Appendix [B]

Biodiversity Assessment Review

Bruxner Highway – Mallanganee Range and Willock Street Rehabilitation

Biodiversity Assessment Report

Transport for NSW | May 2022

NSW GOVERNMENT

BLANK PAGE

Contents

List of figures

List of tables

Executive summary

Transport for New South Wales (the proponent) is proposing improvements to a 2.5km length of the Bruxner Highway, between approximately 37.5km to 39.7km west of Casino. The project includes the western portion of Maintenance Segment 5390 “Mallanganee Range” and the entire length of Maintenance Segment 5400 “Willock Street” and includes work to widen and strengthen the existing pavement, along with other carriageway maintenance. The impact footprint covers approximately 5.1 hectares (ha) up to 0.91 ha of which is native vegetation, the remaining being the existing cleared road corridor. The regional context and study area are shown on **Figures 1-1** and **2-1**.

A Biodiversity Assessment Report (BAR) is required to:

- Assess impacts of the proposal on native vegetation at the site and any identified or potential threatened species, populations and ecological communities and their habitat.
- Identify the requirements relevant to the proposal under the following legislation:
  - Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
  - NSW *Biodiversity Conservation Act 2016* (BC Act);
  - NSW *Fisheries Management Act 1994* (FM Act);
  - NSW *Biosecurity Act 2015*; and
  - Relevant local LEP.
- Provide recommendations to avoid, minimise and/or mitigate impacts of the proposal on biodiversity, including entry into the Biodiversity Offset Scheme (BOS) if required.

The BAR was completed in three stages:

1. A desktop review of available resources to provide landscape context for the proposal site and inform aspects of the field survey
2. A field survey, including:
   a. vegetation survey according to the Biodiversity Assessment Methods (BAM).
   b. threatened species occurrence assessment based on necessary habitat types and vegetation associations predicted to occur, or observed, in the vicinity of the proposal site.
3. Preparation of a written Biodiversity Assessment Report (BAR) that describes the impacts of the proposed activity on native vegetation and threatened species, populations and ecological communities, and provides recommendations to avoid, minimise and mitigate these impacts, including recommendations for entry into the Biodiversity Offset Scheme (BOS) if required.

In summary the key findings for the report are:

Likely impacts on biodiversity values:

Trees that are listed as potential koala use trees occur within the proposed zone of upgrade works as follows:

- Two (2) trees that are recognised locally as a primary food tree species were identified within the proposed zone of works and have potential to be impacted (refer **Figure 5.1, Plates 1-3**).
- Eleven (11) trees that are recognised locally as a secondary food tree species were identified within the proposed zone of works and have potential to be impacted.
- One (1) tree that is recognised locally as a secondary food tree was identified within the proposed zone of works to the south of the existing roadway but is unlikely to be impacted.

- One potential Koala food tree towards the west of the proposal site will likely have overhanging branches trimmed.

The potential impact of the removal of these trees has been assessed according to the requirements of the BC Act with the result that no significant impact on the Koala is expected.

Additionally, the proposal site contains the following Plant Community Types (PCTs) and these zones represent the broad habitat types found on site that could possibly be used by threatened species known to occur in the greater locality:

- **PCT 1210 -** Spotted Gum – Grey Box grassy open forest of the Richmond Range of the NSW North Coast.
- **PCT 845** - Giant Stinging Tree - Fig dry subtropical rainforest on the NSW North Coast Bioregion.

PCT 1210 is not associated with and listed TECs.

PCT 845 is associated with the following TECs:

- BC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.
- EPBC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

Numerous larger trees that occur within the proposal site and have potential to be cleared have been classified as potential habitat trees (refer **Figure 5-1**) in that they provide potential nesting/roosting/feeding resources for a suite of native species including threatened fauna. Note that no evidence of glider feed trees or significant tree hollows, that would provide habitat for hollow dwelling threatened fauna, were noted during the site assessment although some trees had numerous scratches and were obviously well utilised by foraging arboreal mammals.

Threatened Species/Results of Significant Impact Assessments:

Although the following threatened species were considered to have a moderate or high likelihood of occurrence, none were detected on site and an Assessment of Significance (AoS) has been undertaken for each species which concluded it is unlikely that there would be a significant impact (refer **Appendix B**):

- Brush Sophora.
- Scrub Turpentine.
- Wompoo Fruit-Dove.
- Rose-crowned Fruit-Dove.
- Little Lorikeet.
- Powerful Owl.
- Masked Owl.
- Sooty Owl.
- Regent Honeyeater.
- Varied Sittella.
- Barred Cuckoo-shrike.
- Scarlet Robin.
- Brush-tailed Phascogale.
- Common Planigale.
- Koala.
- Yellow-bellied Glider.

- Squirrel Glider.
- Greater Glider.
- Long-nosed Potoroo.
- Black-striped Wallaby.
- Red-legged Pademelon.
- Grey-headed Flying-fox.
- Golden-tipped Bat.
- Greater Broad-nosed Bat.
- Little Bent-winged Bat.
- Shorter Rainforest Ground-beetle.
- Giant Barred Frog.
- Mountain Frog.
- Large-eared Pied Bat.
- Three-toed Snake-tooth Skink.

As mentioned previously **PCT 845** is associated with the following TECs:

- BC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.
- EPBC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

Although little to no direct clearing of PCT 845 vegetation (as it occurs towards the eastern extent of the proposed works zone) is proposed, some minimal impacts are possible with the planned clearing of adjacent managed roadside vegetation. As such a BC Act test of significance was completed for this community as a precaution with the results that no significant impact is likely (refer **Appendix B**). Note that the vegetation with potential to be impacted did not meet the threshold for assessment of significance as per the EPC Act and therefore no such assessment was undertaken for the purposes of this report (refer **Section 3.2**).

Requirement for referral:

In summary it was found that the proposal is unlikely to have a significant impact on any of the threatened species/communities recorded, or potentially occurring, or any areas of potential habitat. As such, it is recommended that the proposal need not be referred to the Federal Minister for the Environment for further consideration or approval, nor is the preparation of a Species Impact Statement that further assesses and considers the scope of work proposed required. It is not recommended at this time that the proposal enter into the BOS scheme however, any changes to the scope or scale of impacts would require reassessment.

With reference to the assessment criteria provided under Part 7A, Division 12, Subdivision 221ZV of the FM Act, it is considered that the proposal would not have a significant impact on any threatened aquatic species, their populations, ecological communities or habitats. As such, the preparation of a Species Impact Statement that further considers the impacts of the proposal on aquatic fauna is not required, any changes to the scope or scale of impacts would require reassessment.

Recommendations for wildlife connectivity measures:

Due to the small size and scope of the proposal and its current proximity to the existing highway, no impacts to the function of wildlife corridors and no significant reduction to connectivity in the local area is expected.

Offsetting:

The proposal is not expected to require substantial vegetation clearing and will not have any significant (i.e. serious and irreversible) impact on threatened species or communities. Therefore, it is not recommended to the proponent that a Species Impact Statement be prepared. Additionally, entry into the BOS is not recommended, should TfNSW consider entering into the Biodiversity Offset Scheme at this time.

Assumptions/Limitations:

Due to the limited duration of the field survey, a precautionary approach was taken with regard to determining the impact to threatened species predicted to occur within the region and/or where suitable habitat was identified.

The scope of work proposed was considered in relation to the vegetation communities identified and the habitat that they provide, with reference to the criteria provided under the EPBC Act's Significant Impact Guidelines and Section 7.3 of the BC Act.

Glossary

Definitions	
Biodiversity Assessment Method	The Biodiversity Assessment Method is established under section 6.7 of the BC Act. The BAM is established for the purpose of assessing certain impacts on threatened species and threatened ecological communities (TECs), and their habitats, and the impact on biodiversity values.
Biodiversity offsets	The gain in biodiversity values achieved from the implementation of management actions on areas of land, to compensate for losses to biodiversity values from the impacts of development (DPIE 2020)
Calculator or BAM-C	Biodiversity Assessment Method Calculator – a tool that applies the BAM to calculate the number and type of credits required to offset the impacts of development on biodiversity or credits generated at a biodiversity stewardship site.
Construction footprint	The area to be directly impacted by the proposal during construction activities (see definition for subject land).
Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.
Direct impact	Direct impacts on biodiversity values include those related to clearing native vegetation and threatened species habitat, and impacts on biodiversity values prescribed by the Biodiversity Conservation Regulation 2017 (the BC Regulation) (DPIE 2020)
Habitat	An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic component.
Indirect impact	Impacts that occur when the proposal affects native vegetation and threatened species habitat beyond the development footprint or within retained areas (e.g. transporting weeds or pathogens, dumping rubbish). This includes impacts from activities related to the construction or operational phase of the proposal and prescribed impacts (DPIE 2020).
Local population	Local population: the population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions: • The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area. • The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area. • The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time or return year to year. (OEH 2018)

Definitions	
MNES	A matter of national environmental significance (MNES) protected by a provision of Part 3 of the EPBC Act
Mitchell landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (DPIE 2020).
Mitigation	Action to reduce the severity of an impact.
Mitigation measure	Any measure that facilitates the safe movement of wildlife and/or prevents wildlife mortality or injury.
Native vegetation	(a) trees (including any sapling or shrub or any scrub), (b) understorey plants, (c) groundcover (being any type of herbaceous vegetation), (d) plants occurring in a wetland. A plant is native to New South Wales if it was established in New South Wales before European settlement (BC Act).
Operational footprint	The area that will be subject to ongoing operational impacts from the proposal. This includes the road, surrounding safety verges and infrastructure, fauna connectivity structures and maintenance access tracks and compounds.
Population	A group of organisms, all of the same species, occupying a particular area (DPIE 2020).
Proposal area/site/ footprint	The area of land that is directly impacted on by the proposal that is being assessed under the EP&A Act, including access roads, and areas used to store construction materials. It includes the construction and operational areas for the proposal.
Study area	The area directly affected by the proposal and any additional areas likely to be affected by the proposal, either directly or indirectly. See also definition of local population.
Target species	A species has been identified within the study area or is considered to have a moderate to high likelihood of occurrence and may be impacted by the proposal.

Abbreviations	
BAM	Biodiversity Assessment Method (DIPE 2020)
BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Scheme under the BC Act
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DoEE	Former Commonwealth Department of Environment and Energy
DPIE	NSW Department of Planning, Industry and Environment
DPI	NSW Department of Primary Industries
EEC	Endangered ecological community
EES	Environment Energy and Science Group, Department of Planning, Industry and Environment
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth).
FM Act	Fisheries Management Act 1994 (NSW)
GDE	Groundwater dependent ecosystems
IBRA	Interim Biogeographically Regionalisation of Australia
MNES	Matters of National Environmental Significance
NPWS	NSW National Parks and Wildlife Service
OEH	Former NSW Office of Environment and Heritage
PCT	Plant Community Type
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy
TECs	Threatened Ecological Communities
TBDC	Threatened Biodiversity Data Collection
Transport	Transport for NSW
VEC	Vulnerable Ecological Community
VIS	Vegetation information system

1 Introduction

1.1 Proposal background

This proposal is a part of ongoing road maintenance and upgrades provided by Transport for NSW along its main roads and highways and is funded by the Assets Program. The proposed upgrades are located on the Bruxner Highway (HW16) near the locality of Mallanganee between Tabulam and Mummulgum and is located approximately 38km West of Casino. The proposal is linked to several similar road upgrade and maintenance projects in the local area including the Dyraaba road upgrade, which ReconEco is also currently preparing a BAR for, as well as several similar current and past upgrade and maintenance projects.

1.2 The proposal

The proposal is for pavement rehabilitation of two segments of carriageway: S5390 (Part – western end) (Mallanganee Range) and S5400 (Willock Street). The proposal starts 100m east of segment marker 5390 (-28.900271, 152.739146) and extends for approximately 2.15km to 100m west of segment marker 5400 (- 28.902206, 152.727954). The proposal may include the establishment of additional ancillary sites although it expected that previously established sites will used.

The proposal objective is to rehabilitate the pavement, increase sealed width area from 7m (in some locations) to 8.5m, provide minimum 1.0m shoulder or more where possible, provide new and/or upgrade existing barriers, improve drainage systems (some culverts have ARL rating of 1) and possible upgrade the intersection at Willocks Street to include a BAL and BAR treatment layout.

The need to rehabilitate this 2.15km long project has been identified through the recorded high-level roughness, rutting and observations of heavily cracked pavement. This pavement also has inadequate sub-surface drainage which has resulted in a low remaining life expectancy of the pavement (< 3 years) and high ongoing maintenance costs.

The proposal will also include the use of a pre-existing ancillary/stockpile site situated approximately 85m from the western end of the proposal site (refer **Figure 2.1**).

The impact footprint covers of approximately 5.1 hectares (ha) up to 0.88 ha of which being vegetated, the remaining being the existing road corridor. The regional context and study area are shown on **Figures 1-1** and **2-1**. The majority of impacts to vegetation will be limited to the strips of regularly slashed, non-native vegetation along the road embankments. However, clearing of Spotted Gum/Grey Box woodland vegetation is proposed for the zone approximately mid-way within the proposal site and to the north of the existing roadway (refer **Figure 5-1**). It is proposed to remove and/or trim a number of trees in this area including trees that are listed as potential koala use trees, details are as follows:

- Two trees that are recognised primary potential feed trees.
- Twelve trees that are recognised secondary potential feed trees.
- One (1) tree that is recognised locally as a secondary food tree was identified within the proposed zone of works to the south of the existing roadway but is unlikely to be impacted.
- One potential food tree towards the west of the proposal site will likely have overhanging branches trimmed.

The removal of these trees has been assessed according to the requirements of the BC Act and EPBC Act with the result that no significant impact on the Koala is expected. This potential impact on Koalas and other potential impacts are quantified and assessed in this

report. Based on available background information the biodiversity impacts of this proposal are expected to be minor due to the limited scope of the proposed works however, these impacts have been assessed in detail by ReconEco as per the following Biodiversity Assessment Report.

The proposal is expected to be completed in approximately 24 weeks.

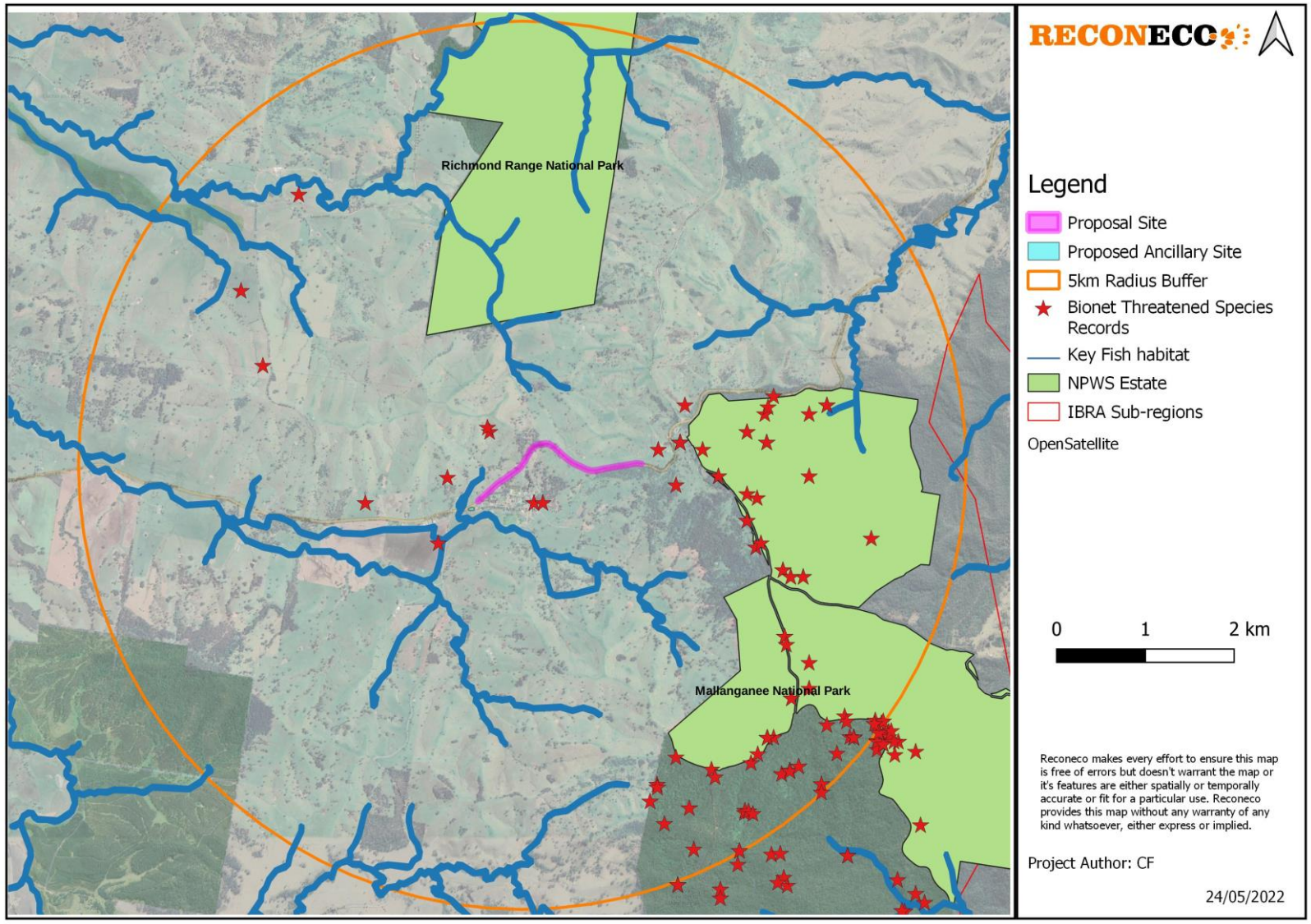


Figure 1-1: Regional context of the proposal

1.3 Legislative context

A Review of Environmental Factors (REF) is prepared to satisfy Transport for NSW (Transport) duties under s.5.5 of the EP&A Act to "examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity" and s.5.5 in making decisions on the likely significance of any environmental impacts. This biodiversity impact assessment forms part of the REF being prepared for the HW16 Bruxner Highway, Mallanganee Range and Willock Street Rehabilitation project and assesses the biodiversity impacts of the proposal to meet the requirements of the EP&A Act.

Part 7 of the BC Act and Part 7A of the FM Act require that the significance of the impact on threatened species and endangered ecological communities or their habitats is assessed using a five-part test at Section 7.3 of the BC Act. Where a significant impact is likely to occur, a species impact statement (SIS) must be prepared in accordance with the Environment Agency Head's requirements, or a Biodiversity Development Assessment Report (BDAR) must be prepared by an accredited assessor in accordance with the Biodiversity Assessment Method (BAM).

In September 2015, a "strategic assessment" approval was granted by the Federal Minister in accordance with the EPBC Act. The approval applies to Transport road activities being assessed under Division 5.1 (formerly Part 5) of the EP&A Act with respect to potential impacts on nationally listed threatened species, ecological communities and migratory species.

As a result, Transport road proposals assessed via an REF:

- Must address and consider potential impacts on nationally listed threatened species, populations, ecological communities and migratory species, including application of the "avoid, minimise, mitigate and offset" hierarchy
- Do not require referral to the Department of Agriculture, Water and the Environment (DAWE) for these matters, even if the activity is likely to have a significant impact.
- Must use the Biodiversity Offset Scheme (BOS) to offset project impacts.

To assist with this, assessments are required in accordance with the *Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999* (DoE 2013).

2 Methods

2.1 Personnel

Name	Position	CV
Adam Stone	Ecologist	Master of Research – Invasive Species Ecology – The University of Queensland Bachelor of Applied Science – Ecology – Queensland University of Technology 10 years of field experience Numerous MWREF and associated Ecological Assessments for TfNSW at various locations throughout NSW.
Craig Falkner	Principal Ecologist	Bachelor of Applied Science – Environmental Resource Management – Southern Cross University 1999. 20 years of experience as a consulting ecologist based in the Northern Rivers region of NSW Numerous MWREF and associated Ecological Assessments for TfNSW in and around the greater area of the proposal site.

2.2 Background research

Preliminary assessments drew on local experience, previous reporting and information held on government databases and archives. Results of database searches were used to assist in identifying distributions, suitable habitats and known records of threatened species to increase the effectiveness of the field investigations. Information sources reviewed included the following:

- NSW Government online aerial imagery (www.maps.six.nsw.gov.au).
- NSW DPI Fisheries Spatial Data Portal: https://www.dpi.nsw.gov.au/about-us/science-and-research/spatial-data-portal
- SEED datasets including Biodiversity Values Map and available native vegetation community mapping (https://geo.seed.nsw.gov.au/)
- Core Koala Habitat identified by the Koala Habitat Protection SEPP 2021

Commonwealth datasets:

- The DAWE's Protected Matters Search Tool: http://environment.gov.au/erin/ert/epbc/index.html
- National Flying-fox monitoring viewer. http://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf
- NSW Government Biodiversity Values Map which identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017 (https://www.lmbc.nsw.gov.au).
- Flora and fauna records and profiles contained in the NSW Threatened Species Database, EPBC Protected Matters Search Tool and DPI threatened fish distribution maps.

- BioNet (www.bionet.nsw.gov.au) Wildlife Atlas and Plant Community Type (VIS) databases.
- Flora of NSW (Harden 1991-2002) and Flora NSW Online (www.plantnet.rbgsyd.nsw.gov.au).

Database searches were undertaken before the field assessment to determine any threatened species, ecological communities, important protected habitat (e.g. Wetlands) or defined areas of biodiversity priority predicted to occur in the study area and those previously recorded within the 10 km search area. The results of these searches led to the identification of key species for field survey effort and targeted searches. Results of the database searches are provided in **Appendix B**.

2.3 Vegetation Assessment

Vegetation survey and assessment was completed in accordance with Chapter 4 of the Biodiversity Assessment Method (DIPE 2020a).

A site induction and project scoping meeting were undertaken on the 11th of February 2022 and was attended by the TfNSW Project Manager (Ross Gerekowski) and Environmental Officer (Kate Dallimore), as well as ecologists from ReconEco (Adam Stone and Craig Faulkner). An ecological inspection of the proposal area was subsequently undertaken by Adam Stone on 11th and 12th of February 2022 with the site surveyed again by Craig Faulkner on 12th April 2022.

The objectives of the field survey were to:

- Identify native species and vegetation communities present.
- Describe the quality and value of the vegetation and the flora and fauna habitat at the development site.
- Determine if species, populations or ecological communities listed as threatened under the BC Act, FM Act and/or EP&BC Act are/may be present.
- Determine the significance of impact to any threatened entities present or likely to be present.

2.3.1 Vegetation Mapping

Vegetation communities were identified in accordance with the online *NSW Master Plant Community Type Classification* (OEH, 2018b), which is the current state-wide vegetation classification system for Plant Community Types (PCT). This classification system is used for vegetation mapping, development assessment and site planning purposes. It describes over 1,500 PCTs across the state, and groups the vegetation communities into vegetation Class and Formation / Sub-formation (Keith et al., 2004).

The BioNet Vegetation Classification database was used to identify the candidate vegetation communities likely to be present based on the site conditions (flora species present, vegetation structure, bioregion, and landscape position and soil type) and the relevant published PCT descriptions.

2.3.2 Vegetation Survey and Classification

In this study PCTs were identified on the basis of the following inputs:

- Professional ecological knowledge about locally occurring vegetation types and landscape, soil and topographic patterns, including transitions from one community to another and potential for intergrades between plant communities.

- Field survey results confirming the flora species present, vegetation structure, landscape position and soil type at the study area and the extent and condition of native vegetation.

If any of the PCTs were identified as having potential to be part of a Threatened Ecological Community (TEC), the relevant identification guidelines (NSW Scientific Committee listing criteria and Commonwealth identification guides) were consulted to determine the status of the vegetation community present in the study area. These guidelines provide the identification criteria used to positively identify the community as being part of the TEC. The criteria include location, species present, overstorey species, weed cover, number and type of native species including whether certain 'important' native species are present. Where required, the TEC decision process is documented in the results section of this report.

Plant identification followed nomenclature in the Royal Botanic Gardens PlantNet online database (Royal Botantic Gardens and Domain Trust, 2018).

Due to the narrow shape, limited size and the substantial impacts of ongoing maintenance management on the flora assemblage at the proposal site, an abridged BAM was used to determine PCTs and determine the presence of threatened plants. Plots were placed where vegetation community appeared to best represent each specific PCT (**Figure 2-1**) quadrats were placed randomly throughout the area rather than along a defined transect to minimize the effects of transect stratification.

Areas of non-native vegetation (particularly in road margins) were identified and mapped. Dedicated plot data could not be collected in these areas however detailed composition descriptions are provided to show the composition and abundance of non-native vegetation in the study area.

PCTs and their condition classes were identified and mapped as vegetation zones (a relatively homogenous area of native vegetation on a proposal site that is the same PCT and broad condition type) under the BAM. The number of plots to be completed for each identified vegetation zone is provided in **Table 2-1** below.

Table 2-1: Minimum number of plots required per zone area

Vegetation zone area (ha)	Minimum number of plots/mid-lines
<2	1 plot/mid-lines
>2-5	2 plots/mid-lines
>5-20	3 plots/mid-lines
>20-50	4 plots/mid-lines
> 50–100	5 plots/mid-lines
> 100–250	6 plots/mid-lines
> 250–1000	7 plots/mid-lines; more plots may be needed if the condition of the vegetation is variable across the zone
> 1000	8 plots/mid-lines; more plots may be needed if the condition of the vegetation is variable across the zone

2.4 Threatened species assessment

2.4.1 Habitat assessment

The study area was searched for fauna while traversing the entire proposal area on foot. Potential habitat such as rocks, loose bark and course woody debris was examined for cryptic species. In addition, any possible roosting habitat associated with the culverts that may be suitable for the sheltering requirements of microbats (e.g. crevices, cavities within the abutments etc.,) was searched, a hand-held torch being used to assist with this process. Any evidence of fauna present on, or in the vicinity of, the proposal site was recorded, such as guano accumulations, scats, tracks, feathers and sloughed skins. Birds were recorded as either present on the site, or as incidental if only observed flying over (and not using) the study area. All potential arboreal habitat such as hollows, dreys or nests were recorded using a gps (**Figure 5-1**). Additionally, a habitat assessment was undertaken for each threatened species or community identified with the potential to occur in the study area (refer **Appendix B**).

Considering the scope of works proposed, combined with the condition of the fauna habitats observed during the site inspection, no targeted fauna surveys (such as live trapping, nocturnal searches, echolocation detectors etc) were considered necessary/carried out.

2.4.2 Targeted Flora Surveys

Due to the scope and limited potential impacts of the proposal it will likely not be necessary to conduct prescribed targeted surveys for any of the species deemed ‘potential’ or ‘likely’ to occur at the site. Any detectable presence would have been detected during the initial survey given the size of the site and scope of impact area. However, due to prescribed survey periods required under the BAM and the inability to detect many species outside of this window it cannot be stated that species are absent to the legislative degree achieved by targeted surveys. Should TfNSW decide that targeted surveys are required to reach the standard of certainty achieved under the BAM, ReconEco advises that an amendment to the current tender would be necessary to facilitate targeted surveys that would likely take place over the next 12 to 18 months depending on species and their associated survey windows. A targeted survey proposal and timeline can be provided if requested however, as targeted surveys are not recommended at this stage it is not included in this document.

2.4.3 Targeted fauna surveys

The study area was assessed for its potential to provide habitat for those threatened plants and animals known or predicted to occur in the study area. Habitat requirements of species were reviewed using a combination of ecological knowledge and the online threatened species profiles published by the NSW Office of Environment and Heritage (OEH), Department of Primary Industries (DPI) Fisheries, and the Australian Government Department of Agriculture, Water and the Environment (DAWE). Features such as rocky outcrops, overhangs, caves or any suitable cave substitutes observed in association with existing bridges or culverts, waterbodies, dense understorey vegetation and habitat trees were recorded.

Any evidence of fauna (e.g. scats, tracks, calls, fur, feathers, sloughed skins, microchiropteran guano accumulations) was recorded, if observed. Attention was given to

identifying suitable microbat sheltering sites, tree hollows with signs of breeding activity or the presence of nests which may indicate use of the site by threatened fauna species.

Where habitat assessments indicate a threatened species potentially occurs on, or close to, the proposal site, it has been assumed as present if absence can't be established based on the level of field survey accumulated.

The results of the desktop review and the field assessment were collated and reviewed in the context of local ecological knowledge to determine the likelihood of occurrence of threatened species and ecological communities, and potential impacts of the proposal (**Appendix B**). For instance, some threatened species may be predicted to occur locally but, on assessment of the site, key habitat elements or conditions are not present, in which case the species is assessed as not being present or impacted.

The likelihood of occurrence of threatened species, populations or ecological communities was categorised as follows:

Likelihood	Criteria
Recorded	The species was observed in the study area during the current survey
High	It is highly likely that a species inhabits the study area and is dependent on identified suitable habitat (ie. for breeding or important life cycle periods such as winter flowering resources), has been recorded recently in the locality (10km) and is known or likely to maintain resident populations in the study area. Also includes species known or likely to visit the study area during regular seasonal movements or migration.
Moderate	Potential habitat is present in the study area. Species unlikely to maintain sedentary populations, however may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent (ie. for breeding or important life cycle periods such as winter flowering resources) on habitat within the study area, or habitat is in a modified or degraded state. Includes cryptic flowering flora species that were not seasonally targeted by surveys and that have not been recorded.
Low	Based on the habitat recorded in the study area it is not likely that this species will occur.

The species confirmed to be present or considered likely or with potential to be present at the site, were then considered as to whether the extent and type of development would be likely to impact on them.

Tests of significance were then completed for these species and ecological communities in accordance with the BC Act and/or the assessment of significance under the EPBC Act, and the relevant guidelines for these assessments (**Appendix B**).

Seven-part tests of significance were also conducted for threatened entities listed under the FM act and are presented in **Appendix E**.

2.5 Aquatic Surveys

The nearest waterway (an unnamed creek) is situated approximately 200m to the west of the western extent of the proposal site (refer **Figure 1-1** and **3-2**) and is listed as Key Fish Habitat according to DPI Fisheries mapping. The proposed works are not predicted to impact this waterway. Additionally, it is planned to utilise a pre-existing ancillary site that is situated 100m to the east of the waterway (between the western extent of the proposed road upgrade zone and the waterway) (refer **Figures 2-1 and 3-2**). Once again, the use of the pre-existing

cleared site would not have any impact on the subject waterway. Considering the above points, no aquatic survey was undertaken for the purposes of this assessment.

2.6 Summary of survey effort and limitations

As mentioned previously, due to the scope and limited potential impacts of the proposal it is considered unnecessary to conduct prescribed targeted surveys for any of the species deemed 'potential' or 'likely' to occur at the site. Any detectable presence would have been recorded during the initial survey given the size of the site and scope of impact area. However, due to prescribed survey periods required under the BAM and the inability to detect many species outside of this window it cannot be stated that species are absent to the legislative degree achieved by targeted surveys. Should TfNSW decide that targeted surveys are required to reach the standard of certainty achieved under the BAM ReconEco advises that an amendment to the current tender would be necessary to facilitate targeted surveys that would likely take place over the next 12 to 18 months depending on species and their associated survey windows. A targeted survey proposal and timeline can be provided if requested however, as targeted surveys are not recommended at this stage it is not included in this document.

The following table (**Table 2-2**) summarizes the current survey effort at the site.

Table 2-2 Targeted species survey details

Species	Minimum survey requirements[1]	Survey completed
BAM vegetation assessment	Identify PCTs using the BAM and determine the presence of potential TECs	Abridged BAM assessment as described in section 2.4.1. Two plots were completed in the two present PCTs. Neither area exceeded the 2ha threshold or represented a different condition class to require additional plots.
General fauna and potential habitat assessment	All fauna observations must be recorded by the assessor.	All fauna or traces of fauna (scat, scratches etc,.) was recorded throughout the duration of the survey.
Habitat tree identification	TfNSW has requested that any habitat tree (hollow bearing, nests) be identified should trees need to be removed or impacted.	All habitat trees were identified and marked using a GPS, any tree with limbs overhanging the current carriageway were assessed for habitat potential in any limb that may be impacted.

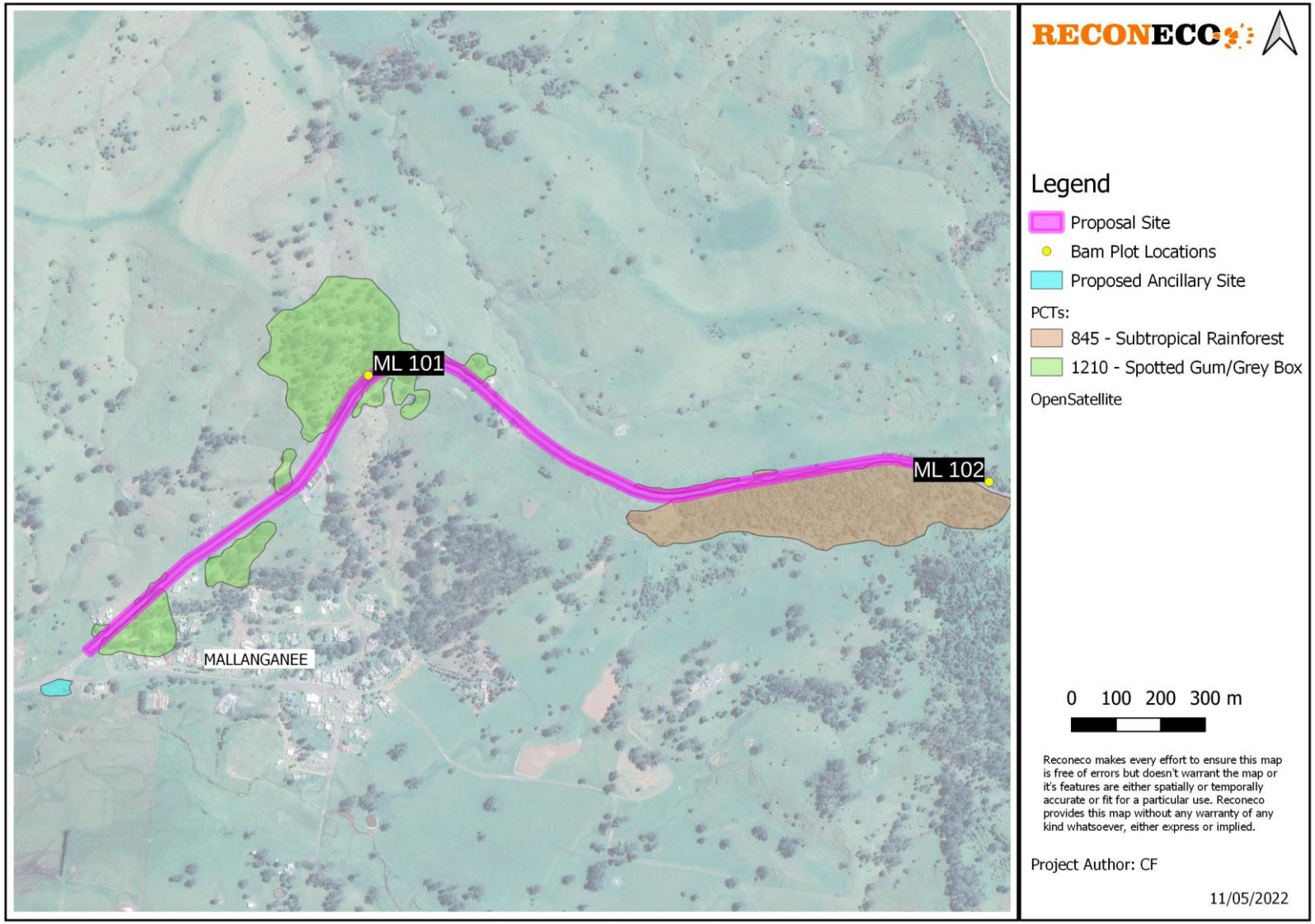


Figure 2-1: Study area in context incl. BAM plot locations.

3 Existing environment

Native Vegetation Communities.

Bioregions:

The study area is situated in the Woodenbong subregion of the Southeastern Queensland Bioregion, presumably as per the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway & Cresswell, 1995) however, following the release of IBRA7 in 2021 no published information exists regarding the subregions key environmental attributes. No published literature of official guidelines relating the subregion are available at present, as such; geology, landforms, soil types and vegetation cannot be provided.

Mitchell Landscapes:

The landscapes of NSW, termed Mitchell Landscapes, were mapped in 2002 to provide a framework for reporting reserve establishment and for determining over-cleared landscapes. These landscapes broadly describe areas of similar topography, geology, soils and vegetation. The Clarence Foothills and Clarence - Richmond Alluvial Plains occur within the study area. The characteristics of both landscapes are provided in **Table 3-1**.

Table 3-1 Landscape feature descriptions.

Landscape Feature	Description
Clarence Foothills	Subdued ranges and hills on gently folded middle Jurassic claystone, lithic and felspathic sandstone, coal measures and quartz sandstone, general elevation 150 to 550m, local relief 250m. Yellow, brown and greyed texture-contrast soils on slopes, sandy alluvium and dark uniform clay or clay loams along valley floors. Moist hardwood forest of; blackbutt (*Eucalyptus pilularis*), grey gum (*Eucalyptus punctata*), white mahogany (*Eucalyptus acmenoides*), red mahogany (*Eucalyptus resinifera*), New England blackbutt (*Eucalyptus andrewsii* ssp. *campanulata*), and Sydney blue gum (*Eucalyptus saligna*). Pockets of dry closed forest are present in gullies protected from fire.
Clarence - Richmond Alluvial Plains	Wide valleys, channels, floodplains, terraces and estuaries of the Clarence and Richmond Rivers and other coastal streams on Quaternary alluvium, general elevation 0 to 50m, local relief 15m. Deep brown earths and structured brown clay on floodplains. Terrace with yellow texture-contrast soil containing ironstone concretions. Extensively cleared the valley floor supported forest of cabbage gum (*Eucalyptus amplifolia*), forest red gum (*Eucalyptus tereticornis*), broad-leaved apple (*Angophora subvelutina*), river oak (*Casuarina cunninghamiana*), silky oak (*Grevillea robusta*), rough-barked apple (*Angophora floribunda*), native teak (*Flindersia australis*), coastal grey box (*Eucalyptus bosistoana*), pink bloodwood (*Corymbia intermedia*), spotted gum (*Corymbia maculata*), grey ironbark (*Eucalyptus paniculata*), broad-leaved paperbark (*Melaleuca quinquenervia*), blackwood (*Acacia melanoxylon*) and black she-oak (*Casuarina litoralis*). On the margins of the basalt-based Lamington Volcanic Slopes Landscape; dry closed forest with native cascarilla (*Croton verreauxii*), yellow tulip (*Drypetes deplanchei*), silver basswood (*Polyscias elegans*), guioa (*Guioa semiglauca*), red cedar (*Toona australis*) with abundant vines and emergent hoop pine (*Araucaria cunninghamii*). Salt marsh, mangrove communities and paperbark (*Melaleuca quinquenervia*) freshwater swamps occur in the estuary.

Environmentally sensitive areas

The presence and/or proximity of environmentally sensitive areas relative to the study area is summarised in **Table 3-2**.

Table 3-2 Environmentally sensitive areas possibly occurring within the study area.

Environmental Considerations	In the study area?
Land identified on the Biodiversity Values Map under the NSW BC Act	Yes (Appendix A)
Area of Outstanding Biodiversity Value (AOBV) under the NSW BC Act	No
Critical habitat nationally?	No
An area reserved or dedicated under the NSW *National Parks and Wildlife Act 1974*?	No
Is the proposal located within land reserved or dedicated within the meaning of the *Crown Lands Act 1989* for preservation of other environmental protection purposes?	Yes
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments?	No
Lands protected under SEPP 2021– Resilience and Hazards Chapter 2 Coastal Wetlands?	No
Lands protected under SEPP 2021 – Resilience and Hazards Chapter 2 Littoral Rainforests?	No
Lands protected under SEPP 71 – Coastal Protection?	No
Lands protected under SEPP 2021 – Biodiversity and Conservation Chapters 3 and 4 Koala Habitat Protection?	Yes
Lands protected under SEPP 2021 – Biodiversity and Conservation Chapter 8 Sydney Drinking Water Catchment?	No
Land identified as wilderness under the NSW *Wilderness Act 1987* or declared as wilderness under the *National Parks and Wildlife Act 1974*?	No
Aquatic reserves dedicated under the FM Act?	No
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land subject to a conservation agreement under the NSW *National Parks and Wildlife Act 1974*?	No
Land identified as State Forest under the NSW *Forestry Act 1916*?	No
Acid sulphate area?	No
Protected riparian habitat?	No
Mapped Key Fish Habitat? The nearest waterway (an unnamed creek) is situated approximately 200m to the west of the western extent of the proposal site (refer **Figure 3-2**) and is listed as Key Fish Habitat according to DPI Fisheries mapping. The proposed works are not predicted to impact this waterway.	No

3.1 Plant community types and vegetation zones

Vegetation survey plots were conducted in the study area according to the BAM. Total impacted area for each PCT is provided in **Table 3.3** and justification for PCT identification is provided below. The study area was found to contain two PCTs namely:

- **PCT 1210** - Spotted Gum – Grey Box grassy open forest of the Richmond Range of the NSW North Coast.
- **PCT 845** - Giant Stinging Tree - Fig dry subtropical rainforest on the NSW North Coast Bioregion.

Table 3-3 Plant community types

Plant community type (PCT)	Maximum clearable area	Threatened ecological community?
PCT 1210 - Spotted Gum – Grey Box grassy open forest of the Richmond Range of the NSW North Coast.	0.29 ha	No
PCT 845 - Giant Stinging Tree - Fig dry subtropical rainforest on the NSW North Coast Bioregion.	0.01 ha	Yes

PCT 1210 Spotted Gum – Grey Box grassy open forest of the Richmond Range of the NSW North Coast:

Vegetation formation: Dry Sclerophyll Forests (Shrub/grass sub-formation).

Vegetation class: Clarence Dry Sclerophyll Forests.

Other mapping sources: No mapping available for this region.

Estimate of percent cleared: 40.00%

Condition: Poor

Extent in the study area: > 11.82 ha (based on aerial estimation).

Threatened Ecological Community: No associated TEC.

Plots completed: 1

Table 3-4: Diagnostic species used during PCT determination

Growth form	Typical species
Trees	*Corymbia variegata, Eucalyptus moluccana, Eucalyptus propinqua*
Shrubs	*Lantana camara, Myrsine variabilis, Maclura cochinchinensis,* ***Senna pendula var. glabrata, Cupaniopsis parvifolia***
Grass and grass like	*Chloris gayana, Themeda australis, Lomandra longifolia, Cymbopogon refractus, Setaria sphacelata, Poa labillardierei, Sorghum leiocladum*
Forb	*Vernonia cinerea, Asparagus* ***plumosus****, Wahlenbergia sp., Bidens Pilosa, Dolichandra unguis-cati, Hypochaeris radicata*
Fern	*N/A*
Other	*Eustrephus latifolius*

Description	Photo
Description: Vegetation recorded at the site was consistent with the description given for PCT 1210. Three upper stratum species were recorded within surveyed patches of PCT 1210; Grey Gum (*Eucalyptus moluccana) being the dominatent with* Spotted Gum (*Corymbia variegate*) subdominant and Small Fruit Gum (*Eucalyptus propinqua) occurring infrequently.*). Of these Spotted Gums tended to be taller but occurred in lower densities than Grey Gum. Mid and ground story species were also consistent with the PCT description however, the abundance of weeds (particularly invasive grasses and Lantana) appeared to substantially limit the diversity within these strata.	 **Plate 1** Example of PCT 1210

PCT 845: Giant Stinging Tree - Fig dry subtropical rainforest on the NSW North Coast Bioregion:

Vegetation formation: Rainforests.

Vegetation class: Subtropical Rainforests.

Other mapping sources: No mapping available for this region.

Estimate of percent cleared: 70.00%

Condition: Very Poor

Extent in the study area: > 100 ha (based on aerial estimation).

Threatened Ecological Community: PCT 845 is associated with the following TECs;

BC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

EPBC Act Listed, Critically Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

Vegetation recorded as PCT 845 was found to not meet the relevant TEC thresholds under the EPBC Act (discussed below) and as such these patches of PCT 845 are not considered TECs under that particular legislation.

Plots completed: 1

Table 3-5: Diagnostic species used during PCT determination

Growth form	Typical species
Trees	*Caldcluvia paniculosa, Grevillea robusta, Syzygium smithii, Doryphora sassafras*
Shrubs	*Lantana camara (>90% cover)*
Grass and grass like	*Chloris gayana, Themeda australis, Cymbopogon refractus, Setaria sphacelata*
Forb	*Plectranthus parviflorus, Parsonsia straminea, Hypochaeris Radicata*
Fern	*N/A*

Description	Photo
Vegetation recorded at the site was consistent with the description given for PCT 845. Four upper stratum species (**Table 3-6**) were recorded within surveyed patches of PCT 845, no upper stratum species was dominant, and no emergent canopy was present. The overall condition of the upper stratum was poor with most trees within the potential impact footprint appearing to be relatively young (<20 years old). As with patches of PCT 1210 the mid and lower strata were heavily invaded by Lantana but to a greater degree (>90%) which significantly reduced detectability and likely contributed to the low abundance of species present or detected.	 **Plate 4** Example of PCT 845.

3.2 Threatened Ecological Communities.

As mentioned previously, the vegetation of PCT 845 identifies as the BC Act Listed Endangered Ecological Community (EEC) of Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions. It additionally identifies as the EPBC Act Listed Critically Endangered Community of Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

Although little to no direct clearing of PCT 845 vegetation (as it occurs towards the eastern extent of the proposed works zone) is proposed, some minimal impacts are possible with the planned clearing of adjacent managed roadside vegetation and drainage areas. As such a BC Act test of significance was completed for this community as a precaution with the results that no significant impact is likely (refer **Appendix B**). Note that the vegetation with potential to be impacted did not meet the threshold for assessment of significance as per the EPC Act and therefore no such assessment was undertaken for the purposes of this report (refer **Figure 3- 1** below).

Condition thresholds:

The listed **Lowland Rainforest of Subtropical Australia** ecological community comprises those patches that meet the key diagnostic characteristics (above) and the **condition thresholds** (below).

Patch Type (evidence of remnant vegetation & regeneration status)	**A** Natural remnant evident by the persistence of mature residual trees from Appendix B. **AND**	**B** Some residual trees from Appendix B are present plus evidence of either; natural regeneration*1 **AND/OR** regeneration with active management*2 **AND**	**C** A non-remnant patch that has recovered through a) natural regeneration*1 **AND/OR** b) supplementary planting that has stature and quality that is reflective of the 'Description' *3 **AND**
Patch Size (excludes buffer zone)	≥ 0.1 ha **AND**	≥ 1 ha **AND**	≥ 2 ha **AND**
Canopy Cover (over entire patch)*4	Emergent/canopy/subcanopy*4 cover is ≥ 70% **AND**		
Species Richness (over entire patch)	contains ≥ 40 native woody species*5 from Appendix A **AND**	contains ≥ 30 native woody species*5 from Appendix A **AND**	
Percent of total vegetation cover that is native *6 (use sample plot)	≥70% of vegetation *6 is native	≥50% of vegetation *6 is native	

Notes:

*1 Evidence of natural regeneration is shown by the presence of seedlings of a range of native species that did not originate through deliberate plantings.

*2 A patch that is **actively managed** has regular (e.g. every 1–2 years) on the ground human regenerative activity such as weed control or supplementary plantings.

*3 Closed canopy, 20–30 m tall, of representative species (e.g. white booyong, hoop pine, figs, brush box, yellow carabeen, red cedar, rosewood, white beech)

*4 Canopy cover (projective foliage cover) is estimated over the entire patch. When assessing the ecological community, the canopy includes the emergents and subcanopy (everything above 10 m tall). Canopy/sub-canopy includes all trees and vines (native and non-native).

*5 Woody species are trees, shrubs or vines that contain wood or wood fibres that consist mainly of hard lignified tissues. Excluded from woody species are graminoids, other herbs and non-woody vines.

Figure 3-1: TEC threshold for BC and EPBC Act listing of Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

Note: Canopy was significantly less than 70% as such no TEC was recorded according to the requirements of the EPBC Act.

3.3 Groundwater dependent ecosystems

Relevant Bureau of Meteorology mapping identifies a ground water dependant ecosystem in the eastern sector of the proposal site (refer **Figure 3-2**). This zone is rated as 'low potential GDE – from regional studies' according to the mapping. Given this low potential as GDE, and the fact that impacts to groundwater are unlikely as part of the proposed works, it is considered unlikely that any significant impacts to groundwater dependant ecosystems would ensue as a result of the proposal.

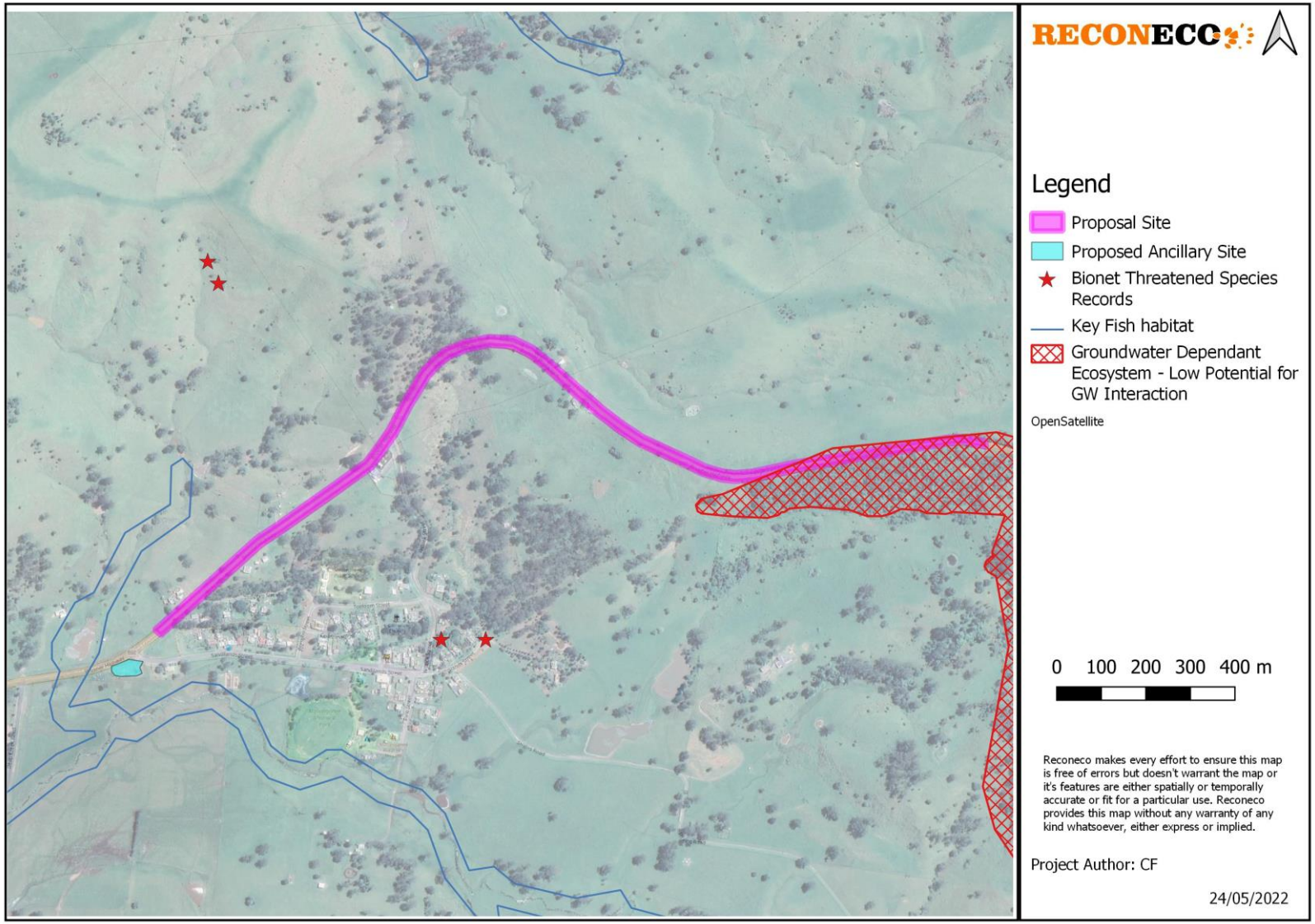


Figure 3-2: Groundwater dependent ecosystems.

3.4 Threatened species

A total of 80 threatened flora and fauna species were assessed to determine the likelihood of occurrence (species moderately or highly likely to occur are shown in **Table 3-6**) within the study area based on the PCTs present and habitat attributes observed. Habitat attributes such as the presence of hollow-bearing trees, stags, fallen logs, waterways and riparian woodland indicate that the study area potentially supports numerous threatened species predicted to occur within the area.

The extent of the proposal will not significantly reduce the occupancy of the vegetation communities. Based on the mapped vegetation communities within the wider study area, it is assumed that the habitat attributes recorded within the proposal site are also continuous.

Specifically, the following points have been drawn regarding threatened species with potential to be impacted by the work:

- Fourteen (14) trees that are recognised Koala feed species, consisting of two primary feed tree species and 12 secondary feed tree species occur within the zone of proposed works as it is currently mapped (refer **Figure 5-1**). These trees are situated approximately midway within the proposal site and are at the large corner where upgrade clearing works will be concentrated.
- Note that the potential feed tree situated on the southern side of the roadway will not be impacted by the proposal (i.e. 11 of the trees occurring within the mapped survey area are likely to be impacted).
- Additional such trees also occur in the immediate surrounds and in vicinity of the boundary of the proposed works zone as it is currently mapped.
- No Koalas or evidence of recent koala presence in the form of pellets or fresh scratch/pock marks on tree trunks were recorded during the survey.
- One potential food tree towards the west of the proposal site will likely have overhanging branches trimmed.
- Aside from the potential Koala food trees identified above, numerous larger trees that occur within the proposal site and have potential to be cleared have been classified as potential habitat trees (refer **Figure 5-1**) in that they provide potential nesting/roosting/feeding resources for a suite of native species including threatened species.
- Note that no evidence of glider feed trees or significant tree hollows, that would provide habitat for hollow dwelling threatened fauna, were noted during the site assessment although some trees had numerous scratches and were obviously well utilised by foraging arboreal mammals.
- No evidence of glider feed trees or significant tree hollows (some smaller, likely very shallow hollows are present) that would provide valuable habitat for hollow dwelling threatened fauna were noted during the site assessment.

The BC Act 5-part-tests of significance and EPBC Act test of significance have been completed for all threatened flora species listed in **Appendix B**.

Table 3-6: Habitat assessment and surveys results

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Identification Method (not recorded, assumed, recorded, expert report)	Survey Compliant	Potential Occurrence	Results
Aves	Wompoo Fruit-Dove	*Ptilinopus magnificus*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Rose-crowned Fruit-Dove	*Ptilinopus regina*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Little Lorikeet	*Glossopsitta pusilla*	V,P		Yes	Yes	Assumed	Yes (assumed)	High	5 part test of significance completed and deemed no significant impact likely
Aves	Powerful Owl	*Ninox strenua*	V,P,3		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Masked Owl	*Tyto novaehollandiae*	V,P,3		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Sooty Owl	*Tyto tenebricosa*	V,P,3		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Regent Honeyeater	*Anthochaera phrygia*	E4A,P	CE	Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Varied Sittella	*Daphoenositta chrysoptera*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Identification Method (not recorded, assumed, recorded, expert report)	Survey Compliant	Potential Occurrence	Results
Aves	Barred Cuckoo-shrike	*Coracina lineata*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Scarlet Robin	*Petroica boodang*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Brush-tailed Phascogale	*Phascogale tapoatafa*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Common Planigale	*Planigale maculata*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Koala	*Phascolarctos cinereus*	V,P	V	Yes	Yes	Assumed	Yes (assumed)	High	5 part test of significance completed and deemed no significant impact likely
Mammalia	Yellow-bellied Glider	*Petaurus australis*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Squirrel Glider	*Petaurus norfolcensis*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Greater Glider	*Petauroides volans*	P	V	Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Identification Method (not recorded, assumed, recorded, expert report)	Survey Compliant	Potential Occurrence	Results
Mammalia	Long-nosed Potoroo	*Potorous tridactylus*	V,P	V	Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Black-striped Wallaby	*Macropus dorsalis*	E1,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Red-legged Pademelon	*Thylogale stigmatica*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Grey-headed Flying-fox	*Pteropus poliocephalus*	V,P	V	Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Golden-tipped Bat	*Phoniscus papuensis*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Greater Broad-nosed Bat	*Scoteanax rueppellii*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Little Bent-winged Bat	*Miniopterus australis*	V,P		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Insecta	Shorter Rainforest Ground-beetle	*Nurus brevis*	E1,3		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Identification Method (not recorded, assumed, recorded, expert report)	Survey Compliant	Potential Occurrence	Results
Flora	Brush Sophora	*Sophora fraseri*	V	V	Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Flora	Scrub Turpentine	*Rhodamnia rubescens*	E4A		Yes	Yes	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Coxen's Fig-Parrot	*Cyclopsitta diophthalma coxeni*	P	E1	Yes	No	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Red Goshawk	*Erythrotriorchis radiatus*	P	V,P	Yes	No	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Aves	Swift Parrot	*Lathamus discolor*	P	CE	No	No	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Amphibia	Giant Barred Frog	*Mixophyes iteratus*	P	V,P	Yes	No	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Amphibia	Mountain Frog	*Philoria kundagungan*	P	E1	Yes	No	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely
Mammalia	Large-eared Pied Bat	*Chalinolobus dwyeri*	P	V,P	Yes	No	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Identification Method (not recorded, assumed, recorded, expert report)	Survey Compliant	Potential Occurrence	Results
Reptilia	Three-toed Snake-tooth Skink	*Coeranoscincus reticulatus*	P	V,P	Yes	No	Assumed	Yes (assumed)	Moderate	5 part test of significance completed and deemed no significant impact likely

3.5 Aquatic results

No sensitive aquatic features will be impacted by the proposal. The nearest waterway (an unnamed creek) is situated approximately 200m to the west of the western extent of the proposal site (refer Figure 3-2) and is listed as Key Fish Habitat according to DPI Fisheries mapping. The proposed works are not predicted to impact this waterway. The waterway was assessed during the survey however it was not currently flowing and appeared to have been heavily degraded by cattle movements as well as weed invasion. It is likely that based on the degraded nature of the stream that it likely represents only marginal habitat for threatened aquatic fauna.

No additional sensitive aquatic areas were detected during the survey or background searches.

Proposed works will not cause significant impacts to aquatic habitat as they are unlikely to alter a watercourse, inhibit water flow or block fish passage. Additionally, no residual impacts are expected given degraded nature of culvert drainage lines and the distance of proposed works zone from Key Fish Habitat.

3.6 Wildlife connectivity corridors

Due to the small size and scope of the proposal no impacts to the function of wildlife corridors and no significant reduction to connectivity in the local area is expected.

3.7 SEPPs (where applicable)

The following relevant SEPP was identified at the locality:

- SEPP (Biodiversity and Conservation) 2021.

Chapters 3 and 4 of the State Environmental Planning Policy (Biodiversity and Conservation) 2021 aim to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. The Policy applies to Local Government Areas listed under Schedule 2 of the policy which includes the study area.

The SEPP only applies in relation to activities which require a development application to be made. As Clause 1.108 (1) of TISEPP precludes the proposal from requiring development consent, the SEPP does not apply to the proposal. However, it is TfNSW policy to consider all potential environmental impacts of the proposed works, including potential impacts to Koalas and / or their habitat.

All the sites or part thereof are mapped on the Koala Development Application Map. Further to this, potential impacts to Koala habitat are summarised as follows:

- The proposal will remove a maximum total area of 0.30 ha of vegetation (likely substantially less as the proposed zones of clearing are finalised). Of this area, the majority comprises highly disturbed areas along road margins that are subject to regular vegetation maintenance / slashing. However, some wooded areas would be impacted and these zones, according to the latest SEPP, include ‘Koala use trees’. In order to better identify potential impacts on Koalas, trees recognised locally as primary, secondary and/or tertiary food trees were mapped with the results as follows:
    - Two (2) trees that are recognised locally as a primary food tree species were identified within the proposed zone of works and have potential to be impacted (refer **Figure 5.1, Plates 1-3**).
    - Eleven (11) trees that are recognised locally as a secondary food tree species were identified within the proposed zone of works and have potential to be impacted.

    - One (1) tree that is recognised locally as a secondary food tree was identified within the proposed zone of works to the south of the existing roadway but is unlikely to be impacted (i.e. 11 of the trees occurring within the mapped survey area are likely to be impacted).
    - One potential food tree towards the west of the proposal site will likely have overhanging branches trimmed.
- The greater area of the proposal site contains more expansive zones of similar wooded habitat.
- The proposal will not introduce new connectivity breaks or substantially reduce current connectivity. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.
- No Koalas or evidence of Koala presence in the form of pellets or scratch/pock marks on tree trunks were recorded within the zone of proposed works.
- Trees proposed for removal are immediately adjacent to the busy highway and on a relatively steep embankment therefore representing somewhat marginal/compromised potential koala habitat (refer **Appendix B**).

As a result of the potential habitat to be removed and the Bionet records of the Koalas in the vicinity, an Assessment of Significance (AoS) for the Koala as per the requirements of the BC Act has been undertaken which concluded it is unlikely that there would be a significant impact on this species.

Plate 1: Forest Red Gum (primary Koala food tree species) in foreground with Grey Gum (secondary) in background.

Plate 2: Grey Gums (secondary Koala food tree species) likely to be removed.

Plate 3: Grey Gum toward western extent with overhanging branches likely to be trimmed.

3.8 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, Matters of National Environmental Significance (MNES) and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government's DAWE.

The EPBC Act protected matters search has identified no wetlands of international importance, two TECs, 44 threatened species and 15 migratory species that could possibly occur in the study area (**Annexure B**). A summary of these matters and whether the proposal is likely to impact them is provided in **Table 3-7.** It is concluded that no MNES will be impacted by the proposal.

Table 3-7: Matters of National Environmental Significance

Factor	Potential impact
Any impact on a wetland of international importance?	No
Any impact on a listed threatened species or communities?	No significant impact
Any impacts on listed migratory species?	No significant impact
Any impact on a Commonwealth marine area?	No
Does the proposal involve a nuclear action (including uranium mining)?	No
Additionally, any impact (direct or indirect) on Commonwealth land?	No
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	No

4 Avoidance and Minimisation

4.1 Avoid impact

TfNSW has committed to avoiding any impacts to biodiversity where possible by largely limiting impacts to areas of non-native vegetation and by remaining withing the managed

road corridor where possible. Where this is not possible TfNSW have agreed to minimize these impacts by following the mitigations outlined in **Table 6-1**. The following impact avoidance methods are also recommended to be implemented:

- To avoid impacts associated with weed introduction and spread, wash down and inspect all machinery before entering and exiting the proposal site. Machinery must be clean of all mud, soil and vegetation material.
- Clear only those trees within the impact footprint required by the proposal and follow tree clearing guidelines outlined in **Table 6-1**.

4.2 Minimise impact

Proposed impact minimisation measures:

- The construction works and vehicle access to the construction site is to be constrained to the minimum area practical and will use as few entry/exit points as possible.
- Material stockpiles, equipment and machinery storage and laydown areas will be consolidated within a defined impact area, preferably reusing ancillary sited from previous works to minimise the overall impact footprint.
- The impact footprint will be minimised by restricting access across the site to the defined development footprint, including avoiding unnecessary vehicle and personnel movements across unused land.
- Excavation of rock and soil and construction activities will occur only during daylight hours to limit impacts on nearby residents due to noise.

5 Impact Assessment

5.1 Construction direct impacts

5.1.1 Removal of native vegetation

Impacts to native vegetation are anticipated to be relatively minor. Currently TfNSW has proposed a maximum clearing extent that would include up to 0.30 ha of native vegetation. The majority of this clearing will occur within the patch of PCT 1210 (Spotted Gum – Grey Box grassy open forest) immediately north of the Willocks Street intersection with the Bruxner Highway (**Figure 5-1**).

As mentioned previously, the vegetation of PCT 845 identifies as the BC Act Listed Endangered Ecological Community (EEC) of Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions. It additionally identifies as the EPBC Act Listed Critically Endangered Community of Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions. Further to this, the vegetation recorded as PCT 845 was not found to meet the relevant TEC thresholds under the EPBC Act (described below) and as such zones containing PCT 845 are not considered TECs under that particular legislation.

Although little to no direct clearing of PCT 845 rainforest vegetation (as it occurs towards the eastern extent of the proposed works zone) is proposed, some minimal impacts are possible with the planned clearing of adjacent managed roadside vegetation. As such a BC Act test of significance was completed for this community as a precaution with the results that no significant impact is likely (refer **Appendix B**). Note that the vegetation with potential to be impacted did not meet the threshold for assessment of significance as per the EPC Act and therefore no such assessment was undertaken for the purposes of this report (refer **Figure 3-1**).

As the majority of this proposal occurs within the managed road reserve, biodiversity impacts will be limited to the removal and trimming of the koala/habitat trees mapped in **Figure 5-1**

and a maximum of approximately 0.30 ha of native vegetation (**Table 5-1**) which would not constitute a significant impact.

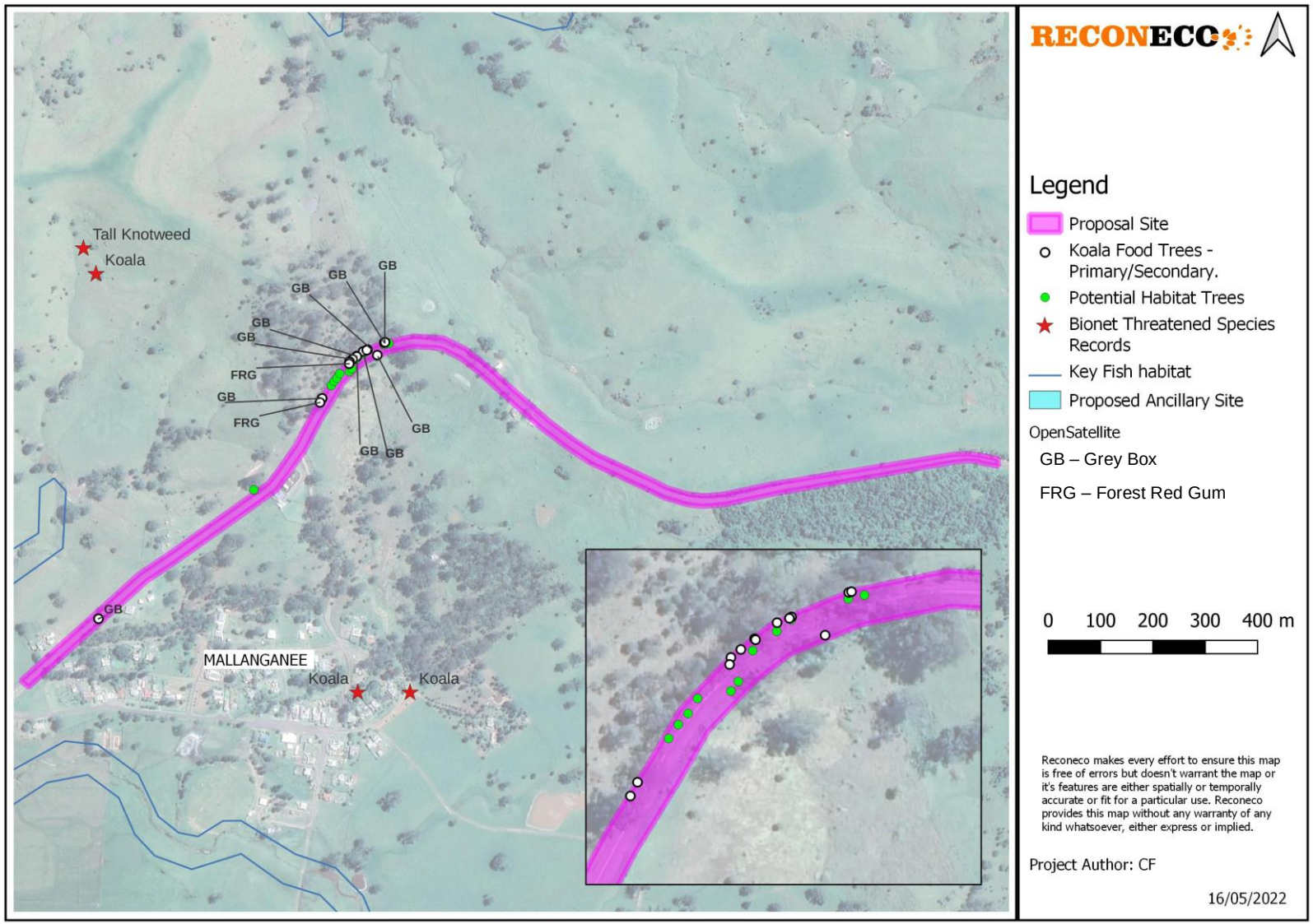


Figure 5-1: Location impacted zone and woody vegetation that may be impacted by the proposal.

Table 5-1: Impacts to vegetation communities

Plant community type (PCT)	Status		Proposal area[1] (hectares/m^2)
	TSC Act	EPBC Act	
PCT 1210 - Spotted Gum – Grey Box grassy open forest of the Richmond Range of the NSW North Coast.	No	No	*0.29 ha*
PCT 845 - Giant Stinging Tree - Fig dry subtropical rainforest on the NSW North Coast Bioregion.	Yes	Association present, TEC threshold not met (Section 3.2.2)	*0.01 ha*

Note: Area based on ground-truthed vegetation mapping within the study area, final cleared area will likely be substantially less.

5.1.2 Removal of threatened fauna habitat

A total of 80 threatened or protected flora and fauna species were assessed for their likelihood of occurrence based on the PCTs present and habitat attributes observed. Of these 18 were assessed as having a moderate or high likelihood of occurrence within the proposal site (see **Appendix B** for determinations). Habitat attributes such as the presence of hollow-bearing trees, stags, fallen logs, and waterways indicate that the study area potentially supports numerous threatened species predicted to occur within the greater locality. Numerous larger trees that occur within the proposal site and have potential to be cleared have been classified as potential habitat trees (refer **Figure 5-1**) in that they provide potential nesting/roosting/feeding resources for a suite of native species including threatened fauna. Note that no evidence of glider feed trees or significant tree hollows, that would provide habitat for hollow dwelling threatened fauna, were noted during the site assessment although some trees had numerous scratches and were obviously well utilised by foraging arboreal mammals.

As previously stated, the extent of the proposed development will not significantly reduce the occupancy of the vegetation communities. Based on the mapped vegetation communities within the wider study area, it is assumed that the habitat attributes recorded within the proposal site are also continuous. The reduction of available habitat for predicted threatened species which utilise woodland is negligible and is unlikely to cause such impact as to put a local population at risk of local extinction or prevent the movement of species across the landscape such that it would constitute a significant impact.

The removal of potential koala food trees has been identified as one of the main potential impacts of the proposed clearing. As stated previously, two (2) trees that are recognised locally as a primary food tree species were identified within the proposed zone of works and have potential to be impacted (refer Figure 5.1, Plates 1-3) and eleven (11) trees that are recognised locally as a secondary food tree species were identified within the proposed zone of works and have potential to be impacted.

Trees that are listed as potential koala use trees occur within the proposed zone of upgrade works as follows:

- Two (2) trees that are recognised locally as a primary food tree species were identified within the proposed zone of works and have potential to be impacted (refer **Figure 5.1, Plates 1-3**).
- Eleven (11) trees that are recognised locally as a secondary food tree species were identified within the proposed zone of works and have potential to be impacted.
- One (1) tree that is recognised locally as a secondary food tree was identified within the proposed zone of works to the south of the existing roadway but is unlikely to be impacted.
- One potential Koala food tree towards the west of the proposal site will likely have overhanging branches trimmed.

The potential impact of the removal of these trees has been assessed according to the requirements of the BC Act with the result that no significant impact on the Koala is expected.

Impacts to aquatic dependant species will be minimised by observing the mitigation strategies listed is **Section 5**, although any such impacts are considered unlikely due to the lack of aquatic habitat in vicinity of the any proposed works zones.

The BC Act tests of significance and EPBC Act test of significance have been completed for all threatened species assessed as moderately or highly likely to occur at the site (refer summary of results in **Table 5- 2**). The results of these tests are set out in full in **Appendix B**.

Table 5-2: Impacts on threatened fauna and fauna habitat

Class	Common Name	Scientific Name	NSW status	Comm status	Expected Impact
Aves	Wompoo Fruit-Dove	*Ptilinopus magnificus*	V,P		Non-significant
Aves	Rose-crowned Fruit-Dove	*Ptilinopus regina*	V,P		Non-significant
Aves	Little Lorikeet	*Glossopsitta pusilla*	V,P		Non-significant
Aves	Powerful Owl	*Ninox strenua*	V,P,3		Non-significant
Aves	Masked Owl	*Tyto novaehollandiae*	V,P,3		Non-significant
Aves	Sooty Owl	*Tyto tenebricosa*	V,P,3		Non-significant
Aves	Regent Honeyeater	*Anthochaera phrygia*	E4A,P	CE	Non-significant
Aves	Varied Sittella	*Daphoenositta chrysoptera*	V,P		Non-significant
Aves	Barred Cuckoo-shrike	*Coracina lineata*	V,P		Non-significant
Aves	Scarlet Robin	*Petroica boodang*	V,P		Non-significant
Mammalia	Brush-tailed Phascogale	*Phascogale tapoatafa*	V,P		Non-significant
Mammalia	Common Planigale	*Planigale maculata*	V,P		Non-significant
Mammalia	Koala	*Phascolarctos cinereus*	V,P	V	Non-significant
Mammalia	Yellow-bellied Glider	*Petaurus australis*	V,P		Non-significant
Mammalia	Squirrel Glider	*Petaurus norfolcensis*	V,P		Non-significant
Mammalia	Greater Glider	*Petauroides volans*	P	V	Non-significant

Class	Common Name	Scientific Name	NSW status	Comm status	Expected Impact
Mammalia	Long-nosed Potoroo	*Potorous tridactylus*	V,P	V	Non-significant
Mammalia	Black-striped Wallaby	*Macropus dorsalis*	E1,P		Non-significant
Mammalia	Red-legged Pademelon	*Thylogale stigmatica*	V,P		Non-significant
Mammalia	Grey-headed Flying-fox	*Pteropus poliocephalus*	V,P	V	Non-significant
Mammalia	Golden-tipped Bat	*Phoniscus papuensis*	V,P		Non-significant
Mammalia	Greater Broad-nosed Bat	*Scoteanax rueppellii*	V,P		Non-significant
Mammalia	Little Bent-winged Bat	*Miniopterus australis*	V,P		Non-significant
Insecta	Shorter Rainforest Ground-beetle	*Nurus brevis*	E1,3		Non-significant
Flora	Brush Sophora	*Sophora fraseri*	V	V	Non-significant
Flora	Scrub Turpentine	*Rhodamnia rubescens*	E4A		Non-significant
Aves	Coxen's Fig-Parrot	*Cyclopsitta diophthalma coxeni*	P	E1	Non-significant
Aves	Red Goshawk	*Erythrotriorchis radiatus*	P	V,P	Non-significant
Aves	Swift Parrot	*Lathamus discolor*	P	CE	Non-significant
Amphibia	Giant Barred Frog	*Mixophyes iteratus*	P	V,P	Non-significant
Amphibia	Mountain Frog	*Philoria kundagungan*	P	E1	Non-significant
Mammalia	Large-eared Pied Bat	*Chalinolobus dwyeri*	P	V,P	Non-significant
Reptilia	Three-toed Snake-tooth Skink	*Coeranoscincus reticulatus*	P	V,P	Non-significant

5.1.3 Removal of threatened flora

No flora species listed as threatened in either State or Federal legislation were recorded on site and therefore none is expected to be impacted.

5.1.4 Aquatic impacts

The unnamed ephemeral water way is situated approximately 200m to the west of the western extent of the proposal site (refer **Figure 1-1** and **3-2**) and is listed as Key Fish Habitat according to DPI Fisheries mapping. Additionally, it is planned to utilise a pre-existing ancillary site that is situated 100m to the east of the waterway (between the western extent of the proposed road upgrade zone and the waterway) (refer **Figures 2-1 and 3-2**).

The waterway was assessed during the survey however it was not currently flowing and appeared to have been heavily degraded by cattle movements as well as weed invasion. It is likely that based on the degraded nature of the stream that it likely represents only marginal habitat for threatened aquatic fauna.

The proposed works are not predicted to impact this waterway given that they are relatively remote from the waterway and therefore unlikely to alter the watercourse, inhibit water flow or block fish passage.

5.1.5 Injury and mortality

As the proposal will not alter the way in which the current carriageway is used it is not anticipated that the risk of vehicle strikes would increase during the operating phase of this proposal. Additional risks to wildlife and vegetation posed by the use of plants and equipment at the site should be mitigated by adherence to safeguards proposed in **Table 6-1**.

5.2 Indirect/operational impacts

5.2.1 Wildlife connectivity and habitat fragmentation

Due to the limited scope of the proposal, indirect impacts as well as the proposals contribution to cumulative impacts locally will likely be insignificant. No substantial changes to the shape or connectivity of either PCT occurring within the proposal site are expected. The proposed carriageway width is not likely to significantly exacerbate the barrier effects beyond those that are currently associated with the carriageway.

According the Bionet database there are nearby records for the Koala (refer **Figure 5-1**). In terms of potential impacts on Koalas, as mentioned previously, the proposal will remove a maximum total area of 0.30 ha of vegetation (likely substantially less as the proposed zones of clearing are finalised) that incorporates potential koala 'use trees '. In order to better identify potential impacts on Koalas, trees recognised locally as primary, secondary or tertiary food species were mapped with the result as follows:

- Two (2) trees that are recognised locally as a primary food tree species were identified within the proposed zone of works and have potential to be impacted (refer **Figure 5.1, Plates 1-3**).
- Eleven (11) trees that are recognised locally as a secondary food tree species were identified within the proposed zone of works and have potential to be impacted.
- One (1) tree that is recognised locally as a secondary food tree was identified within the proposed zone of works to the south of the existing roadway but is unlikely to be impacted (i.e. 11 of the trees occurring within the mapped survey area are likely to be impacted).
- One potential food tree towards the west of the proposal site will likely have overhanging branches trimmed.

No additional and significant impacts to the following aspects of landscape ecology locally are expected:

- Edge effects.
- Invasion and spread of weeds (**Table 6-1**).
- Invasion and spread of pests (**Table 6-1**).
- Invasion and spread of pathogens and disease (**Table 6-1**).
- Changes to hydrology.
- Increased noise, light or vibration.

5.2.2 Groundwater dependent ecosystems

One area of mapped low potential groundwater impact (DPI Water 2012) occurs at the site's eastern extent. However, due to the low impact associated with works particularly in that section of the site, no significant impacts to GWDEs are expected.

5.3 Assessments of significance

The BC Act requires a prescribed 5-part test of significance when assessing whether an action, development or activity is likely to significantly affect threatened species or communities, or their habitats. Additionally impacts to threatened entities as well as marine and migratory species covered under the EPBC were assessed to determine whether significant impacts (as defined under the relevant act) were likely. Determinations are provided in **Appendix B**. The impact statements are summarised below:

- None of the BC act listed threatened species and/or threatened ecological communities determined to occur/potentially occur within the proposal site were found to be at risk of significant impacts.
- None of the vegetation communities were associated with or met the threshold to be considered a EPBC Act listed TEC, as such no impacts EPBC listed TECs will occur as a result of this proposal.
- None of the EPBC act listed threatened species determined to potentially occur within the proposal site were found to be at risk of significant impacts.
- None of the EPBC act listed marine and migratory species determined to potentially occur within the proposal site were found to be at risk of significant impacts.
- No other EPBC act listed entity (important wetlands etc.) will be impacted by this proposal.
- No impacts to FM listed species mapped as occurring in the locality given relevant waterways are unlikely to be impacted.

Given that no significant impacts to BC and EPBC listed entities are likely to occur, a Species Impact Statement (SIS) is not required and entry into the BOS is not recommended at this time.

6 Mitigation

6.1 Mitigate impact

The proposal is not expected to require substantial vegetation clearing and will not have any significant (i.e. serious and irreversible) impact on threatened species or communities. Therefore, it is not recommended to the proponent that a Species Impact Statement be prepared at this time. Additionally, entry into the BOS is not recommended, should TfNSW chose to enter into the Biodiversity Offset Scheme at this time.

However, impact on biodiversity from the proposal can never be zero. Therefore, measures, or environmental safeguards, should be implemented to mitigate these impacts. These measures are detailed in **Table 6-1**.

Table 6-1: Mitigation measures

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
Removal of native vegetation	Native vegetation removal will be minimised through detailed design.	Detailed design	Effective	*No residual loss anticipated given limited scale of clearing and proposed revegetation as per safeguards listed below.*
	Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	Prior to construction	Effective	
	Vegetation removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bush rock* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	
	Native vegetation will be re-established in accordance with *Guide 3: Re-establishment of native vegetation* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	Post construction	Effective	
	The unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site.	During construction	Proven	

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
Removal of threatened species habitat and habitat features	*Habitat removal will be minimised through detailed design.*	*Detailed design*	*Effective*	*No residual impacts expected given limited scale of clearing and culvert works and the fact no threatened species activity detected during survey. Refer also Part 5 Significant Impact Assessments.*
	Habitat removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	
	Habitat will be replaced or re-instated in accordance with *Guide 5: Re-use of woody debris and bushrock* and *Guide 8: Nest boxes* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Proven	
	The unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened fauna, not assessed in the biodiversity assessment, are identified in the proposal site.	During construction	Proven	
Removal of threatened plants	Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Proven	*No residual impacts expected as no threatened flora identified on site.*

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
	The unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened flora species, not assessed in the biodiversity assessment, are identified in the proposal site.	During construction	Proven	
Aquatic impacts	Aquatic habitat will be protected in accordance with *Guide 10: Aquatic habitats and riparian zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) and Section 3.3.2 *Standard precautions and mitigation measures* of the *Policy and guidelines for fish habitat conservation and management Update 2013* (DPI (Fisheries NSW) 2013).	During construction	Effective	*No residual impacts expected given degraded nature of culvert waterway and distance of project from Key Fish Habitat.*
Groundwater dependent ecosystems	Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.	Detailed design	Effective	*N/A - No groundwater dependant ecosystems occur within the proposal site or likely impact footprint.* *No residual impacts expected.*
Changes to hydrology	Changes to existing surface water flows will be minimised through detailed design.	Detailed design	Effective	*N/A - No residual impacts expected.*
Fragmentation of identified habitat corridors	Connectivity measures will be implemented in accordance with the *Wildlife Connectivity Guidelines for Road Projects* (RTA 2011).	Detailed design, during construction and post construction	Effective	*N/A - No residual impacts expected as no further fragmentation expected.*
	Any connectivity measures implemented will be installed under the supervision of an experienced ecologist.	During construction	Effective	

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
Edge effects on adjacent native vegetation and habitat	Exclusion zones will be set up at the limit of clearing in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	*N/A - No residual impacts expected.*
Injury and mortality of fauna	Fauna will be managed in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	*No residual impacts expected.*
Invasion and spread of weeds	Weed species will be managed in accordance with *Guide 6: Weed management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	*No residual impacts expected.*
Invasion and spread of pests	Pest species will be managed within the proposal site.	During construction	Effective	*No residual impacts expected.*
Invasion and spread of pathogens and disease	Pathogens will be managed in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011).	During construction	Effective	*No residual impacts expected.*
Noise, light and vibration	Shading and artificial light impacts will be minimised through detailed design.	Detailed design	Effective	*No residual impacts expected.*

7 Offset strategy

7.1 Quantification of offset or revegetation requirements

As mentioned previously, in terms of TfNSW guidelines for Biodiversity Offsets, it is not recommended that TfNSW enter into the BOS at this time, as such no prescribed offset will be required. Non-prescribed offsets and mitigations such as supplementary plantings, habitat box installation and roadside wildlife mitigations (wildlife crossings, fencing etc.) would improve the biodiversity outcomes of this proposal as well as improving the resilience of local ecosystems and mitigating the cumulative impacts of clearing and ecological degradation locally.

8 Conclusion

An ecological investigation has been carried out along, and adjacent to, an approximately 2.5 km long section of The Bruxner Highway. This area was investigated as TfNSW are proposing to upgrade this section of roadway. As part of the proposed road works TfNSW will conduct carriageway maintenance, widen the existing carriageway where necessary and repair and upgrade associated infrastructure such as culverts and gutters where necessary. The proposed works will require the realignment of the current carriageway and the clearing of up to 0.91 ha of native vegetation.

The proposal site was found to contain the following Plant Community Types (PCT):

- PCT 1210 Spotted Gum – Grey Box grassy open forest of the Richmond Range of the NSW North Coast.
- PCT 845: Giant Stinging Tree - Fig dry subtropical rainforest on the NSW North Coast Bioregion.

PCT 845 is associated with the following TECs

- BC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.
- EPBC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.

PCT 1210 is not associated with and listed TECs.

Additionally, due to the limited duration of the field survey a precautionary approach was taken with regard to determining the impact the threatened species predicted to occur within the region and/or where suitable habitat was identified.

No threatened flora species were detected during field surveys and accordingly it is considered unlikely that such a species would be impacted by the proposed works.

Rainforest vegetation toward the eastern extent of the proposal site represents an Endangered Ecological Community according to the relevant provisions of the BC Act. Although no direct clearing of this vegetation is proposed some minimal impacts are possible with the proposed clearing of adjacent managed roadside vegetation. As such a BC Act test of significance was completed for this community as a precaution with the results that no significant impact is likely.

No threatened fauna species and/or signs of their presence (scats, tracks etc) were detected on site during field surveys. However, some forested areas would be impacted and these wooded areas, according to the latest SEPP, include ‘Koala use trees’. In order to better identify potential impacts on Koalas, trees recognised as local primary, secondary or tertiary food trees were mapped with the result as follows:

- Two (2) trees that are recognised locally as a primary food tree species were identified within the proposed zone of works and have potential to be impacted (refer **Figure 5.1, Plates 1-3**).
- Eleven (11) trees that are recognised locally as a secondary food tree species were identified within the proposed zone of works and have potential to be impacted.

- One (1) tree that is recognised locally as a secondary food tree was identified within the proposed zone of works to the south of the existing roadway but is unlikely to be impacted.
- One potential food tree towards the west of the proposal site will likely have overhanging branches trimmed.

The greater area of the proposal site contains more expansive zones of similar wooded habitat. A BC Act test of significance was completed for the koala with the conclusion that no significant impact is likely.

References

Commonwealth of Australia (2010) Survey Guidelines for Australia's Threatened Bats. Available on the DAWE website http://www.environment.gov.au/epbc/publications/threatened-bats.html

Commonwealth of Australia (2010) Survey Guidelines for Australia's Threatened Birds. Available on the DAWE website https://www.environment.gov.au/system/files/resources/107052eb-2041-45b9-9296-b5f514493ae0/files/survey-guidelines-birds-april-2017.pdf

Commonwealth of Australia (2011a) Survey Guidelines for Australia's Threatened Frogs. Available on the DAWE website http://www.environment.gov.au/system/files/resources/ff3eb752-482d-417f-8971-f93a84211518/files/survey-guidelines-frogs.pdf

Commonwealth of Australia (2011b) Survey Guidelines for Australia's Threatened Mammals, Commonwealth of Australia. Available on the DAWE website http://www.environment.gov.au/system/files/resources/b1c6b237-12d9-4071-a26e-ee816caa2b39/files/survey-guidelines-mammals.pdf

Commonwealth of Australia (2011c) Survey Guidelines for Australia's Threatened Reptiles Available on the DAWE website: http://www.environment.gov.au/system/files/resources/eba674a5-b220-4ef1-9f3a-b9ff3f08a959/files/survey-guidelines-reptiles.pdf

Commonwealth of Australia (2011d) Survey guidelines for Australia's threatened fish Available on the DAWE website at http://www.environment.gov.au/system/files/resources/6c9817ee-517b-4c13-9d8c-e66a61514f53/files/survey-guidelines-fish.pdf

Commonwealth of Australia (2013a), Matters of National Environmental Significance Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. Available from: https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf

Commonwealth of Australia (2013b) Survey Guidelines for Australia's Threatened Orchids (draft) Available on the DAWE website www.environment.gov.au/system/files/resources/e160f3e7-7142-4485-9211-2d1eb5e1cf31/files/draft-guidelines-threatened-orchids.pdf

Department of Environment and Climate Change (2009) Threatened species survey and assessment guidelines: field survey methods for fauna – Amphibians. Available on the EES website http://www.environment.nsw.gov.au/resources/threatenedspecies/09213amphibians.pdf

Department of Environment and Conservation (2004) Threatened biodiversity survey and assessment. Guidelines for developments and activities (working draft). Available on the EES website. https://www.environment.nsw.gov.au/research-and-publications/publications-search/threatened-biodiversity-survey-and-assessment

Department of Environment, Climate Change and Water (2009) Sensitive species data policy. Available at: https://www.environment.nsw.gov.au/research-and-publications/publications-search/sensitive-species-data-policy

DPI (2012), Risk Assessment Guidelines for Groundwater Dependent Ecosystems. Available on the EPI website http://www.water.nsw.gov.au/__data/assets/pdf_file/0005/547682/gde_risk_assessment_guidelines_volume_1_final_accessible.pdf

DPI (2013), Policy and Guidelines for Fish Habitat Conservation and Management. https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/634694/Policy-and-guidelines-for-fish-habitat.pdf

DPIE (2019b), Biodiversity Assessment Operational Manual Stage 2. Available from: https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-assessment-method-operational-manual-stage-1-180276.pdf

DPIE (2020), The Biodiversity Assessment Method. Available from:https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-assessment-method-2020-200438.pdf

DPIE (EES) (2020a), Surveying threatened plants and their habitats. NSW survey guide for the Biodiversity Assessment Method. Available from: https://www.environment.nsw.gov.au/-

/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/surveying-threatened-plants-and-habitats-nsw-survey-guide-biodiversity-assessment-method-200146.pdf

DPIE (EES) (2020e), Serious and irreversible impacts. Available from: https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/biodiversity-offsets-scheme/serious-and-irreversible-impacts

DPIE (EES) (2020f), NSW Survey Guide for Threatened Frogs. A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method. Available here: https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/nsw-survey-guide-for-threatened-frogs-200440.pdf

OEH (2017b), Guidance to assist a decision-maker to determine a serious and irreversible impact.

OEH (2018a), Biodiversity Assessment Method Operational Manual – Stage 1. Available from https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-assessment-method-operational-manual-stage-1-180276.pdf

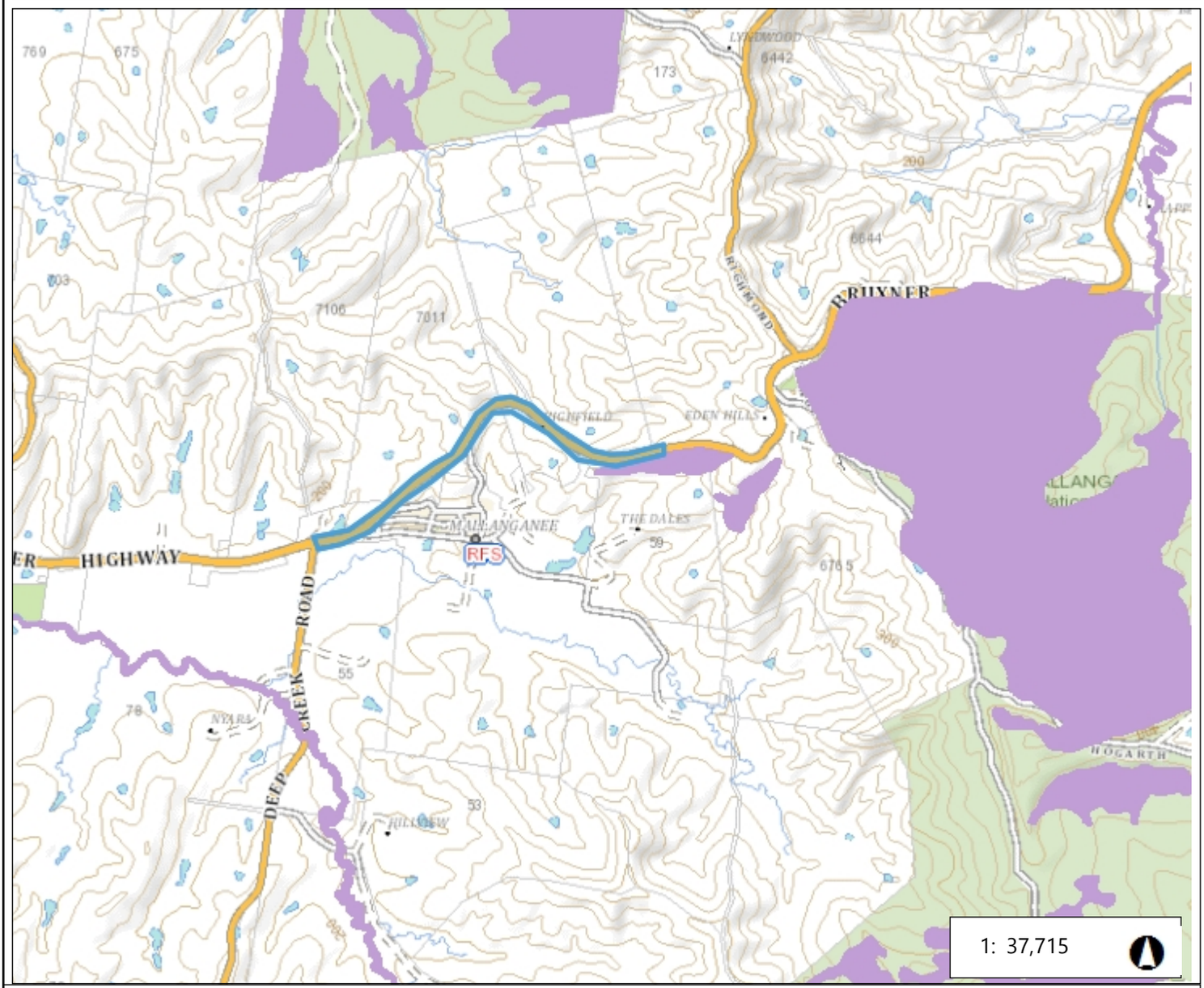
OEH (2018), 'Species credit' threatened bats and their habitats NSW survey guide for the Biodiversity Assessment Method. Available on the DPIE website at: https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/species-credit-threatened-bats-survey-guide-180466.pdf

RTA (2011), Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects. Roads and Traffic Authority, NSW. Available on the RMS website at: https://www.rms.nsw.gov.au/business-industry/partners-suppliers/documents/guides-manuals/biodiversity_guidelines.pdf

Annexure A

BOS Biodiversity Values Report

Biodiversity Offset Scheme (BOS) Entry Threshold Map



1,915.9 0 957.97 1,915.9 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	14/02/2022 4:27 PM		**BDAR Required***
Total Digitised Area	14.57	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	0.2	ha	
Area Clearing Threshold	0.25	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	yes		yes
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from 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 s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

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:14/02/2022 04:27 PM

Annexure B

EPBC Protected Matters Report

Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

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

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 14/02/22 16:45:45

No Image Available

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates
Buffer: 5.0Km

No Image Available

Summary

Matters of National Environmental Significance

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

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	44
Listed Migratory Species:	15

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	20
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	3
Regional Forest Agreements:	1
Invasive Species:	26
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Status
Gondwana Rainforests of Australia	NSW	Declared property

National Heritage Properties [Resource Information]

Name	State	Status
Natural		
Gondwana Rainforests of Australia	NSW	Listed place

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within

Name	Status	Type of Presence
		area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
Frogs		
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat may occur within area
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat likely to occur within area
Philoria kundagungan Mountain Frog [1935]	Endangered	Species or species habitat likely to occur within area
Insects		
Phyllodes imperialis smithersi Pink Underwing Moth [86084]	Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys oralis Hastings River Mouse, Koontoo [98]	Endangered	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Plants		

Name	Status	Type of Presence
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Clematis fawcettii Stream Clematis [4311]	Vulnerable	Species or species habitat may occur within area
Corchorus cunninghamii Native Jute [14659]	Endangered	Species or species habitat may occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat known to occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat likely to occur within area
Myrsine richmondensis Purple-leaf Muttonwood, Lismore Muttonwood [83888]	Endangered	Species or species habitat known to occur within area
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat likely to occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat known to occur within area
Plectranthus nitidus Nightcap Plectranthus, Silver Plectranthus [55742]	Endangered	Species or species habitat may occur within area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area
Sophora fraseri [8836]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Tylophora woollsii [20503]	Endangered	Species or species habitat may occur within area
Reptiles		
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]		
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

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

Name
Commonwealth Land - Australian Telecommunications Commission

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Mallanganee	NSW
Richmond Range	NSW
UNE Special Management Zone No1	NSW

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
North East NSW RFA	New South Wales

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana,		Species or species

Name	Status	Type of Presence
Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-28.906395 152.715668,-28.905757 152.716655,-28.904104 152.718972,-28.902601 152.721247,-28.901962 152.72189,-28.900948 152.722362,-28.900271 152.723264,-28.900159 152.724422,-28.900459 152.725796,-28.901323 152.726611,-28.902075 152.727512,-28.902638 152.7291,-28.902826 152.729787,-28.90215 152.73455

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 Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

Appendix A

BAM plot location and photographs

Plot Name	Easting (MGA Zone 56)	Northing (MGA Zone 56)	Photographs	
ML01	152.7231	-28.9002		
ML01	152.7374	-28.9029		

Species recorded

These species were identified on the site during the February 2022 field survey:

Flora Species

Growth Form	Scientific Name	Common Name	Status
TG	*Caldcluvia paniculosa*	Soft Corkwood	
TG	*Grevillea robusta*	Southern Silky Oak	
SG	*Syzygium smithii*	Common Lilly Pilly	
SG	*Doryphora sassafras*	Sassafras	
SG	*Lantana camara*	Lantana	HTW
GG	*Chloris gayana*	Rhodes Grass	
GG	*Themeda australis*	Kangaroo Grass	
GG	*Cymbopogon refractus*	Barbed Wire Grass	
GG	*Setaria sphacelata*	South African Pigeon Grass	
GG	*Aristida sp.*	Spear Grass	
TG	*Corymbia variegata*	Spotted Gum	
TG	*Eucalyptus moluccana*	Grey Box	
GG	*Lomandra longifolia*	Spiny-head Mat-rush	
FG	*Vernonia cinerea*	Vernonia cinerea	
FG	*Asparagus setaceus*	Common Asparagus Fern	HWT
FG	*Wahlenbergia sp.*	Wahlenbergia	
FG	*Enchylaena tomentosa*	Ruby Saltbush	
FG	*Bidens Pilosa*	Farmers Peg	
FG	*Rumex brownii*	Dock	
FG	*Hypochaeris Radicata*	Catsear	
FG	*Plectranthus parviflorus*	Little Spurflower	
FG	*Conyza parva*	Fleabane	
FG	*Geranium sp.*	Geranium	
FG	*Trifolium sp.*	Clover	
FG	*Trifolium sp. (possibly as above)*	Clover	
FG	*Cirsium vulgare*	Milk Thistle	
O	*Dolichandra unguis-cati*	Cat's Claw Creeper	HTW
O	*Parsonsia straminea*	Monkey Rope	

***FG = Forb, GG = Grass and Grass-like, SG = Shrub, TG = Tree, O = Other, HTW = High Threat Weed (BAM)**

Fauna Species

Class	Species name	Common name	Native/exotic
Aves	*Aquila audax*	Wedge-tailed Eagle	N
Aves	*Cacatua galerita*	Sulphur-crested Cockatoo	N
Aves	*Manorina melanocephala*	Noisy Miner	N
Aves	*Gymnorhina tibicen*	Magpie	N
Aves	*Cracticus nigrogularis*	Pied Butcherbird	N
Aves	*Acridotheres tristis*	Common myna	E
Aves	*Grallina cyanoleuca*	Magpie-lark	N
Aves	*Zosterops lateralis*	Silvereye	N
Aves	*Malurus cyaneus*	Superb Fairywren	N
Aves	*Delichon urbicum*	Common House Martin	N
Aves	*Egretta novaehollandiae*	White-faced Heron	N
Aves	*Alisterus scapularis*	Australian king parrot	N
Aves	*Trichoglossus moluccanus*	Rainbow lorikeet	N
Aves	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet	N
Aves	*Spilopelia chinensis*	Spotted dove	N
Amphibia	*Limnodynastes tasmaniensis*	Spotted grass frog	N
Reptilia	*Boiga irregularis*	Common Tree Snake	N

Appendix B

Habitat assessment table

Habitat assessment table for BC Act listed threatened species and EP&BC Act migratory species within the IBRA subregion, NSW Bionet records and incorporating sightings of species within 10 km. Unless otherwise indicated, habitat information has been taken from OEH Threatened Biodiversity Profiles, available at https://www.environment.nsw.gov.au/threatenedSpeciesApp/. Likelihood of occurrence has been determined based on professional judgement, observations made during field surveys and information available in species profiles and other sources.

NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.

Commonwealth Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.

Likelihood of occurrence criteria

Likelihood	Criteria
Recorded	The species was observed in the study area during the current survey
High	It is highly likely that a species inhabits the study area and is dependant on identified suitable habitat (ie. for breeding or important life cycle periods such as winter flowering resources), has been recorded recently in the locality (10km) and is known or likely to maintain resident populations in the study area. Also includes species known or likely to visit the study area during regular seasonal movements or migration.
Moderate	Potential habitat is present in the study area. Species unlikely to maintain sedentary populations, however may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent (ie. for breeding or important life cycle periods such as winter flowering resources) on habitat within the study area, or habitat is in a modified or degraded state. Includes cryptic flowering flora species that were not seasonally targeted by surveys and that have not been recorded.
Low	Based on the habitat recorded on the proposal site it is not likely that this species will occur.

Habitat assessment table

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Wompoo Fruit-Dove	*Ptilinopus magnificus*	V,P		Yes	Yes	Occurs along the coast and coastal ranges from the Hunter River in NSW to Cape York Peninsula. It is rare south of Coffs Harbour. Three subspecies are recognised, with the most southerly in NSW and south-eastern Queensland. It used to occur in the Illawarra, though there are no recent records. Occurs in, or near rainforest, low elevation moist eucalypt forest and brush box forests. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species likely utilises the site as a resource, but it likely does not represent core habitat for this species.**	Y
Aves	Rose-crowned Fruit-Dove	*Ptilinopus regina*	V,P		Yes	Yes	Coast and ranges of eastern NSW and Queensland, from Newcastle to Cape York. Vagrants are occasionally found further south to Victoria. Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species likely utilises the site as a resource but it likely does not represent core habitat for this species.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Black-necked Stork	*Ephippiorhynchus asiaticus*	E1,P		No	Yes	The species *Ephippiorhynchus asiaticus* comprises two subspecies, *E. a. asiaticus* in India and south-east Asia, and *E. a. australis* in Australia and New Guinea. In Australia, Black-necked Storks are widespread in coastal and subcoastal northern and eastern Australia, as far south as central NSW (although vagrants may occur further south or inland, well away from breeding areas). In NSW, the species becomes increasingly uncommon south of the Clarence Valley, and rarely occurs south of Sydney. Since 1995, breeding has been recorded as far south as Bulahdelah. Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Glossy Black-Cockatoo	*Calyptorhynchus lathami*	V,P,2		Yes	Yes	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia. 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. **Low – The species is associated with PCTs recorded at the site and has been recorded within 10km, vegetation recorded on site lacks critical foraging (*Allocasuarina* stands) and breeding (large tree hollows >30cm in diameter) features as such the species is unlikely to utilise the vegetation within the proposal site.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Little Lorikeet	*Glossopsitta pusilla*	V,P		Yes	Yes	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs. Forages primarily in the canopy of open *Eucalyptus* forest and woodland, yet also finds food in *Angophora, Melaleuca* and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. **High – Species is associated with PCTs recorded at the site and has been recorded within 10km, the presence of both forage (flowering gums) and breeding (tree hollows) suggest that the species likely utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Powerful Owl	*Ninox strenua*	V,P,3		Yes	Yes	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y
Aves	Masked Owl	*Tyto novaehollandiae*	V,P,3		Yes	Yes	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Sooty Owl	*Tyto tenebricosa*	V,P,3		Yes	Yes	Occupies the easternmost one-eighth of NSW, occurring on the coast, coastal escarpment and eastern tablelands. Territories are occupied permanently. Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation; hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum (*Pseudocheirus peregrinus*) or Sugar Glider (*Petaurus breviceps*). **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y
Aves	Regent Honeyeater	*Anthochaera phrygia*	E4A,P	CE	Yes	Yes	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, as a woodland generalist the species may utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Varied Sittella	*Daphoenositta chrysoptera*	V,P		Yes	Yes	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, as a woodland generalist the species may utilises the site.**	Y
Aves	Barred Cuckoo-shrike	*Coracina lineata*	V,P		Yes	Yes	Coastal eastern Australia from Cape York to the Manning River in NSW. Barred Cuckoo-shrikes are generally uncommon in their range and are rare in NSW. Rainforest, eucalypt forests and woodlands, clearings in secondary growth, swamp woodlands and timber along watercourses. They are usually seen in pairs or small flocks foraging among foliage of trees for insects and fruit. They are active birds, frequently moving from tree to tree. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, as a woodland generalist the species may utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Scarlet Robin	*Petroica boodang*	V,P		Yes	Yes	The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, as a woodland generalist the species may utilises the site.**	Y
Mammalia	Brush-tailed Phascogale	*Phascogale tapoatafa*	V,P		Yes	Yes	The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Common Planigale	*Planigale maculata*	V,P		Yes	Yes	Coastal north-eastern NSW, coastal east Queensland and Arnhem Land. The species reaches its confirmed southern distribution limit on the NSW lower north coast however there are reports of its occurrence as far south as the central NSW coast west of Sydney. Common Planigales inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y
Mammalia	Koala	*Phascolarctos cinereus*	V,P	V	Yes	Yes	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. **High – Species is associated with PCTs recorded at the site and has been recorded within 10km, several species of koala feed tree were recorded within the proposal site however, no evidence (scats, scratching etc..,) of recent occupation was detected. Primary and secondary food tree species proposed for removal.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Yellow-bellied Glider	*Petaurus australis*	V,P		Yes	Yes	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. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y
Mammalia	Squirrel Glider	*Petaurus norfolcensis*	V,P		Yes	Yes	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. 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 mid-storey. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Greater Glider	*Petauroides volans*	P	V	Yes	Yes	The greater glider is found in southern Queensland, eastern Australia, south-eastern New South Wales, and the montane forests of the Victorian central highlands. The greater glider chooses habitat based on several factors, the dominant factor being the presence of specific species of eucalypt. Distribution levels are higher in regions of montane forest containing manna gum (*E. viminalis*) and mountain gum (*E. dalrympleana, E. obliqua*). Furthermore, the presence of E. *cypellocarpa* appears to improve the quality of habitat for the greater glider in forests dominated by *E. obliqua*. Another factor determining population density is elevation. Optimal levels are 845 m above sea level. Within a forest of suitable habitat, they prefer overstorey basal areas in old-growth tree stands. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y
Mammalia	Long-nosed Potoroo	*Potorous tridactylus*	V,P	V	Yes	Yes	The long-nosed potoroo is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. There are geographically isolated populations in western Victoria. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Black-striped Wallaby	*Macropus dorsalis*	E1,P		Yes	Yes	From the Townsville area in Queensland to northern NSW where it occurs on both sides of the Great Divide. On the north west slopes of NSW it occurs in Brigalow remnants to south of Narrabri. On the north coast it is confined to the upper catchments of the Clarence and Richmond Rivers. Preferred habitat is characterised by dense woody or shrubby vegetation within three metres of the ground. This dense vegetation must occur near a more open, grassy area to provide suitable feeding habitat. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y
Mammalia	Red-legged Pademelon	*Thylogale stigmatica*	V,P		Yes	Yes	Patchily distributed along coastal and subcoastal eastern Australia from Cape York to the Hunter Valley in NSW. Southern range records are from the Watagan Mountains and the Wyong district. There are unconfirmed records from the western New England Tablelands (e.g. west of Emmaville). This species is also found in New Guinea. Inhabits forest with a dense understorey and ground cover, including rainforest, moist eucalypt forest and vine scrub. Wet gullies with dense, shrubby ground cover provide shelter from predators. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km, the species may utilises the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Grey-headed Flying-fox	*Pteropus poliocephalus*	V,P	V	Yes	Yes	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km. the vegetation present at the site represents foraging habitat only.**	Y
Mammalia	Golden-tipped Bat	*Phoniscus papuensis*	V,P		Yes	Yes	The Golden-tipped Bat is distributed along the east coast of Australia in scattered locations from Cape York Peninsula in Queensland to south of Eden in southern NSW. It also occurs in New Guinea. Found in rainforest and adjacent wet and dry sclerophyll forest up to 1000m. Also recorded in tall open forest, Casuarina-dominated riparian forest and coastal Melaleuca forests. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km however, the vegetation recorded at the site likely only represents marginal habitat. It is lacking defined vegetated margins, extensive tree hollows, cleared culvert approaches or other significant habitat features. It is likely that vagrants would utilize the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Greater Broad-nosed Bat	*Scoteanax rueppellii*	V,P		Yes	Yes	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km however, the vegetation recorded at the site likely only represents marginal habitat. It is lacking defined vegetated margins, extensive tree hollows, cleared culvert approaches or other significant habitat features. It is likely that vagrants would utilize the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Little Bent-winged Bat	*Miniopterus australis*	V,P		Yes	Yes	East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. 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. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. **Moderate – Species is associated with PCTs recorded at the site and has been recorded within 10km however, the vegetation recorded at the site likely only represents marginal habitat. It is lacking defined vegetated margins, extensive tree hollows, cleared culvert approaches or other significant habitat features. It is likely that vagrants would utilize the site.**	Y
Insecta	Shorter Rainforest Ground-beetle	*Nurus brevis*	E1,3		Yes	Yes	Described in the mid 1800s, it was thought to be extinct until the early 1970s when a population was located in Lismore. Currently the only known populations occur in Lismore area and the Richmond Range near Mallanganee (inc. the nearby Mallanganee National Park), west of Casino. Subtropical and warm temperate rainforest. The locations of the proposal site is well away from known records for the species and the roadside habitat of the proposed disturbance zones are generally relatively open/exposed and unsuitable for the species.	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Bailey's Cypress Pine	*Callitris baileyi*	E1		No	Yes	Found sporadically in south-east Queensland and far north NSW. In NSW the main population is found on private land adjacent to Koreelah National Park west of Woodenbong, a few scattered individuals are located within the park. Another two fragmented populations are located between Casino and Tabulam. Old records exist for this species at Acacia Creek. Rocky, hilly or mountainous areas, usually near creeks, and on shallow and often clay soils. It is found in eucalypt woodland, commonly associated with ironbark, blue gum and spotted gum. **Low - Species is not associated with PCTs recorded at the site and was not detected during field survey.**	N
Flora	Rainforest Cassia	*Senna acclinis*	E1		Yes	Yes	Occurs in coastal districts and adjacent tablelands of NSW from the Illawarra in NSW to Queensland. Grows on the margins of subtropical, littoral and dry rainforests. **Low - Species is associated with PCTs recorded at the site and was not detected during field survey.**	N
Flora	Brush Sophora	*Sophora fraseri*	V	V	Yes	Yes	Bush Sophora occurs north from the Casino district in north-east NSW, where it is very rare. Also in south-east Queensland where it is widespread but not common. Brush Sophora is usually found in wet situations in wet sclerophyll forest or vine forest, often near rainforest. **Moderate - Species is associated with PCTs recorded at the site and has been recorded within 10km. The species was not detected during the field survey however, the extensive presence of lantana combined with its cryptical nature mean that it cannot be considered absent.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Onion Cedar	*Owenia cepiodora*	V	V	Yes	Yes	North from the Richmond River in north-east NSW extending just across the border into Queensland. Subtropical and dry rainforest on or near soils derived from basalt. **Low - Species is associated with PCTs recorded at the site and was not detected during field survey.**	N
Flora	Tinospora Vine	*Tinospora smilacina*	E1		No	Yes	North from the Coffs Harbour district in north-east NSW, where it is rare. Its distribution also includes Queensland, Northern Territory and Western Australia. Dry rainforest and along the boundaries of dry rainforest and dry eucalypt forest. **Low – Species is not associated with PCTs recorded on the site and was not detected during field survey.**	N
Flora	Slaty Red Gum	*Eucalyptus glaucina*	V	V	Yes	Yes	Found only on the north coast of NSW and in separate districts: near Casino where it can be locally common, and farther south, from Taree to Broke, west of Maitland. Grows in grassy woodland and dry eucalypt forest. Grows on deep, moderately fertile and well-watered soils. **Low - Species is associated with PCTs recorded at the site and was not detected during field survey.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Scrub Turpentine	*Rhodamnia rubescens*	E4A		Yes	Yes	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of *R. rubescens* typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. **Moderate - Species is associated with PCTs recorded at the site and has been recorded within 10km. The species was not detected during the field survey however, the extensive presence of lantana combined with its cryptical nature mean that it cannot be considered absent.**	Y
Flora	Tall Knotweed	*Persicaria elatior*	V	V	No	Yes	Tall Knotweed has been recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests). The species also occurs in Queensland. This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. **Low - Species is associated with PCTs recorded at the site and was not detected during field survey.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Ripple-leaf Muttonwood	*Myrsine richmondensis*	E1	E	Yes	Yes	In coastal areas on the north coast of New South Wales, from Coraki on the Richmond River north to Mt Warning; very rare. Occurs in tall open sclerophyll forest with a rainforest subcanopy, swamp sclerophyll open forest and on the margins of subtropical rainforest. NSW subdivisions: NC **Low - Species is associated with PCTs recorded at the site and was not detected during field survey.**	N
Aves	White-throated Needletail	*Hirundapus caudacutus*	P	V,C,J,K	No	No	Migratory and usually seen in eastern Australia from October to April. Breeds in forests in south-eastern Siberia, Mongolia, the Korean Peninsula and northern Japan June-August. 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. More common in coastal areas, less so inland. **Low – This species is almost exclusively aerial and does not breed in Australia, it is not associated with PCTs recorded on the site and has not been recorded within 10km.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	White-bellied Sea-Eagle	*Haliaeetus leucogaster*	V,P		No	No	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N
Aves	Comb-crested Jacana	*Irediparra gallinacea*	V,P		No	No	The Comb-crested Jacana occurs on freshwater wetlands in northern and eastern Australia, mainly in coastal and subcoastal regions, from the north-eastern Kimberley Division of Western Australia to Cape York Peninsula then south along the east coast to the Hunter region of NSW, with stragglers recorded in south-eastern NSW (possibly in response to unfavourable conditions further north). Beyond Australia, the Comb-crested Jacana occurs from Borneo and the Philippines, south and east through Sulawesi, the Moluccas and Lesser Sunda Islands, to the Aru Islands, New Guinea and New Britain. Inhabit permanent freshwater wetlands, either still or slow-flowing, with a good surface cover of floating vegetation, especially water-lilies, or fringing and aquatic vegetation. **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Grey-crowned Babbler (eastern subspecies)	*Pomatostomus temporalis temporalis*	V,P		No	No	The Grey-crowned Babbler has two distinctive subspecies that intergrade to the south of the Gulf of Carpentaria. West of here the subspecies *rubeculus*, formerly considered a separate species (Red-breasted Babbler) is still widespread and common. The eastern subspecies (*temporalis* occurs from Cape York south through Queensland, NSW and Victoria and formerly to the southeast of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km, it is likely that only vagrants would utilise the site**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Varied Sittella	*Daphoenositta chrysoptera*	V,P		No	Yes	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. **Low – The species is not associated with PCTs recorded at the site, it has been recorded within 10km however, it is likely that only vagrants would utilise the site**	N
Aves	Australasian Bittern	*Botaurus poiciloptilus*	P	E1	No	No	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Curlew Sandpiper	*Calidris ferruginea*	P	CE	No	No	The Curlew Sandpiper is distributed around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. The Curlew Sandpiper breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period, arriving in Australia between August and November, and departing between March and mid-April. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N
Aves	Coxen's Fig-Parrot	*Cyclopsitta diophthalma coxeni*	P	E1	Yes	No	Limited to about five populations scattered between Bundaberg in Queensland and the Hastings River in NSW. The total number is thought to be less than 200 birds which makes it one of Australia's most endangered birds. Usually recorded from drier rainforests and adjacent wetter eucalypt forest but rarely seen due to its small size and cryptic habits. Also found in the wetter lowland rainforests that are now largely cleared in NSW. **Moderate – Species is associated with PCTs recorded at the site and but has not been recorded within 10km, the species may utilize the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Red Goshawk	*Erythrotriorchis radiatus*	P	V,P	Yes	No	This unique Australian endemic raptor is distributed sparsely through northern and eastern Australia, from the western Kimberley Division of northern Western Australia to north-eastern Queensland and south to far north-eastern NSW, and with scattered records in central Australia. The species is very rare in NSW, extending south to about 30°S, with most records north of this, in the Clarence River Catchment, and a few around the lower Richmond and Tweed Rivers. Formerly, it was at least occasionally reported as far south as Port Stephens. 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. **Moderate – Species is associated with PCTs recorded at the site and but has not been recorded within 10km, the species may utilize the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Grey Falcon	*Falco hypoleucos*	P	V,P	No	No	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW. 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. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km, it is likely that only vagrants would utilise the site**	N
Aves	Painted Honeyeater	*Grantiella picta*	P	V,P	No	No	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. **Low – site lacks critical habitat features; Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*).**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Swift Parrot	*Lathamus discolor*	P	CE	No	No	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. Migrates to the Australian south-east mainland between February and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. **Moderate – Species is associated with PCTs recorded at the site and but has not been recorded within 10km, the species may utilize the site.**	Y
Aves	Eastern Curlew	*Numenius madagascariensis*	P	CE	No	No	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern Curlews are rarely recorded inland. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. The Eastern Curlew breeds in Russia and north-eastern China but its distribution is poorly known. During the non-breeding season a few birds occur in southern Korea and China, but most spend the non-breeding season in north, east and south-east Australia. It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Australian Painted Snipe	*Rostratula australis*	P	E1	No	No	The Australian Painted Snipe is restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. 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. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Aves	Black-breasted Button-quail	*Turnix melanogaster*	P	V,P	Yes	No	The Black-breasted Button-quail is endemic to south-eastern Queensland and far north-eastern NSW, at scattered sites from the Byfield region south to the Border Ranges and mainly on and east of the Great Divide but extending inland to the inner western slopes, up to 300 km from the coast. There have been few recent records in north-eastern NSW, with only ten records, from six localities, in the 20 years to 2000, though there are many records directly adjacent to NSW across the Queensland border. There have been no published reports since 2000. There were a few records on the New England Tableland in the late 1960s and 1970s, though their validity has been questioned. Preferred habitat includes drier low closed forests, including dry rainforests, vine forest and vine thickets, often in association with Hoop Pine, and Bottletree scrubs. The understorey may be dense or sparse, but a deep, moist leaf-litter layer, in which the birds forage, is an important component of habitat. Birds have been recorded using Lantana thickets at edges of rainforest or Lantana understorey of forest or rainforest, but it is not known if Lantana associations are suitable for sustaining breeding. **Low – The species is associated with PCTs recorded at the site but has been recorded within 10km, it is likely that only vagrants would utilise the site as it lacks significant patches of continuous cover.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Amphibia	Southern Barred Frog	*Mixophyes balbus*	P	V,P	No	No	Stuttering Frogs occur along the east coast of Australia from southern Queensland to north-eastern Victoria. Considered to have disappeared from Victoria and to have undergone considerable range contraction in NSW, particularly in south-east NSW. It is the only *Mixophyes* species that occurs in south-east NSW and in recent surveys it has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species. Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km. It is unlikely that the species would utilize the site.**	N
Amphibia	Fleay's Frog	*Mixophyes fleayi*	P	E1	No	No	A restricted distribution on the eastern side of the ranges in south-east Queensland (south from Conondale ranges) and northeast NSW. Recent records in NSW are from Nightcap National Park, Border Ranges National Park, Mt. Warning National Park, Tooloom National Park and Yabbra National Park. Rainforest and wet eucalypt forest of the escarpment and foothills, usually close to gravely streams. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km. It is unlikely that the species would utilize the site.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Amphibia	Giant Barred Frog	*Mixophyes iteratus*	P	V,P	Yes	No	The Giant Barred Frog is distributed along the coast and ranges from Eumundi in south-east Queensland to Warrimoo in the Blue Mountains. Declines appear to have occurred at the margins of the species' range, with no recent records south of the Hawkesbury River and disappearances from a number of streams in QLD. Northern NSW, particularly the Coffs Harbour-Dorrigo area, is a stronghold. Giant Barred Frogs are found along freshwater streams with permanent or semi-permanent water, generally (but not always) at lower elevation. **Moderate – Species is associated with PCTs recorded at the site but has not been recorded within 10km, the species may utilise the site.**	Y
Amphibia	Mountain Frog	*Philoria kundagungan*	P	E1	Yes	No	The Mountain Frog has a restricted distribution from the Mistake Mountains in south-east Queensland to Tooloom National Park, southwest of Woodenbong, in NSW. In NSW populations are known from Tooloom, Koreelah and Mount Clunie National Parks. In Queensland a number of populations occur in Main Range National Park. The Mountain Frog, as with other Philoria species, requires continually high moisture levels and is most common in subtropical and temperate rainforests. It is found in shallow burrows in mud moss or in leaf-litter in the headwaters and along the edges of constantly flowing streams or around permanent soaks in highland forest. **Moderate – Species is associated with PCTs recorded at the site but has not been recorded within 10km, the species may utilise the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Insecta	Pink Underwing Moth	*Phyllodes imperialis smithersi*	P	E1	No	No	The Southern Pink Underwing Moth is distributed from Nambour in south-eastern Queensland to Bellingen in northern NSW. In NSW it is known to occur in a small number of localities from the QLD border to Wardell, and there is a disjunct population in the Bellingen area. The Southern Pink Underwing Moth is found in subtropical rainforest below about 600 m elevation. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km. It is unlikely that the species would utilise the site.**	N
Mammalia	Large-eared Pied Bat	*Chalinolobus dwyeri*	P	V,P	Yes	No	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. 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. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. **Moderate – Species is associated with PCTs recorded at the site but has not been recorded within 10km however, the vegetation recorded at the site likely only represents marginal habitat. It is lacking defined vegetated margins, extensive tree hollows, cleared culvert approaches or other significant habitat features. It is likely that vagrants would utilize the site.**	Y

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	New Holland Mouse	*Pseudomys novaehollandiae*	P	V,P	No	No	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Genetic evidence indicates that the New Holland Mouse once formed a single continuous population on mainland Australia and the distribution of recent subfossils further suggest that the species has undergone a large range contraction since European settlement. Total population size of mature individuals is now estimated to be less than 10,000 individuals although, given the number of sites from which the species is known to have disappeared between 1999 and 2009, it is likely that the species' distribution is actually smaller than current estimates. Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km, no significant occurrences of potential habitat or possible presence were recorded. It is unlikely that the species would utilize the site.**	N
Mammalia	Hastings River Mouse	*Pseudomys oralis*	P	E1	No	No	A patchy distribution spanning the Great Dividing Range from the Hunter Valley, south of Mt Royal, north to the Bunya Mountains near Kingaroy in south-east Queensland, at elevations between 300 m and 1100 m. A variety of dry open forest types with dense, low ground cover and a diverse mixture of ferns, grass, sedges and herbs. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km, no significant occurrences of potential habitat or possible presence were recorded. It is unlikely that the species would utilize the site.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Hairy-joint Grass	*Arthraxon hispidus*	P	V,P	No	No	Occurs over a wide area in south-east Queensland, and on the northern tablelands and north coast of NSW, but is never common. Also found from Japan to central Eurasia. Moisture and shade-loving grass, found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N
Flora	Stream Clematis	*Clematis fawcettii*	P	V,P	No	No	Found in widely dispersed areas in southern Queensland and in north-east NSW north from Lismore. Drier rainforest, usually near streams. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Native Jute	*Corchorus cunninghamii*	P	E1	No	No	Occurs from the Richmond River in north-east NSW to the Brisbane River in Queensland. In NSW populations occur at Bungabbee and Toonumbar. Occurs in ecotones between wet eucalypt forest and dry to dry-subtropical rainforest on sheltered slopes and gullies, and grassy, open forest on exposed slopes and ridges. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N
Flora	bluegrass	*Dichanthium setosum*	P	V,P	No	No	Bluegrass occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, extending to northern Queensland. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. (Often collected from disturbed open grassy woodlands on the northern tablelands, where the habitat has been variously grazed, nutrient-enriched and water-enriched). It is open to question whether the species tolerates or is promoted by a certain amount of disturbance, or whether this is indicative of the threatening processes behind its depleted habitat. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Macadamia Nut	*Macadamia integrifolia*	P	V,P	No	No	Macadamia integrifolia is a small to medium-sized tree, growing to 15 metres in height. Native to rainforests in south east Queensland and northern New South Wales, Australia. Common names include macadamia, smooth-shelled macadamia, bush nut, Queensland nut and nut oak. **Low – Species is not associated with PCTs recorded on the site, has not been recorded within 10km and was not detected during field survey.**	N
Flora	Rough-shelled Bush Nut	*Macadamia tetraphylla*	P	V,P	No	No	Confined chiefly to the north of the Richmond River in north-east NSW, extending just across the border into Queensland. Many records, particularly those further south, are thought to be propagated. Found in subtropical rainforest, usually near the coast. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N
Flora	Purple-leaf Muttonwood	*Myrsine richmondensis*	P	E1	No	No	In coastal areas on the north coast of New South Wales, from Coraki on the Richmond River north to Mt Warning; very rare. Occurs in tall open sclerophyll forest with a rainforest subcanopy, swamp sclerophyll open forest and on the margins of subtropical rainforest. NSW subdivisions: NC **Low – Species is not associated with PCTs recorded on the site, has not been recorded within 10km and was not detected during field survey.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Onionwood	*Owenia cepiodora*	P	V,P	No	No	North from the Richmond River in north-east NSW extending just across the border into Queensland. Subtropical and dry rainforest on or near soils derived from basalt. **Low – Species is not associated with PCTs recorded on the site, has not been recorded within 10km and was not detected during field survey.**	N
Flora	Knotweed	*Persicaria elatior*	P	V,P	No	No	Tall Knotweed has been recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests). The species also occurs in Queensland. This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Native Guava	*Rhodomyrtus psidioides*	P	CE	Yes	No	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. **Low – Species is not associated with PCTs recorded on the site and was not detected during field survey.**	N
Flora	Sophora fraseri	*Sophora fraseri*	P	V,P	No	No	Bush Sophora occurs north from the Casino district in north-east NSW, where it is very rare. Also in south-east Queensland where it is widespread but not common. Brush Sophora is usually found in wet situations in wet sclerophyll forest or vine forest, often near rainforest. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Austral Toadflax	*Thesium australe*	P	V,P	No	No	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Although originally described from material collected in the SW Sydney area, populations have not been seen in a long time. It may persist in some areas in the broader region. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N
Flora	Tylophora woollsii	*Tylophora woollsii*	P	E1	No	No	The Cryptic Forest Twiner is found from the NSW north coast and New England Tablelands to southern Queensland, but is very rare within that range. Known on the Tablelands from the Bald Rock and Boonoo Boonoo areas north of Tenterfield. This species grows in moist eucalypt forest, moist sites in dry eucalypt forest and rainforest margins. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Reptilia	Three-toed Snake-tooth Skink	*Coeranoscincus reticulatus*	P	V,P	Yes	No	The Three-toed Snake-tooth Skink occurs on the coast and ranges from the Macleay valley in NSW to south-eastern Queensland. It is very uncommon south of Grafton. Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils. The Three-toed Snake-tooth Skink lives in loose soil, leaf litter and rotting logs, and feeds on earthworms and beetle grubs. **Moderate – Species is associated with PCTs recorded at the site but has not been recorded within 10km, as a woodland generalist the species may utilises the site.**	Y
Reptilia	Adorned Delma	*Delma torquata*	P	V,P	No	No	The collared delma is mostly located in the areas of south-east Queensland but they have been recorded within northern New South Wales. Due to its vulnerability, the collared delma's distribution across Queensland is highly fragmented and only found in specific areas of south-east Queensland; these fragmented habitats are extremely restricted. This fragmentation can be divided into two areas based on phylogeographical changes, coastal and inland. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km, no significant occurrences of potential habitat or possible presence were recorded. It is unlikely that the species would utilize the site.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Actinopterygii	Clarence River Cod, Eastern Freshwater Cod	*Maccullochella ikei*	P	E1	No	No	The only breeding population of the species is in the Mann-Nymboida sub-catchment of the Clarence River. Previously, the species was also known from the Richmond and Brisbane Rivers, where it is now extinct. There is thought to be less than 100 mature individuals in the wild. The Clarence River cod prefers clear rocky streams and rivers with low flow velocity and abundant instream cover of rocks, timber or tussocks. Research indicates that Clarence River Cod are associated with deeper parts of the river near cover, especially around rocky islands, large boulders and pools in fast-flowing water. Large woody debris and rocky overhangs may provide shelter and important spawning sites. Females deposit eggs onto hard surfaces, such as rocks and hollow logs. The female leaves after eggs are deposited and the care of the nest is carried out exclusively by the male. The male will continue to defend the nest site and eggs until they hatch. **Low – The species requires substantial bodies of water for foraging and breeds coastally, it may utilize the site during flood or periods of extended flow.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Nightcap Plectranthus, Silver Plectranthus	*Plectranthus nitidus*	P	E1	No	No	The species occurs within north-east NSW and south-east Queensland. In NSW it was previously known only from Nightcap National Park near Terania Creek in northern NSW. However, the species has now been recorded as far south as Chaelundi National Park near Nymboida. Grows on rocky cliff-faces and boulders, in the shelter and shade provided by the adjacent rainforest and dry rainforest. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N
Mammalia	Brush-tailed Rock-wallaby	*Petrogale penicillata*	P	E1	No	No	The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. However the distribution of the species across its original range has declined significantly in the west and south and has become more fragmented. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km, although exposed rock is present at the site it lacks critical features (large fissures and under hangs) for this species. It is unlikely that the species would utilize the site.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	a grass	*Paspalidium grandispiculatum*	P	E1	No	No	Paspalidium grandispiculatum occurs in south east Queensland and north east NSW. In NSW, it is known from the north of Grafton in the Mount Neville, Gibberagee and Doubleduke vicinities. Information on the number of individual plants is lacking, but there are probably many thousands of ramets; the degree of clonality within populations is unknown. In NSW, Paspalidium grandispiculatum is likely to be restricted to poor sandy soils on sandstone. It has been found in open forest of Turpentine (Syncarpia glomulifera) on undulating topography as well as in drier forest types on ridges. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Flora	Leafless Tongue-orchid	*Cryptostylis hunteriana*	P	V,P	No	No	The Leafless Tongue Orchid has been recorded from as far north as Gibraltar Range National Park south into Victoria around the coast as far as Orbost. It is known historically from a number of localities on the NSW south coast and has been observed in recent years at many sites between Batemans Bay and Nowra (although it is uncommon at all sites). Also recorded at Munmorah State Conservation Area, Nelson Bay, Wyee, Washpool National Park, Nowendoc State Forest, Ku-Ring-Gai Chase National Park and Ben Boyd National Park. Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. **Low – The species is not associated with PCTs recorded within the proposal site and has not been recorded within 10km, additionally the weediness of the site suggest that it would be unlikely for this sensitive species to be present or capable or colonizing the site under current management.**	N

Class	Common Name	Scientific Name	NSW status	Comm status	Associated PCT	Record within 10km	Habitat Assessment	Test of Signifcance (TOS)?
Mammalia	Long-nosed Potoroo (SE Mainland)	*Potorous tridactylus*	P	V,P	No	No	The long-nosed potoroo is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. There are geographically isolated populations in western Victoria. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature. **Low – The species is not associated with PCTs recorded at the site and has not been recorded within 10km, no significant occurrences of potential habitat or possible presence were recorded. It is unlikely that the species would utilize the site.**	N

BC Act 5 part test of significance

Biodiversity Conservation Act 2016 Test of significance

The threatened species 'test of significance' (or '5-part test') is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. The test of significance is set out in s.7.3 of the *Biodiversity Conservation Act 2016*, and is completed in accordance with the questions set out below:

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

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

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

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

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

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

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

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

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

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

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Ptilinopus magnificus	Wompoo Fruit-Dove	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Ptilinopus regina	Rose-crowned Fruit-Dove	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Glossopsitta pusilla	Little Lorikeet	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Ninox strenua	Powerful Owl	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Tyto novaehollandiae	Masked Owl	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Tyto tenebricosa	Sooty Owl	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Anthochaera phrygia	Regent Honeyeater	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Daphoenositta chrysoptera	Varied Sittella	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Coracina lineata	Barred Cuckoo-shrike	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Petroica boodang	Scarlet Robin	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Phascogale tapoatafa	Brush-tailed Phascogale	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Planigale maculata	Common Planigale	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Phascolarctos cinereus	Koala	The proposal will remove a small area (<0.29ha) of native vegetation that is associated with this species however, the limited scale of the clearing will likely not have an adverse effect on the life cycle of this species. Further to this, the local extent of associated vegetation will remain largely unchanged and comparable habitat discernible from the survey site contained a greater quantity of habitat features of equal or significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.30 ha of vegetation (likely substantially less) containing 'Koala use trees'. Of this area the majority comprised highly modified areas along road margins. ii. The proposal will not introduce new connectivity breaks or substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species. iv. According the Bionet database there are nearby records for the Koala (refer **Figure 3.2**). v. In terms of potential impacts on Koalas, as mentioned previously, the proposal could include the removal of the following trees: • Two (2) trees that are	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
				• recognised locally as a primary food tree species. • Eleven (11) trees that are recognised locally as a secondary food tree. No signs (scats, pock marks, scratches, individuals) of Koala using the study area were detected during the site survey.			

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Petaurus australis	Yellow-bellied Glider	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Petaurus norfolcensis	Squirrel Glider	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Petauroides volans	Greater Glider	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Potorous tridactylus	Long-nosed Potoroo	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Macropus dorsalis	Black-striped Wallaby	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Thylogale stigmatica	Red-legged Pademelon	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Pteropus poliocephalus	Grey-headed Flying-fox	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Phoniscus papuensis	Golden-tipped Bat	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Scoteanax rueppellii	Greater Broad-nosed Bat	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Miniopterus australis	Little Bent-winged Bat	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Nurus brevis	Shorter Rainforest Ground-beetle	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Sophora fraseri	Brush Sophora	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Rhodamnia rubescens	Scrub Turpentine	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Erythrotriorchis radiatus	Red Goshawk	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Lathamus discolor	Swift Parrot	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Mixophyes iteratus	Giant Barred Frog	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Philoria kundagungan	Mountain Frog	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Chalinolobus dwyeri	Large-eared Pied Bat	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	The proposal will remove a small area of native vegetation that is associated with this species however, the limited scale of the clearing associated with this proposal will likely not have an adverse effect on the life cycle of this species. Given that the local extent of associated vegetation will remain largely unchanged and extents visible from the survey site contained a greater quantity of habitat features of significantly higher habitat value.	N/A	i. The proposal will remove a maximum total area of 0.9 ha of native vegetation (likely substantially less) of this area the majority comprised highly invaded areas along road margins. ii. The proposal will not introduce novel connectivity breaks of substantially reduce current connectivity. iii. Given the overall low quality of the site and lack of significant habitat features it is not likely that the proposal will significantly impact the long-term survival of the species.	No	No	No significant impacts are expected.

Scientific Name	Common Name	BC Act 5-part Test Criteria					Significance of Impact
		a.	b.	c.	d.	e.	
BC Act Listed, Endangered: Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions.	N/A	N/A – EEC not species.	Although no direct clearing of PCT 845 vegetation (as it occurs towards the eastern extent of the proposed works zone) is proposed, some minimal impacts are possible with the planned clearing of adjacent managed roadside vegetation. These impacts would not modify the composition and/or extent of the ecological community such that its local occurrence is placed at risk of extinction. This is especially so too considering that large expanses (> 100 ha based on aerial estimation) of similar community vegetation occurs in the greater area of the proposal.	As mentioned, little to no direct clearing of PCT 845 vegetation (as it occurs towards the eastern extent of the proposed works zone) is proposed and at a maximum 0.01ha of such vegetation could be impacted. Additionally, this vegetation occurs as a disjointed roadside 'strip' and there will be no further fragmentation as a result of the proposal. This vegetation is not considered important to the long-term survival of the EEC given is extent of occurrence in the greater locality.	No	No. Direct clearing of native (EEC) vegetation is not planned but some indirect impacts may occur as a result of clearing managed (previously cleared) roadside vegetation.	No significant impacts are expected.

Appendix C

Field data sheets

Date	11/02/22	Survey Name	ML			Photo #	✓	Surveyer Name	Adam Stone
Easting	152.7231	Northing	-28.9002			PCT ID	1219	Plot ID #	ML01

Stratum layers;

Upper		Height	cover %	Mid	Height	cover %	Ground	Height	cover %
Spotted?		15	60	RFT	1	2	Chloris	0.5	20
bloodwood?		10	20	Lantana	1	5	blue grass	0.5	5
				vines	2	30	barley fake	0.5	10

Does vegetation extend beyond project area and is it similar in character	(Y/N)
Canopy connectivity/linkages to adjacent bushland parcels	Notes Continues N private property

	Tree	grnd/mid
Estimate # native	100	30
Estimate # exotic	0	70
HTW (Y/N)	Y	
Threatened flora/fauna?	N	
Leaf Litter Density (L- M- H)	M	
Rock outcrops (Y/N) turn over	Y	
Culvert (bats)	N	
Caves/crevice	Yes crevices	

Presence of woody debris/stags	(Y/N)	Small number
Evidence of regrowth	(Y/N)	moderate
Diversity of age class	J/(M)	

Mistletoe (Y/(N))	density	notes

Nests Out of season, no late nests

material	shape	structure	size	photo	placement in tree	notes

Logs turn over

Number	hollow (Y/N)	notes
~10	Y	Large present
>50	Y	Small present

Tree stem DBH (cm)	
>80	—
50 - 79	✓
30 - 49	✓
20 - 29	✓
10 - 19	✓
5 - 9	—
< 5	—

Traces and signs

Scats (Y/N)		Scratches (Y/N)		Diggings (Y/N)		Burrows (Y/N)		Casurina cones (Y/N)		other
Pig?		rat track	Pads Possum		Pig?					

Watercourses N/A

Number	Flow (pool, flow, riffles)	Physical (snags, boulders)	Bed & bank (sand, rocky)	Depth & Diameter	aquatic vegetation

Water quality (algal blooms, turbidity)							
Fish present							
Weediness (WoNS)	Y	Erosion	Y	Evidence timber harvesting/collection	N		
Evidence of clearing	Y	Grazing	N	Fire	N	urban refuse	Y

Notes Any unique habitats beyound disturbance limits Floating or submerged vegetation in watercourses etc

Possible Pig damage? more native and diverse than other PCT, possible different from DYC1. Still very weedy

Forestry plot survey sheet

Date	11/02/22	Survey Name	ML	Photo #	✓	Surveyer Name	Adam Steve
Easting	157.7374	Northing	-28.9092	PCT ID	1201	Plot ID #	ML02

Stratum layers;

Upper		Height	cover %	Mid	Height	cover %	Ground	Height	cover %
Sheoak		8	15	lantana	2	90	Chloris	0.5	70
Rainforest tree		6	5	FERN	1	10	Signal	0.25	25
Lillypilly		6	5	Vines	1	1	big head grass	0.25	3

Does vegetation extend beyond project area and is it similar in character (Y/N) Cont into Protected

Canopy connectivity/linkages to adjacent bushland parcels Notes Green

	Tree	ground/mid
Estimate # native	100	95
Estimate # exotic	0	95
HTW (Y/N)	Y	
Threatened flora/fauna?	N	
Leaf Litter Density (L- M- H)	M	
Rock outcrops (Y/N) turn over	N	
Culvert (bats)	N	
Caves/crevice	N	

Presence of woody debris/stags	(Y/N) Some
Evidence of regrowth	(Y/N)
Diversity of age class	J/M

Mistletoe (Y/N)	density	notes

Nests N/A

material	shape	structure	size	photo	placement in tree	notes

Logs turn over too Small

Number	hollow (Y/N)	notes

Tree stem DBH (cm)	
>80	—
50 - 79	—
30 - 49	—
20 - 29	✓
10 - 19	✓
5 - 9	—
< 5	—

Traces and signs

Scats (Y/N)		Scratches (Y/N)		Diggings (Y/N)		Burrows (Y/N)		Casurina cones (Y/N)		other

Watercourses N/A

Number	Flow (pool, flow, riffles)	Physical (snags, boulders)	Bed & bank (sand, rocky)	Depth & Diameter	aquatic vegetation

Water quality (algal blooms, turbidity)					
Fish present					
Weediness (WoNS)	Y	Erosion	Y	Evidence timber harvesting/collection	N
Evidence of clearing	Y	Grazing	N	Fire N	urban refuse Y

Notes Any unique habitats beyond disturbance limits Floating or submerged vegetation in watercourses etc

Very very weedy, lots of lantana. Vines outside of survey element
Wide margin for impacts of clearance

Month Year | Version: 1