Flora and Fauna Assessment Report: Blakebrook Public School

417 Rosehill Road, Blakebrook, Northern NSW

24001279

10 November 2023

KLEINFELDER
Bright People. Right Solutions.

Suite 3, 240-244 Pacific Highway,
Charlestown, NSW 2290

Phone: +61 2 4949 5200

Flora and Fauna Assessment Report: Blakebrook Public School

417 Rosehill Road, Blakebrook, Northern NSW

Kleinfelder Project: 24001279

Kleinfelder Document: NCA23R157873-B

Prepared for:
ADCO Construction Pty Ltd

Level 2, 7-9 West Street
North Sydney NSW 2060

Prepared by:
Kleinfelder Australia Pty Ltd

10/156 Boundary Street, West End, QLD 4101
Phone: +61 2 4949 5200
ABN: 23 146 082 500

Document Control:

Version	Description	Date
1.0	Draft	4 October 2023
1.1	Draft	10 November 2023
Prepared	Reviewed	Endorsed
		
Kevin Wormington	Howard Rogers	Howard Rogers

EXECUTIVE SUMMARY

Kleinfelder Australia Pty Ltd were engaged by ADCO Constructions Pty Ltd, on behalf of School Infrastructure New South Wales, to prepare a Flora and Fauna Assessment Report to support a Development Application (DA) for the new construction at the Blakebrook Public School (BBPS) under the Northern River Schools Flood Recovery Reimburse Project.

The desktop research determined that there was one Plant Community Type (PCT) within the Subject Site but there were a wide range of Threatened Ecological Communities (TECs), and threatened flora and fauna within 5 km of the subject site (Locality). However a large percentage of the Threatened fauna were marine and freshwater wetland species that would not occur in the Subject Site or Development Site due to the lack of those habitats.

The field survey determined that trees, shrubs groundcover, and the managed lawns and playing fields were planted vegetation and did not represent any PCTs or TECs that occur within the Locality. The patch of trees mapped as PCT 4046 - *Northern Lowland Swamp Turpentine-Red Gum Forest* was a patch of old and large Camphor Laurel (*Cinnamomum camphora*) trees which are an exotic. There was one threatened flora species (Davidson's Plum *Davidsonia jerseyana*) observed within the Subject Site but not in the Development Site and would not be significantly impacted. The vegetation did not contain any microhabitat features such as hollow-bearing trees, logs, rocks, burrows or nests. The vegetation could provide marginal foraging habitat for threatened fauna but there was no threatened fauna observed within the Subject Site.

Analysis of the Development Site determined that there would be a new disturbance area of 0.1832 ha that would be made up of 0.1814 ha of Managed Lawns and 0.0018 ha of Planted Vegetation (two small trees). Linkage to native vegetation in the locality of BBPS is generally poor and only mobile species would be able to access the Subject Site. In addition, the lack of any suitable habitat or microhabitat in the Development Site meant that no threatened fauna would be significantly impacted.

The conclusions were that no threatened communities, flora or fauna species were recorded within the Subject Site except Davidson's Plum. The other threatened flora and fauna were not considered to have a moderate to high likelihood of occurrence except the Koala. The Davidson's Plum is not in the Development Site and would be protected with fencing during the construction, and would not be impacted. A 5 part Test determined that the Koala would not be significantly impacted since no Koala feed or roost trees were present in the Development Site. As such, the proposed development is unlikely to cause a significant impact to any threatened communities, species or populations listed under the NSW BC Act or EPBC Act.

Avoidance and mitigation measures have been presented to reduce potential impacts to the biodiversity values within the Subject Site and the environment.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

1.1 PROJECT BACKGROUND

Kleinfelder Australia Pty Ltd (Kleinfelder) were engaged by ADCO Constructions Pty Ltd (ADCO), on behalf of School Infrastructure New South Wales (SINSW), to prepare a Flora and Fauna Assessment Report (FFAR) to support a Development Application (DA) for the new construction at the Blakebrook Public School (BBPS) under the Northern River Schools Flood Recovery Reimburse Project. The proposed development is located entirely within the grounds of 417 Rosehill Road, Blakebrook, New South Wales (NSW) 2480 (Lot 2 DP859866) (hereafter referred to as the "Subject Site") (**Figure 1**). The Subject Site is located in Bundjalung Country.

The following terms are used throughout this report to describe geographical areas (**Figure 2**).

- **Subject Site** – 417 Rosehill Road, Blakebrook, NSW 2480 (Lot 2 DP859866).
- **Development Site** – area within the Subject Site proposed for development of the new school construction and landscaping.
- **Locality** – land within a 5 km radius of the Subject Site.

This report identifies flora, fauna and threatened species present, or likely to occur within the Subject Site based on species and/or habitats detected during field surveys and threatened flora and fauna records from the locality. An assessment of the likely impacts on identified threatened species, habitat features, wildlife corridors and vegetation communities as a result of the proposed development is also undertaken.

1.2 SITE LOCATION

The site is located in Bundjalung Country at 417 Rosehill Road, Blakebrook, NSW 2478, and is legally described as Lot 2 DP859866 (**Figure 1**). The Subject Site is located within the Ballina Local Government Area and has an area of approximately 1.2809 ha and rises from 14.0 m Australian Height Datum (AHD) at the southeastern corner boundary to 16.0 m AHD northwestern boundary.

The Subject Site has 1 street frontage:

- Rosehill Road (southern boundary).

The site is primarily cleared land, with the exception of the existing groups of linear trees and gardens that have been planted around the boundary and between some of the existing buildings (**Figure 2**).

1.3 SITE DESCRIPTION

The site is comprised of the existing school and infrastructure, and planted vegetation, including lawns and playing fields. The Subject Site is located within the Clarence - Richmond Alluvial Plains (Mitchell 2002), which is associated with Wide valleys, channels, floodplains, terraces and estuaries of the Clarence and Richmond Rivers and other coastal streams on Quaternary alluvium with a general elevation of 0 to 50m and a local relief of 15m. There are no mapped watercourses within the Subject Site. The nearest watercourses are Goolmangar Creek (170 m southwest) and Terania Creek (450 m southeast) of the Subject Site.

The Subject Site has been cleared of the original native vegetation and replanted with a mixture of native and exotic vegetation including lawns and playing fields.

1.4 SURROUNDING DEVELOPMENT

The subject site is zoned as SP2 (Educational Establishment) and the surrounding areas are farmlands zoned as RU1 (Rural Primary Production).

PROJECT REFERENCE:	20213532
DATE DRAWN: 27/09/2023	Version 1
DRAWN BY:	RHourigan
DATA SOURCE: ESRI - 2023 NSW DFSI - 2020	

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

Locality

Blakebrook PS:
Northern NSW
Flood Recovery – Ecological Assessment
SINSW03370-22

FIGURE:

1

J:\00 CLIENT FILES\125103_ADCO\24001279_Northern Rivers Schools\Mapping\230921_Blakebrook_Fig01_Location.mxd

Legend

- Development Site
- Subject Site

Vegetation

- PCT ID: 4046, Northern Lowland Swamp Turpentine-Red Gum Forest
- PCT ID: 0, Not classified

Scale 1:861

0 5 10 20 30 40 Metres

N

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

PROJECT REFERENCE:	24001279
DATE DRAWN:	10/4/2023 Version 1
DRAWN BY:	KWormington
DATA SOURCE:	Nearmap - 2023

Subject Site

Blakebrookl PS
Northern NSW
Flood Recovery – Ecological Assessment
SINSW03370-22

FIGURE:

2

J:\00 CLIENT FILES\125103_ADCO\24001279_Northern Rivers Schools\Mapping\230921_Blakebrook_Fig02_DevSite_A4L.mxd

1.5 PROJECT DESCRIPTION

The existing buildings at Blakebrook Public School, 417 Rosehill Road, Blakebrook (Lot 2 Deposited Plan (DP) 859866) were significantly inundated during the February / March 2022 floods and as a consequence most of the structures are no longer habitable due to the damages caused by flood waters. As a result, the NSW Department of Education is proposing to demolish most of the existing school buildings and construct a new elevated school building to replace it. The floor level of the new building will be located above the design flood level to increase flood resistance and create useable undercroft spaces.

The works are being undertaken as a Development Application (DA) to Lismore City Council (Council).

The proposed development is to be undertaken in two (2) stages as follows:

- Stage 1: Demolition of the existing buildings and tree removal (separate Early Works DA)
- Stage 2: Construction of a new elevated school building and landscaping and ancillary works and structures (this Main works DA).

The Main Works development comprises:

- Construction of a new elevated school building, with at-grade (undercroft) amenities and storage, including:
    - Ground Level:
        - Open undercroft space for covered outdoor learning and play.
        - Male and female amenities and accessible toilet / change room facility.
        - Cleaners' store.
        - Equipment store.
        - Sport equipment store.
    - Elevated Level:
        - New administration comprising interview room, clerical spaces, Principal's office, staff room, sick bay and male, female and accessible amenities.
        - School library with computer room, store, main communications room and library office.
        - Four (4) General Learning Spaces (GLS) with learning commons and multi-purpose space.
        - Canteen with open servery space.
        - Store.
        - Male, female and accessible amenities.
        - Mechanical plant.
- New and hard soft landscaping including replacement play equipment, vegetable garden, fernery and yarning circle.
- New hydrant pump house with fire tanks.
- Relocation and replacement of existing septic tanks and water tanks.

It is not proposed to increase staff or student numbers as a result of these works.

It should be noted that areas where buildings are demolished that will not have any new infrastructure built will be either returned to managed lawns, ornamental gardens or will be planted with trees.

1.6 REPORT OBJECTIVES

The objectives of the combined assessment include:

- Complete a desktop assessment including relevant threatened biota and regional vegetation mapping.
- Describe the flora and fauna (and their habitats) present on, or likely to occur on the Subject Site.
- Identification of native vegetation, noting the extent and condition of plant community types, as well as the presence, condition and extent of any threatened ecological communities.
- Assess the relevance and value of the Subject Site for threatened species and ecological communities (and their habitats) listed under the NSW Biodiversity Conservation Act 2016 (BC Act).

- Assess the potential impacts of the proposed development on threatened species and ecological communities, pursuant to Section 7.3 of the BC Act (5-part test).
- Assess the potential requirements of a species impact statement or a biodiversity development assessment report if the proposed development significantly affect threatened species, pursuant to Section 7.8 of the BC Act.
- Assess that the likely significant effect on threatened species, populations or ecological communities is the only likely significant effect on the environment, a species impact statement may be obtained under Part 4 of the EP&A Act instead of an environmental impact statement, pursuant to Section 221ZX of the FM Act.
- Comment on the likely occurrence and relevance of matters of national environmental significance listed under the Commonwealth Environment Planning and Biodiversity Conservation Act 1999 (EPBC Act).
- Describe steps to avoid and mitigate any identified impacts on flora and fauna and to protect the natural environment of the Subject Site.

2 LEGISLATIVE CONTEXT

2.1 COMMONWEALTH LEGISLATION

2.1.1 *Environment Protection & Biodiversity Conservation Act 1999*

The purpose of the EPBC Act is to ensure that actions likely to cause a significant impact on 'matters of national environmental significance' undergo an assessment and approval process. Under the EPBC Act, an action includes a proposal, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things. An action that 'has, will have or is likely to have a significant impact on a Matter of National Environmental Significance (MNES) is deemed to be a 'controlled action' and may not be undertaken without prior approval from the Australian Minister for the Environment.

The EPBC Act identifies nine MNES:

1. World heritage properties.
2. National heritage places.
3. Wetlands of international importance (Ramsar Wetlands).
4. Threatened species and ecological communities.
5. Migratory species.
6. Commonwealth marine areas.
7. The Great Barrier Reef Marine Park.
8. Nuclear actions (including uranium mining).
9. A water resource, in relation to coal seam gas development and large coal mining development.

MNESs 4 and 5 are relevant to this assessment. As part of the current assessment, MNES that are predicted to occur within the locality (applying a 10 km buffer) were obtained from the on-line Protected Matters Search Tool (DAWE 2021a). These records are discussed in **Section 4**. The EPBC Act has been further addressed in this assessment through:

- Field surveys for EPBC Act listed threatened biota and migratory species.
- Assessment of potential impacts on EPBC Act listed threatened species and migratory biota.
- Identification of suitable impact mitigation and environmental management measures for EPBC Act listed threatened species and migratory biota.

2.2 STATE LEGISLATION

2.2.1 *Environmental Planning and Assessment Act 1979*

The *Environmental Planning and Assessment Act 1979* (EP&A Act) forms the legal and policy platform for proposal assessment and approval in NSW and aims to 'encourage the proper management, development and conservation of natural and artificial resources'. All development in NSW is assessed in accordance with the provisions of the EP&A Act and the EP&A Regulation 2021.

The project will be assessed under Part 4 of the EP&A Act.

2.2.2 *Biodiversity Conservation Act 2016*

2.2.2.1 Overview

The *Biodiversity Conservation Act 2016* (BC Act), the *Biodiversity Conservation Regulation 2017* (NSW BC Regulation) and amendments to the NSW *Local Land Services Act 2013* (LLS Act) commenced on 25 August 2017. The legislation aims to "maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development". The BC Act repeals several pre-existing Acts, most notably the NSW *Threatened Species Conservation Act 1995* (TSC), the NSW *Nature Conservation Trust Act 2001* and the NSW *Native Vegetation Act 2003*.

The BC Act together with the BC Regulation outlines the framework for addressing impacts on biodiversity from development and clearing. The framework details a pathway to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offset Scheme (The BOS).

2.2.2.2 Entry into the Biodiversity Offset Scheme

Entry into the BOS is triggered by developments, projects and activities that meet criteria or certain thresholds for significant impacts on biodiversity in accordance with Section 6.3 of the BC Act. Alternatively, the BOS can be entered into on an opt-in basis.

Criteria to which the BOS applies includes the following:

- Local Development (assessed under Part 4 of the EP&A Act) that triggers the BOS Threshold or is "likely to significantly affect threatened species" (based on a test of significance pursuant to Section 7.3 of the BC Act). The BOS Threshold has two parts, and is triggered by the following:
  - Clearing of vegetation that exceeds an area threshold (based on the minimum lot size), or
  - Impacts are predicted to occur within an area mapped on the Biodiversity Values Map (the BV Map).
  - State Significant Development (SSD) and State Significant Infrastructure projects (SSI), unless "the Secretary of the Department of Planning, Industry and Environment and the environment agency head determine that the project is not likely to have a significant impact".
  - Biodiversity certification proposals.
  - Clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds the BOS threshold and does not require development consent.
  - Clearing of native vegetation that requires approval by the Native Vegetation Panel under the Local Land Services Act 2013.
  - Activities assessed and determined under Part 4 of the Environmental Planning and Assessment Act 1979 (generally, proposals by government entities) if proponents choose to 'opt in' to the Scheme.

The new Disturbance Area within the Development Site will be 0.1832 ha that is made up of 0.1814 ha of Managed Lawns and 0.0018 ha of Planted Vegetation (two small trees). The proposed development at BBPS will result in no clearing or impacts to native vegetation communities, but has an area clearing threshold of 0.5 ha based on the Subject Site's minimum lot size of 1.2809 ha. There are no areas mapped on the BV Map within the Subject Site. As such, the proposed development does not trigger entry into the BOS, thus a Biodiversity Development Assessment Report (BDAR) is not required to support the DA under the above criteria.

The current assessment has considered the likelihood of occurrence of threatened species and ecological communities listed under the BC Act in **Section 4** and **Appendix A** of this report.

2.2.3 Biosecurity Act 2015

Under the *Biosecurity Act 2015* (NSW) all plants are regulated with a general biosecurity duty "to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable." Under the Act, a biosecurity impact "is an adverse effect on the economy, environment, or the community that arises, or has the potential to arise, from a biosecurity matter." This legislation is addressed in **Section 4.1.2.**

2.2.4 Coastal Management Act 2016

The *Coastal Management Act 2016* establishes a strategic framework and objectives for managing coastal issues in NSW. The Act promotes a focus on ecologically sustainable development in relation to the 'coastal zone' as defined by the Act comprising of four coastal management areas:

- Coastal Wetlands and Littoral Rainforests Area – areas which display the characteristics of coastal wetlands or littoral rainforests.
- Coastal Vulnerability Area – areas subject to coastal hazards such as coastal erosion and tidal inundation.
- Coastal Environment Area – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included.
- Coastal Use Area – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

The State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) officially commenced on 1 March 2022 and Chapter 2 covers how development proposals are assessed if they are in a coastal zone, and is supported by detailed mapping. Chapter 2 was previously the Coastal Management SEPP 2018.

Chapter 2 gives effect to the objectives of the *Coastal Management Act 2016* from a land use planning perspective, by specifying how development proposals are to be assessed if they fall within the coastal zone. It defines the four coastal management areas in the Act through detailed mapping and specifies assessment criteria that are tailored for each coastal management area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas.

The Subject Site does contain Coastal Use Areas and Coastal Environment Map Area. As such, the *Coastal Management Act 2016* does apply to this development.

2.2.5 Fisheries Management Act 1994

The FM Act outlines the framework to conserve fish stocks and key habitats by conserving threatened species, populations and ecological communities of fish and marine vegetation, and promote ecologically sustainable development.

The current assessment has considered the likelihood significant effects on threatened species and communities in regard to Section 221ZX of the Act.

2.2.6 Water Management Act 2000

Controlled activities carried out in, on or under waterfront land are regulated by the *Water Management Act 2000* ("WM Act"). 'Waterfront land' is defined as the bed of any river, lake or estuary, and the land within 40 m of the river bank, lake shore or estuary mean high water mark. No mapped waterways exist within the Subject Site. Goolmangar Creek (170 m southwest) and Terania Creek (450 m southeast) exceed the 40 m limit within the Subject Site and BBPS new construction footprint. Therefore, the new construction does not constitute a 'controlled activity' in accordance with the WM Act.

Consideration of direct or indirect impacts to aquatic and riparian habitat is provided in **Section 5.1.4**. Mitigation measures are detailed in **Section 5.2.2.**

2.2.7 State Environmental Planning Policy (Biodiversity & Conservation) 2021 - Koala.

The State Environmental Planning Policy (Biodiversity & Conservation) 2021 (B&C SEPP) aims in Chapter 4 to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas (*Phascolarctos cinereus*) to support a permanent free-living population over their present range and reverse the current trend of Koala population decline. Where an approved Koala Plan of Management (KPoM) applies to the land, council's determination of the development application must be consistent with the approved KPoM that applies to the land.

The B&C SEPP does apply to land zoned SP2 in LGAs listed in Schedule 2 of the SEPP (Koala Habitat protection) 2021, which includes the Lismore City LGA. Therefore the B&C SEPP does apply to the Subject Site. There is currently a KPoM (Comprehensive Koala Plan of Management for south-east Lismore) for the Lismore City LGA.

2.3 Local Planning Instruments

2.3.1 Ballina Local Environmental Plan 2012

The Subject Site is located within the Lismore City LGA. The Lismore Local Environmental Plan 2012 (2013 EPI 20) (Lismore LEP) controls development within the Subject Site through zoning and development controls. The objective for the environment associated with Land zoned SP2 (Infrastructure) are:

- To protect, sustain and enhance Lismore's natural environment, particularly native fauna and flora.
- To minimise the adverse effects of natural hazards, particularly flooding, bush fire and land instability.
- To ensure that development is consistent with the principles of ecologically sustainable development.

These controls are described in greater detail by the supporting Lismore Development Control Plan 2012 (Lismore DCP).

2.3.2 Ballina Shire Development Control Plan 2012

The Lismore DCP Chapter 14 (Vegetation Protection) supports the Lismore LEP by providing additional detail and guidance on addressing vegetation management issues associated with development. The Lismore DCP should be read in conjunction with the Lismore LEP for its application and exemptions are listed in Schedule 1. Section 3 of the Lismore DCP lists vegetation exempt from requiring an approval from the Lismore City Council. Most of the vegetation does not meet the exemption requirements and will require an approval as required in Section 4 of the Lismore DCP.

Vegetation management activities in the above zone should be undertaken in accordance with the provisions of the *Local Land Services Act 2013* and the *Biodiversity Conservation Act 2016*.

2.3.3 Comprehensive Koala Plan of Management for south-east Lismore 2013

The Comprehensive Koala Plan of Management for south-east Lismore 2013 (Lismore KoMP) aims to:

1. To ensure that activities threatening koalas and their habitat, within the koala planning area (Figure 1) in the south-east of the Lismore Local Government Area (LGA) are avoided, minimised, mitigated and/or compensated.
2. To maintain or improve Lismore's Koala population and their habitat by working with landholders and industry and pursuing appropriate relevant partnership and funding opportunities.
3. To provide a transparent and consistent development assessment framework for Council and people intending to prepare an application to develop land determination of development applications that may have a potential adverse impact on koalas and their habitat.

The main objectives are:

1. Identify and list the preferred koala food tree species likely to be found in the Lismore LGA and to map preferred koala habitat in the koala planning area.
2. Minimise the effect of those processes within Council's sphere of control and influence which threaten koalas and their habitat.
3. Ensure that there is no net loss of preferred or core koala habitat in the area and allow for safe koala movement across the landscape.
4. Create, manage and/or restore koala habitat linkages and corridors.
5. Provide a transparent and consistent assessment pathway and criteria for the processing of development applications, as well as present guidelines for: Koala habitat assessment; food tree and koala habitat retention; compensation for the loss of food trees and koala habitat.
6. Promote koalas as an asset for Lismore's economic development and tourism.

Under the Comprehensive Koala Plan of Management for South-east Lismore 2013 (Lismore KPoM), the Subject Site is not in the Koala Planning Area (KPA) and the KoMP does not apply to it. However, the Lismore KPoM should be used as a guide for Koala conservation in the Subject Site.

3 MATERIALS AND METHODS

3.1 DESKTOP ASSESSMENT

3.1.1 Aerial Imagery

Historical aerial imagery was reviewed to assess the extent of vegetation clearing that has previously occurred within the Subject Site. Aerial imagery from 1966 was retrieved from NSW Globe (2022).

3.1.2 Database Searches

Existing information on the flora and fauna of the Subject Site and the locality, including relevant threatened biota was obtained from:

- The SVTM NSW Extant PCT mapping through the SEED portal (Geocortex Viewer for HTML5 (nsw.gov.au)) was used to determine the vegetation mapping for the Subject Site.
- The NSW State Vegetation Type Map: Plant Communities Release C1.1.M1 (DPE 2022).
- The BioNet Atlas of NSW Wildlife (Dept of Planning and Environment 2023) for previous records of threatened species, populations and ecological communities (as listed under the BC Act) within a 5 km radius of the Subject Site.
- Department of Climate Change, Energy, the Environment and Water (DCCEEW 2023a) Protected Matters Search Tool (5 km buffer).
- State Environmental Planning Policy (Resilience and Hazards) 2021 – Map (http://webmap.environment.nsw.gov.au/PlanningHtml5Viewer/?viewer=SEPP_CoastalManagement) was used to determine if any Coastal Wetlands or Littoral Rainforest are mapped within the Subject Site.
- The Biodiversity Values Map and Threshold Tool (Biodiversity Values Map and Threshold tool (nsw.gov.au)) was used to generate a Biodiversity Values Map and Threshold Report to determine if any areas of the Subject Site are mapped as having high biodiversity value.
- The occurrence of regulated waterways within the Subject Site was reviewed by obtaining Hydroline Mapping from NSW Land and Property Information (Water Management (General) Regulation 2018 Hydro Line spatial data | Water (nsw.gov.au)).
- Relevant published literature on threatened biota (see References).

The results of the database searches were used to compile a list of threatened species, populations and communities, as listed under the BC Act and EPBC Act that could potentially occur on the Subject Site, and their likelihood of occurrence (**Appendix A**).

3.2 FIELD SURVEY

3.2.1 Vegetation Assessment

A diurnal inspection of the Subject Site and surrounds was undertaken on 10 August 2022 to provide specific observations for this report and the broader BBPS project.

Native vegetation types were identified based on dominant flora species present within each structural layer (i.e. canopy, shrub and ground layers). Exotic or highly modified native vegetation was defined based on structure and species composition. Where required, boundaries of vegetation types and communities were marked with a hand-held GPS and mapped using geographical information system (GIS) software.

Vegetation and habitats were compared with descriptions provided in the BioNet Vegetation Classification to identify PCTs. Vegetation types were also assessed against identification criteria for State and Commonwealth listed threatened ecological communities (DCCEEW 2023b; Office of Environment and Heritage 2023).

One (BBPS1) 400 m² floristic plot/transects was sampled across the Subject Site in accordance with Section 5.3.4 of the NSW Biodiversity Assessment Method (BAM) (DPIE 2020a) (**Figure 3**). Plot/transects were positioned to sample areas that were most representative of the floristic characteristics of potential PCTs. Percentage cover and relative abundance was recorded for all plant species. A list of plant species within other planted vegetation areas of the Subject Site was also recorded.

Plant identification and nomenclature were based on species descriptions presented within The Flora of New South Wales Volumes 1 to 4 (Harden, G (ed.) 1993) and with reference to taxonomic updates in PlantNET - The Plant Information Network System of Botanic Gardens Trust, Sydney, Australia (National Herbarium of NSW 2023).

3.2.2 Fauna and Habitat Assessment

The locations of any important habitat features, such as microbat roosting habitat, hollow-bearing trees, terrestrial refugia and nests/burrows were captured with a handheld GPS device and photographed where appropriate.

Searches for potential habitat for threatened fauna species included but were but not limited to:

- Koala feed trees.
- Foraging trees for threatened birds.
- Hollow-bearing trees.
- Potential roosts for microbats.
- Vegetated ponds, riparian vegetation and drainage lines for frogs and waterbirds.
- Woody debris, leaf litter and bush rock.

Diurnal opportunistic and incidental observations of fauna species were recorded during field surveys. These included opportunistic observation of fauna activity such as scats, tracks, burrows or other traces. A full survey following *Threatened Species Survey and Assessment: Guidelines* was not required due to all the vegetation being planted.

3.3 Survey Limitations

The survey techniques and survey effort applied for this study were commensurate with the nature and condition of the Subject Site. Due to these limitations, priority was given to habitat assessment for relevant threatened biota. A 'likelihood of occurrence' assessment was applied to all species previously recorded or predicted to occur within the locality based on State and Commonwealth information sources. No fauna trapping, nocturnal surveys or targeted surveys following NSW Threatened Biodiversity Survey and Assessment: Guidelines for developments and activities (working draft) (DEC 2004) for threatened fauna species were deemed appropriate given the nature of the site.

While a minimal diversity of native and exotic flora species was recorded, a longer survey duration or multiple seasonal surveys may have resulted in the detection of a greater diversity of species. The whole of the small Subject Site is considered to be planted vegetation and unsuitable for most threatened plant species known to occur in the locality; therefore, the survey effort that is recommended in the NSW Guide to Surveying Threatened Plants (DPIE 2020b) was not considered to be applicable.

Legend

- Survey Tracks
- Contours
- Subject Site
- BBPS1

Scale 1:800

0 5 10 20 30 40 Metres

N

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

PROJECT REFERENCE:	24001279
DATE DRAWN:	10/4/2023 Version 1
DRAWN BY:	KWormington
DATA SOURCE:	Nearmap - 2023

Survey Effort

Blakebrookl PS
Northern NSW
Flood Recovery – Ecological Assessment
SINSW03370-22

FIGURE:

3

J:\00 CLIENT FILES\125103_ADCO\24001279_Northern Rivers Schools\Mapping\230921_Blakebrook_Fig03_SurveyEffort_A4L.mxd

4 RESULTS

4.1 DESKTOP

4.1.1 Aerial Imagery

Historical aerial imagery for the Subject Site is presented in **Plate 1.** This imagery indicates that the woody vegetation within the Subject Site was cleared prior to 1966 except for the western and southern side. The NSW aerial imagery shows that the other vegetation was planted throughout the subject after 1966 (**Figure 3**). It should be noted that the trees visible in **Plate 1** are Camphor Laurels (*Cinnamomum camphora*), presumably planted in the early days of the school.

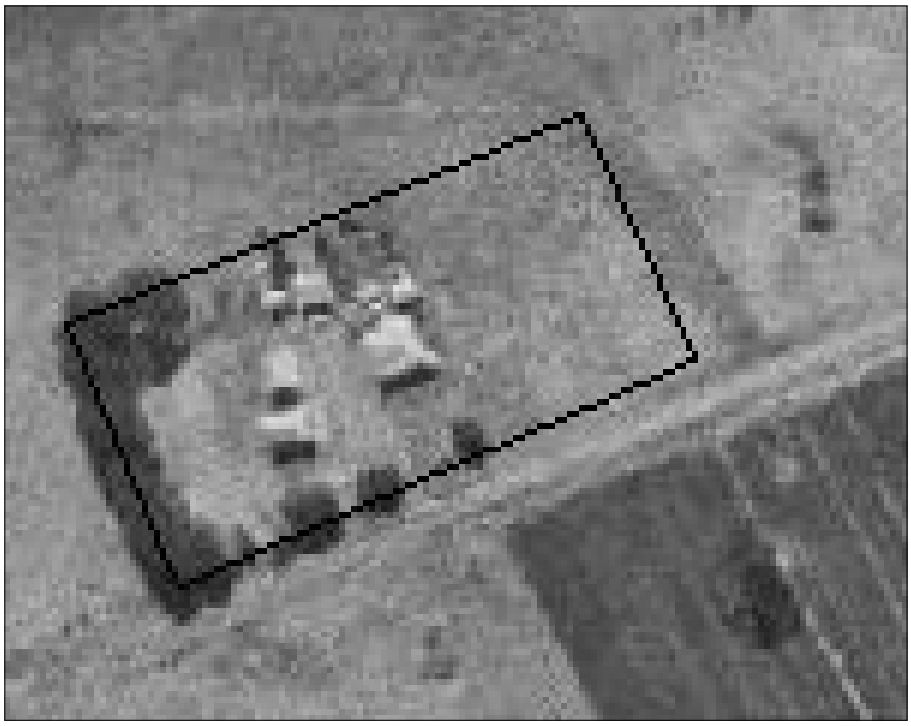


Plate 1: Aerial photograph of Blakebrook Public School (NSW Globe 1966)

4.1.2 Database Searches: Threatened Communities, Flora and Fauna

A search of the NSW Bionet Atlas for records of threatened communities, flora and fauna species within 5 km of the Subject Site returned a list of 13 communities, 12 threatened flora species, 12 birds, 8 mammals, 0 reptiles, 1 amphibian and 1 insect. A search of the Department of Environment and Energy Protected Matter Search Tool returned a list of 4 threatened ecological communities, 30 threatened plants, 17 threatened birds, 10 mammals, 1 reptile, 3 amphibians, 1 fish, and 1 insect. Another 13 migratory species were recorded that could occur within a 5 km radius of the Subject Site**.**

A search of BioNet Vegetation Classification and SEED map recorded 1 PCT in the study site: PCT 4046 – *Northern Lowland Swamp Turpentine-Red Gum Forest* (**Figure 2** and **Table 1**) overlapping the western end Subject Site.

The full results from the database searches are in **Appendix H**.

Table 1: PCT 4046 – *Northern Lowland Swamp Turpentine-Red Gum Forest*

PCT 3046- *Northern Lowland Swamp Turpentine-Red Gum Forest*	
Vegetation Formation and Class	• KF_CH9 Forested Wetland • Coastal Floodplain Wetlands
Floristic description	A very tall to extremely tall sclerophyll open forest with a mid-stratum of Melaleucas and soft-leaved species and a grassy ground layer, occurring on floodplains and low rises of the southern Richmond River and Lower Clarence valleys. *Lophostemon suaveolens* is almost always present in the canopy or sub-canopy, very frequently with red gums (*Eucalyptus tereticornis* or *Eucalyptus seeana*). Scattered *Eucalyptus siderophloia* and *Corymbia intermedia* are also occasionally present. A small tree layer includes a diverse range of species. Acacias are almost always present, *Alphitonia excelsa* and melaleucas are very frequent and *Glochidion ferdinandi* is common. The more frequent acacias and melaleucas are *Acacia aulacocarpa*, *Acacia disparrima* and *Melaleuca alternifolia*. The shrub layer is sparse and commonly includes scattered *Breynia oblongifolia*. The mid-dense ground layer typically includes graminoids, climbers and forbs, very frequently including *Imperata cylindrica*, *Geitonoplesium cymosum* and *Parsonsia straminea*, commonly *Ottochloa gracillima* and occasionally *Gynochthodes jasminoides*. This PCT primarily occurs in the Bungawalbin to Wardell area in the Lower Richmond Valley, however, extends to Nana Glen south of Grafton. It occurs in a wet climate with more than 1060 mm mean annual rainfall, at elevations of typically below 60 metres asl, on sandy alluvial sediments or sandstone substrates. This PCT is floristically related to PCT 3428 which shares similar canopy species and has a similar distribution
Condition within Development Site	The vegetation within this zone is characterised by a mix of planted native/exotic trees and shrubs, the majority of which are not locally indigenous. There were several large Camphor Laurel trees associated with the mapped patch of PCT 4046 at the western end of the Subject Site but there were not any lower storey trees or shrubs.
Justification for PCT selection	Diagnostic species are not identified in this vegetation zone nor does its composition identify with this PCT.
Status	**BC Act:** **BC Act:** PCT 4046 is associated with 1 Endangered Ecological Communities (EEC): • Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion. **EPBC Act:** PCT 4046 is associated with one Endangered Ecological Community (EEC): Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions.
PCT % Cleared	69.9 %

The results from the above searches were entered into the Likelihood of Occurrence (LoO) table in **Appendix A**. There were not any Biodiversity Values but a PCT was mapped within the Subject Site (**Figure 2** and **Section 4.3**). The above threatened species will be discussed in **Sections 4.5 and 4.6**.

Due to the Subject Site being a terrestrial area only; marine and freshwater wetland mammals, birds, reptiles and fish have not been included in the LoO table.

4.1.3 Coastal Management Area

The Subject Site occurs within a Coastal Use Area, and Coastal Environment Map Area, but is outside of the Coastal Wetlands associated with the Richmond River. The Resilience and Hazards SEPP is relevant to future development.

4.1.4 Waterways

There were no regulated waterways associated with the Subject Site, however Goolmangar Creek and Terania Creek are located 170 m southwest and 450 m southeast from the boundaries respectively. Therefore, the new construction does constitute a 'controlled activity' in accordance with the WM Act. Consideration of direct or indirect impacts to aquatic and riparian habitat is provided in **Section 5.1.4**. Mitigation measures are detailed in **Section 5.2.2.**

4.2 VEGETATION ASSESSMENT

4.2.1 Flora Diversity

A total of 66 flora species were recorded within the Subject Site, including 36 exotic species of which 1 was considered 'High Threat Exotic" or listed Priority Weeds for the North Coast Local Land Services Region under the Biosecurity Act 2015 (NSW) (NCLLS 2021). One threatened flora species (Davidson's Plumb *Davidsonia jerseyana*) was identified within the Subject Site during field surveys (**Plate 2**). It is most likely the tree was planted as it is in a linear strip of trees on the northern fence line. This tree will need to be marked and protected during the construction phase. A list of the flora species identified within the Subject Site is provided in **Appendix B Table 6**. There were a large number of exotic garden plants that were not included.

A total of 7 plant species were identified during the assessment in BAM Plot BBPS1. These consisted of 2 native species and 5 exotic species. Plant species comprised of the following growth forms:

- 0 Trees (TG)
- 0 Shrubs (SG)
- 4 Grass and grasslike (GG) species
- 3 Forbs (FG)
- 0 "Other" growth forms

Plate 2: Davidson's Plum

4.2.2 Priority Weeds

1 priority weed species (Fireweed *Senecio madagascariensis*) was identified for the North Coast Local Land Services (LLS) Region (Department of Primary Industries 2023).

Mitigation measures to prevent the spread of weeds are presented in **Section 5.2.**

4.3 Plant Community Types

4.3.1 Overview

There was 1 PCT recorded within the Subject Site by the BioNet Vegetation Classification and SEED map but the vegetation in the Subject Site did not fit its description since it was Planted Vegetation. The vegetation within the Development Site was assigned to vegetation zones based on floristics and vegetation condition (**Figure 4**). Vegetation Zones comprised the following:

- **Vegetation Zone 1**: Planted Vegetation – includes native/exotic trees and shrubs with understorey plants.
- **Vegetation Zone 2**: Managed Lawns - planted native/exotic grasses and exotic forbs with native tree seedings planted in its southern part (Managed).

The vegetation communities within the Subject Site (**Figure 4**) were characterised by Planted Vegetation (**Plate 3 - Plate 11**), and Managed Lawns, also planted (**Plate 12)**. A summary of vegetation communities is provided in **Table 2**. Full descriptions of each vegetation zone are provided in the following sub-sections. Floristic and structural plot data is provided in **Appendix C**. The extent of each vegetation zone is illustrated on **Figure 4**.

None of the vegetation communities identified with any Plant Community Types (PCTs). There were no Threatened Ecological Communities (TECs) identified within the Subject Site.

Table 2: Vegetation Communities within the Subject Site

Vegetation Community	Vegetation Formation	Vegetation Class	Area (ha) within Subject Site	Area (ha) within Development Site
Vegetation Zone 1: Planted Vegetation	NA	NA	0.3703 ha	0.0018 ha
Vegetation Zone 2: Managed Lawns	NA	NA	0.6421 ha	0.1814 ha
Total			**1.0124 ha**	**0.1832 ha**
Fauna Habitat				
Hollow-bearing trees (HBTs)	None		None	None
Woody debris, leaf litter and bush rock.	None		None	None
Nests	None		None	None
Waterbodies/watercourses	none		None	None

The 0.1832 ha of vegetation that will be removed is comprised of 0.1814 ha of Managed Lawns and 0.0018 ha of Planted Vegetation. The Planted Vegetation will consist of two small trees/shrubs that do not contain any habitat values other than flowering. One dead tree will be removed from the eastern boundary of the Subject Site (Northern Tree Care 2023) but vegetation and tree canopy associated with the dead tree will remain intact. A small amount of lopping of branches off the Camphor Laurels (exotic species) at the western end of the Subject site will be required, but this will not impact on any native vegetation or foraging by native fauna.

4.3.2 Vegetation Zone 1

Table 3: Planted Vegetation

PCT	Vegetation Formation
Vegetation Formation and Class	N/A
Area within Development Site	0.0018 ha (0.3703 ha within the Subject Site)
Survey Effort	Meander
Floristic description	The vegetation within this zone is characterised by a canopy, a shrub layer and ground layer comprising of mix of planted native/exotic species. The groundcover is predominantly exotic (**Plate 3 - Plate 6 and**).
Condition within Development Site	The vegetation within this zone is characterised by a mix of planted native/exotic trees and shrubs, the majority of which are not locally indigenous.
Justification for PCT selection	Vegetation within this zone is not representative of a PCT.
Status	**BC Act:** N/A **EPBC Act:** N/A
PCT % Cleared	N/A

Plate 3: Planted Native/Exotic trees and Gardens within the Subject Site

Plate 4: **Planted Native/Exotic trees and gardens within the Subject Site**

Plate 5 **Planted Native/Exotic trees (Camphor laurel) and Managed Lawns within the Subject Site**

Plate 6: **Planted Native/Exotic trees and gardens within the Subject Site**

Plate 7: **Planted Native/Exotic trees and gardens within the Subject Site**

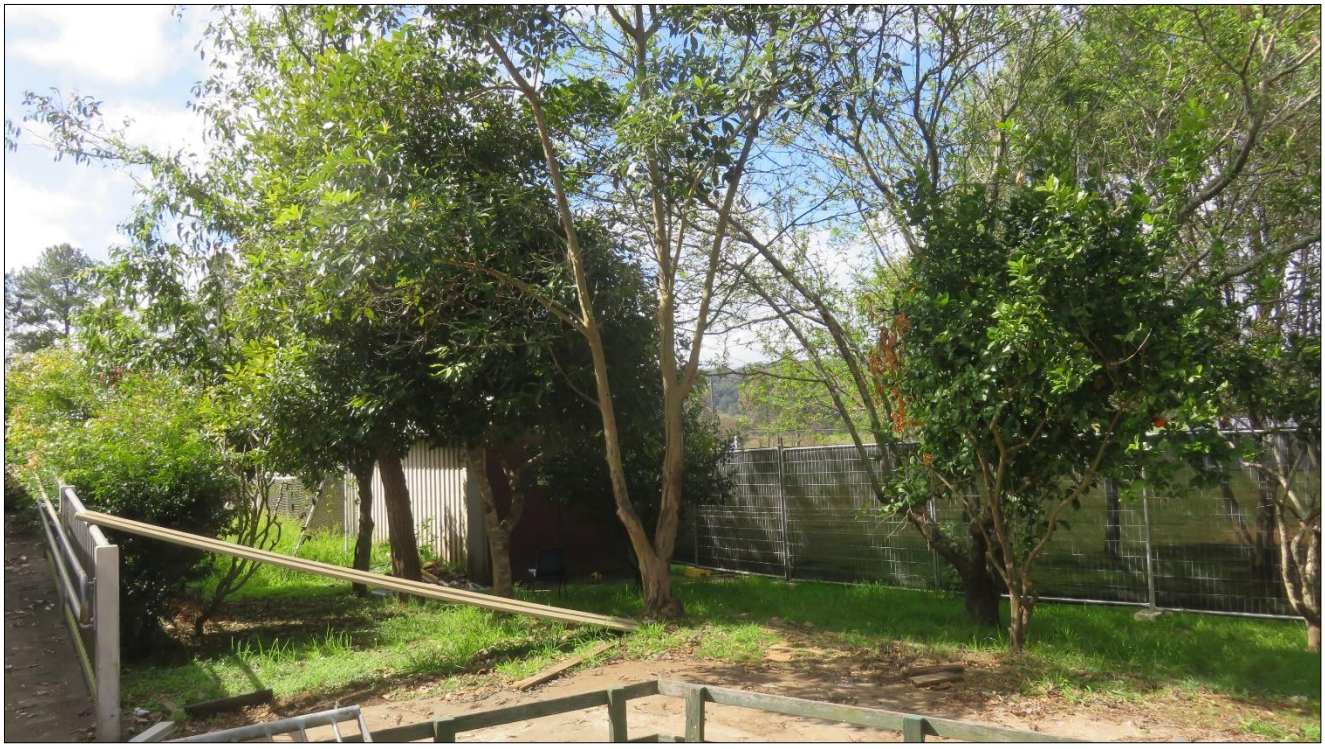


Plate 8: **Planted Native/Exotic trees and gardens within the Subject Site**

Plate 9: **Planted Native/Exotic trees and gardens within the Subject Site**

Plate 10: **Planted Native/Exotic trees and gardens within the Subject Site**

Plate 11: **Planted Native/Exotic trees and gardens within the Subject Site**

4.3.3 Vegetation Zone 2

Table 4: Managed Lawns

PCT	Vegetation Formation
Vegetation Formation and Class	N/A
Area within Development Site	0.1814 ha (0.6421 ha within the Subject Site)
Survey Effort	BAM Plot and Meander
Floristic description	The vegetation within this zone is characterised by an absence of a canopy and a shrub layer. The Managed Lawns were characterised by Green Couch (*Cynondon dactylon*), Carpet Grass (*Axonopus compressus*) Queensland Blue Couch (*Digitaria didactyla*), Pennywort (*Centella asiatica*) and Clover (*Trifolium repens*) (**Plate 12** and **Plate 5**).
Condition within Development Site	The vegetation within this zone is characterised by a mix of planted native/exotic grasses with exotic forbs throughout.
Justification for PCT selection	Vegetation within this zone is not representative of a PCT.
Status	**BC Act:** N/A **EPBC Act:** N/A
PCT % Cleared	N/A

Plate 12: Area of a Managed Lawns within the Subject Site (Biodiversity Assessment Method Site BBPS1)

Legend

- Davidson's Plum
- Subject Site
- Development Site
- Buildings/Structures
- Disturbance_Area
- Planted Vegetation
- Managed Lawns

Scale 1:829

0 5 10 20 30 40 Metres

N

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

PROJECT REFERENCE:	24001279
DATE DRAWN:	10/4/2023 Version 1
DRAWN BY:	KWormington
DATA SOURCE:	Nearmap - 2023

Vegetation Zones

Blakebrookl PS
Northern NSW
Flood Recovery – Ecological Assessment
SINSW03370-22

FIGURE:

4

J:\00 CLIENT FILES\125103_ADCO\24001279_Northern Rivers Schools\Mapping\230921_Blakebrook_Fig04_VegZone_A4L.mxd

4.4 Threatened Ecological Communities

A search of the BioNet Atlas of NSW Wildlife (Dept of Planning and Environment 2023) returned 13 records of threatened ecological communities (TECs) within a 5 km radius of the Subject Site. An EPBC Protected Matters Search (DCCEEW 2023a) returned a list of 4 TECs within the locality of the Subject Site that were also in the BioNet Atlas list (**Appendix A**). None of the above TECs were within the Subject Site.

4.5 Threatened Flora Species

A total of 30 native flora species were detected within the Subject Site during field surveys (**Appendix B**). One was the threatened flora species (Davidson's Plum). A search of the BioNet Atlas of NSW Wildlife returned 12 records of threatened plant species within a 5 km radius of the Subject Site; one was Davidson's Plum. The EPBC Protected Matters Search returned a list of 23 additional threatened plant species predicted to occur within the locality of the Subject Site. A "likelihood of occurrence' assessment determined that no threatened flora species have a moderate or high likelihood of occurrence within the Development Site, based on habitat suitability and occurrence of records within the locality.

See **Appendix A** for likelihood of occurrence assessment for threatened flora species within the Development Site.

4.6 Fauna Habitat

Fauna habitat within the Subject Site is characterised by Linear strips of planted trees and shrubs, and open managed (mown) grassed areas. All the vegetation within the Development Site and Subject is highly managed, and therefore there are no leaf litter, logs, trees or major shrub cover that would otherwise provide important habitat for ground dwelling native fauna or hollow trees that would provide denning or roosting for hollow dependent species. As such most of the vegetation within the Development Site is unlikely to constitute habitat for threatened species and only minor habitat for locally occurring species associated with farmland environments.

4.7 Threatened Fauna Species

A total of 15 native fauna species were detected within the Subject Site during field surveys (**Appendix C**). None were threatened fauna species. A search of the BioNet Atlas of NSW Wildlife returned a list of 22 terrestrial threatened fauna species that have previously been recorded within 5 km of the Subject Site. The EPBC Protected Matters Search returned an additional of 13 threatened fauna species predicted to occur within the locality of the Subject Site.

A "likelihood of occurrence" assessment (see **Appendix A**) determined that no threatened fauna species had a moderate or high likelihood of occurrence within the Development Site except for the Koala, based on the occurrence of largely unsuitable habitat throughout the Subject Site.

4.8 Koala Habitat

Under the Lismore KoMP, the Subject Site is not in the Koala Planning Area where Preferred Koala Habitat is mapped in the Lismore LGA. However, there are Koala records from BioNet 1.5 km to the east in a large patch of Wet and Dry Sclerophyll forests. The Subject Site is in an area where there is no Koala habitat mapped. The vegetation close to the Subject Site and along the creeks is mainly Lismore Basalt Subtropical Rainforest, which would not provide strong linkage to the area where Koalas have been recorded. Even though there were two primary Koala food tree species (Blue Gum *Eucalyptus tereticornis* and Swamp Mahogany *E. robustus*) and some secondary species on the Subject Site none of these will be removed. It is unlikely these would be used by Koalas for foraging (**Appendix A**).

However, due to the potential for Koalas to use the site during construction, the Koala was further assessed by the 5 Factor Test of Significance under Section 7.3 of the BC Act and under EPBC Act Significant Impact Guidelines. Both the 5 Factor Test and the Significant Impact Guidelines determined that there would not be significant impact on the Koala (**Appendix D** and **Appendix E**).

4.9 EPBC Protected Matters

Only one EPBC Act listed threatened plant species (Davidson's Plum) was recorded within the Subject Site. A 'likelihood of occurrence' assessment was conducted for the rest of threatened species and migratory species returned by the EPBC Protected Matters Search (**Appendix A**). The Davidson's Plum was located outside of the Development Site and would be protected during the construction of the new school (**Section 5.2**). No other threatened species, population or ecological community listed under the EPBC Act were identified as occurring within the Subject Site or having a moderate to high likelihood of occurrence within the Subject Site except the Koala. The Significant Impact Guidelines determined that there would not be significant impact on the Koala (**Appendix E**).

5 DISCUSSION

5.1 IMPACT ASSESSMENT

5.1.1 Impacts to Native Vegetation

The proposed development will not directly impact any PCTs, including TECs, within the Development Site (**Figure 4 and Appendix A**). Impacts to planted vegetation will include:

- **Vegetation Zone 1**: Planted Vegetation (0.0018 Ha).
- **Vegetation Zone 2**: Managed Lawns (0.1814 ha).

Mitigation measures to minimise the potential for disturbance of native species within the Subject Site are presented in **Section 5.2**.

5.1.2 Impacts to Fauna

Potential indirect impacts of the proposed development on resident fauna populations include the following:

- Noise during the construction phase may cause minor disturbance to resident fauna within the locality and disrupt their natural behaviour.
- Pollution such as chemical spills from construction machinery may have adverse effects on the water quality and biota within downstream aquatic habitat.
- Ground disturbance by machinery during the construction phase may create dust and facilitate the movement of sediment. Sedimentation could adversely affect the water quality within any downstream aquatic habitat.

Management measures are presented in **Section 5.2** to reduce the potential for these impacts.

5.1.3 Impacts to Threatened Species

Davidson's Plum was the only threatened plant species identified within the Subject Site during the assessment but it was in the planted vegetation and was most likely a planted from nursery stock. However, it is not in the Development Site and will not be impacted by the construction. Measures to protect vegetation are included in Section 5.2.2. No threatened species were assessed as having a moderate or high likelihood of occurrence except the Koala (**Appendix A**). However it was determined by the BC Act 5 Part Test and the EPBC Act test of Significance that the Koala would not be significantly impacted (**Appendix D and Appendix E**). Therefore, the proposed development is unlikely to impact on threatened species or their habitats.

5.1.4 Impacts to Aquatic Habitat

The Development Site is located near Goolmangar Creek (170 m southwest) and Terania Creek (450 m southeast), but there is pasture and cropping land between the Subject Site. There will not be any direct impacts from the Development Site but there may be indirect impacts to Goolmangar Creek and Terania Creek. However, the distance to the creeks could ameliorate potential impacts.

Potential indirect impacts include the following:

- The excavation of soil within the Subject Site during the construction phase has the potential to facilitate sediment movement into areas of native vegetation along the creeks.
- The introduction of chemicals such as fuels for vehicles and machinery during the construction phase has the potential to cause pollution to downstream aquatic habitat.

Recommendations to reduce the potential for adverse environmental impacts to aquatic habitat are presented in **Section 5.2**.

5.1.5 Cumulative Impacts

Cumulative impacts arise from the interaction of individual elements associated with the proposed development and the additive effects of other external projects. No impacts to native vegetation under the proposed development will occur. No other known projects within the locality are known to have relevance to this project

that could exacerbate cumulative impacts. Any related development proposed within the site, as well as those external to the site, should consider cumulative impacts.

5.2 IMPACT AMELIORATION

5.2.1 Avoidance Measures

Impacts on biodiversity values have been addressed through an iterative design process to avoid areas of higher biodiversity value within the Subject Site. The design of the proposed development considers existing biodiversity values within the Subject Site, including very low impacts to areas of Planted Vegetation located within the school grounds.

The ecological values existing within the Planted Vegetation, which are to be minimised as a result of the proposed development design, include the following:

- The vegetation within this Subject Site is planted native and exotic trees but could provide foraging for some mobile fauna species.
- The vegetation is in a low to moderate condition, with a mostly native tree canopy with a midstorey and shrub layer.
- The vegetation does not contain important fauna habitat features.
- The vegetation was observed as being in use by a number of local bird species and is potential suitable habitat for highly mobile threatened species common within the locality (i.e. Grey Headed Flying Fox (*Pteropus poliocephalus*) but not arboreal mammals.

The footprint of the proposed development is positioned to only impact on two small trees/shrubs in the Planted vegetation and the rest will be Managed Lawns. As a result the proposed development will not impact threatened species, threatened populations or their habitat.

Appropriate mitigation measures have been detailed below to further minimise any indirect impacts to biodiversity values within the Subject Site.

5.2.2 Mitigation Measures

5.2.2.1 Erosion Control

Mitigation measures to reduce soil erosion and pollutant run-off during construction activities should include:

- Installation of erosion and sediment control structures surrounding the Planted Vegetation area and excavation works within the development site prior to any construction works and in accordance with Managing Urban Stormwater: Soils and Construction (The Blue Book).
- Regular inspection of erosion and sediment control measures, particularly following rainfall events to ensure their ongoing functionality.
- Avoid stockpiling of materials adjacent to native vegetation, but instead use areas that are already cleared/ disturbed.
- Undertake maintenance of silt fences and other mitigation measures to isolate runoff.
- Any trenching activities for services should aim to minimise open trenches and ensure appropriate sedimentation management of the excavated material and any open entry / exit points of the trench.

5.2.2.2 Dust Control

Specific measures to minimise the generation of dust and associated impacts on adjacent natural environments should include:

- Setting maximum speed limits for all traffic within the Subject Site to limit dust generation.
- Application of dust suppressants or covers on soil stockpiles.

5.2.2.3 Chemical Spills

Specific measures to minimise the potential for chemical spills and associated impacts on adjacent natural environments should include the following:

- All chemicals must be kept in clearly marked bunded areas.
- Regularly inspect vehicles and mechanical plant for leakage of fuel or oil.

5.2.2.4 Vegetation Clearing (Tree Removal)

Only two small living trees/shrubs will be cleared therefore a qualified Ecologist should not be required unless, in the unlikely event, occupied nests are observed in those trees or species that could nest in the Managed Lawns need relocation, e.g. Masked Lapwing.

5.2.2.5 Tree and Habitat Protection Measures

Specific measures to minimise the impacts to trees, fauna habitat and Threatened Ecological Communities within the Subject Site should include:

- Clearly delineate the boundaries of the project footprint to prevent any unnecessary clearing beyond its extent.
- All retained trees are to be protected in accordance with AS 4970 – 2009.
- It is recommended that all civil contractors that enter the site are made aware of the importance of preserving retained trees and understand the tree protection measures that are put in place to preserve retained trees. Appropriate signage such as 'no go zone' or 'environmental protection area' should be installed.
- Prior to demolition works Tree Protection Fencing (TPF) and/or zones as identified in AS 4970 – 2009 is recommended to be located under the guidance of an appointed site arborist. Unless specified otherwise the location of tree protection fencing is to be positioned to allow for adequate work access and/or be located at the extremity of the Tree Protection Zone (TPZ) (approximately 12.6m for the subject site). Where design and construction access may be restrictive timber beam trunk protection is recommended to be installed, with ground protection mats provided to protect underlying tree roots within tree protection zones or designated protection areas.
- Unless approved otherwise, activities prevented within the TPZ (12.6m) include machine excavation, including trenching, storage & work preparation, wash down areas, soil level change, utility services and physical damage to trees.
- In accordance with AS4970 - 2009 a Project or Site Arborist (at least AQF 5) is to be engaged to monitor, supervise excavation within TPZ setbacks, if required, advise and provide certification of protection works conducted.
- Where approved by the arborist the pruning of roots at or below 30mm in diameter is to be conducted in accordance with AS4970 – 2009. Root protection during works within the TPZ, will occur such that tree roots are not damaged or ripped beyond the point of excavation by site machinery. Where larger roots have been encountered, they are to be referred to the arborist for further advice.
- For deep excavations exposed roots at the excavated cut face are to be protected with jute mesh, geotextile fabric or similar being secured in place to avoid drying of roots and the exposed soil profile.
- Any additional works outside of the area assessed as part of this report, if required, will be referred to any arborist before works commence.
- Any pruning of trees to comply with AS4373 Pruning Standards, and specifically be conducted in accordance with Safe Work Australia – Guide to managing risks of tree trimming and removal works 2016.
- Should there be any uncertainty with tree protection requirements the development site superintendent shall contact the appointed qualified arborist for advice prior to works occurring.
- Ensure vehicle and equipment parking areas and stockpile areas are identified and positioned to avoid areas containing ecological value.
- Limit the use of pesticides in the project footprint where possible to avoid contamination of nearby watercourses/wetland areas.
- Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat.
- Levels of lighting within the site will be reduced to a minimal level to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. Lighting should comply with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting.

5.2.2.6 Weed Management

Specific measures to minimise the impacts of weed invasion to retained native vegetation areas within the Subject Site should include:

- The fungal pathogens *Phytophthora cinnamomi* and Myrtle Rust (*Puccinia psidii*) are known to occur in the Ballina LGA however, it is unknown if they occur within the Development Site. These pathogens can have devastating impacts on native plant communities and inhabiting fauna if not properly managed.
- Ensure soil and seed material is not transferred in accordance with measures outlined in the CEMP.
- Weed infestations within the construction footprint are to be identified and mapped prior to construction.

5.2.2.7 Management of Displaced Fauna

There is unlikely to be displaced fauna species unless there are species that nest in open ground, or species exposed to open trenches from service installations:

- Should a native species nest in the Managed Lawns, this area should be fenced until the use of the nesting by the species is complete, or it has been inspected by a suitably trained Ecologist.
- Trenches should ideally be filled the same day of excavation. If they are left open overnight, they should be inspected the following morning by an appropriately qualified person, and any trapped fauna extracted and released.
- All handling of fauna species should be conducted by a suitably trained Ecologist.
- Displaced fauna species are to be relocated to adjacent bushland.
- If any injured fauna species are found during the construction period, construction must stop immediately so that the injured animal can be safely removed and taken to a vet or wildlife carer.

6 CONCLUSION

The proposed development will not require the removal of any native vegetation consistent with PCTs or TECs or Vegetation Zone 1 (Native and exotic trees and shrubs) will be cleared under the proposed development. The main vegetation clearing will be 0.1814 ha of Managed Lawns and 0.0018 ha of Planted Vegetation.

No threatened communities, flora or fauna species were recorded within the Subject Site or are considered to have a moderate to high likelihood of occurrence except the Koala. However, it was determined the Koala would not be significantly impacted. As such, the proposed development is unlikely to cause a significant impact to any threatened communities, species or populations listed under the NSW BC Act or the EPBC Act.

Avoidance and mitigation measures have been presented to reduce potential impacts to the biodiversity values within the Subject Site and the environment.

7 REFERENCES

DCCEEW (2023a) *EPBC Act Protected Matters Search Tool http://environment.gov.au/epbc/protected-matters-search-tool*. Department of Climate Change, Energy, the Environment and Water, Canberra, Australia.

DCCEEW (2023b) Species Profile and Threats Database http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl. *Dep. Clim. Change Energy Environ. Water*.

DEC (2004) *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - Working Draft*. Department of Environment and Conservation (NSW).

Department of Primary Industries (2023) NSW WeedWise.

Dept of Planning and Environment (2023) BioNet Atlas of NSW https://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx.

DoE (2013) *Matters of National Environmental Significance: Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Australian Government, Canberra.

DPE (2022) *The NSW State Vegetation Type Map: Plant Communities Release C1.1.M1.* Department of Planning and Environment, NSW, Sydney.

DPIE (2020a) *Biodiversity Assessment Method*. Department of Planning, Industry and Environment, Sydney, NSW.

DPIE (2020b) *Surveying threatened plants and their habitats: SW survey guide for the Biodiversity Assessment Method*. Department of Planning, Industry and Environment, Sydney, NSW.

Harden, G (ed.) (1993) *Flora of New South Wales, Volumes 1-4*. NSW University Press, Sydney , Australia.

Mitchell P. (2002) *Descriptions for NSW (Mitchell) Landscapes. Version 2. https://www.environment.nsw.gov.au/resources/conservation/landscapesdescriptions.pdf*. Department of Environment and Climate Change, Sydney, NSW.

National Herbarium of NSW (2023) PlantNet: The Plant Information Network System of the Royal Botanic Gardens and Domain Trust, Version 2.0. [online] http://plantnet.rbgsyd.nsw.gov.au/.

NCLLS (2021) *North Coast Regional Strategic Weed Management Plan 2017-2022 Version 2*. North Coast Local Land Services NSW, Sydney, N.S.W.

Northern Tree Care (2023) *Arboricultural Impact Assessment - Blakebrook Public School*. Northern Tree Care, Ballina.

Office of Environment and Heritage (2023) Threatened Biodiversity Profile Search https://www.environment.nsw.gov.au/threatenedspeciesapp/.

Pizzey G. & Knight F. (2017) *Birds of Australia Digital Edition V1.5*. 8th edn. Gibbon Multimedia (Aus) Pty Ltd, Craigieburn, Australia.

APPENDIX A – THREATENED COMMUNITIES AND SPECIES DATABASE SEARCH

A list of threatened species, populations and ecological communities that have been reported or modelled to occur from within a five-kilometre radius of the Subject Site was obtained from the following databases:

- NSW DPIE BioNet Atlas (BioNet) (Dept of Planning and Environment 2023): (http://www.bionet.nsw.gov.au/).
- Commonwealth - Protected Matters Search Tool (PMST) (DCCEEW 2023a): (https://www.environment.govSPRAT.au/epbc/protected-matters-search-tool).

Further resources used to inform the threatened species database search included:

- NSW DPIE BioNet Threatened Biodiversity Profiles (Office of Environment and Heritage 2023): (Threatened biodiversity profile search | NSW Environment, Energy and Science).
- Species Profile and Threats Database (SPRAT) (DCCEEW 2023b). Available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

An assessment was then made of the likelihood of the threatened species, populations, and ecological communities reported or modelled to occur in the locality occurring within the Development Site or using the habitat within the Development Site as an essential part of a foraging range.

The table below summarises the likelihood of threatened species and EPBC Act listed migratory species occurring within the Development Site based on the habitat requirements of each species.

A brief definition of the likelihood of occurrence criteria is provided below:

- Known – species identified within the site during surveys.
- High – species known from the area (DPIE BioNet Atlas records), suitable habitat (such as roosting and foraging habitat) present within the site.
- Moderate – species may be known from the area, potential habitat is present within the site.
- Low – species not known from the area and/or marginal habitat is present within the site.
- Nil – habitat requirements not met for this species within the site.

Due to the Subject Site being a terrestrial area; marine and freshwater wetland mammals, birds, reptiles and fish have not been included in Table 5. References used for habitat information include:

- NSW DPIE BioNet Threatened Biodiversity Profiles (Office of Environment and Heritage 2023).
- Species Profile and Threats Database (SPRAT) (DCCEEW 2023b).
- PlantNet (National Herbarium of NSW 2023)
- Pizzey and Knight Digital Edition (Pizzey and Knight 2017).

Note: Species recorded in the BioNet Atlas Species Sightings Search over 5 km from the Subject Site are not considered in the locality due to the minimum area available from the search covering greater than a 5 km radius.

Table 5: 'Likelihood of Occurrence' (LoO) table (Assess Req = further assessment required)

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
		BC Act	EPBC Act						
Threatened Ecological Communities									
1.	Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	E	-	K	Bionet	Coastal Cypress Pine Forest characteristically has a closed to open canopy of Coastal Cypress Pine (*Callitris columellaris*), which may sometimes be mixed with eucalypts such as Pink Bloodwood (*Corymbia intermedia*), Blackbutt (*Eucalyptus pilularis*) or Scribbly Gum (*E. signata*), wattles including Salwood (*Acacia disparrima subsp. disparrima*) and also Black She-oak (*Allocasuarina littoralis*), Coast Banksia (*Banksia integrifolia subsp. integrifolia*) or Old-man Banksia (*B. serrata*) and/or rainforest trees. The understorey of shrubs, sedges and herbs is typically open to sparse.	Absent from Development Site	Nil	No
2.	Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community. (Same EPBC Act)	-	E	K	BioNet PMST	The ecological community is found within the South Eastern Queensland (SEQ), NSW North Coast (NNC), Sydney Basin (SYB) and part of the South East Corner (SEC) IBRA7 bioregions. The canopy layer is dominated by *Casuarina glauca* (Swamp Oak, Swamp She-oak).	Absent from Development Site	Nil	No
3.	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	K	BioNet	Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes. Dense grassland or sedgeland vegetation, often less than 0.5 metre tall and dominated by amphibious plants including *Paspalum distichum* (water couch), *Leersia hexandra* (swamp rice-grass), *Pseudoraphis spinescens* (mud grass) and *Carex appressa* (tussock sedge).	Absent from Development Site	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
4.	Grey Box—Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion (Same EPBC Act)	E	E	K	BioNet PMST	Typically dominated by a tall open tree canopy of eucalypts Grey Box *Eucalyptus moluccana* and Grey Gum *Eucalyptus propinqua* and, less commonly, Grey Gum *Eucalyptus biturbinata*, Grey Ironbark *Eucalyptus siderophloia* and Hoop Pine *Araucaria cunninghamii*. Grey Box—Grey Gum Wet Sclerophyll Forest has a structurally complex understorey including rainforest trees and shrubs, vines, ferns and herbs.	Absent from Development Site	Nil	No
5.	Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	K	BioNet	Littoral Rainforest is generally a closed forest, the structure and composition of which is strongly influenced by its proximity to the ocean. The canopy is dominated by rainforest species, with scattered emergent individuals of sclerophyll species, such as Angophora costata, Banksia integrifolia, Eucalyptus botryoides and Eucalyptus tereticornis occur in many stands. There is considerable floristic variation between stands and in particular areas, localised variants may be recognised.	Absent from Development Site	Nil	No
6.	Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E	-	K	BioNet	Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions is an ecological community of subtropical rainforest and some related, structurally complex forms of dry rainforest. The trees are taxonomically diverse at the genus and family levels, and some may have buttressed roots. A range of plant growth forms are present in Lowland Rainforest, including palms, vines and vascular epiphytes.	Absent from Development Site	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
7.	Lowland Rainforest of Subtropical Australia (Same EPBC Act)	E	CE	K	BioNet PMST	The ecological community occurs on basalt and alluvial soils, including sand and old or elevated alluvial soils as well as floodplain alluvia. It also occurs occasionally on enriched rhyolitic soils and basaltically enriched metasediments. Lowland Rainforest mostly occurs in areas <300 m above sea level. In addition, Lowland Rainforest typically occurs in areas with high annual rainfall (>1300 mm).	Absent from Development Site	Nil	No
8.	Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E	-	K	BioNet	Lowland Rainforest on Floodplain supports a rich diversity of plants and animals. Typical tree species in the community include figs (F*icus macrophylla, F. obliqua* and *F. watkinsiana*), palms (*Archontophoenix cunninghamiana and Livistona australis*), Silky Oak (*Grevillea robusta*), Black Bean (*Castanospermum australe*) and Brush Cherry (*Syzygium australe*).	Absent from Development Site	Nil	N0
9.	Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion (Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland Bioregions)	E	E	K	BioNet PMST	The most widespread and abundant dominant trees include *Eucalyptus tereticornis* (forest red gum), *E. siderophloia* (grey ironbark), *Corymbia intermedia* (pink bloodwood) and, north of the Macleay floodplain, *Lophostemon suaveolens* (swamp turpentine). Other trees may be scattered throughout at low abundance or locally common at few sites. These include *Eucalyptus moluccana* (grey box), *E. propinqua* (grey gum), *E. seeana* (narrow-leaved red gum), *Angophora subvelutina* (broad-leaved apple), *E. robusta* (swamp mahogany), *Eucalyptus resinifera* subsp. *Hemilampra* (red mahogany), *E. acmenoides* (white mahogany), *Angophora woodsiana, A. paludosa* and rainforest trees such as *Ficus* spp. (figs) and *Cupaniopsis* spp. (tuckeroos).	Absent from Development Site	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
10.	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	K	BioNet	This community is found on the coastal floodplains of NSW. It has a dense to sparse tree layer in which Casuarina glauca (swamp oak) is the dominant species northwards from Bermagui. Other trees including *Acmena smithii* (Lilly Pilly), *Glochidion* spp. (cheese trees) and *Melaleuca* spp. (paperbarks) may be present as subordinate species.	Absent from Development Site	Nil	No
11.	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	K	BioNet	The trees may exceed 25 m in height, but stands dominated by Melaleuca ericifolia typically do not exceed 8 m in height. The community also includes some areas of fernland and tall reedland or sedgeland, where trees are very sparse or absent. The most widespread and abundant dominant trees include *Eucalyptus robusta* (swamp mahogany), *Melaleuca quinquenervia* (paperbark) Scattered trees, include *Callistemon salignus* (sweet willow bottlebrush), *Casuarina glauca* (swamp oak) and *Eucalyptus resinifera* subsp. *hemilampra* (red mahogany), *Livistona australis* (cabbage palm) and *Lophostemon suaveolens* (swamp turpentine).	Absent from Development Site	Nil	No
12.	Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E	-	K	BioNet	*Themeda australis* is the dominant species in the Themeda Grassland on seacliffs and coastal headlands in the ecological community. *Themeda australis* is an extremely widespread species, but in this community, it may have a distinctive appearance, being prostrate and having glaucous leaves. *Banksia integrifolia subsp. integrifolia*, *Westringia fruticosa* and *Acacia sophorae* occurs as an emergent shrub.	Absent from Development Site	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
13.	White Gum Moist Forest in the NSW North Coast Bioregion	E	-	K	BioNet	White Gum Moist Forest at maturity typically has a tall open canopy of eucalypts. The community is dominated by White Gum *Eucalyptus dunnii* with common associates being Sydney Blue Gum *E. saligna*, Tallowwood *E. microcorys* and/or Brush Box *Lophostemon confertus*. In undisturbed state the understorey typically includes a diverse and prominent stratum of rainforest trees, vines, palms, ferns and herbs.	Absent from Development Site	Nil	No
Flora									
1.	*Amyema plicatula*	E	E	-	PMST	Amyema plicatula (formerly considered a subspecies of A. scandens), is a bushy mistletoe that grows as a stem-parasite on Rosewood (*Dysoxylum fraserianum*) in New South Wales. Occurs within a remnant rainforest fragment on cleared farmland within the Rocky Creek area, north of Lismore. Parasitic on mature Rosewood trees, growing on basalt-derived soils where subtropical rainforest would have grown before land-clearing occurred.	No suitable habitat or host tree species are within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
2.	*Arthraxon hispidus* Hairy Jointgrass	V	V	545	BioNet PMST	Hairy Jointgrass is a creeping grass with branching, erect to semi-erect purplish stems. Long white hairs project around the edge of the leaf. Moisture and shade-loving grass, found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
3.	*Backhousia subargentea* Giant Ironwood	E	-	9	BioNet	Giant Ironwood grows up to 30 m tall but, in NSW, most specimens are less than 8 m tall . Giant Ironwood is found in dry rainforest regrowth consisting of thickets growing in steeply sloping paddocks on basalt-derived soil as well as in sub-tropical and warm temperate rainforest.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
4.	*Bosistoa transversa* Yellow Satinheart	V	V	-	PMST	A crooked tree up to 22 m tall with a dense dark-green crown. The broad, leathery leaves are heart-shaped at the base and paired on the stem. Three-leaved Bosistoa grows in wet sclerophyll forest, dry sclerophyll forest and rainforest including highly disturbed habitat up to 300 m in altitude.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
5.	*Bulbophyllum globuliforme* Hoop Pine Orchid	V	V	-	PMST	The Miniature Moss-orchid is a host-specific species, only growing on the Hoop Pine, where it colonises the upper branches of mature trees.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
6.	*Clematis fawcettii* Stream Clematis	V	V	-	PMST	Northern Clematis is a vine growing high into the rainforest canopy. Occurs in Drier rainforest, usually near streams.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
7.	*Corchorus cunninghamii* Native Jute	E	E	2	BioNet PMST	The Native Jute is a perennial semi-herbaceous shrub that grows to 1.5 m tall. It occurs in the ecotone of wet sclerophyll forest and dry to dry-subtropical rainforest (e.g. araucarian microphyll vine forest), and in Hoop Pine (*Araucaria cunninghamii*) plantations. It often occurs on hill crests, exposed slopes, ridges or upper slopes of hilly terrain on south or south-east aspect	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
8.	*Cryptostylis hunteriana* Leafless Tongue Orchid	V	V	-	PMST	As its name implies, the Leafless Tongue Orchid has no leaf. It produces an upright flower-stem to 45 cm tall, bearing five to 10 flowers between October and March. Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum *(Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black Sheoak (*Allocasuarina littoralis*); appears to prefer open areas in the understorey of this community.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
9.	*Cynanchum elegans* White-flowered Wax Plant	E	E	-	PMST	A climber or twiner with a highly variable form. Mature stems have a fissured corky bark and can grow to 10 metres long and 3.5 cm thick. The leaves are paired and ovate to broadly ovate in shape. Restricted to eastern NSW where it is distributed from Brunswick Heads on the north coast to Gerroa in the Illawarra region. The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
10.	*Davidsonia jerseyana* Davidson's Plum	E	E	1	BioNet	Slender tree to 10 m high, with few branches, each bearing a tuft of leaves, ± covered with irritant hairs. Confined to the Tweed and Brunswick River catchments, Davidson's plum is known from more than 100 sites. The majority of known sites are from south and east facing slopes in subtropical and riverine rainforest in high rainfall areas at less than 300 m above sea level.	No suitable habitat within the Development Site. One record within the locality. However, there are two plants within the Subject Site that will not be cleared for the construction. The trees will be in a TPZ. Not recorded during site assessment.	Nil	Low

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
11.	*Desmodium acanthocladum* Thorny Pea	V	V	110	Bionet	The Thorny Pea is a sprawling shrub 1 – 2 m in height and often more than 2 m wide. It occurs in dry rainforest and fringes of riverine subtropical rainforest on basalt-derived soils at low elevations.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
12.	*Endiandra floydii* Crystal Creek Walnut	E	E	-	PMST	Small tree, often with coppice shoots at base; young shoots finely hairy with fawn hairs, new leaves pinkish brown. Found in warm-temperate and subtropical rainforest, from sea level to 430 m altitude.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
13.	*Eucalyptus glaucina* Slaty Red Gum	V	V	-	PMST	A medium-sized tree to 30 m tall. The bark is smooth and mottled white to slaty grey. It has been observed in a variety of habitats: i.e. shallow soils or stony hillsides, but not on poor sandstones; grassy woodlands on deep, moderately fertile and well watered soil; gentle slopes near drainage lines in alluvial and clayey soils.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
14.	*Floydia praealta* Ball Nut	V	V	-	PMST	The Ball Nut inhabits floristically rich, tall, closed riverine to subtropical rainforest. The species is recorded on gently sloping alluvial levees to moderately sloped foot slopes and hillslopes, as well as steeply sloping scree slopes at altitudes from 50—350 m. This species generally occurs in red loam soil on basalt	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
15.	*Gossia fragrantissima* Sweet Myrtle	E	E	-	BioNet PMST	Small to medium-sized tree to 30 m high; bark brown, rough. Leaves oblanceolate to oblong, 10–25 cm long, 10–30 mm wide. Grows in subtropical and riverine rainforest north from the Clarence River north.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
16.	*Hicksbeachia pinnatifolia* Monkey Nut	V	-	-	PMST	It is a small tree to 10 m tall, often with several unbranched stems. The leaves are leathery and compound, each 40 – 100 cm long, deeply lobed, or with many leaflets and a winged central spine. It occurs as an understorey tree in subtropical rainforest, regrowth rainforest, moist eucalypt forest and Brush Box forest. The soils are mostly slightly acid loams or clay loams and derived from a range of substrates	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
17.	*Macadamia integrifolia* Macadamia Nut	-	V	1	BioNet PMST	Small tree; new growth pale green. It grows in remnant rainforest, preferring partially open areas such as rainforest edges. It spans a wide range of landforms including hill crests, hill slopes, scree slopes and foot slopes, gullies, benches and terrace plains. High nutrient alluvial and volcanic soils predominate.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
18.	*Macadamia tetraphylla* Rough-shelled Bush Nut	V	V	1	BioNet PMST	A small to medium-sized, usually densely bushy, tree growing up to 18m tall. The leaves are 7 – 25 cm long and oblong or slightly lance-shaped. The leaf-margins are toothed and prickly. It is a rare species that generally occurs in subtropical rainforest and complex notophyll vineforest, at the margins of these forests and in mixed sclerophyll forest. It occurs in restricted habitat, growing on moderate to steep hillslopes on alluvial soils at well-drained sites.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
19.	*Marsdenia longiloba (Leichhardtia longiloba)* Slender Marsdenia	E	V	-	PMST	It is a slender climber of the milk vine group, with pairs of very finely pointed leaves. Habitat is mainly subtropical and warm temperate rainforest, lowland moist or open eucalypt forest adjoining rainforest. Associated species include *Eucalyptus crebra, E. microcorys, E. acmenoides, E. saligna, E. propinqua, Corymbia intermedia* and *Lophostemon confertus*.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
20.	*Myrsine richmondensis* Purple-leaf Muttonwood	E	E	-	PMST	The purple-leaf muttonwood is a small, evergreen tree or shrub that grows to 5 metres high and occurs in north-east NSW in tall open sclerophyll forest with a rainforest subcanopy, swamp sclerophyll open forest and on the margins of subtropical rainforest.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
21.	*Ochrosia moorei* Southern Ochrosia	E	E	1	BioNet PMST	Erect shrub or small tree to 9 m high, shoots glabrous; terminal leaf buds enclosed in a sticky exudate. Grows in subtropical rainforest in the Tweed and Richmond River districts.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
22.	Owenia cepiodora *Onionwood*	V	V	-	PMST	Tree up to 30 m high, buds resinous, glabrous; freshly cut bark smells of onions. Occurs in subtropical and dry rainforest from Bangalow to McPherson Range	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
23.	*Pedleya acanthoclada (Desmodium acanthocladum)* Thorny Pea	V	V	-	PMST	Shrub to c. 1 m high; branches rigid, glabrous, spinose. Leaves 3-foliolate; leaflets oblanceolate to oblong, 0.3–2.5 cm long, 1–6 mm wide. Grows mainly along rivers in Lismore-Grafton district	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
24.	*Persicaria elatior* Tall Knotweed	V	V	-	PMST	It is an erect herb to 90 cm tall, with stalked, glandular hairs on most plant parts. Its leaves are up to 11 cm long and 30 mm wide. This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
25.	*Phaius australis* Southern Swamp Orchid	E	E	-	PMST	This orchid has flower stems up to 2 m tall and large broad leaves with a pleated appearance, both arising from a fleshy bulb near ground level. Swampy grassland or swampy forest including rainforest, eucalypt or paperbark forest, mostly in coastal areas.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
26.	*Plectranthus nitidus* Nightcap Plectranthus	E	E	-	PMST	Nightcap Plectranthus is a small shrub that grows 30–150 cm tall. Its leaves are rounded, fleshy and have serrated edges. Occurs on rocky cliff faces or amongst rocky outcrops and boulders. Sites are often damp and sheltered or may be shaded by adjacent canopy. Associated vegetation is usually subtropical rainforest or ecotones between open forest and rainforest to altitudes of 180 m	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
27.	*Randia moorei* Spiny Gardenia	E	E	-	PMST	Spiny Gardenia is a shrub or small tree growing up to 10 m in height with flowers that are cream to yellow. It grows in subtropical, riverine, littoral and dry stunted rainforests along moist scrubby water courses.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
28.	*Rhodamnia rubescens* Scrub Turpentine	CE	CE	3	BioNet PMST	Shrub or small tree to 25 m high with reddish/brown, fissured bark. Young stems densely covered in fine hairs. Leaves 5–10 cm long, 2–5 cm wide. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
29.	*Rhodomyrtus psidioides* Native Guava	CE	CE	-	PMST	A shrub or small tree to 12 m high with brown scaly bark. Young branchlets and inflorescences covered with pale hairs. Leaves 5–25 cm long, 2.5–6.5 cm wide with upper surface hairless and glossy. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
30.	*Sophora fraseri*	V	V	-	PMST	Brush Sophora is a small sparsely branched shrub growing 1 - 2 m tall, which belongs to the pea family. It is usually found in wet situations in wet sclerophyll forest or vine forest, often near rainforest. The roots contain a number of fungal/mycorrhizal species.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
31.	*Syzygium hodgkinsoniae* Red Lilly Pilly	V	V	-	PMST	This is a small tree to about 11 m tall. Its paired leaves are oval shaped or slightly elongated, 8 - 15 cm long, with a short blunt point at the tips. Usually found in riverine and subtropical rainforest on rich alluvial or basaltic soils.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
32.	*Thesium australe* Austral Toadflax	V	V	-	PMST	Austral Toadflax is a small, straggling herb to 40 cm tall. Leaves are pale green to yellow-green, somewhat succulent, 1 - 4 cm long and 0.5 - 1.5 mm wide. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
33.	*Tinospora smilacina* Tinospora Vine	E	-	5	BioNet	Tinospora Vine is a slender climber, more or less deciduous, and often has a succulent stem. Occurs in dry rainforest and along the boundaries of dry rainforest and dry eucalypt forest.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
34.	*Tinospora tinosporoides* Arrow-head Vine	V	-	28	BioNet	Tall woody climber, glabrous, dioecious. Leaves with lamina triangular to ovate, mostly 8–13 cm long, 3–10 cm wide. Occurs in wetter subtropical rainforest, north from the Richmond River.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
35.	*Vincetoxicum woollsii (Tylophora woollsii)*	E	E	-	PMST	A slender woody climber that grows to 3 m long. The paired leaves are on stalks 7 - 20 mm long, and are an elongated heart-shape with a firm texture. This species grows in moist eucalypt forest, moist sites in dry eucalypt forest and rainforest margins. Plants appear to persist as a network of stems under leaf litter when aerial stems are absent.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
Birds									

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
1.	*Anthochaera phrygia* Regent Honeyeater	CE	CE	-	PMST	Mostly recorded in box-ironbark eucalypt associations. At times of food shortage, the species also uses other woodland types and wet lowland coastal forest dominated by Swamp Mahogany or Spotted Gum.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Low	No
2.	*Botaurus poiciloptilus* Australasian Bittern	E	E	-	PMST	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha spp.*) and spikerushes (*Eleocharis spp.*).	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
3.	*Calyptorhynchus lathami lathami* South-eastern Glossy Black-Cockatoo	V	V	-	PMST	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
4.	*Climacteris picumnus victoriae* Brown Treecreeper	V	V	-	PMST	The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
5.	*Cyclopsitta diophthalma coxeni* Coxen's Fig-Parrot	CE	CE	-	PMST	Coxen's Fig-Parrot occupies habitats that occur from sea level to approximately 900 m above sea level in rainforest habitats including subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, and vine forest.	Marginally suitable habitat within the Subject Site but not in the Development Site. No records within the locality. Not recorded during site assessment.	Low	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
6.	*Erythrotriorchis radiatus* Red Goshawk	CE	E	3	PMST	Red Goshawks inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, *Melaleuca* swamp forest and riparian *Eucalyptus* forest of coastal rivers.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
7.	*Falco hypoleucos* Grey Falcon	E	V	-	PMST	Medium-sized, compact, pale falcon with a heavy, thick-set, deep-chested appearance. The species is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
8.	*Hirundapus caudacutus* White-throated Needletail	-	V, M	3	BioNet PMST	Most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. These conditions are often used by insects to swarm (e.g. termites and ants) or tend to lift insects away from the surface which favours sighting of White-throated Needletails as they feed.	Marginally suitable aerial foraging habitat above the Development Site. The Planted vegetation would provide marginal habitat but it will not be impacted. Records within the locality. Not recorded during site assessment.	Low	No
9.	*Lathamus discolor* Swift Parrot	E	CE, M	-	PMST	This migratory species has been recorded on the mainland from a variety of habitat types including dry and wet sclerophyll forest, forested wetlands, coastal swamp forests and heathlands. This species does not breed within mainland Australia. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
10.	*Rostratula australis* Australian Painted Snipe	E	E	-	PMST	In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
11.	*Stagonopleura guttata* Diamond Firetail	V	V	-	PMST	Diamond firetails occur in eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees. They prefer areas with relatively low tree density, few large logs, and litter cover but high grass cover.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
12.	*Turnix maculosus* Red-backed Button-quail	V	V	2	BioNet PMST	The Black-breasted Button-quail is restricted to rainforests and forests, mostly in areas with 770-1200 mm rainfall per annum. They prefer drier low closed forests, particularly semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and araucarian notophyll vine forest. They may also be found in low, dense acacia thickets and, in littoral area, in vegetation behind sand dunes	No habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
Mammals									
1.	*Chalinolobus dwyeri* Large-eared Pied Bat	V	V	-	PMST	Found in well-timbered areas containing gullies. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features.	Marginal foraging habitat or suitable roosting or nesting habitat within the Development Site or Subject Site. No records within the locality.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
2.	*Dasyurus maculatus* Spotted-tailed Quoll	E	E	1	Bionet PMST	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. The Spot-tailed Quoll is predominantly nocturnal and rests during the day in dens. Habitat requirements include suitable den sites such as hollow logs, tree hollows, rock outcrops or caves	No suitable habitat within the Development Site. One record within the locality. Not recorded during site assessment.	Nil	No
3.	*Miniopterus australis* Little Bentwing-bat	V	-	3	BioNet	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings.	No suitable within the Development Site. Records within the locality.	Low	No
4.	*Miniopterus orianae oceanensis* Large Bent-winged Bat	V	-	3	BioNet,	Forages in forested habitats. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings, and other man-made structures.	No suitable within the Development Site within the Development Site. Records within the locality.	Low	No
5.	*Myotis macropus* Southern Myotis	V	-	1	BioNet	Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	No suitable foraging or roosting habitat within the Development Site. Records within the locality.	Nil	No
6.	*Notamacropus parma* Parma Wallaby	V	V	-	PMST	Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. Typically feed at night on grasses and herbs in more open eucalypt forest and the edges of nearby grassy areas.	No suitable foraging or roosting habitat within the Development Site. No records within the locality. Not recorded during site assessment	Nil	No
7.	*Nyctophilus bifax* Eastern Long-eared Bat	V	-	5	BioNet	Lowland subtropical rainforest and wet and swamp eucalypt forest, extending into adjacent moist eucalypt forest. Coastal rainforest and patches of coastal scrub are particularly favoured.	No suitable foraging or roosting habitat within the Development Site. Records within the locality.	Low	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
8.	*Petauroides volans* Greater Glider (southern and central)	E	E	-	PMST	The Greater Glider occurs in moist eucalypt forests and feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. It shelters during the day in tree hollows and will use up to 18 hollows in their home range with an average size of 1 to 3 ha.	No suitable habitat or hollow-bearing trees within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
9.	*Petaurus norfolcensis* Squirrel Glider	V	-	6	BioNet	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. Prefers mixed species stands with a shrub or Acacia midstorey. Require abundant tree hollows for refuge and nest sites.	No suitable habitat or hollow-bearing trees within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
10.	*Petaurus australis australis* Yellow-bellied Glider	V	V	-	PMST	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Requires hollow-bearing trees for nesting and denning.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
11.	*Petrogale penicillata* Brush-tailed Rock-wallaby	E	V	-	PMST	This species prefers rocky habitats, including loose boulder-piles, rocky outcrops, steep rocky slopes, cliffs, gorges and isolated rock stacks. It also utilises tree limbs. While it appears that most Brush-tailed Rock-wallaby colonies are on north-facing slopes and cliff lines, colonies have been found on south-facing cliffs in Kangaroo Valley.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
12.	*Phascolarctos cinereus* Koala	E	E	158	BioNet PMST	Found in a variety of forest types with suitable feed tree species.	No suitable habitat removed within the Development Site, foraging habitat within the Subject Site. Records within the locality. Not recorded during site assessment.	Moderate	No
13.	*Planigale maculata* Common Planigale	V	-	1	BioNet	Common Planigales inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water. They are active at night and during the day shelter in saucer-shaped nests built in crevices, hollow logs, beneath bark or under rocks.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Low	No
14.	*Potorous tridactylus* Long-nosed Potoroo	V	V	-	PMST	The Long-nosed Potoroo is sparsely distributed along the coast and Great Dividing Range of south-east Queensland through NSW. There is limited information about the species habitat in Queensland and NSW. It can be found in wet eucalypt forests to coastal heaths and scrubs. The main factors would appear to be access to some form of dense vegetation for shelter and the presence of an abundant supply of fungi for food	No habitat within the Development Site. One record within the locality. Not recorded during site assessment.	Low	No
15.	*Pseudomys novaehollandiae* New Holland Mouse	-	V	-	PMST	Inhabits open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. Soil type may be an important indicator of suitability of habitat for the New Holland Mouse, with deeper top soils and softer substrates being preferred for digging burrows.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
16.	*Pteropus poliocephalus* Grey-headed Flying-fox	V	V	19	BioNet, PMST	Occurs across a wide range of habitat types along the eastern seaboard of Australia, depending on food availability. Fruit from myrtaceous trees and rainforest trees form the major components of their diet.	No foraging habitat present within the Development Site or camps detected in the Subject Site. Records within the locality. Not recorded during site assessment.	Low	No
Reptiles									
1.	*Coeranoscincus reticulatus* Three-toed Snake-tooth Skink	V	V	-	PMST	The Three-toed Snake-tooth Skink has been found in loose, well mulched friable soil, in and under rotting logs, in forest litter, under fallen hoop pine bark and under decomposing cane mulch. n NSW, the Three-toed Snake-tooth Skink has been recorded in dry rainforest, northern warm temperate rainforest, subtropical rainforest, grassy wet sclerophyll forest and shrubby sclerophyll forest	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
Amphibians									
1.	*Litoria olongburensis* Wallum Sedge Frog	V	E	-	PMST	The Wallum Sedge Frog is found in ephemeral, seasonal and permanent wetlands with emergent reeds, ferns and/or sedges, in undisturbed coastal wallum swamps. While most common in swamps, the Wallum Sedge Frog may also be found around creeks and freshwater lakes in coastal wallum.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
2.	*Mixophyes fleayi* Fleay's Frog	E	E	-	PMST	Fleay's Frog is associated with montane rainforest and open forest communities adjoining rainforest (. The species occurs along stream habitats from first to third order streams and is not found in ponds or ephemeral pools. Adults may be found in leaf litter and along watercourses in rainforest and adjoining wet sclerophyll forests.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
3.	*Mixophyes iteratus* Giant Barred Frog	E	V	-	PMST	The Giant Barred Frog occurs in rainforests and wet sclerophyll forests in upper to lower catchment areas and were observed to prefer a closed forest canopy with a relatively light cover of vegetation at ground level.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
Fish									
1.	*Maccullochella ikei* Clarence River Cod	?	E	-	PMST	This species has a patchy distribution and is confined to dystrophic, freshwater systems draining through sandy coastal lowlands and 'wallum' heaths (Banksia dominated heathlands). Specific habitat requirements for this fish include slow-flowing, fresh, acidic waters with abundant aquatic vegetation.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
Insect									
1.	*Argynnis hyperbius inconstans* Australian Fritillary	-	CE	-	PMST	The Australian fritillary usually occurs around river estuaries or open, swampy coastal regions. While the Australian fritillary has been successfully reared on Viola hederaceae in captivity, the subspecies is believed to be host-plant specific in the wild and therefore only occurs in areas where its larval food plant, the arrowhead violet, occurs.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
2.	*Nurus brevis* Shorter Rainforest Ground-beetle	E	-	1	BioNet	The Shorter Rainforest Ground-beetle is a relatively large, heavily built, wingless, carabid beetle. It occurs in subtropical and warm temperate rainforest.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Nil	No
Migratory Species									

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
1.	*Apus pacificus* Pacific Swift	-	M	-	PMST	Almost entirely aerial and give spectacular displays of high-speed flying above any habitat, urban or rural. Swifts are most often seen in late summer, nearly always in flocks. They are typically associated with stormy weather when they feed on nuptial swarms of various insects.	Broadly suitable aerial foraging habitat above the subject Site but not the Development Site. Records within the locality. Not recorded during site assessment.	Low	No
2.	*Cuculus optatus* Oriental Cuckoo	-	M	-	PMST	Inhabits rainforest margins, monsoon forest, vine scrub, riverine thickets, wet densely canopied Eucalypt forests, paperbark swamp and mangroves.	No suitable habitat within the Development Site. Records within the locality. Not recorded during site assessment.	Nil	No
3.	*Monarcha melanopsis* Black-faced Monarch	-	M	-	PMST	The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical and subtropical rainforest, broadleaf thicket/shrubland. It is also sometimes found in nearby open eucalypt forests (mainly wet sclerophyll forests), especially in gullies with a dense, shrubby understorey as well as in dry sclerophyll forests and woodlands, often with a patchy understorey.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Low	No
4.	*Motacilla flava*	-	M	-	PMST	Uses short grass and bare ground, swamp margins, sewerage ponds, saltmarshes and playing fields. Rare non-breeding migrant to Australia but common in Europe.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Low	No
5.	*Myiagra cyanoleuca* Satin Flycatcher	-	M	-	PMST	Satin Flycatchers mainly inhabit eucalypt forests, often near wetlands or watercourses. They generally occur in moist, tall forests, often occurring in gullies. They also occur in eucalypt woodlands with open understorey and grass ground cover, and are generally absent from rainforest.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Low	No

	Species	Status		Records	Source	Habitat	Summary	LoO	Asess Req
6.	*Rhipidura rufifrons* Rufous Fantail	-	M	-	PMST	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts, usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Low	No
7.	*Symposiachrus trivirgatus* Spectacled Monarch	-	M	-	PMST	Uses understorey of mountain/lowland rainforests, thickly wooded gullies, waterside vegetation including mangroves below the canopy.	No suitable habitat within the Development Site. No records within the locality. Not recorded during site assessment.	Low	No

APPENDIX B – FLORA SPECIES LIST

Table 6: Flora Species List – BBPS 1 and Planted Vegetation

	Plant Species	Common name	BBPS1	Planted Vegetation
	Native Species		**Ground Cover**	**Vegetation Layer**
	Trees			
1.	*Agathis robusta*	Kauri Pine		c
2.	*Brachychiton acerifolius*	Flame Bottletree		s
3.	*#Buckinghamia celsissima*	Ivory Curl Tree		m
4.	*#Corymbia calophylla*	Marri		m
5.	*Cupaniopsis anacardioides*	Tuckeroo		c,m
6.	*Davidsonia jerseyana*	Davidson's Plum (N-E F-E)		c
7.	*Elaeocarpus grandis*	Blue Quandong		m
8.	*Eucalyptus pilularis*	Blackbutt		m
9.	*Eucalyptus resinifera*	Red Mahogany		c
10.	*Eucalyptus robusta*	Swamp Mahogany		m
11.	*Eucalyptus tereticornis*	Blue Gum		c
12.	*Grevillia robusta*	Silky Oak		c
13.	*Harpullia pendula*	Tulipwood		c
14.	*Lophostemon confertus*	Queensland Brush Box		c,m
15.	*Melaleuca quinquenervia*	Broad-leaved Paperbark		c
16.	*Melaleuca viminalis*	Weeping Bottlebrush		m,s
17.	*Neolitsea australiensis*	Green Bolly Gum		m,s
18.	*Syzygium luehmannii*	Small Leaf Lillypilly		m
19.	*Syzygium australe*	Bush Cherry		c,m
20.	*Toechima dasyrrhache*	Blunt-leaved Steelwood		c,s
21.	*Waterhousea floribunda*	Weeping Lillypilly		c,m
	Grass/Grasslike			
1.	*Chloris divaricata*	Slender Chloris		
2.	*Cynondon dactylon*	Green Couch Grass	40	g
3.	*Digitaria didactyla*	QLD Blue Couch Grass	5	g
4.	*Lomandra longifolia*	Mat-rush		g
	Fern			
1.	*Asplenium australasicum*	Crows Nest		g

	Plant Species	Common name	BBPS1	Planted Vegetation
2.	*Cyathea spp.*	Tree Fern		s
3.	*Platycerium bifurcatum*	Elkhorn		g
4.	*Platycerium spp.*	Staghorn		c,g
	Other			
1.	*#Cordyline manner-suttoniae*	Broad-leafed Palm Lilly		s
	Non-native Species		**Exotic Cover%**	**Vegetation Layer**
	Trees			
1.	*Cinnamomum camphora*	Camphor Laurel		c,g
2.	*Cupaniopsis fruticosa*			m
3.	*Citrus limon*	Lemon Tree		s
4.	*Citrus reticulata*	Mandarin Tree		s
5.	*Citrus sinensis*	Orange Tree		s
6.	*Fraxinus griffithii*	Himalayan Ash		m
7.	*Handroanthus ochraceus*	Yellow Trumpet		m
8.	*Philadelphus spp.*	Mock Orange		s
9.	*Plumeria rubra*	Frangipani		s
10.	*Syzygium cumini*	Java Plum		m
11.	*Tipuana tipu*	Pride of Bolivia		c
12.	**Shrubs**			
13.	*Laurustinus viburnum*	Laurustine		s
14.	*Myrtastrum rufopunctatum*	New Caledonian Myrtle		s
	Grass/Grasslike			
1.	*Axonopus compressus*	Carpet Grass	40	g
2.	*Chloris gayana*	Rhodes Grass		g
3.	*Cyperus rotundus*	Nut Grass		g
4.	*Eleusine indica*	Crowsfoot	3	
5.	*Eragrostis tenuifolia*	Elastic Grass		g
6.	*Ophiopogon japonicus*	Mondo Grass		g
7.	*Stenotaphrum secundatum*	Sapphire Buffalo Grass		g
	Forbs			
1.	*Centella asiatica*	Pennywort	1	g
2.	*Cirsium vulgare*	Spear Thistle		g
3.	*Emilia sonchifolia*	Emilia		g

	Plant Species	Common name	BBPS1	Planted Vegetation
4.	*Erigeron sumatrensis*	Tall Fleabane		g
5.	*Gamochaeta pensylvanica*	Cabrera		g
6.	*Hypochaeris radicata*	Cats Ear		g
7.	*Richardia brasiliensis*	White Eye		g
8.	*Rumex Crispus*	Curly Dock		g
9.	*Solanum lycopersicum*	Tomato		g
10.	*Solanum nigrum*	Blackberry Nightshade		g
11.	*Taraxacum officinale*	Dandelion	1	g
12.	*Trifolium repens*	Clover	10	
	Other			
1.	*Dypsis lutescens*	Golden Cane Palm		m
2.	*Passiflora spp.*	Wild passionfruit		g
	High Threat Exotic (HTE)			
1.	*Senecio madagascariensis*	Fireweed		g

Layers: e = emergent, c = canopy, m = mid, s = shrub, g = ground, NE = Endangered BC Act and FE = Endangered EPBC Act.

APPENDIX C – FAUNA SPECIES LIST

Table 7: Fauna Species List

No.	Scientific Name	Common Name	Status		Observation Type*	General Abundance within Development Site**
			BC	EPBC		
	Birds					
1.	*Cracticus tibicen*	Australian Magpie			O, H	1
2.	*Geopelia humeralis*	Bar Shouldered Dove			O, H	2
3.	*Lichmera indistincta*	Brown Honeyeater			O, H	5
4.	*Ocyphaps lophotes*	Crested Pigeon			O, H	3
5.	*Rhipidura albiscapa*	Grey Fantail			O, H	2
6.	*Chrysococcyx basalis*	Horsfield's Bronze Cuckoo			O, H	1
7.	*Dacelo novaeguineae*	Laughing Kookaburra			O, H	4
8.	*Meliphaga lewinii*	Lewin's Honeyeater			O, H	5
9.	*Vanellus miles*	Masked Lapwing			O, H	2
10.	*Manorina melanocephala*	Noisy Miner			O, H	5
11.	*Cracticus nigrogularis*	Pied Butcherbird			O, H	2
12.	*Trichoglossus haematodus*	Rainbow Lorikeet			O, H	10
13.	*Gerygone olivacea*	White-throated Gerygone			O, H	2
14.	Rhipidura leucophrys	Willy Wagtail			O, H	2
	Reptiles					
1.	Cryptoblepharus virgatus	Fence Post Skink			O	2

*Observation Type: O (Visual Observation), H (Heard whilst on site), E (Evidence recorded included scats, tracks or markings), R (Recorded through the use of call detectors [level of confidence C: Confident, Pr: Probable, Po: Possible]).

** General Abundance: I (Individual record), UC (Uncommon, 2-5 records), C(Common occurrence on site >5 records)

APPENDIX D - ASSESSMENT OF SIGNIFICANCE (PURSUANT TO SECTION 7.3 OF THE BC ACT)

D.1 FACTORS OF ASSESSMENT - *BIODIVERSITY CONSERVATION ACT 2016*

The five factors considered in the test of significance under s.7.3 of the BC Act are shown in the table below. The tests of significance for all threatened species, populations and ecological communities considered likely to occur within the Study Area are provided in the proceeding sub-sections.

D1. 2 Threatened mammals

The threatened species assessment on mammals considers the following species:

- Koala (*Phascolarctos cinereus*)

Table D1.1: Threatened mammal species

Factor	Assessment
(a) Effect on life cycle of **threatened species**.	The proposed activity will not remove any Koala Feed Trees or trees that could be used for roosting. The life cycle of the Koala will not be affected.
(b) (i) Effect on the extent of **EEC** or **CEEC**.	Not Applicable
(b) (ii) Effect on composition of **EEC** or **CEEC**.	Not Applicable
(c) (i) Extent of habitat removal or modification for **threatened species**, **population,** or **ecological community**	The activity will remove not remove any Koala habitat trees and would not impact on the Koala, see (a).
(c) (ii) Extent of fragmentation or isolation of habitat for **threatened species**, **population,** or **ecological community.**	The activity will not impact any wooded vegetation corridors used by Koalas, no fragmentation or isolation will occur. There will not be fenced off area, allowing free transit of fauna.
(c) (iii) The importance of habitat to **threatened species**, **populations,** or **ecological community**.	No habitat for the Koala will be impacted that is associated to the requirements of this species, but is connected to other Koala habitat.
***(d)* Area of Outstanding Biodiversity Value**	Not Applicable
***(e)* Key Threatening Processes**	Key Threatening Processes relevant to the proposed development: ▪ Clearing of native vegetation ▪ Removal of dead wood and dead trees (potential) ▪ Predation by feral predators (potential as a result of increased human activity and discarded waste products attracting such animals) ▪ Invasion of native plant communities by exotic perennial grasses The proposed development would not facilitate the above-listed KTP's even to a minor extent. This is in consideration of the small scale of proposed impact and the existing disturbed nature surrounding the Subject Site.

Factor	Assessment
Conclusion	The proposed activity will not impact on any Koala feed trees or any area wooded vegetation used by Koalas. No impact will occur to any foraging or potential breeding habitat for these species. Potential KTPs are likely to be minimal and can be appropriately controlled.

APPENDIX E – EPBC ACT ASSESSMENT OF SIGNIFICANCE

Species Assessed under the EPBC Act Significant Impact Guidelines

The following pertains to Assessments of Significance for direct or indirect impacts to EBPC Act listed threatened species, populations, and communities.

The following species have been assessed under the EPBC Act *Matters of National Environmental Significance Significant impact guidelines 1.1* (DoE 2013) (Significant Impact Guidelines):

- Critically Endangered Species
  - None
- Endangered Species
  - Koala (*Phascolarctos cinereus*)
- Vulnerable Species
  - None
- Migratory Species
  - None

E1 Critically Endangered and Endangered Species – EPBC Act Assessment of Significance

The EPBC Act Significant Impact Guidelines (DoE 2013) state:

> *An action is likely to have a significant impact on a Critically Endangered and Endangered species if there is a real chance or possibility that it will:*
>
> - *lead to a long-term decrease in the size of a population*
> - *reduce the area of occupancy of the species.*
> - *fragment an existing population into two or more populations.*
> - *adversely affect habitat critical to the survival of a species.*
> - *disrupt the breeding cycle of a population.*
> - *modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.*
> - *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.*
> - *introduce disease that may cause the species to decline, or*
> - *interfere with the recovery of the species.*
>
> *A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered, or vulnerable threatened species, occurrences include but are not limited to:*
>
> - *a geographically distinct regional population, or collection of local populations, or*
> - *a population, or collection of local populations, that occurs within a particular bioregion.*

Table E1 Critically Endangered and Endangered Species

Will the action -	Koala - *Phascolarctos cinereus*
- lead to a long-term decrease in the size of a population	The proposed activity will not impact on any Koala feed trees or any other breeding or roosting places for this animal due no clearing of living trees in the Subject Site, nor will it result in any direct or indirect impacts to this species, that could result in a long-term decrease in population size.
- reduce the area of occupancy of the species - fragment an existing population into two or more populations	The activity will not impact on any habitat that could be used by this species; thus, there will be no reduction in the area of occupancy nor fragmentation of habitat.
- adversely affect habitat critical to the survival of a species - modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed will not impact on any Koala feed trees. No critical or important habitat will be adversely affected, modified, destroyed, or otherwise impacted that could cause species or species habitat decline.
- disrupt the breeding cycle of a population	The loss of no feed trees will not impact on the breeding cycle of this species. It may result in increased predators if appropriate management practices are not implemented (such as waste management). Measures have been included in this document to adequately manage such risk; these matters would be further managed through the Construction Environment Management Plan (CEMP).
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat - introduce disease that may cause the species to decline	Mitigation measures are described in this document to suitably manage the potential spread of fungal pathogens that could impact Koala food trees. Ensuring all equipment used to clear and remove vegetation, or that is to be used onsite, is free from fungal contaminants prior to entering the site will result in an acceptable level of risk in maintaining healthy Koala habitat. The risk of an increase in pest animal activity (namely feral rats and cats), can be adequately managed through measures provided in this document and through a CEMP. All vehicles and equipment should also be void of organic matter such as soil or mud that may contain seeds of invasive species. Appropriate management of waste will ensure local and/or wild dogs are not attracted to the area.
- interfere with the recovery of the species.	Implementation of mitigation measures outlined within this document will ensure that the proposed activity does not interfere in the recovery of any of these species.
Conclusion	The proposed activity will only impact on habitat that is not accessible by this species which would not be important or critical to the survival of this species. Risks caused by feral animals and disease can be appropriately managed through measures detailed in this document and by a CEMP. The proposed activity is not likely to result in a significant impact to any critically endangered or endangered species.

APPENDIX F – STAFF CONTRIBUTIONS

The following staff were involved in the compilation of this report.

Table 8: Staff Contributions

Name	Qualification	Title/Experience	Contribution
Dr Kevin Wormington	PhD Ecology	Senior Ecologist	Report Writing and GIS
Dr Howard Rogers	PhD Forest Dynamics and Community Ecology	Principal Ecologist	Report Review
Rachel Hourigan	BSc MEnv	GIS Analyst	GIS Mapping

APPENDIX G – LICENSING

Kleinfelder employees involved in the current study are licensed or approved under the *Biodiversity Conservation Act 2016* (Accreditation Number: 81350, Expiry: 1 May 2024) and the *Animal Research Act 1985* to harm/trap/release protected native fauna and to pick for identification purposes native flora and to undertake fauna surveys.

APPENDIX H – DATABASE SEARCHES

BioNet Atlas Communities

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), Commonwealth listed, CAMBA listed, JAMBA listed or ROKAMBA listed Communities in selected area [North: -28.71 West: 153.18 East: 153.28 South: -28.81] returned 0 records for 13 entities.

Report generated on 5/09/2023 5:34 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Community				*Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion*		Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	E3		P	
Community				*Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community*		Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		E	K	
Community				*Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*		Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		P	
Community				*Grey Box—Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion*		Grey Box—Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion	E3		K	
Community				*Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*		Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	

Community	*Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*	Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3		K	
Community	*Lowland Rainforest of Subtropical Australia*	Lowland Rainforest of Subtropical Australia		CE	K	
Community	*Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion*	Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3		K	
Community	*Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion*	Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	E3		K	
Community	*Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community	*Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community	*Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions*	Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3		P	
Community	*White Gum Moist Forest in the NSW North Coast Bioregion*	White Gum Moist Forest in the NSW North Coast Bioregion	E3		K	

Bionet Atlas Threatened Species

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), Commonwealth listed, CAMBA listed, JAMBA listed or ROKAMBA listed Entities in selected area [North: -28.71 West: 153.18 East: 153.28 South: -28.81] returned a total of 645 records of 34 species.

Report generated on 5/09/2023 5:31 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Amphibia	Myobatrachidae	3075	*^Mixophyes iteratus*		Giant Barred Frog	E1,P,2	E	2	
Animalia	Aves	Columbidae	0025	*Ptilinopus magnificus*		Wompoo Fruit-Dove	V,P		1	
Animalia	Aves	Columbidae	0021	*Ptilinopus regina*		Rose-crowned Fruit-Dove	V,P		5	
Animalia	Aves	Ciconiidae	0183	*Ephippiorhynchus asiaticus*		Black-necked Stork	E1,P		14	
Animalia	Aves	Ardeidae	0196	*Ixobrychus flavicollis*		Black Bittern	V,P		1	
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*		White-bellied Sea-Eagle	V,P		3	
Animalia	Aves	Rallidae	0053	*Amaurornis moluccana*		Pale-vented Bush-hen	V,P		2	
Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*		Little Lorikeet	V,P		1	
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*		Powerful Owl	V,P,3		1	
Animalia	Aves	Tytonidae	9924	*^^Tyto tenebricosa*		Sooty Owl	V,P,3		1	
Animalia	Aves	Climacteridae	8127	*Climacteris picumnus victoriae*		Brown Treecreeper (eastern subspecies)	V,P		1	
Animalia	Aves	Pomatostomidae	8388	*Pomatostomus temporalis temporalis*		Grey-crowned Babbler (eastern subspecies)	V,P		1	
Animalia	Aves	Monarchidae	0376	*Carterornis leucotis*		White-eared Monarch	V,P		2	
Animalia	Mammalia	Dasyuridae	1045	*Planigale maculata*		Common Planigale	V,P		1	
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*		Koala	E1,P	E	158	
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*		Squirrel Glider	V,P		6	

Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	19	
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*	Southern Myotis	V,P		1	
Animalia	Mammalia	Vespertilionidae	1336	*Nyctophilus bifax*	Eastern Long-eared Bat	V,P		5	
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*	Little Bent-winged Bat	V,P		6	
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		3	
Animalia	Insecta	Carabidae	I010	*^^Nurus brevis*	Shorter Rainforest Ground-beetle	E1,3		1	
Plantae	Flora	Apocynaceae	1176	*Ochrosia moorei*	Southern Ochrosia	E1	E	1	
Plantae	Flora	Cunoniaceae	10943	*^Davidsonia jerseyana*	Davidson's Plum	E1,2	E	1	
Plantae	Flora	Fabaceae (Faboideae)	2833	*Desmodium acanthocladum*	Thorny Pea	V	V	110	
Plantae	Flora	Menispermaceae	7167	*Tinospora smilacina*	Tinospora Vine	E1		5	
Plantae	Flora	Menispermaceae	3691	*Tinospora tinosporoides*	Arrow-head Vine	V		28	
Plantae	Flora	Myrtaceae	15211	*^^Backhousia subargentea*	Giant Ironwood	E1,3		9	
Plantae	Flora	Myrtaceae	11894	*Gossia fragrantissima*	Sweet Myrtle	E1	E	8	
Plantae	Flora	Myrtaceae	4283	*Rhodamnia rubescens*	Scrub Turpentine	E4A	CE	3	
Plantae	Flora	Poaceae	4776	*Arthraxon hispidus*	Hairy Jointgrass	V	V	241	
Plantae	Flora	Proteaceae	9680	*Macadamia integrifolia*	Macadamia Nut		V	1	
Plantae	Flora	Proteaceae	5446	*Macadamia tetraphylla*	Rough-shelled Bush Nut	V	V	1	
Plantae	Flora	Tiliaceae	6198	*Corchorus cunninghamii*	Native Jute	E1	E	2	

Department of Planning and Environment

Biodiversity Values Map and Threshold Report

This report is generated using the Biodiversity Values Map and Threshold (BMAT) tool. The BMAT tool is used by proponents to supply evidence to a consent authority to determine whether or not a Biodiversity Development Assessment Report (BDAR) is required under the Biodiversity Conservation Regulation 2017 (Cl. 7.2 & 7.3).

The report provides results for the proposed development footprint area identified by the user and displayed within the blue boundary on the map.

There are two pathways for determining whether or not a BDAR is required for the proposed development:

1. Is there Biodiversity Values Mapping?
2. Is the 'clearing of native vegetation area threshold' exceeded?

Biodiversity Values Map and Threshold Report

Date of Report Generation		06/09/2023 8:50 AM
Biodiversity Values (BV) Map Threshold - Results Summary		
1	**Does the development Footprint intersect with BV mapping?**	no
2	**Was ALL of the BV Mapping within the development footprinted added in the last 90 days?** (dark purple mapping only, no light purple mapping present)	no
3	**Date of expiry of dark purple 90 day mapping***	N/A
4	**Is the Biodiversity Values Map threshold exceeded?**	no
Area Clearing Threshold - Results Summary		
5	**Size of the development or clearing footprint**	1,415.7 sqm
6	**Native Vegetation Area Clearing Estimate (NVACE)**	87.1 sqm
7	**Method for determining Minimum Lot Size**	Lot size
8	**Minimum Lot Size** (10,000sqm = 1ha)	12,761 sqm
9	**Area Clearing Threshold** (10,000sqm = 1ha)	5,000 sqm
10	**Is the Area Clearing Threshold exceeded?**	no

Is the proposed development assessed above the Biodiversity Offsets Schema (BOS) threshold? Exceeding the BOS threshold will require completion of a Biodiversity Development Assessment Report (BDAR). More details provided on page 2.	**no**

What do I do with this report?

• If the result above indicates a BDAR is required, a Biodiversity Development Assessment Report **may be required** with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of accredited assessors. An accredited assessor can apply the Biodiversity Assessment Method and prepare a **BDAR**.

• If the result above indicates a BDAR is not required, you have not exceeded the BOS threshold. This report can be provided to Council to support your development application. You may still require a permit from your local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species" as determined under the test in Section 7.3 of the Biodiversity Conservation Act 2016. You may also be required to review the area where no vegetation mapping is available.

• If all Biodiversity Values mapping within your development footprint are less than 90 days old, i.e. mapping is displayed as dark purple on the map, a BDAR may not be required if your Development Application is submitted within that 90 day period. *Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 3 above.

For more detailed advice about actions required, refer to the **Interpreting the evaluation report** section of the Biodiversity Values Map Threshold Tool User Guide.

Review Options:

• If you believe the Biodiversity Values mapping is incorrect please refer to our BV Map Review webpage for further information.

• If you disagree with the NVACE result for Line Item 6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared) you can undertake a self-assessment. For more information about this refer to the **Guide for reviewing BMAT Tool area clearing threshold results**.

Acknowledgement

I, as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature: _____ Date:_____

(Typing your name in the signature field will be considered as your signature for the purposes of this form)

06/09/2023 08:50 AM

Biodiversity Values Map

126.6 0 63.28 126.6 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days
- Native Vegetation Area Clearing Estimate (NVACE)
- Development area selected by proponent

06/09/2023 08:50 AM

The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the Biodiversity Values Map viewer for mapping updates is recommended.

2018 Hydroline spatial data 1.0

06/09/2023, 09:04:38

1:4,514

0 0.03 0.07 0.13 mi

0 0.05 0.1 0.2 km

Maxar

Water Management (General) Regulation

NSW Department of Industry | Lands and Water | Water

SEED
The Central Resource for Sharing and Enabling Environmental Data in NSW

Legend

Filter Swatches... | Filter

SEPP_Resilience_and_Hazards_2021

Coastal Wetlands

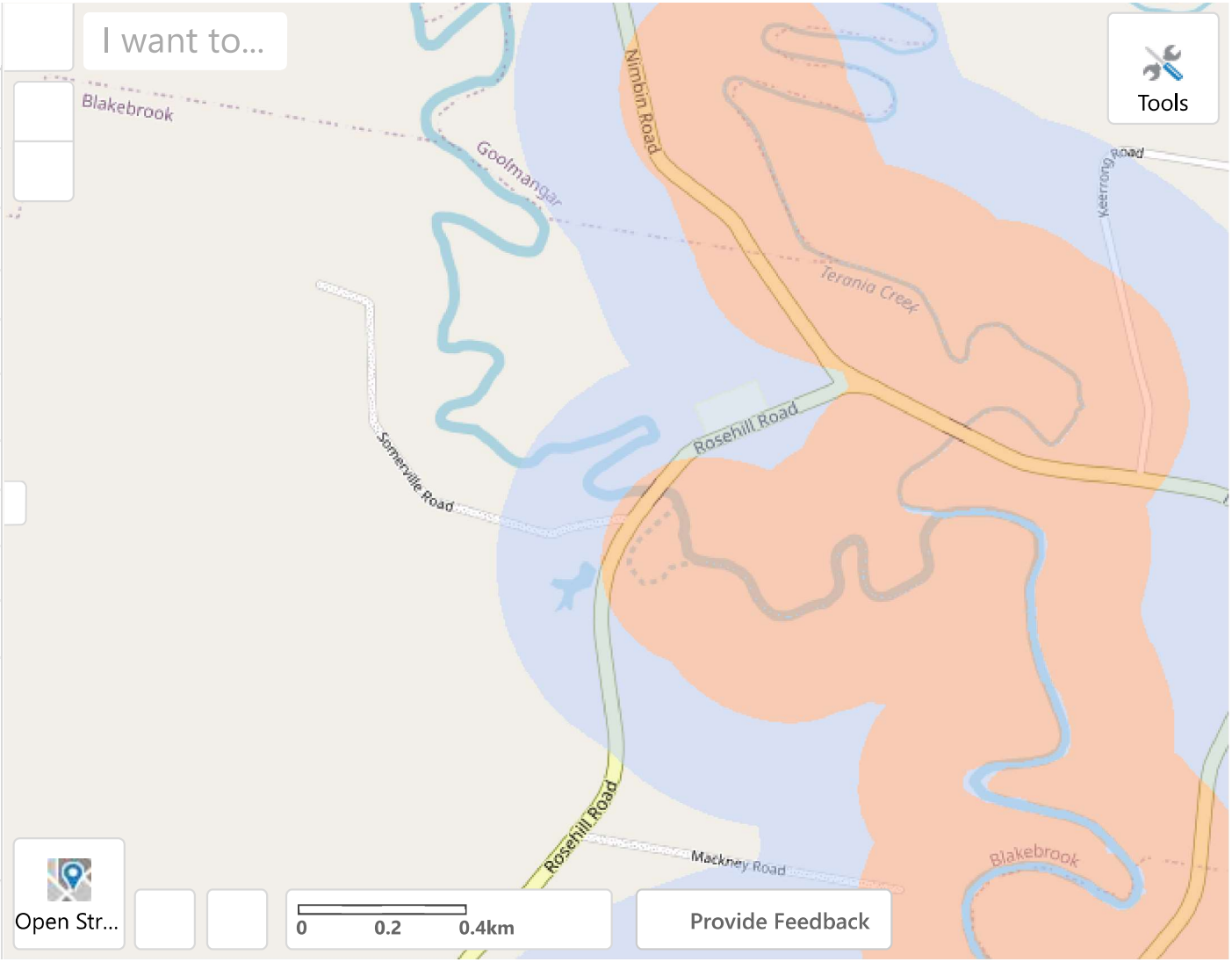
- Coastal Wetlands
- Proximity Area for Coastal Wetlands

Littoral Rainforest

- Littoral Rainforest
- Proximity Area for Littoral Rainforest

- Coastal Environment Area Map
- Coastal Use Area Map

Legend | Drawing Order



NSW State Environmental Planning Policy - Koala Habitat Protection

Please note this map does not show core koala habitat.

Sign in

Layers

Filter Layers...

Filter

- Land Application Map
  - Land Application Map
- Koala Management Areas
  - Koala Management Area
    - Central & Southern Tablelands
    - Central Coast
    - Darling Riverine Plains
    - Far West
    - North Coast
    - Northern Tablelands
    - Northwest Slopes
    - Riverina
    - South Coast
- EPI Land Zoning
  - Land Zoning

Layers

Functions

Tools

North Coast

NSW_Im...

0 0.2 0.4km

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 05-Sep-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	63
Listed Migratory Species:	17

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 https://www.dcceew.gov.au/parks-heritage/heritage

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

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	24
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community may occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rostratula australis](#)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
[Stagonopleura guttata](#)			
Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
[Turnix melanogaster](#)			
Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area	In feature area
FISH			
[Maccullochella ikei](#)			
Clarence River Cod, Eastern Freshwater Cod [26170]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
[Litoria olongburensis](#)			
Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat may occur within area	In feature area
[Mixophyes fleayi](#)			
Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In feature area
[Mixophyes iteratus](#)			
Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat known to occur within area	In feature area
INSECT			
[Argynnis hyperbius inconstans](#)			
Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
[Chalinolobus dwyeri](#)			
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Dasyurus maculatus maculatus (SE mainland population)](#)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Amyema plicatula			
[81879]	Endangered	Species or species habitat may occur within area	In buffer area only
Arthraxon hispidus			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat known to occur within area	In feature area
Bosistoa transversa			
Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat may occur within area	In feature area
Clematis fawcettii Stream Clematis [4311]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Corchorus cunninghamii Native Jute [14659]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat may occur within area	In feature area
Endiandra floydii Floyd's Walnut, Crystal Creek Walnut [52955]	Endangered	Species or species habitat may occur within area	In feature area
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat may occur within area	In feature area
Floydia praealta Ball Nut, Possum Nut, Big Nut, Beefwood [15762]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Gossia fragrantissima Sweet Myrtle, Small-leaved Myrtle [78867]	Endangered	Species or species habitat known to occur within area	In feature area
Hicksbeachia pinnatifolia Monkey Nut, Bopple Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak [21189]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Leichhardtia longiloba listed as Marsdenia longiloba Clear Milkvine [91911]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In feature area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Myrsine richmondensis Purple-leaf Muttonwood, Lismore Muttonwood [83888]	Endangered	Species or species habitat may occur within area	In feature area
Ochrosia moorei Southern Ochrosia [11350]	Endangered	Species or species habitat known to occur within area	In buffer area only
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pedleya acanthoclada listed as Desmodium acanthocladum Thorny Pea [93275]	Vulnerable	Species or species habitat known to occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area	In feature area
Plectranthus nitidus Nightcap Plectranthus, Silver Plectranthus [55742]	Endangered	Species or species habitat may occur within area	In buffer area only
Randia moorei Spiny Gardenia [10577]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Sophora fraseri [8836]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Syzygium hodgkinsoniae Smooth-bark Rose Apple, Red Lilly Pilly [3539]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [11269]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11258]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata			
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Sterna striata White-fronted Tern [799]		Migration route may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area overfly marine area	In buffer area only

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
330 kV Transmission Line, 205km in Length	2010/5326	Controlled Action	Completed	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact us page.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111