoons, farm dams and on flood-prone river flats, particularly where there are bullrushes or spikerushes.	Low	Low. No BioNet records within locality; no further assessment required.
Mixophyes iteratus	Giant Barred Frog	E	E	Deep, damp leaf litter in rainforests, moist eucalypt forest and near dry eucalypt forest.	Low	Low. No BioNet records within locality; no further assessment required.
REPTILES						
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	V	V	Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils.	Low	Low. No BioNet records within locality; no further assessment required.
AVIFAUNA						
Anthochaera phrygia	Regent Honeyeater	CE	CE	Dry open forest and woodland with an abundance of nectar-producing eucalypts, particularly box-ironbark woodland, swamp mahogany forests, and riverine sheoak woodlands.	Low	Low. No BioNet records within locality; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Suitability of Site Habitat	Potential Occurrence and need for Test of Significance
		BC Act	EPBC Act			
Botaurus poiciloptilus	Australasian Bittern	E	E	Permanent freshwater wetlands with tall dense vegetation, particularly bullrushes and spikerushes.	Low	Low. No BioNet records within locality; no further assessment required.
Burhinus grallarius	Bush Stone-curlew	E	-	Lightly timbered open forest and woodland, and partly cleared farmland with woodland remnants, preferring areas with dry leaf-litter, fallen timber and sparse ground cover.	Low	Low; no further assessment required.
Coracina lineata	Barred Cuckoo-shrike	V	-	Rainforest, eucalypt woodlands, swamp woodlands and timber along watercourses.	Low	Low; no further assessment required.
Daphoenositta chrysoptera	Varied Sittella	V	-	Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low	Low; no further assessment required.
Dromaius novaehollandiae	Emu population NSW North Coast Bioregion	E	-	Open forest, woodland, coastal heath, coastal dunes, wetland areas, tea tree plantations and open farmland, and occasionally in littoral rainforest.	Low-moderate	**Records in locality. Opportunistic foraging habitat occurs. Test of significance completed.**
Ephippiorhynchus asiaticus	Black-necked Stork	E	-	Swamps, mangroves, mudflats, dry floodplains.	Low	Low; no further assessment required.
Erythrotriorchis radiatus	Red Goshawk	CE	V	In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	Low	Low. No BioNet records within locality; no further assessment required.
Falco hypoleucos	Grey Falcon	E	V	Generally restricted the arid and semi-arid zones or where annual rainfall is less than 500 mm.	Low	Low. No BioNet records within locality; no further assessment required.
Grantiella picta	Painted Honeyeater	V	V	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema.	Low	Low. No BioNet records within locality; no further assessment required.
Grus rubicunda	Brolga	V	-	Shallow swamps, floodplains, grasslands and pastoral lands.	Low	Low; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Suitability of Site Habitat	Potential Occurrence and need for Test of Significance
		BC Act	EPBC Act			
Haliaeetus leucogaster	White-bellied Sea-eagle	V	-	Coastal fringes, waterways and adjacent land. Birds form permanent pairs that inhabit territories throughout the year.	Low	Low; no further assessment required.
Hirundapus caudacutus	White-throated Needletail	-	V	Most often recorded aerial foraging above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy. Breeding does not occur in Australia.	Low	Low; assessed under EPBC Act.
Lathamus discolor	Swift Parrot	E	E	Forests, woodlands, plantations, and banksias.	Low	Low. No BioNet records within locality; no further assessment required.
Lophoictinia isura	Square-tailed Kite	V	-	Dry woodland and open forest, particularly along major rivers and belts of trees in urban or semi-urban areas. Home range can extend over at least 100 km².	Low	Low; no further assessment required.
Ninox strenua	Powerful Owl	V	-	Woodland and open forest to tall moist forest and rainforest, common along drainage lines.	Low	Low; no further assessment required.
Pandion cristatus	Eastern Osprey	V	-	Forages for fish in fresh, brackish or saline waters of rivers, lakes, estuaries with suitable nesting sites nearby.	Low	Low; no further assessment required.
Pezoporus wallicus wallicus	Eastern Ground Parrot	V	-	Heathland and sedgeland within or adjacent to swamps.	Low	Low; no further assessment required.
Podargus ocellatus	Marbled Frogmouth	V	-	Subtropical rainforest spending most time is deep, wet sheltered gullies.	Low	Low; no further assessment required.
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V	-	Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains.	Low	**Recorded - opportunistic foraging habitat occurs. Test of significance completed.**
Ptilinopus magnificus	Wompoo Fruit-Dove	V	-	Rainforests, low-elevation moist eucalypt forest, and Brush Box forests.	Low	Low; no further assessment required.
Ptilinopus regina	Rose-crowned Fruit-Dove	V	-	Subtropical and dry rainforest, moist eucalypt forest and swamp forest.	Low	Low; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Suitability of Site Habitat	Potential Occurrence and need for Test of Significance
		BC Act	EPBC Act			
Rostratula australis	Australian Painted Snipe	E	E	Well-vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, and open timber.	Low	Low. No BioNet records within locality; no further assessment required.
Stagonopleura guttata	Diamond Firetail	V	-	Grassy eucalypt woodlands, open forest, mallee, temperate grassland, and secondary grassland derived from other communities, riparian areas, and sometimes in lightly wooded farmland.	Low	Low; no further assessment required.
Turnix melanogaster	Black-breasted Button-quail	V	V	Drier rainforests and vine scrubs, often in association with Hoop Pine and a deep moist leaf litter layer. During drought it may move to adjacent wetter rainforests.	Low	Low. No BioNet records within locality; no further assessment required.
Tyto longimembris	Eastern Grass Owl	V	-	Areas of tall grass, including tussocks in swampy areas, grassy plains, swampy heath, cane grass, sedges on flood plains.	Low	Low; no further assessment required.
Tyto novaehollandiae	Masked Owl	V	-	Dry eucalypt forest and woodlands.	Low	**Potential suitable hollows present, foraging habitat is considered marginal. Test of significance completed.**
MAMMALS						
Aepyprymnus rufescens	Rufous Bettong	V	-	Tall moist eucalypt forest to open woodland with tussock grass understorey.	Low	Low; no further assessment required.
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Sandstone cliffs and fertile woodland valley habitat within close proximity of each other.	Low	Low. No BioNet records within locality; no further assessment required.
Chalinolobus nigrogriseus	Hoary Wattled Bat	V	-	Inhabits dry open eucalypt forests, favouring forests dominated by Spotted Gum, boxes and ironbarks, and heathy coastal forests where Red Bloodwood and Scribbly Gum are common.	Low	**Potential roosting and foraging habitat occurs. Test of significance completed.**

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Suitability of Site Habitat	Potential Occurrence and need for Test of Significance
		BC Act	EPBC Act			
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Dry and moist eucalypt forests and rainforests, fallen hollow logs, large rocky outcrops.	Low	Low; no further assessment required.
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Moist and dry eucalypt forest and rainforest, particularly at high elevations.	Low	**Potential roosting and foraging habitat occurs. Test of significance completed.**
Miniopterus australis	Little Bent-winged Bat	V	-	Moist eucalypt forest, rainforest and dense coastal scrub.	Low	**Potential roosting and foraging habitat occurs. Test of significance completed.**
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Forest or woodland; roosts in caves, old mines and stormwater channels.	Low	**Potential roosting and foraging habitat occurs. Test of significance completed.**
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.	Low	**Potential roosting and foraging habitat occurs. Test of significance completed.**
Myotis macropus	Southern Myotis	V	-	Bodies of water, rainforest streams, large lakes, reservoirs.	Low	Low; no further assessment required.
Petauroides volans	Greater Glider	-	V	Wide range of habitats including tall open woodland, eucalypt forests and low woodlands.	Low	Low. No BioNet records within locality; no further assessment required.
Petaurus norfolcensis	Squirrel Glider	V	-	Blackbutt, bloodwood and ironbark eucalypt forest with heath understorey in coastal areas, and box-ironbark woodlands and River Red Gum forest inland.	Low	**Potential habitat occurs along western margin. Test of significance completed.**
Petrogale penicillata	Brush-tailed Rock Wallaby	E	V	North-facing cliffs and dry eucalypt forest and woodland, inhabiting rock crevices, caves, overhangs during the day, and foraging in grassy areas nearby at night.	Low	Low. No BioNet records within locality; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Suitability of Site Habitat	Potential Occurrence and need for Test of Significance
		BC Act	EPBC Act			
Phascogale tapoatafa	Brush-tailed Phascogale	V	-	Drier forests and woodlands with hollow-bearing trees and sparse ground cover.	Low	**Potential habitat occurs along western margin. Test of significance completed.**
Phascolarctos cinereus	Koala	V	V	Appropriate food trees in forests and woodlands, and treed urban areas.	Low	Low; no further assessment required.
Planigale maculata	Common Planigale	V	-	Rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas with surface cover close to water.	Low	Low; no further assessment required.
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	V	Cool temperate rainforest, moist and dry forests, and wet heathland, inhabiting dense layers of grass, ferns, vines and shrubs.	Low	Low. No BioNet records within locality; no further assessment required.
Pseudomys novaehollandiae	New Holland Mouse	V	V	Occurs in open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	Low	Low. No BioNet records within locality; no further assessment required.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Moderate as foraging habitat.	**Possible (as part of a broader foraging range). Test of significance completed.**
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.	Low	**Potential roosting and foraging habitat occurs. Test of significance completed.**
Vespadelus troughtoni	Eastern Cave Bat	V	-	Cave roosting species found in dry open forest and woodland near cliffs and rocky overhangs.	Low	Low; no further assessment required.
Xeromys myoides	Water Mouse	-	V	Occurs in mangroves and the associated saltmarsh, sedgelands, clay pans, heathlands and freshwater wetlands in SEQ, central south Qld and the Northern Territory.	Low	Nil - not recorded in NSW.

V = Vulnerable; E = Endangered; CE = Critically Endangered; PE = Presumed Extinct

Appendix G

Tests of Significance

Tests of significance ('five-part tests') under Section 7.3 of the BC Act have been completed for the following threatened fauna species:

- Brush-tailed Phascogale
- Eastern Coastal Free-tailed Bat
- Eastern False Pipistrelle
- Emu population NSW North Coast Bioregion
- Greater Broad-nosed Bat
- Grey-crowned Babbler
- Grey-headed Flying-fox
- Hoary Wattled Bat
- Large Bent-winged Bat
- Little Bent-winged Bat
- Masked Owl
- Squirrel Glider.

a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Brush-tailed Phascogale

Brush-tailed Phascogales prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. They are agile climbers foraging preferentially in rough barked trees of 25 cm DBH or greater. The diet mostly comprises arthropods but also includes other invertebrates, nectar and sometimes small vertebrates. Females have exclusive territories of approximately 20 - 40 ha, while males have overlapping territories often greater than 100 ha. Brush-tailed Phascogales nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span. Mating occurs May - July; males die soon after the mating season whereas females can live for up to three years but generally only produce one litter.

Threatening processes for this species include:

- Loss and fragmentation of habitat
- Loss of hollow-bearing trees
- Predation by foxes and cats
- Competition for nesting hollows with the introduced honeybee.

Potential Impacts of the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. The vegetation to be removed comprises low quality habitat for Brush-tailed Phascogales in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Brush-tailed Phascogale would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern Coastal Free-tailed Bat

The Eastern Coastal Free-tailed Bat occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. They typically roost in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally; probably insectivorous.

Threatening processes for this species include:

- Loss of hollow-bearing trees
- Loss of foraging habitat
- Application of pesticides in or adjacent to foraging areas
- Artificial light sources spilling onto foraging and/or roosting habitat
- Large scale wildfire or hazard reduction burns on foraging and/or roosting habitat.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Eastern Coastal Free-tailed Bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Eastern Coastal Free-tailed Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern False Pipistrelle

The Eastern False Pipistrelle prefers moist habitats, with trees taller than 20 m. It hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Females are pregnant in late spring to early summer.

Threatening processes for this species include:

- Disturbance to winter roosting and breeding sites
- Loss of roosting habitat, primarily hollow-bearing eucalypts
- Loss and fragmentation of foraging habitat, particularly extensive areas of continuous forest and areas of high productivity.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Eastern False Pipistrelle in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Eastern False Pipistrelle would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Emu Population NSW North Coast Bioregion

The site occurs within an area known to be utilised by the Coastal Emu Population which is listed as an endangered population under the BC Act. The Yuraygir sub population occurring south of the Clarence River is known to occupy the coastal strip of Yuraygir National Park as well as surrounding contiguous areas in the Sandon and Brooms Head area in the north to Minnie Water and Red Rock in the south and Tucabia, Tyndale and Shark Creek to Pillar Valley and the lower Clarence River wetlands in the west. A detailed review of the movements and range of the Yuraygir sub-population of Coastal Emus was undertaken as part of the *Coastal Emu Management Plan* for the Woolgoolga to Ballina (W2B) Pacific Highway Upgrade project (Jacobs, 2015) by interpretation and discussion of the annual emu census results from NPWS land managers (Gina Hart and Matt Clarke) and interviews with long-standing property owners. Key findings of this review include:

The majority of the sub-population is centred on Yuraygir National Park including Station Creek to Red Rock, Wooli, Diggers Camp, Minnie Waters, Sandon, Sandon River, Brooms Head, Wooloweyah, James Creek and Taloumbi.

The population is divided by a number of social groups that show fidelity to particular areas and habitat that support important pre and post-breeding life-cycle events. The degree of relatedness and interaction between the groups is not known.

- *Groups range a considerable distance and include:*
  - *One ranging within the area south of Tucabia from the Coldstream River wetlands in the west to Pillar Valley and Yuraygir National Park in the east.*
  - *A second group that is largely found on the agricultural land and forests between Pine Brush and Candole State Forest in the south, Tyndale Swamp and north to Shark Creek and Green Hill and the cane farms around Shark Creek including Byrons Lane and McIntyres Lane at Tyndale.*
    - *These two groups frequently access floodplain wetlands and creeks such as Chaffin Swamp and Pillar Valley Creek. They utilise modified agricultural habitats during pre- and post-breeding activities in spring and summer with the cane fields frequently occupied by adult males raising young.*
    - *Anecdotal information on breeding activities suggests that breeding occurs in four broad areas: Station Creek to Red Rock River (south), Wooli - Diggers Camp - Minnie Water - Sandon River (central), Brooms Head - Sandon River - Candole State Forest - Wallaby Lane (north), Pillar Valley around Chaffin Hill and Whites Hill in the western edge of their range (west).*

The CVC Emu register shows a record of two Emus recorded in proximity to the site along James Creek Road two years ago. Other records in the locality of the site include records along Palmers Channel Bank Road to the east and Gardiners Road to the south of the site. Emu records associated with the site are low in comparison with other areas of habitat occurring south of Gulmarrad and east of Palmers Channel.

Potential Impacts from the Proposal

The proposal would result in the removal of an area representing potential opportunistic foraging habitat for birds within the local population as part of the broader home range utilised by this species. This habitat does not represent good quality, permanent or nesting habitat. The removal of this habitat is unlikely to substantially affect the local population of the species given that a large area of habitat is

utilised by the population locally including large areas of agricultural (sugar cane) land and as such foraging resources for the local population would be impacted to a minor and incremental extent.

Other potential impacts of the proposal are associated with increased traffic movements and associated increases to roadkill risk and the increased potential of Emu interactions with domestic dogs. Given the relatively low number of Emu records in the locality of the site (CVC Emu Register) compared to other known areas of occupancy for this species it would be highly unlikely that an adverse effect on the life cycle of this population would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Large and Little Bent-winged Bat

Bentwing-bats occur in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Roosting occurs in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. Little Bentwing-bats often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters.

In NSW, the largest maternity colony is in close association with a large maternity colony of Eastern Bentwing-bats and appears to depend on the large colony to provide the high temperatures needed to rear its young. Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer. Only five nursery sites/maternity colonies are known in Australia.

Threatening processes for these species include:

- Disturbance of colonies, especially in nursery or hibernating caves, may be catastrophic
- Destruction of caves that provide seasonal or potential roosting sites
- Changes to habitat, especially surrounding maternity/nursery caves and winter roosts
- Pesticides on insects and in water consumed by bats bio accumulates, resulting in poisoning of individuals
- Predation from foxes, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges
- Predation from feral cats, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges
- Introduction of exotic pathogens such as the White-nosed fungus
- Hazard reduction and wildfire fires during the breeding season
- Large scale wildfire or hazard reduction can impact on foraging resources
- Poor knowledge of reproductive success and population dynamics.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Eastern or Little Bentwing-bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Eastern or Little Bentwing-bat would occur such that a viable local population of these species is likely to be placed at risk of extinction.

Greater Broad-nosed Bat

The Greater Broad-nosed Bat utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although usually roosting in tree hollows, the species has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species. Little is known of the reproductive cycle, however a single young is born in January; prior to birth, females congregate at maternity sites located in suitable trees, where they appear to exclude males during the birth and raising of a single young.

Threatening processes for this species include:

- Disturbance to roosting and summer breeding sites
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions
- Loss of hollow-bearing trees
- Pesticides and herbicides may reduce the availability of insects or result in the accumulation of toxic residues in individuals' fat stores
- Changes to water regimes are likely to impact food resources, as is the use of pesticides and herbicides near waterways.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Greater Broad-nosed Bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Greater Broad-nosed Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Grey-crowned Babbler

Grey-crowned Babblers (GCB) inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Other habitat includes woodlands on fertile soils in coastal regions. Flight is laborious so birds prefer to hop to the top of a tree and glide down to the next one. Birds are generally unable to cross large open areas.

Babblers live in family groups that consist of a breeding pair and young from previous breeding seasons. A group may consist of up to 15 birds. All members of the family group remain close to each other when foraging. They build and maintain several conspicuous, dome-shaped stick nests about the size of a football. A nest is used as a dormitory for roosting each night. Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts. Nests are maintained year round, and old nests are often dismantled to build new ones.

Breeding occurs between July and February. Usually two to three eggs are laid and incubated by the female. During incubation, the adult male and several helpers in the group may feed the female as she sits on the nest. Young birds are fed by all other members of the group. Territories range from one to 50 hectares (usually around 10 hectares) and are defended all year. Territorial disputes with neighbouring groups are frequent and may last up to several hours, with much calling, chasing and occasional fighting.

Babblers feed on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses.

Threatening processes for this species include:

- Loss, degradation and fragmentation of woodland habitat on high fertility soils.
- Excessive total grazing pressure and loss of coarse woody debris is resulting in degradation and loss of important habitat components.
- Infestation of habitat by invasive weeds including exotic perennial grasses. These weeds are very aggressive and form dense grass swards covering inter-tussock spaces preventing access to leaf and stick litter where babblers commonly forage for invertebrates.
- Inappropriate fire regimes - excessive fires lead to loss of tree and shrub regeneration and absence of fire may lead to the grass sward being too dense and therefore unsuitable for foraging by babblers.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.
- Climate change impacts including reduction in resources due to drought.
- Nest predation by species such as ravens and butcherbirds may be an issue in some regions where populations are small and fragmented.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; potential foraging habitat within retained trees will be retained. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Grey-crowned Babblerin the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Grey-crowned Babbler would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Grey-headed Flying-fox

Grey-headed Flying-foxes (GHFF) have a distribution that typically extends approximately 200 km from the coast of Eastern Australia, from Rockhampton in Queensland to Adelaide in South Australia. Foraging areas include subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. GHFF feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia*, and fruits of rainforest trees and vines, as well as from cultivated gardens and orchards. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Annual mating commences in January and conception occurs in April or May; a single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. GHFF may travel up to 50 km from the camp to forage; commuting distances are more often <20 km.

Threatening processes for this species include:

- Clearing of woodlands for agriculture
- Loss of roosting and foraging sites
- Electrocution on powerlines, entanglement in netting and on barbed-wire
- Heat stress
- Conflict with humans
- Incomplete knowledge of abundance and distribution across the species' range.

Potential Impacts from the Proposal

Vegetation/habitat requiring removal for the proposal would be unlikely to contain important foraging resources for GHFF in the context of substantial areas of adjacent forest on site and in the locality. No potential roost habitat would be affected. Minor native tree loss for the works (three immature trees) represents a negligible contraction in foraging resources for the species.

On this basis it is considered that the proposed work would be unlikely to have an adverse effect on the life cycle of GHFF such that a viable local population of the species is placed at risk of extinction.

Hoary Wattled Bat

In NSW, the Hoary Wattled Bat occurs in dry open eucalypt forests, favouring forests dominated by Spotted Gum, boxes and ironbarks, and heathy coastal forests where Red Bloodwood and Scribbly Gum are common. Because it flies fast below the canopy level, forests with naturally sparse understorey layers may provide the best habitat. The species roosts in hollows and rock crevices and will occupy urban areas with suitable habitat. Birthing usually occurs during October and November when twins are born.

Threatening processes for this species include:

- Clearing and fragmentation of dry forest and woodland habitat through clearing for agriculture and development
- Loss of tree hollows for roosting and maternity sites from forest management favouring younger stands of trees
- Loss of hollow-bearing trees used for roosting and maternity sites as a result of too-frequent burning for grazing and forestry management activities
- Pesticides on insects and in water consumed by bats bio accumulates, resulting in poisoning of individuals. The use of pesticides also reduces available insect food sources.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Hoary Wattled Bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Hoary Wattled Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Masked Owl

Masked Owls live in dry eucalypt forests and woodlands from sea level to 1100 m and often hunt along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 500 to 1000 ha. Masked Owls roost and breed in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.

Threatening processes for this species include:

- Loss of mature hollow-bearing trees and changes to forest and woodland structure, which leads to fewer such trees in the future
- Clearing of habitat for grazing, agriculture, forestry or other development

- A combination of grazing and regular burning is a threat, through the effects on the quality of ground cover for mammal prey, particularly in open, grassy forests
- Secondary poisoning from rodenticides
- Being hit by vehicles.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. In a local context, the works are unlikely to result in significant impacts to foraging resources or a reduction in the prey base for the Masked Owl.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Masked Owl would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Squirrel Glider

Squirrel Gliders inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. They prefer mixed species stands with a shrub or Acacia mid-storey. Squirrel Gliders live in family groups of a single adult male one or more adult females and offspring and require abundant tree hollows for refuge and nest sites. The diet varies seasonally and consists of *Acacia* gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.

Threatening processes for this species include:

- Habitat loss and degradation
- Fragmentation of habitat
- Loss of hollow-bearing trees
- Loss of understorey food resources
- Inappropriate fire regimes
- Reduction in food resources due to drought
- Mortality due to entanglement on barbed wire
- Occupation of hollows by exotic species
- Mortality due to collision with vehicles
- Predation by exotic predators
- Changes in spatial and temporal distribution of habitat due to climate changes.

Potential Impacts from the Proposal

The proposal would result in the loss of up to three immature native trees; no hollow-bearing trees will be removed. The vegetation to be removed comprises low quality habitat for Squirrel Gliders in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Squirrel Glider would occur such that a viable local population of the species is likely to be placed at risk of extinction.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

No threatened ecological communities occur.

in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

The habitat to be removed is immature, isolated and does not provide any significant resources for any of the subject species in the context of the site and locality.

In relation to Emu habitat to be removed the proposal would remove an area of opportunistic foraging habitat which is well represented locally. CVC Emu register records suggest that the site is utilised on a very occasional basis compared to other areas to the south of Gulmarrad.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

The affected vegetation/habitat is already highly fragmented. The proposed development would not fragment habitat for any of the subject species and no barriers or dispersal to movement would result.

In relation to Emu habitat the proposal is unlikely to fragment habitat for the local population given the nomadic nature of the Emu and numerous options for movement through the landscape associated in the locality of the site.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The affected trees comprise a negligible foraging resource for the subject species and loss of these trees is of low importance in a local context.

In relation to Emu habitat, the proposal would remove an area of potential foraging habitat which is well represented within the locality. The site has no particular values as permanent or breeding habitat.

c) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

No areas of outstanding biodiversity value have been declared in Clarence Valley Local Government Area.

d) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A key threatening process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species or ecological communities. The current list of KTP listed under the BC Act, and whether the Proposal is recognised as a KTP is shown in **Table G.1**.

Table G.1 Key Threatening Processes

Key Threatening Process (as per Schedule 4 of the BC Act)	*Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?*		
	Likely	*Possible*	*Unlikely*
Aggressive exclusion of birds by noisy miners (*Manorina melanocephala*)			✓
Alteration of habitat following subsidence due to longwall mining			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic climate change		✓	
Bushrock removal			✓
Clearing of native vegetation	✓		
Competition and grazing by the feral European Rabbit (*Oryctolagus cuniculus*)			✓
Competition and habitat degradation by feral goats (*Capra hircus*)			✓
Competition from feral honeybees (*Apis mellifera*)			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest eucalypt dieback associated with over-abundant psyllids and bell miners			✓
Habitat loss and degradation by Feral Horses			✓
Herbivory and environmental degradation caused by feral deer			✓
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition			✓
Importation of red imported fire ants (*Solenopsis invicta*)			✓
Infection by *Psittacine circoviral* (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Infection of native plants by *Phytophthora cinnamomi*			✓
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae			✓
Introduction of the large earth bumblebee (*Bombus terrestris*)			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)			✓
Invasion and establishment of the Cane Toad (*Bufo marinus*)			✓
Invasion, establishment and spread of Lantana (*Lantana camara*)			✓
Invasion of native plant communities by African Olive (*Olea europaea L. subsp. cuspidata*)			✓
Invasion of native plant communities by *Chrysanthemoides monilifera*			✓
Invasion of native plant communities by exotic perennial grasses			✓
Invasion of the Yellow Crazy Ant (*Anoplolepis gracilipes*) into NSW			✓
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss of hollow-bearing trees			✓
Loss or degradation (or both) of sites used for hill-topping by butterflies			✓
Predation and hybridisation by feral dogs (*Canis lupus familiaris*)			✓
Predation by the European Red Fox (*Vulpes vulpes*)			✓
Predation by the feral cat (*Felis catus*)			✓
Predation by *Gambusia holbrooki* (Plague Minnow or Mosquito Fish)			✓
Predation by the Ship Rat (*Rattus rattus*) on Lord Howe Island			✓
Predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*)			✓
Removal of dead wood and dead trees			✓

The Proposal may be characteristic of the following KTPs:

- Clearing of native vegetation: Refers to the destruction of a sufficient proportion of one or more strata (layers) within a stand or stands of native vegetation. The loss of three immature trees from disturbed pasture indicates contributions to this KTP are very low.
- The Proposal incrementally contributes to *Anthropogenic climate change*, through the generation of carbon dioxide during operation of machinery and vehicles and associated fuel consumption however the impact is not considered significant.

On this basis the degree that the Proposal would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.