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NEWCASTLE SYDNEY

# Ecological Assessment Report

## Proposed Bridge Replacement

926 Westleys Road Bindera 2422 NSW

**Prepared for: Neil Cann and Simon Taylor**

**c/- Perception Planning**

**March 2024**

**AEP Ref: 3427**

**Revision: 00**

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## Document Control

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| **Document Name** | Ecological Assessment Report for Proposed Bridge Replacement,<br>Lot 902 DP 878135, 926 Westleys Road, Bindera NSW. |
| **Project Number** | 3427 |
| **Client Name** | Neil Cann and Simon Taylor c/- Perception Planning |
| **AEP Project Manager** | Natalie Black |
| **AEP Project Team** | Natalie Black<br>Brendon Young<br>Oscar Anderson<br>Naomi Stackhouse |

## Revision

| Revision | Date | Author | Reviewed | Approved |
|---|---|---|---|---|
| 00 | 01/03/2024 | Oscar Anderson | Brendon Young | Natalie Black |

## Distribution

| Revision | Date | Name | Organisation |
|---|---|---|---|
| 00 | 01/03/2024 | Joseph Murphy | Perception Planning |

# Executive Summary

Anderson Environment & Planning was commissioned by Perception Planning on behalf of Neil Cann and Simon Taylor (the clients) to undertake an Ecological Assessment Report (EAR) for a proposed bridge replacement and associated civil works to provide access to Lot 902 DP 878135, 926 Westleys Road, Bindera NSW (the Subject Site). The Subject Site is zoned RU1 Primary Production. No native vegetation will be cleared by the proposed development. Dredging and reclamation will occur in the Mackays Creek, however the natural flow regime will be maintained during and post-construction.

This report is specifically intended to indicate the likelihood of the proposed development having a significant impact on potentially occurring threatened species or ecological communities. In this regard, the report aims to recognise the relevant requirements of the NSW *Environmental Planning & Assessment Act 1979*, the NSW *Biodiversity Conservation Act 2016* (BC Act), the NSW *Fisheries Management Act 1994* (FM Act), the NSW *Water Management Act 2000* (WM Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Fieldwork was conducted to ground-truth regional vegetation mapping and confirm historical clearing within the riparian zone. Native vegetation within the Subject Site is consistent with Plant Community Type (PCT) 3101 – *Northern Hinterland Shatterwood Dry Forest* which is mapped within the locality. PCT 3101 is associated with the Threatened Ecological Community (TEC) *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*. The vegetation within the riparian zone and in-stream is dominated by exotic weed species, with the occasional native species. The wider surrounds are predominantly managed pasture and large tracts of remnant native vegetation.

No vegetation is proposed to be removed by the development and no threatened flora species were identified in the Study Area.

Habitat and fauna surveys were undertaken, including aquatic surveys. No threatened species were observed.

Assessment under the 5-part test of significance of impacts determined that significant impacts upon Purvis' Turtle (*Myuchelys purvisi),* listed under the BC Act, are unlikely. Similarly, assessment under section 220ZZ of the FM Act determined Southern Purple Spotted Gudgeon (*Mogurnda adspersa*) is unlikely to be significantly impacted by the proposed bridge replacement. Consideration of the EPBC Act revealed that impacts on Matters of National Environmental Significance are unlikely to occur, therefore, a referral to the Commonwealth is not required.

Following a review of the State Environmental Planning Policy (Biodiversity and Conservation) 2021, specifically Chapter 4 Koala Habitat Protection 2021, it was identified no listed koala preferred use trees or feed trees are to be impacted, and no further consideration is required.

General recommendations and mitigation measures have been included in the report to minimise environmental impacts of the proposal during the construction phase. These measures should provide adequate protection during the construction phase for native flora and fauna in the locality.

# Study Certification and Licensing

The fieldwork for this report was carried out by Oscar Anderson BEnvSc of Anderson Environment & Planning. The report was written by Brendon Young MEnvMg, BASc (Hons), GC Fish Con&Mg and reviewed and approved by Senior Environmental Manager, Natalie Black BSc (Hons), MPL & Cert IV TAE & MSc (BAAS no. 19076).

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL101313;
- Animal Research Authority (Trim File No: 14/600(2)) issued by NSW Agriculture; and
- Animal Research Establishment Accreditation Number 53724.

**Certification:**

As the principal certifier, I, Natalie Black, make the following certification:

The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the species recorded, or considered likely to occur within the Survey Area.

Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, unless specified departures from industry standard guidelines are justified for scientific and/or animal ethics reasons; and

All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the Animal Research Act 1995, National Parks and Wildlife Act 1974 and the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.

Principal Certifier:

**Natalie Black**

**Senior Environmental Manager**

**BAAS: 19076**

**Anderson Environment & Planning**

1 March 2024

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# 1.0 Introduction

The proposed development is for a replacement bridge and associated civil works over the Mackays Creek at 926 Westleys Road Bindera NSW (the Subject Site).

Anderson Environment & Planning was commissioned by Perception Planning (the client) to undertake an Ecological Assessment Report (EAR) for the proposed development. The Study Area is currently zoned RU1 Primary Production. The proposed development encompasses the entirety of the Subject Site.

Anderson Environment & Planning (AEP) have undertaken necessary investigations for the production of an EAR. This assessment has been undertaken with reference to the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), the NSW *Biodiversity Conservation Act 2016* (BC Act), NSW *Fisheries Management Act 1994* (FM Act), NSW *Water Management Act 2000* (WM Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report is specifically intended to indicate the likelihood of the proposal having a significant impact on threatened species or ecological communities. In this regard, the report aims to recognise the relevant requirements of the NSW *Environmental Planning & Assessment Act 1979*, the NSW *Biodiversity Conservation Act 2016* (BC Act), the NSW *Fisheries Management Act 1994* (FM Act), and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The purpose of this report is to:

- Describe the ecological values of the Subject Site;
- Explore the potential for threatened species to utilise the area; and
- Assess ecological impacts associated with the proposal against relevant legislation.

Potential ecological impacts on native species in general are also considered, as are recommendations for minimising any impacts within the scope of the development.

For the purposes of referencing, this document should be referred to as:

Anderson Environment & Planning (2024) Ecological Assessment Report for Proposed Bridge Replacement at 926 Westleys Road, Bindera NSW. Unpublished report for Perception Planning.

# 2.0 Site Particulars

**Table 1 – Site Particulars**

| Detail | Comments |
|---|---|
| Client | Perception Planning |
| Address | 926 Westleys Road, Bindera NSW |
| Title(s) | The proposed development is to provide safe access to private residence in the north and north-west section of Lot 902 DP 878135. |
| Subject Site | The Subject Site encompasses an existing bridge that requires replacing paired with areas of impact by its associated civil works. |
| LGA | Mid Coast council |
| Zoning | Under the *Gloucester Local Environmental Plan 2010* (the LEP), the Study Area is zoned RU1: Primary Production |
| Current Land Use | Lot 902 DP 878135 is rural farmland and is utilised for primary production. |
| Surrounding Land Use | The Study Area occupies, and is surrounded by rural farmland. A portion of Lot in the north is heavily forested. Mackays creek is a 4$^{th}$ order stream at the Subject Site, and flows downstream approximately 200m to the east, discharging into the Barrington River at Bindera. |

**Figure 1** depicts the extent of the Subject Site overlaid on an aerial photograph of the locality.

# 3.0 Proposed Development

The proposed development is to replace a bridge crossing over Mackays Creek for property access into Lot 902 DP 878135 at 926 Westleys Road, Bindera 2442, NSW.

The Proposed Development Plan within the Subject Site is provided in **Appendix A**

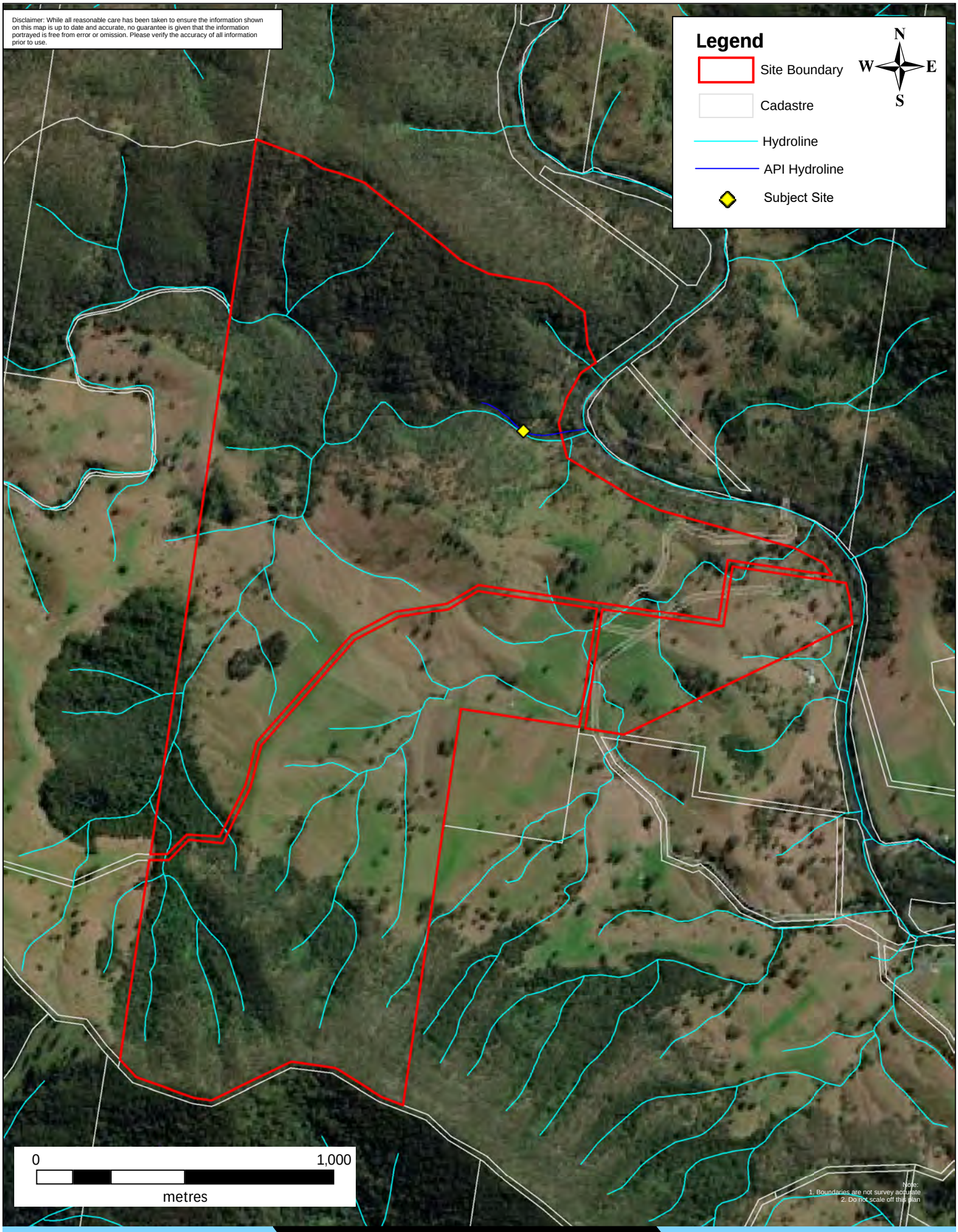


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Figure 1 - Site Location

Date: March 2024

Location: 926 Westleys Road, Bindera

Client: Neil Cann & Simon Taylor

AEP Ref: 3427

# 4.0 Scope and Purpose

Investigations were carried out within the Subject Site and via literature / database searches to gather information required to adequately address Section 7.3 of the BC Act (known as the “5-part test”).

Also afforded consideration were the EPBC Act, the FM Act, the WM Act and relevant State Environmental Planning Policies (SEPPs).

The assessment approach was tailored to undertake sufficient works to ensure that legislative requirements were met relating to threatened species and native species in general for the proposed specific development. This was achieved by background research and literature review, database searches, consultation, targeted ecological fieldwork and mapping, detailed habitat assessment, and ultimately impact assessment consideration against the type and form of development proposed.

Impact assessment was undertaken with due reference to the “Threatened Species Test of Significance Guidelines” (OEH 2018).

Specifically, the scope of this study is to:

- Identify vascular plant species occurring within the site, including any threatened species listed under the BC Act, FM Act or EPBC Act;
- Identify and map the extent of vegetation communities within the site, including any EECs listed under the BC Act, FM Act or EPBC Act;
- Identify any fauna species, including threatened and migratory species, and populations or their habitats, which occur within the site and are known to occur in the wider locality;
- Assess the potential of the proposed development to have a significant impact on any threatened species, populations or ecological communities (or their habitats) identified from the site; and
- Describe measures to be implemented to avoid, minimise, manage or monitor potential impacts of the proposal.

In addition to the survey work conducted within the site boundary and its immediate surrounds, consideration has been afforded to the wider locality, via database searches within 10km of the site and via consideration of habitat areas that may be linked ecologically to the site.

# 5.0 Methodology

The field surveys for the site have been prepared and performed with due recognition of the State Survey Guidelines (DEC 2004; DPI 2006; DECC 2009; DPIE 2020, DECC 2018; DPIE 2020a; DPIE 2020b; DPE 2022a).

The size of the site, the type of native vegetation and habitats remaining, the status of existing and proposed surrounding land use, and the level and type of habitat linkages to proximate bushland areas were considered in formulating the methodology employed and described below.

The assessment approach was tailored to undertake sufficient works to ensure that legislative requirements were met relating to threatened species and native species in general for the proposed specific development.

## 5.1 Information Sources

Information and spatial data provided within this EAR has been compiled from various sources including:

- Aerial Photograph Interpretation (API) of the site and surrounding locality;
- NSW Biodiversity Values Map (accessed January 2024);
- State Vegetation Type Mapping (SVTM) (2022);
- Key Fish Habitat Search (accessed January 2024) https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal;
- State survey guidelines (DEC 2004; DPI 2006; DECC 2009; DECC 2018; DPIE 2020a; DPIE 2020b; DPE 2022a);
- DPE Threatened Species, Populations and Ecological Communities website (https://www.environment.nsw.gov.au/AtlasApp/UI_Modules/TSM_/Default.aspx?a=1) (accessed January 2024);
- DPI Threatened Species Lists website (https://www.dpi.nsw.gov.au/fishing/threatened-species/what-current) (accessed January 2024);
- Collective knowledge gained from previous ecological survey and assessment in the greater NSW region over the past 25 years; and
- In addition, database searches were carried out, namely:
    - Review of flora and fauna records held by the BioNet Atlas of NSW Wildlife within a 10km radius of the site (December 2023);
    - Review of flora and fauna records held by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search within a 5km radius of the Subject Site (accessed December 2023).

## 5.2 Considerations of Biodiversity Offsets Scheme

There are three criteria that require assessment under the Biodiversity Offsets Scheme (BOS) to determine whether or not entry into the BOS is required. The three criteria include;

- Whether or not the site contains Biodiversity Values Mapped land;
- Whether or not it exceeds the Area Clearing Threshold applicable to the minimum lot size; and / or
- Whether or not a 5-part Test of Significance determines that a significant impact on threatened biodiversity is likely to occur.

### 5.2.1 Biodiversity Values Map

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017. The Biodiversity Offsets Scheme (BOS) applies to all local developments, major projects or the clearing of native vegetation where the SEPP (Vegetation in Non-Rural Areas) 2017 applies. Any of these will require entry into the BOS if they occur on land mapped on the BV Map. Exempt and complying development or private native forestry are not subject to the Biodiversity Offsets Scheme.

The Mackays creek and associated riparian zone is mapped as BV land within the Subject Site, however no vegetation will be removed for the proposed development. Therefore, the proposal does not trigger the BOS or the requirement for a Biodiversity Development Assessment Report (BDAR) under this criterion (refer **Appendix C**).

### 5.2.2 Area Clearing Threshold

“The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). The area threshold applies to all proposed native vegetation clearing associated with a development proposal”.

**Table 2 – Area Clearing Thresholds (BC Act)**

| Minimum lot size | Threshold for clearing, above which the BOS applies |
|---|---|
| **< 1ha** | **>0.25ha** |
| 1ha to <40ha | >0.5ha |
| 40ha to <1000ha | >1.0ha |
| >1000ha | >2.5ha |

The removal of native vegetation is not proposed for the development of the replacement bridge; therefore, the Area Clearing Threshold does not apply.

### 5.2.3 Test of Significance

Following the above assessments, it is a requirement to determine whether or not the development is likely to significantly affect threatened species, ecological communities or their habitats using a Test of Significance. The Test of Significance is used to undertake qualitative analysis of the likely impacts and determine whether further assessment is required in association with the development. As part of this Ecological Assessment Report, a 5-part Test of Significance has been undertaken in Section 8.0.

## 5.3 Survey Methods

All fieldwork was conducted within the Subject Site as shown in **Figure 2**.

### 5.3.1 Vegetation Communities

Vegetation was surveyed utilising a variety of methods, as outlined:

- Consideration of SVTM;
- Aerial Photo interpretation (API) to identify any notable variations within the site;
- Consultation of 1:25,000 topographic map series for the area;
- Inspection of the site to ground-truth the unit(s) identified by SVTM; and
- Identification of the vegetation map unit occurred via identification of required dominant species in community structural layers.

The final derived vegetation map was based on dominant species present in the canopy, shrub and ground layers. The dominant species composition, structural and physical attributes were all considered when assigning the best fit ecological communities.

Consideration was given to the potential for the derived vegetation communities to constitute TECs as listed under the BC Act and/or EPBC Act. The floristic composition, geomorphological characteristics and geographical extent were important considerations in this process. The type and location of the relevant vegetation communities can be seen in **Figure 3**.

### 5.3.2 Flora

A flora survey was undertaken to produce a flora species list for the Subject Site, to search specifically for threatened flora species known from the wider locality, and to gather data necessary to both derive vegetation community type(s) and to meet relevant survey guidelines. Such works included:

- Identification of all vascular plant species encountered during fieldwork;
- Survey involved systematic coverage of the Subject Site. Random Meander Technique (Cropper, 1993) was utilised to maximise species encountered. All vascular plant species encountered during fieldwork were recorded; and
- A systematic approach to target threatened plant species at the site as per DPIE guidelines (2020a and 2020b).

### 5.3.3 Habitat

An assessment of the relative habitat values present within the Subject Site was carried out. This assessment focused primarily on the identification of specific habitat types and resources within the site favoured by known threatened species from the region. The assessment also considered the potential value of the Subject Site (and surrounding areas) for all major guilds of native flora and fauna.

The assessment was based on the specific habitat requirements of each threatened fauna species in regards to home range, feeding, roosting, breeding, movement patterns and corridor requirements. Consideration was given to contributing factors including topography, soil, light, hydrology and geomorphology for threatened flora and assemblages.

### 5.3.4 Fauna

Fauna survey was carried out utilising techniques as outlined below. Fauna survey work was undertaken with reference to relevant guidelines and to add additional information to the generated Observed Fauna Species List (**Appendix C**).

#### 5.3.4.1 Avifauna Surveys

The presence of avifauna within the site was assessed via targeted diurnal surveys and incidental observations during all other phases of fieldwork.

For diurnal surveys, birds were identified by direct observation or by recognition of calls or distinctive features such as nests, feathers etc.

#### 5.3.4.2 Mammals

The occurrence of mammals within the site was assessed by utilising habitat assessment as an analogue for presence. Habitat assessment included survey for foraging resources (blossom, herbaceous, prey etc), hollows and roosting opportunity, connectivity and water.

#### 5.3.4.3 Aquatic Fauna

Aquatic surveys were undertaken utilising dip nets and targeted habitat assessment including shaded areas, undercut banks, deep pools, aquatic vegetation and complex substrate such as large boulders and woody snags.

#### 5.3.4.4 Incidental Observations & Secondary Indications

Incidental records of any fauna species observed during fieldwork were noted. This included opportunistic sightings of secondary indications (scratches, scats, diggings, tracks etc.) of any resident or migratory species. Searches were also conducted for whitewash, regurgitation pellets and prey remains from Owls, chewed (Allo) Casuarina cones from Black-Cockatoos, chewed fruit remains from frugivorous birds etc.

### 5.3.5 Details of Field Surveys

A summary of the survey effort is below in **Table 3** and **Figure 2**.

**Table 3 – Field Survey Periods**

| Date | Time | Field Activity | No. of Persons on Site |
|---|---|---|---|
| 4/12/2023 | 11:00 – 13:30 | Random Meander<br>Dip Netting<br>Bird Survey<br>Riparian and Aquatic Vegetation Survey | 1 |

The above survey methodology is considered to provide sufficient understanding of the biodiversity of the Subject Site.

In addition, by applying rigorous habitat assessment to more mobile species identified in BioNet Atlas records within the locality, it was ensured that all possible use of the Subject Site by notable species was considered, and accommodated within subsequent ecological assessment and management recommendations.

AEP has deemed the survey effort undertaken for the Subject Site sufficient given the disturbed and managed nature of the site, the limited amount of habitat features and resources therein, the very small area of low-quality vegetation proposed for removal and the large areas of high-quality vegetation present off site.


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Figure 2 - Survey Effort

Date: March 2024

Location: 926 Westleys Road, Bindera

Client: Neil Cann & Simon Taylor

AEP Ref: 3427

# 6.0 Results

## 6.1 State Vegetation Type Mapping

State Vegetation Type Mapping indicates that the Subject Site contains PCT 3101 – *Northern Hinterland Shatterwood Dry Forest.*

**Figure 3** shows the extent of SVTM within and surrounding the Subject Site.

## 6.2 Ground-truthed Vegetation

Fieldwork was conducted to ground-truth SVTM. The existing bridge and connected access road have resulted in a small amount of historical clearing in the riparian zone of Mackays Creek. Native species identified within the Study Area during field surveys were consistent with PCT 3101, including:

- *Casuarina cunninghamiana;*
- *Persicaria decipiens;* and
- *Lomandra longifolia.*

The riparian zone adjacent the Subject Site was highly weedy with *Ligustrum sinense* (Narrow-leaf Privet) and *Lantana camara* (Lantana) present in abundance.

PCT 3101 is associated with the Threatened Ecological Community (TEC) *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*. The proposed development will not result in the removal of PCT 3101.

**Figure 3** shows the extent of ground-truthed vegetation identified within the Subject Site. Vegetation outside of the Study Area was assumed commensurate with SVTM.

## 6.3 Habitat Assessment

The Subject Site occurs in the upper reaches of the Barrington River and is fed by numerous tributaries originating in the Barrington Tops.

NSW Hydroline spatial data indicates the Subject Site is a 4$^{th}$ order stream. The channel bed is approximately 10m across and the existing bridge is 5m wide. Immediately up-stream the bed consists of medium to large rocks and boulders, high flood debris, with relatively uniform depth varying from 10cm-40cm.

Immediately down-stream the channel slightly meanders and broadens with approx. 1m deep holes in sections on either side of a slight, long bend. High flood debris is occurring in this section of the creek.

## 6.4 Flora

Flora surveys have resulted in the identification of 12 species within the Study Area.

A full list of flora species identified within the site is included in **Appendix B**.

## 6.5 Fauna

Fauna surveys identified 12 species within the Study Area and surrounds comprising 11 birds, one (1) reptile.

No threatened fauna species were detected within the Subject Site.

A list of fauna species present onsite has been generated for the site and is included within the Observed Fauna List in **Appendix C**.

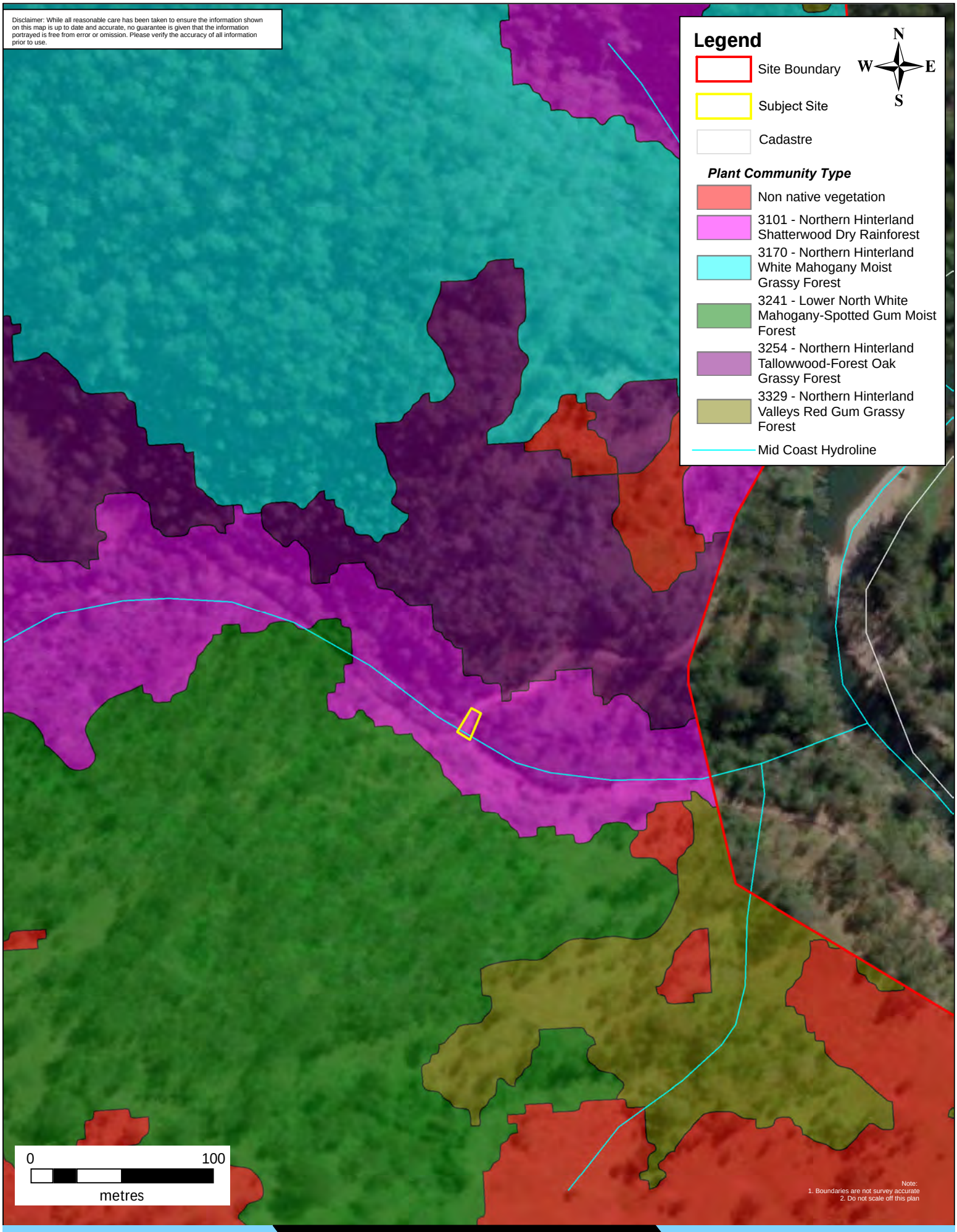


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Figure 3 - State Vegetation Type Mapping

Date: March 2024

Location: 926 Westleys Road, Bindera

Client: Neil Cann & Simon Taylor

AEP Ref: 3427

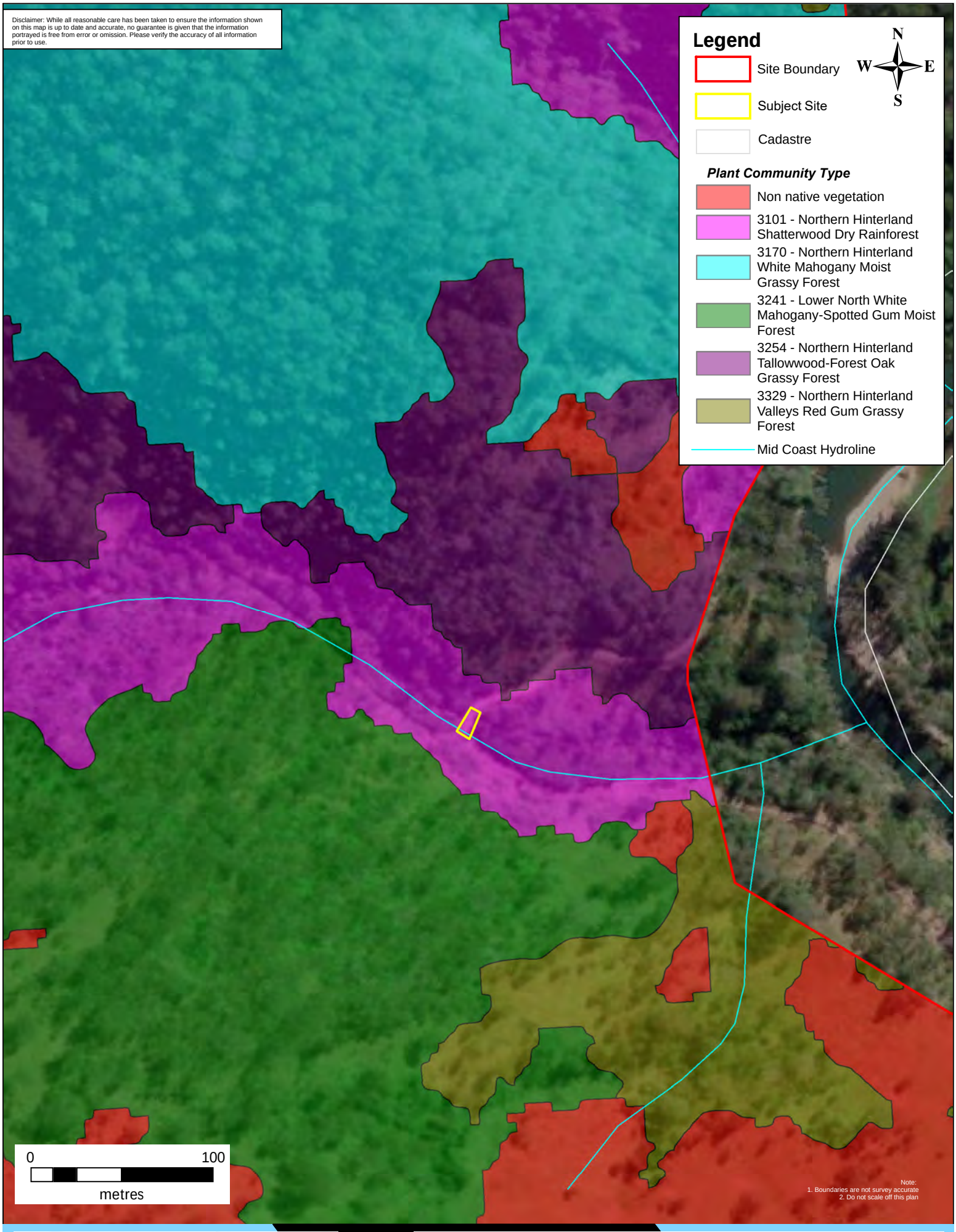


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Figure 4 - Ground-truth Vegetation

Date: March 2024

Location: 926 Westleys Road, Bindera

Client: Neil Cann & Simon Taylor

AEP Ref: 3427

## 6.6 Database Searches

Searches were undertaken of databases within a 5km radius of the Subject Site for BC Act listings and EPBC Act listings. Note that any records considered erroneous, historic only, or obviously of no relevance to the site in regards to habitat (e.g., seabirds, marine species etc.) were omitted.

Additionally, relevant threatened species listed under the FM Act are considered.

The potential for listed threatened species to occur within the Subject Site is considered in **Table 4** and selection for subject species in **Table 5** below. Detailed ecological profiles of threatened species can be found at:

https://www.environment.nsw.gov.au/threatenedspeciesapp/ and;

https://www.dpi.nsw.gov.au/fishing/threatened-species/what-current

**Figure 5** shows the results of the BioNet records database search.

**Table 4 – Threatened Species Appraisal**

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| **Flora** | | | | | | |
| *Eucalyptus largeana* | Craven Grey Box | E | E | 58 | Confined to Gloucester-Craven district and near Pokolbin, although a number of unsubstantiated records exist from outside the currently accepted range.<br>Populations are known from Copeland Tops State Conservation Area and Berrico Nature Reserve, with unconfirmed records from Talawahl and Glen Nature Reserves and Willi Willi National Park. The majority of remaining populations occur on private lands and roadsides, often as single trees or small clumps interspersed with other tree species. Often found in wet forest on subcoastal ranges. | Not observed on site and no vegetation to be impacted by the proposed development. BioNet records predominantly associated with Copeland Tops State Conservation Area north of the Subject Site. The species as such is unlikely to be impacted by the proposal. |
| *Rhodamnia rubescens* | Scrub Turpentine | E | E | 2 | 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 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. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts. | Not observed on site and no vegetation to be impacted by the proposed development. Both BioNet records approx. 3.5km north east of the Subject Site in Copeland Tops State Conservation Area. Species unlikely to be impacted. |
| *Pterostylis elegans* | Elegant Greenhood | V | | 1 | The Elegant Greenhood is known from eight locations, with a restricted distribution from the Barrington Tops to the Walcha district. The species is known to occur on red-brown loams at elevations between 950 m and 1200 m. It is found among grass and shrubs in tall open | Not observed on site and no vegetation to be impacted by the proposed development. Single BioNet record approx. 4.5km north of the Subject Site. Species unlikely to be impacted. |

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| | | | | | eucalypt forest and flowers between January and April. The species occurs in small numbers at each of the known locations.<br>When the plant flowers over summer and autumn it produces a slender upright stem 15-28 cm tall with a single small flower at the tip. The flower is an unusual hood-shaped structure 14-18 mm long, green and white-striped, becoming reddish brown near the petal tips. | |
| **Amphibians** | | | | | | |
| *Mixophyes balbus* | Stuttering Frog | E | V | 2 | 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.<br>Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor. Feed on insects and smaller frogs. Breed in streams during summer after heavy rain. Eggs are laid on rock shelves or shallow riffles in small, flowing streams. As the tadpoles grow they move to deep permanent pools and take approximately 12 months to metamorphose. | The Subject Site lacks the suitable shallow aquatic habitat typical of the upper tributaries of a stream, and as such this species is not considered likely to occur. Two (2) BioNet records approx. 4km north east of the Subject Site, both recorded on the same day in 2018. No native vegetation will be impacted and it is considered unlikely the proposed development will significantly impact this species. |
| **Reptiles** | | | | | | |

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| *Hoplocephalus stephensii* | Stephens' Banded Snake | V | | 1 | Stephens' Banded Snake is nocturnal, and shelters between loose bark and tree trunks, amongst vines, or in hollow trunks limbs, rock crevices or under slabs during the day. At night it hunts frogs, lizards, birds and small mammals. Occurs on coast and ranges from Southern Queensland to Gosford in NSW. Typically, rainforest and eucalypt forests and rocky areas up to 950 m in altitude. | No individuals were observed or heard during field surveys. This species is unlikely to be impacted by the proposed development. This species only has one (1) BioNet record in the locality, and with no native vegetation proposed to be impacted, the species is not a Subject Species. |
| *Myuchelys purvisi* | Manning River Helmeted Turtle, Purvis' Turtle | E | | 32 | Endemic to the middle and upper reaches of the Manning River catchment area. It has been recorded from the Barnard, Barrington, Cooplacurripa, Gloucester, Manning, Mummel, Nowendoc and Rowley Rivers as well as Bobin, Caparra, Dingo and Myall creeks. Habitat preference is for relatively shallow, clear, continuously fast-flowing rivers with rocky and sandy substrates. Boulder beds in pools 2-3 m deep and submerged logs are used as shelter sites by individuals or small aggregations of turtles. The species is predominately diurnal, often seen basking on logs, rocks or the river banks near deep pools, although nocturnal foraging in shallow areas has been observed. It is apparently omnivorous but lacks the ability to catch fast moving prey, instead foraging on the benthos for less mobile food such as other macro-invertebrates, terrestrial fruit and aquatic vegetation. | Endemic to the Manning River catchment area. A high number of BioNet records are located in Barrington River approx. 2.5-5km north west. Mackays Creek is a tributary of Barrington River, providing connectivity to suitable habitat within the Subject Site. Further consideration of this species is required.<br>**Subject Species** |
| **Birds** | | | | | | |
| *Ptilinopus magnificus* | Wompoo Fruit-Dove | V | | 28 | Occurs along the coast and coastal ranges from the Hunter River in NSW to Cape York Peninsula. Occurs in, or near rainforest, low elevation moist eucalypt forest and brush box forests. Feeds on a diverse range of tree and vine fruits and is locally nomadic - following | The species inhabits eucalypt forests and woodlands. No individuals or nests observed within the subject site. BioNet records strongly associated with Mountain Maid approx. 3.5km north east of the Subject Site. Given the lack of |

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| | | | | | ripening fruit. Thought to be an effective medium to long-distance vector for seed dispersal. Feeds alone, or in loose flocks at any height in the canopy. Despite its plumage, can be remarkably cryptic as it feeds, with the call and falling fruit being an indication of its presence. The nest is a typical pigeon nest - a flimsy platform of sticks on a thin branch or a palm frond, often over water, usually 3 - 10 m above the ground. Breeds in spring and early summer; a single white egg is laid. Most often seen in mature forests, but also found in remnant and regenerating rainforest. Aspects of its behaviour such as social behaviour and structure, movements and breeding biology have not been well-studied. | vegetation to be cleared it is unlikely the species will be impacted by the proposed development. |
| *Hirundapus caudacutus* | White-throated Needletail | | V | 2 | Species prefers moist, dry sclerophyll forest with grassy and shrubby understorey. Highly migratory species based on food availability.<br>More common in coastal areas, less so inland. | Occurs in, or near rainforest, low elevation moist eucalypt forest and brush box forests. Only two Bionet Records exist within the locality, and no individuals or nests observed within the subject site. Given the lack of vegetation to be cleared it is unlikely the species will be impacted by the proposed development. |
| *Haliaeetus leucogaster* | White-bellied Sea-Eagle | V | | 1 | Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. | Given the lack of suitable habitat, and lack of recognisable stick nests, this species is not considered likely to occur on site, or at best the site offers marginal foraging habitat. A single record approx. 4km east of the Subject Site along Barrington River from 2019. The proposal is unlikely to significantly impact the species, and as such, it is not a Subject Species. |
| *Glossopsitta pusilla* | Little Lorikeet | V | | 2 | Forages in open Eucalypt Forest and woodland, preferring flowering trees. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally | Two (2) BioNet records approx. 4km north east associated with Mountain Maid. This species is not considered likely to occur on site, and at best the site offers marginal foraging habitat. The area proposed for impact does not contain |

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| | | | | | 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. Roosts in treetops, often distant from feeding areas. Riparian trees often chosen, including species like Allocasuarina. | any Hollow-Bearing Trees, and no native vegetation will be impacted. This species it is not a Subject Species. |
| *Tyto tenebricosa* | Sooty Owl | V | | 2 | 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*). Nests in very large tree-hollows. | Given the lack of suitable habitat (HBTs), and low number of local BioNet records, this species is not considered likely to occur on site, and at best the site offers marginal foraging habitat. The site does not contain any evidence of use by owls such as pellets, white-wash and roosting sites. The proposal will not significantly impact the species, and as such, it is not a Subject Species. |
| *Pomatostomus temporalis temporalis* | Grey-crowned Babbler (eastern subspecies) | V | | 3 | 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. Birds are generally unable to cross large open areas. Live in family groups that consist of a breeding pair and young from previous breeding seasons.<br>Feeds on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses. Nests are usually located in shrubs or sapling eucalypts, although they may be built in the | Given the lack of preferred habitat in the Study Area, being open box woodland, and the few BioNet Records, this species is considered unlikely to occur on site. The proposal will not remove any native vegetation. It is unlikely the proposal will significantly impact this woodland bird, and as such, it is not a Subject Species. |

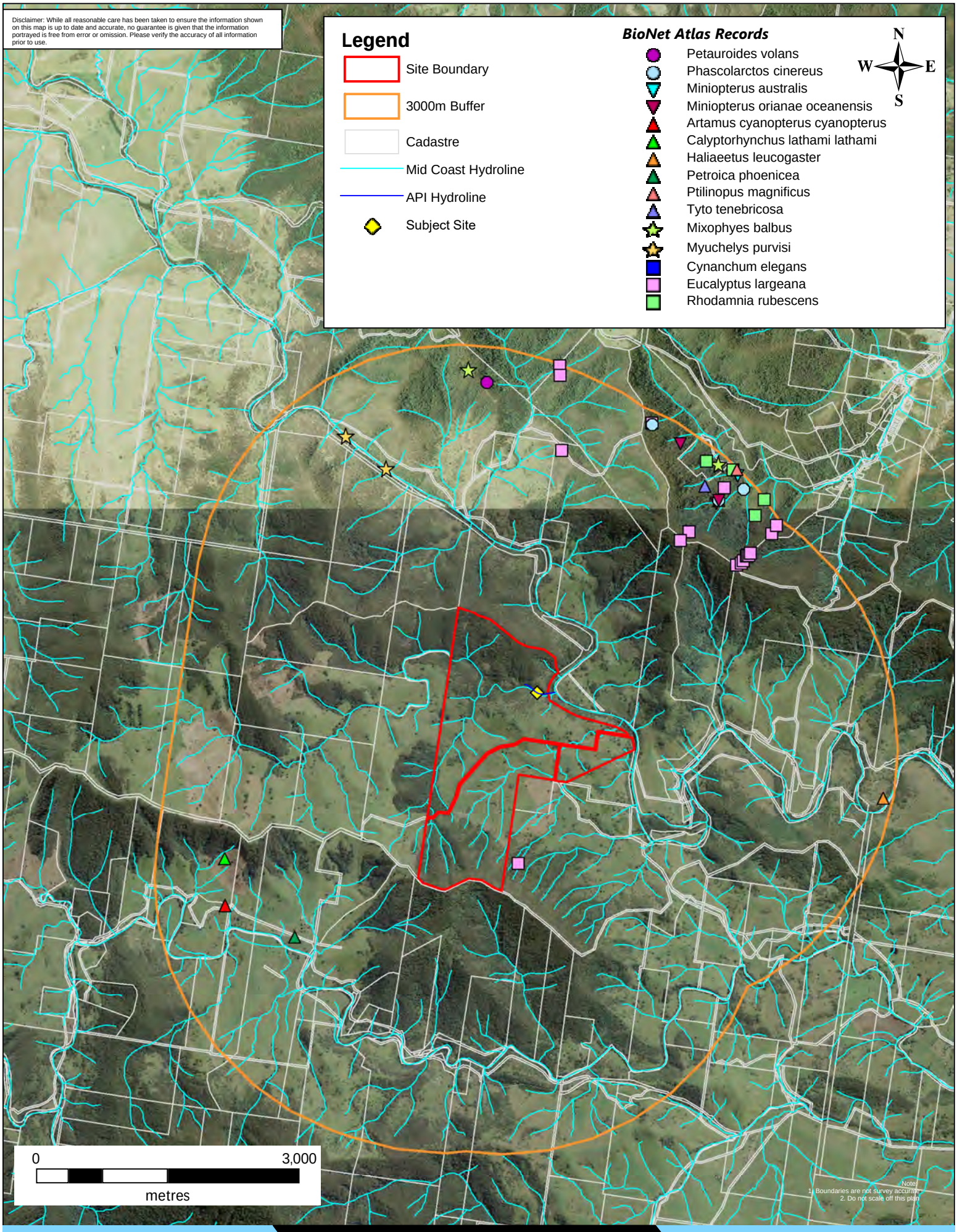
| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| | | | | | outermost leaves of low branches of large eucalypts. | |
| *Daphoenositta chrysoptera* | Varied Sittella | V | | 2 | Inhabits eucalypt forests and woodlands. Forested habitat adjacent the Subject Site.<br>Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years. | Given the lack of preferred habitat in the Study Area, being intact eucalypt forest/woodland, and the few BioNet Records, this species is considered unlikely to occur on site. The proposal will not remove any native vegetation. It is unlikely the proposal will significantly impact this woodland bird, and as such, it is not a Subject Species. |
| *Artamus cyanopterus cyanopterus* | Dusky Woodswallow | V | | 1 | The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. Nest sites vary greatly, but generally occur in shrubs or low trees, living or dead, horizontal or upright forks in branches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post. | Given the lack of preferred habitat, being intact eucalypt woodland, and relatively low BioNet Records, this species is considered unlikely to occur on site. BioNet record approx. 4.5km south west from 2018. Additionally, site surveys returned no results for the species. The proposal has been determined as unlikely to significantly impact the species, and as such, it is not a Subject Species. |

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| *Petroica phoenicea* | Flame Robin | V | | 1 | Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The ground layer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. Nests are often near the ground and are built in sheltered sites, such as shallow cavities in trees, stumps or banks. Builds an open cup nest made of plant materials and spider webs. | Given the lack of preferred habitat in the Study Area and the few BioNet Records, this species is considered unlikely to occur on site. Single BioNet record approx. 4.5km south west from 2016. The proposal will not remove any native vegetation. It is unlikely the proposal will significantly impact this woodland bird, and as such, it is not a Subject Species. |
| **Mammals** | | | | | | |
| *Dasyurus maculatus* | Spotted-tailed Quoll | V | E | 3 | Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. | Closest BioNet record approx. 4.5km north of the Subject Site along Scone Road. Preferred habitat will not be impacted and it is considered unlikely the proposed development will impact this species. |
| *Phascolarctos cinereus* | Koala | E | E | 10 | 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. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Home range size varies with quality of habitat, ranging from less than two ha to several | BioNet records predominantly associated with Copeland Tops State conservation Area north east of the Subject Site. No preferred feed trees are to be removed by the proposed development. No individuals observed or heard during field surveys. It is considered unlikely the proposed development will impact this species. |

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| | | | | | hundred hectares in size. Generally solitary, but have complex social hierarchies based on a dominant male with a territory overlapping several females and sub-ordinate males on the periphery. Females breed at two years of age and produce one young per year. | |
| *Petauroides volans* | Southern Greater Glider | E | E | 1 | The Southern Greater Glider feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range. Occupy a relatively small home range with an average size of 1 to 3 ha. Gives birth to a single young in late autumn or early winter which remains in the pouch for approximately 4 months and is independent at 9 months of age. Usually solitary, though mated pairs and offspring will share a den during the breeding season and until the young are independent. Can glide up to a horizontal distance of 100m including changes of direction of as much as 90 degrees. Very loyal to their territory. | Closest BioNet record approx. 4.5km north of the Subject Site along Scone Road, within Copeland Tops State Conservation Area. No HBTs or preferred feed trees will be impacted by the proposed development. Not considered a subject species. |
| *Miniopterus australis* | Little Bent-winged Bat | V | | 3 | 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. | BioNet records predominantly associated with Copeland Tops State conservation Area north east of the Subject Site. No caves, tunnels or buildings within he Subject Site. Not observed during field surveys, and no evidence of roosting or use of the bridge identified. Bridge will remain after upgrade. It is considered unlikely the proposed development will significantly impact this species. |
| *Miniopterus orianae oceanensis* | Large Bent-winged Bat | V | | 5 | Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use | BioNet records predominantly associated with Copeland Tops State conservation Area north east of the Subject Site. No caves, tunnels or |

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Records | Description | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| | | | | | derelict mines, storm-water tunnels, buildings and other man-made structures. Breeding or roosting colonies can number from 100 to 150,000 individuals. Hunt in forested areas, catching moths and other flying insects above the tree tops. | buildings within he Subject Site. Not observed during field surveys, and no evidence of roosting or use of the bridge identified. Bridge will remain after upgrades. It is considered unlikely the proposed development will significantly impact this species. |
| **Fish** | | | | | | |
| *Mogurnda adspersa* | Southern Purple Spotted Gudgeon | E | | - | | Refer to **Section 10.0 Fisheries Management Act 1994** for assessment. |
| **Odonata** | | | | | | |
| *Archaeophya adamsi* | Adam's Emerald Dragonfly | E | | - | | List as Endangered under the FM Act. While there is suitable habitat within the Study Area, given the small, degraded area to be impacted, it is considered unlikely this species will be impacted by the proposed development. |

**Table Key - Status (BC Act, FM Act & EPBC Act): CE: Critically Endangered, E: Endangered, EP: Endangered Populations V: Vulnerable. (#) – Indicates number of Atlas Records within 5km of the Subject Site.**




AEP

Figure 5 - BioNet Atlas Records

Date: March 2024

Location: 926 Westleys Road, Bindera

Client: Neil Cann & Simon Taylor

AEP Ref: 3427

From **Table 4** above, the species listed in **Table 5** are considered key subject or indicator species for the Subject Site due to being recorded on site, potentially likely to forage and roost or nest on the site, the site potentially forms an important part of a local home range for resident specimens and some potential habitat may be impacted by the proposal.

**Table 5 – Subject Species**

| Scientific Name | Common Name | BC Act | EPBC Act |
|---|---|---|---|
| **Fauna** | | | |
| *Myuchelys purvisi* | Manning River Helmeted Turtle, Purvis' Turtle | E | |

**CE: Critically Endangered, E: Endangered, V: Vulnerable.**

# 7.0 Key Species Considerations

The species identified for further consideration have been analysed in **Table 6**. By considering these species and their lifecycle needs, many other species are also inadvertently considered. The analysis below considers key lifecycle features for each guild of species in more detail, and assists in informing the subsequent 5-part test assessment.

**Table 5 – Key Species Analysis**

| Guild / Species | Reason for Inclusion | Comment |
|---|---|---|
| *Myuchelys purvisi* | Nearby records and connectivity to suitable habitat within the Subject Site. | |

# 8.0 Five-part Test Assessment

Section 7.3 of the BC Act lists five factors that must be taken into account in determining the significance of potential impacts of proposed activities on threatened species, populations, ecological communities and/or their habitats as listed within the BC Act.

The 5-part test is used to determine whether there is likely to be a significant impact, and thus whether the Biodiversity Offsets Scheme (BOS) is triggered.

**Table 6 – Key Species Five-part Test**

| No. | Clause | Assessment |
|---|---|---|
| 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. | The proposed development is likely to have a minimal impact on the life cycle of Purvis' Turtle. Construction and civil works may temporarily impact potential riparian habitat, however given the small area it is unlikely the life cycle of Purvis' Turtle will be impacted. However, once bridge is complete it will not cause an adverse effect on the life cycle of this species. |
| b) | In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:<br>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<br>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. | The proposed development will not hinder, damage or modify any ecological community, as no vegetation is proposed to be removed. |
| c) | In relation to the habitat of a threatened species or ecological community:<br>i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and<br>ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and<br>iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality. | As above. |
| 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) | No areas of outstanding biodiversity value occur within the Study Area. |
| e) | Whether the proposed development or activity is or is part of a key threatening | The development has potential to contribute to the following KTPs: |

| No. | Clause | Assessment |
|---|---|---|
| | process or is likely to increase the impact of a key threatening process (KTP). | *Alteration to the natural flow regimes of rivers, streams, floodplains & wetlands.*<br>The natural flow regime may have been altered by the existing bridge. The proposed design will result in low to no impact to the current flow regime. Minimal and temporary impact may occur during the construct phase. However, once the bridge is replaced it is deemed to have flow impacts in flood events.<br>*Anthropogenic Climate Change*<br>While the proposed development will have minimal direct contribution towards anthropogenic climate change, cumulative impacts should be considered. It is recommended that all construction processes and designs adopt relevant guidelines for the reduction and minimisation of actions contributing to climate change. |

# 9.0 EPBC Act Assessment

A search was conducted in December 2023 for Matters of National Environmental Significance (MNES) as relevant to the EPBC Act. The following MNES are considered in this assessment.

**World Heritage Properties:**

The site is not a World Heritage area and is not in close proximity to any such area.

**National Heritage Places:**

The site is not a National Heritage Place and does not contain any matters of national heritage.

**Wetlands of International Significance (declared Ramsar wetlands):**

The site is not a declared RAMSAR wetland.

**Great Barrier Reef Marine Park:**

The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

**Commonwealth Marine Areas:**

The site is not part of, or within close proximity to, any Commonwealth Marine Area.

**Threatened Ecological Communities (TECs):**

There are three (3) listed TECs within a 5km radius of the Subject Site:

- Lowland Rainforest of Subtropical Australia
- Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions
- Coastal Swamp Sclerophyll Forest of NEW South Wales and South East Queensland

No vegetation will be removed by the proposed development; therefore, no further assessment is required.

**Threatened Species:**

No listed species were observed during field surveys. While *Myuchelys purvisi* is endemic to the Manning River and has been recorded nearby historically, additional impacts to any population are considered highly unlikely.

No vegetation is proposed to be removed by this development. Therefore, it is unlikely to significantly impact any EPBC listed flora.

**Migratory Species:**

A total of 13 migratory species may occur in, or may relate to areas within 5km of the Subject Site. It is not considered the development is likely to significantly affect the availability of potential habitat for such mobile species, or disrupt migratory patterns.

**EPBC Act Assessment Conclusion:**

Consideration of the EPBC Act revealed that it is unlikely that significant impacts on Matters of National Environmental Significance will occur as a result of the proposal. As such a referral is not considered likely to be necessary.

# 10.0 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) objectives are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. The proposed bridge requires the following sections to be addressed under the FM Act:

- Section 201 – A permit is required for dredging or reclamations works on water lands; and
- Section 219 – The blocking of fish passage is prohibited.
- Section 220ZZ – Significant effects on threatened species or community must be assessed.

The following assessment has been undertaken in accordance with the FM Act relevant policies.

The proposed replacement bridge installation will impact the creek bed and create a temporary creek diversion. Additionally, the Subject Site is located within identified *Key Fish Habitat* (**Figure 6**). Therefore, the proposal will require a permit in accordance with the FM Act, and consultation and applications to the Department of Primary Industries (Fisheries).

## 10.1 Dredge and Reclamation Assessment

Under Section 201 of the FM Act a permit will be required to undertake dredging and reclamations activities in Mackays Creek. To obtain approval, an evaluation of risk of environmental factors is required as per Section 171 of the *Environmental Planning and Assessment Regulation 2021.*

**Table 7 – Environmental Risk Assessment for the proposed causeway**

| Environmental Factor | Risk Level (High, Moderate, Low, Nil) | Assessment |
|---|---|---|
| (a) the environmental impact on the community, | Low | Bridge works will provide access to a rural property. Direct environmental impacts to the community are likely marginal and limited, such as increased turbidity downstream during the construction phase. |
| (b) the transformation of the locality, | Low | Given the relatively small scale of the proposed works, it is expected that there will be no major transformation of the locality. |
| (c) the environmental impact on the ecosystems of the locality, | Low | Given the small area of impact and work is for an existing bridge replacement, it is unlikely the local ecosystem will be impacted. |
| (d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality, | Low | No reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality is likely from the proposed development. |
| (e) the effects on any locality, place or building that has—<br>(i) aesthetic, anthropological, | Low | The Subject Site does not represent a place of special value to present or future generations. |

| Environmental Factor | Risk Level (High, Moderate, Low, Nil) | Assessment |
|---|---|---|
| archaeological, architectural, cultural, historical, scientific or social significance, or<br>(ii) other special value for present or future generations, | | |
| (f) the impact on the habitat of protected animals, within the meaning of the Biodiversity Conservation Act 2016, | Low | Given the relatively small scale of the proposed works no significant impact to the habitat of listed threatened species is expected.<br>The proposed works will not impede the flow of Mackays Creek during or post construction. |
| (g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air, | Low | Given the relatively small scale of the proposed works, the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air is not expected. |
| (h) long-term effects on the environment, | Low | Given the relatively small scale of the proposed works, no long-term effects on the environment are expected. |
| (i) degradation of the quality of the environment, | Low | Given the relatively small scale of the proposed works, no degradation of the quality of the environment is expected. |
| (j) risk to the safety of the environment, | Low | The proposal is unlikely to impact the safety of the environment. |
| (k) reduction in the range of beneficial uses of the environment, | Low | The small area to be impacted by the proposed bridge is unlikely to reduce the range of beneficial uses of the environment. |
| (l) pollution of the environment, | Low | The proposal is unlikely to cause pollution of the environment. A small increase in turbidity may occur during construction, however this is not likely to be significant given sedimentation likely already occurs from cattle grazing in the riparian zone. |
| (m) environmental problems associated with the disposal of waste, | Low | It is recommended approval is conditioned to require a Construction Environmental Management Plan that specifies the procedure for waste disposal during construction.<br>Adherence to a suitable plan will result in minimal impact to the environment from waste disposal. |
| (n) increased demands on natural or other resources that are, or are likely to become, in short supply, | Low | It is unlikely the proposed bridge will significantly impact natural resource supplies. |
| (o) the cumulative environmental | Low | The proposed works are for the replacement of an existing structure. Given the small scale of the proposed works it is |

| Environmental Factor | Risk Level (High, Moderate, Low, Nil) | Assessment |
|---|---|---|
| effect with other existing or likely future activities, | | unlikely any cumulative impacts to the environment will be significant. |
| (p) the impact on coastal processes and coastal hazards, including those under projected climate change conditions, | Nil | No impact to coastal processes or coastal hazards is predicted. |
| (q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1, | Low | Given the small scale of the proposed works, it is unlikely the proposal would oppose the objectives and aims of any strategic plans. |
| (r) other relevant environmental factors. | Nil | No other environmental factors are likely to be impacted by the proposed causeway. |

## 10.2 Blockage of Fish Passage Assessment

Under Section 219 of the FM Act, fish passage is not to be blocked without a permit from NSW DPI Fisheries:

***219 Passage of fish not to be blocked***

The current proposed design of the bridge replacement will not impede fish passage. Fish passage will not be blocked during the construction phase.

## 10.3 Threatened Fish Species Assessment

Detailed analysis of NSW DPI (Fisheries) Threatened Species List and Spatial Data Portal were undertaken in December 2023. There are no listed Threatened fish species mapped as occurring within the Study Area. *Mogurnda adspersa* (Southern Purple Spotted Gudgeon) is mapped (**Figure 7**) as occurring in streams within a 5km radius of the Subject Site and further assessment is considered below for this species.

A threatened species assessment has been undertaken in accordance with Department of Primary Industries (2006) *Threatened species assessment guidelines: The Assessment of Significance* (**Table 8**).

**Table 8 – DPI Fisheries Threatened Species Assessment**

| No. | Clause | Assessment |
|---|---|---|
| a) | In the case of a threatened species, whether the action proposed 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. | The proposed bridge will not block fish passage.<br>*Mogurnda adspersa* where not observed during field surveys. |
| b) | in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction. | No endangered populations are currently mapped within the Study Area or surrounds.<br>No species belonging to an endangered population was observed during field surveys.<br>The proposal is considered unlikely to impact a listed endangered population. |
| c) | in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:<br>(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<br>(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 | The Study Area does not occur in a listed endangered or critically endangered ecological community. |
| d) | in relation to the habitat of a threatened species, population or ecological community:<br>(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and | The proposed works are for replacement of an existing bridge. Minimal habitat is likely to be impacted. |
| | (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and | The proposed works will not fragment or isolate any areas of habitat. |
| | (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality. | The proposed works will not fragment or isolate any areas of habitat. Minimal habitat is likely to be impacted. |
| e) | whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly). | No critical habitat for *Mogurnda adspersa* is listed within the Study Area. |

| No. | Clause | Assessment |
|---|---|---|
| f) | whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan. | It is considered the proposed bridge replacement is consistent with priority recovery actions. |
| g) | whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process. | *Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams.*<br>The proposed works will not impede fish passage during , or post, construction.<br><br>*Degradation of native riparian vegetation along New South Wales water courses*<br>No native vegetation is proposed to be removed. The proposed bridge replacements are to an existing structure and will connect to existing roads. It is considered unlikely the proposal with contribute significantly to this Key Threatening Process.<br><br>*Removal of large woody debris from New South Wales rivers and streams*<br>Fallen trees and logs provide instream woody structure for aquatic fauna.<br>It is recommended, where possible, instream woody debris should not be removed. |

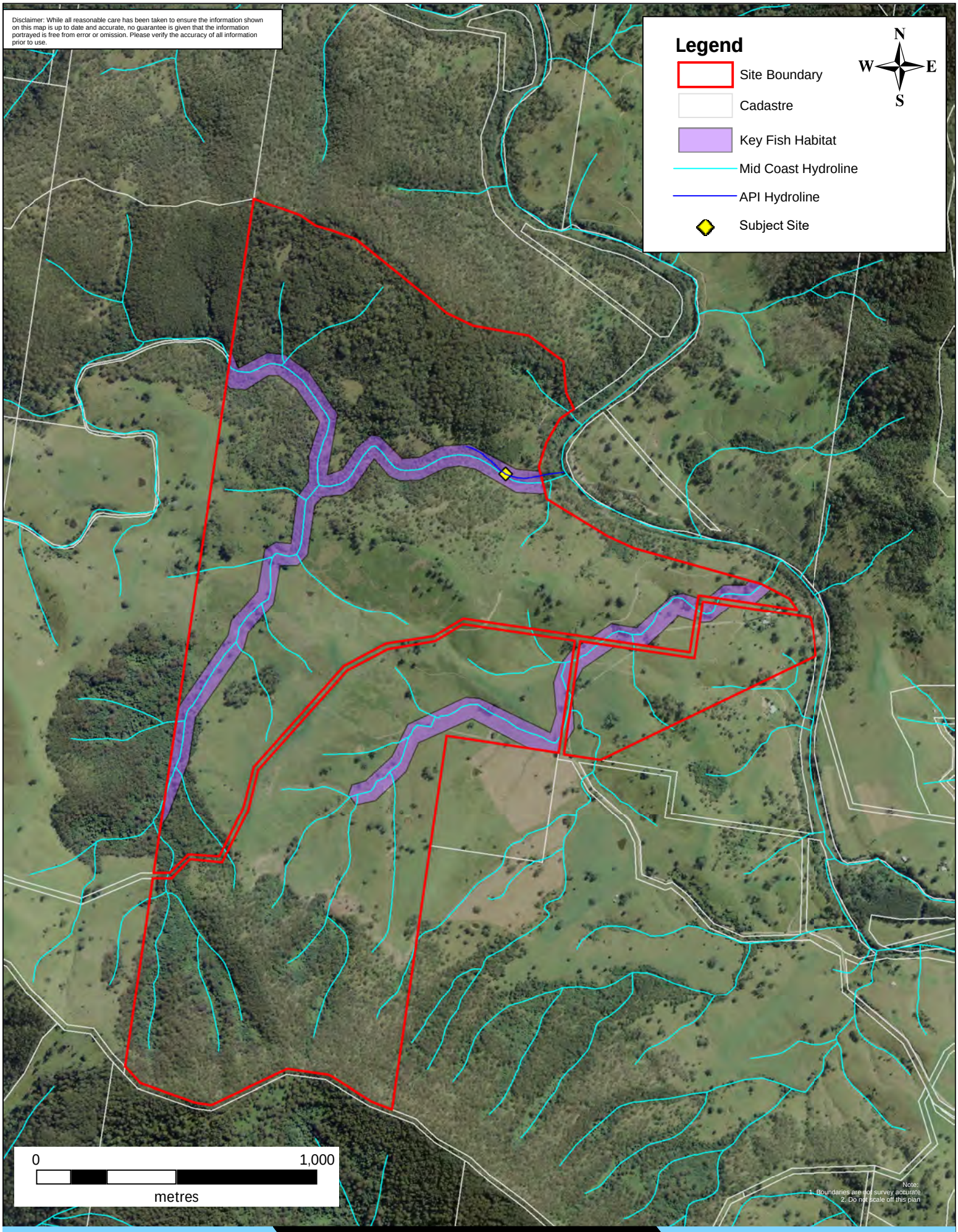



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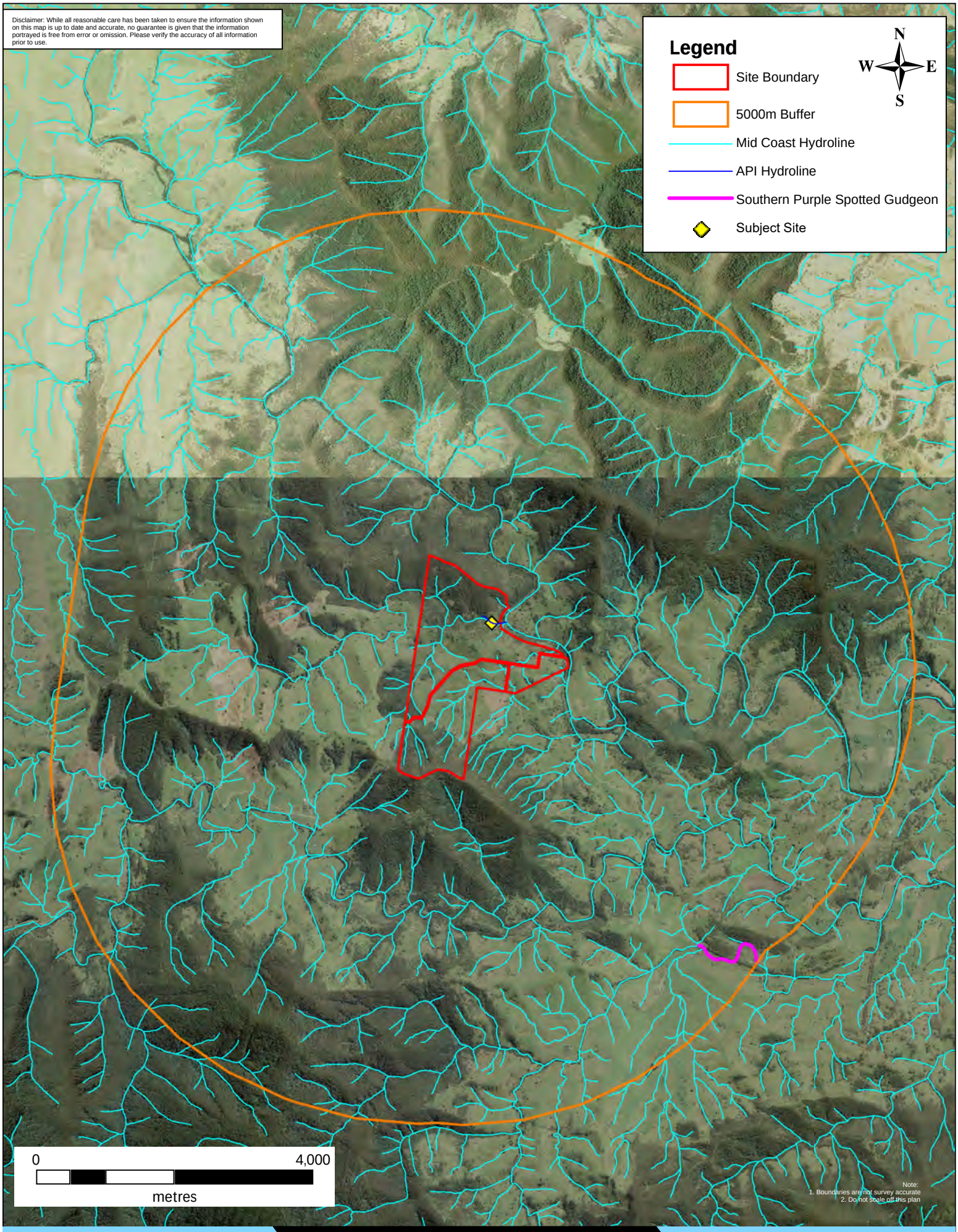
Figure 6 - Key Fish Habitat

Date: March 2024

Location: 926 Westleys Road, Bindera

Client: Neil Cann & Simon Taylor

AEP Ref: 3427




AEP

Figure 7 - Southern Purple Spotted Gudgeon Indicative Distribution

Date: March 2024

Location: 926 Westleys Road, Bindera

Client: Neil Cann & Simon Taylor

AEP Ref: 3427

# 11.0 Water Management Act 2000

Mackays Creek, a 4th order stream, runs through the Subject Site (refer **Figure 1**). Under the WM Act, development work within 40m of a mapped watercourse requires a Controlled Activity Approval (CAA).

**Table 9** outlines DPE (2022) guidelines for works and activities that can occur on waterfront land and in riparian corridors under the WM Act (note approvals are still required under other legislation). The proposed bridge replacement is permissible on a 4th order stream; however, a CAA is required.

**Table 9 – Riparian Corridor Matrix**

| Type | VRZ width (each side of WC) | Total RC width | Cycleways and pathways | Detention basins | | Stormwater outlet structures and essential services | Stream realignment | Road crossings | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Only within 50% outer VRZ | Online | | | Any | Culvert | Bridge |
| 1st order | 10m | 20m + channel width | Yes | Yes | Yes | Yes | Yes | Yes | - | - |
| 2nd order | 20m | 40m + channel width | Yes | Yes | Yes | Yes | - | Yes | - | - |
| 3rd order | 30m | 60m + channel width | Yes | Yes | - | Yes | - | - | Yes | Yes |
| 4th order or greater | 40m | 80m + channel width | Yes | Yes | - | Yes | - | - | Yes | Yes |

# 12.0 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The Biodiversity and Conservation SEPP commenced on 1 March 2022. This SEPP consolidated 11 other SEPPs within this SEPP on 1 March 2022. The State Environment Planning Policy (Koala Habitat Protection) 2021 (BC SEPP) was one SEPP that was consolidated within the Biodiversity and Conservation SEPP 2021 under Chapter 4 – Koala Habitat Protection 2021. No policy changes were made as part of the consolidation nor did the legal effect of the existing SEPPs, with section 30A of the Interpretation Act 1987 applying to the transferred provisions. The consolidation was undertaken in accordance with section 3.22 of the *Environmental Planning and Assessment Act 1979*.

The Biodiversity and Conservation SEPP 2021 aims 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.

No vegetation, listed Koala Use Tree or Feed Tree is proposed to be impacted by the proposed development; therefore, no further assessment is required.

# 13.0 Recommendations

The following general recommendations are made for consideration to minimise localised impacts on biodiversity in general as a result of the rezoning and development of the site:

- Prior to construction, a suitably experienced and qualified Project Ecologist should be appointed to oversee ecological works to mitigate construction impacts on native biota welfare.
- Prior to construction commencing, temporary construction fencing and signage will be installed to delineate construction zone from retained vegetation.
- Prior to construction commencing, the Project Ecologist will inspect the exclusion flagging tape alignment to ensure it is adequate for protection of retained trees and vegetation.
- No machinery or material should be stored within retained vegetation or within the dripline of retained trees.
- Equipment should be cleaned thoroughly and disinfected before entering and exiting site to prevent weed and disease introduction such as *Phytophthora cinnamomi* (Root-rot fungus), *Puccinia psidii* (Myrtle Rust) and others.
- The removal of in-stream woody debris should be minimised where possible during construction. Any in-stream woody debris removed should be returned to a similar location and position post construction if possible.
- Construction should occur in stages to ensure continual flow of the river and prevent the blockage of fish passage.
- It is recommended approval is conditioned to provide a Construction Environmental Management Plan that specifies the procedure for waste disposal during construction.

# 14.0 References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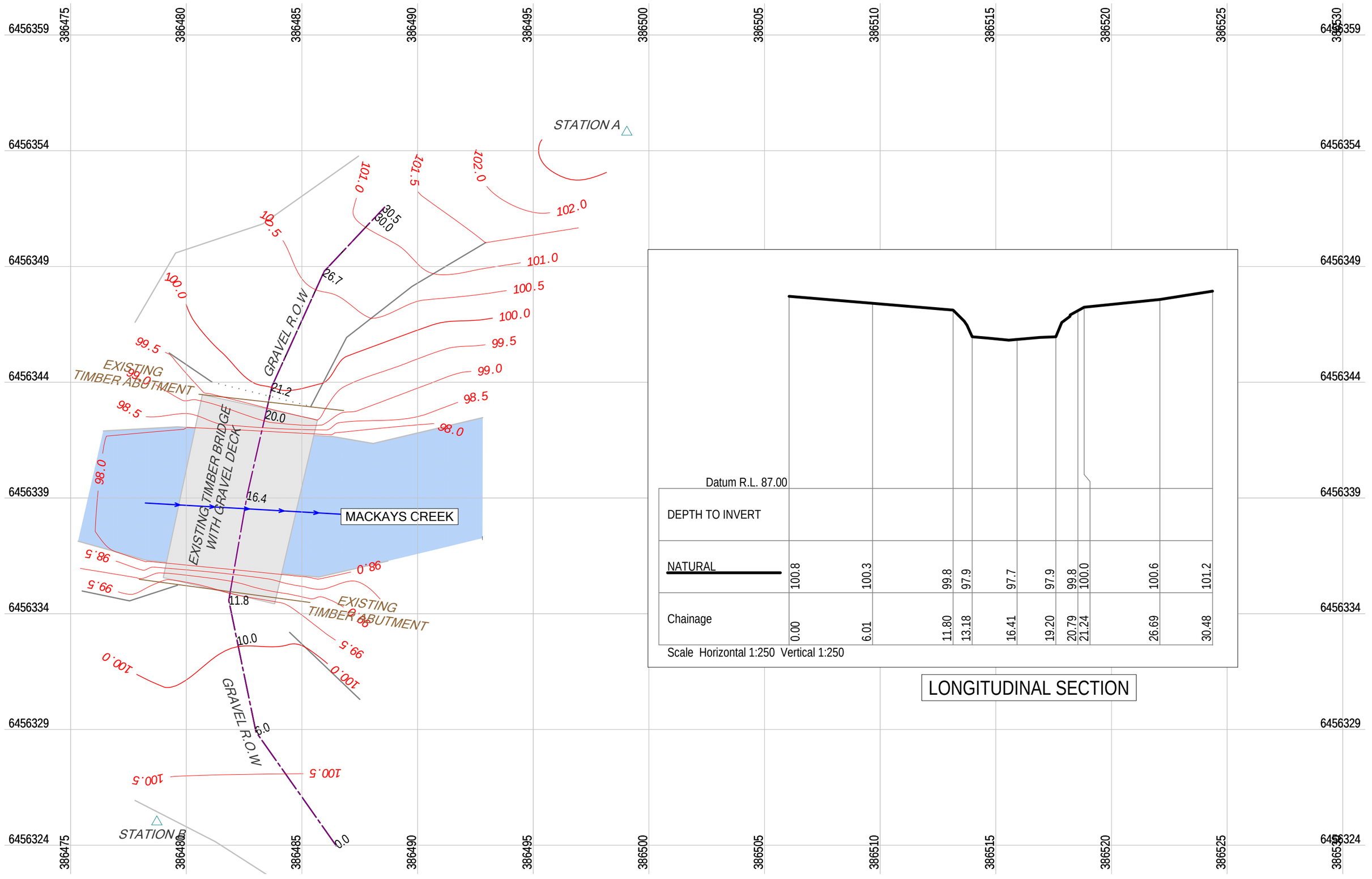
# Appendix A – Proposed Development Plans




Datum R.L. 87.00

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH TO INVERT | | | | | | | | | | |
| NATURAL | 100.8 | 100.3 | 99.8 | 97.9 | 97.7 | 97.9 | 99.8 | 100.0 | 100.6 | 101.2 |
| Chainage | 0.00 | 6.01 | 11.80 | 13.18 | 16.41 | 19.20 | 20.79 | 21.24 | 26.69 | 30.48 |

Scale Horizontal 1:250 Vertical 1:250

## LONGITUDINAL SECTION


CalCo SURVEYORS PTY LTD
34 KING STREET, GLOUCESTER
P.O. BOX 194 GLOUCESTER 2422.
Ph. 02 6558 2255 Fax. 02 6558 2327
EMAIL - survey@calcosurveyors.com.au


PROJECT - BINDERA ROC

CLIENT - CANN

*DETAIL PLAN OF MACKAYS BRIDGE*
*ROW ACCESS WITHIN LOT 902 DP878135*

SCALE 1:150
DATUM - AHD
DATE 21/04/2022

JOB No. 3547
DWG No. MACKAYS

| AMENDMENTS | DATE | BY | AMENDMENTS | DATE | BY |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

# Appendix B – Flora Species List

# FLORA SPECIES LIST

The following list includes all species of vascular plants observed on site during fieldwork. It should be noted that such a list cannot be considered comprehensive, but rather indicative of the flora present on the site. It can take many years of flora surveys to record all of the plant species occurring within any area, especially plant species that are only apparent in some seasons such as Orchids.

A number of species cannot always be accurately identified during a brief survey, generally due to a lack of suitable flowering and/or fruiting material. Any such species are identified as accurately as possible, and are indicated in the list as thus:

- specimens that could only be identified to genus level are indicated by the generic name followed by the abbreviation “sp.”, indicating an unidentified species of that genus;
- specimens for which identification of the genus was uncertain are indicated by a question mark (“?”) placed in front of the generic, which is followed by the abbreviation “sp.” and;
- specimens that could be accurately identified to genus level, but could be identified to species level with only a degree of certainty are indicated by a (“?”) placed in front of the epithet.

Authorities for the scientific names are not provided in the list. These follow the references outlined below.

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Names of families and higher taxa follow a modified Cronquist System (1981).

Exotic species are indicated by an asterisk “*”.

Threatened species listed under the *Biodiversity Conservation Act 2016 (BC Act)* or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are indicated in **bold font**.

| Family | Scientific Name | Common Name |
|---|---|---|
| Casuarinaceae | *Casuarina cunninghamiana subsp. cunninghamiana* | River Oak |
| Crassulaceae | *Crassula sp.** | |
| Cyperaceae | *Cyperus sp.* | |
| Lomandraceae | *Lomandra longifolia* | Spiky-headed Mat-rush |
| Moraceae | *Meclura cochinchinensis* | Cockspur Thorn |
| Oleaceae | *Ligustrum sinense** | Narrow-leaf Privet |
| Oleaceae | *Ligustrum lucidum** | Broad-leaf privet |
| Poaceae | *Cenchrus clandestinus** | Kikuyu |
| Poaceae | *Bouteloua dactyloides** | Buffalo Grass |
| Polygonaceae | *Persicaria decipiens* | Slender Knotweed |
| Verbenaceae | *Lantana camara** | Lantana |
| Verbenaceae | *Verbena bonariensis** | Purple Top |

# Appendix C – Observed Fauna Species List

# Observed Fauna Species List

The following list includes all fauna species that were recorded within the Study area during the surveys undertaken at the Subject Site

**Surveyed Observations**

- Observed (O)
- Heard (W)
- Scat (P)
- Miscellaneous (M)
- Track/Scratchings (F)
- Nest/Roost (E)
- Burrow (FB)
- Hair/Feathers/Skin (H)

**Bat Records**

- Definite (D)
- Likely (L)
- Possible or within Species Group (P)

**Survey Equipment**

- Anabat (U)
- Songmeter (AR)
- Camera Trap (Q)
- Trapped or Netted (T)

| Scientific Name | Common Name | NSW status | Comm. status | BioNet Atlas Records | Surveyed Observations | Survey Equipment |
|---|---|---|---|---|---|---|
| **Aves** | | | | | | |
| *Rhipidura leucophrys* | Willy Wagtail | - | - | - | O | - |
| *Platycercus eximius* | Eastern Rosella | - | - | - | O | - |
| *Eolophus roseicapilla* | Galah | - | - | - | O | - |
| *Aquila audax* | Wedge-tail Eagle | - | - | - | O | - |
| *Gymnorhina tibicen* | Magpie | - | - | - | O | - |
| *Platycercus elegans* | Crimson Rosella | - | - | - | O | - |
| *Malurus cyaneus* | Superb Fairy Wren | - | - | - | O | - |
| *Cacatua galerita* | Sulphur-Crested Cockatoo | - | - | - | O | - |
| *Falco berigora* | Brown Falcon | - | - | - | O | - |
| *Manorina melanocephala* | Noisy Miner | - | - | - | O | - |
| **Reptile** | | | | | | |
| *Chelodina longicollis* | Eastern Long-neck Turtle | - | - | - | O | - |

# Appendix D – BOSET Report

Department of Planning and Environment

# Biodiversity Values Map and Threshold Report

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

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

There are two pathways for determining whether a BDAR is required for the proposed development:

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

## Biodiversity Values Map and Threshold Report

| | | |
|---|---|---|
| **Date of Report Generation** | | 09/01/2024 11:43 AM |
| **1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)** | | |
| 1.1 | **Does the development Footprint intersect with BV mapping?** | yes |
| 1.2 | Was ALL BV Mapping within the development footprinted added in the last 90 days? (dark purple mapping only, no light purple mapping present) | no |
| 1.3 | **Date of expiry of dark purple 90 day mapping** | N/A |
| 1.4 | **Is the Biodiversity Values Map threshold exceeded?** | yes |
| **2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)** | | |
| 2.1 | **Size of the development or clearing footprint** | 7,041.2 sqm |
| 2.2 | **Native Vegetation Area Clearing Estimate (NVACE)** (within development/clearing footprint) | 7,041.2 sqm |
| 2.3 | **Method for determining Minimum Lot Size** | LEP |
| 2.4 | **Minimum Lot Size** (10,000sqm = 1ha) | 1,000,000 sqm |
| 2.5 | **Area Clearing Threshold** (10,000sqm = 1ha) | 10,000 sqm |
| 2.6 | **Does the estimate exceed the Area Clearing Threshold?** (NVACE results are an estimate and can be reviewed using the Guidance) | no |

| | |
|---|---|
| **REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area?** (Your local council will determine if a BDAR is required) | **yes** |

## What do I do with this report?

• If the result above indicates the BOS Threshold has been exceeded, your local council may require a Biodiversity Development Assessment Report with your development application. Seek further advice from Council. An accredited assessor can apply the Biodiversity Assessment Method and prepare a BDAR for you. For a list of accredited assessors go to: https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor.

• If the result above indicates the BOS Threshold has not been exceeded, you may not require a Biodiversity Development Assessment Report. This BMAT report can be provided to Council to support your development application. Council can advise how the area clearing threshold results should be considered. Council will review these results and make a determination if a BDAR is required. Council may ask you to review the area clearing threshold results. You may also be required to assess whether the development is '"likely to significantly affect threatened species" as determined under the test in Section 7.3 of the *Biodiversity Conservation Act 2016*.

• If a BDAR is not required by Council, you may still require a permit to clear vegetation from your local council.

• If all Biodiversity Values mapping within your development footprint was less than 90 days old, i.e. areas are displayed as dark purple on the BV map, a BDAR may not be required if your Development Application is submitted within that 90 day period. Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 1.3 above.

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

## Review Options:

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

• If you or Council disagree with the area clearing threshold estimate results from the NVACE in Line Item 2.6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared), review the results using the Guide for reviewing area clearing threshold results from the BMAT Tool.

## Acknowledgement

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

Signature: _____ Date:_____

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

09/01/2024 11:43 AM

# Biodiversity Values Map and Threshold Tool

The Biodiversity Values (BV) Map and Threshold Tool identifies land with high biodiversity value, particularly sensitive to impacts from development and clearing.

The BV map forms part of the Biodiversity Offsets Scheme threshold, which is one of the factors for determining whether the Scheme applies to a clearing or development proposal. You have used the Threshold Tool in the map viewer to generate this BV Threshold Report for your nominated area. This report calculates results for your proposed development footprint and indicates whether Council may require you to engage an accredited assessor to prepare a Biodiversity Development Assessment Report (BDAR) for your development.

This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

What's new? For more information about the latest updates to the Biodiversity Values Map and Threshold Tool go to the updates section on the Biodiversity Values Map webpage.

Map Review: Landholders can request a review of the BV Map where they consider there is an error in the mapping on their property. For more information about the map review process and an application form for a review go to the Biodiversity Values Map Review webpage.

If you need help using this map tool see our Biodiversity Values Map and Threshold Tool User Guide or contact the Map Review Team at map.review@environment.nsw.gov.au or on 1800 001 490.

# Biodiversity Values Map


558.6 0 279.28 558.6 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

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

Legend

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

09/01/2024 11:43 AM



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

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

# Appendix E – Site Photographs

**Above: Existing bridge over Mackays Creek.**

**Below: Downstream of the existing bridge.**

**Above: Upstream of Mackays Creek.**

**Below: High abundance *Ligustrum sinense* in the riparian zone.**

**Above: In-stream rock and woody debris benthos.**

**Below: Underside of existing bridge.**

**Above: Eastern Long-neck Turtle (*Chelodina longicollis*) within the Subject Site.**

**Below: Mackay Creek in-stream bed and bank.**

# Appendix F – Author CVs

# OSCAR ANDERSON

## Curriculum Vitae

*Oscar works with AEP in the role of Ecologist. Whilst studying at the University of Newcastle, he conducted ecological field studies as a requirement of his degree courses, gaining experience in the field..*

## Qualifications

- Environmental Science and Management, University Of Newcastle Expected in October 2023

## Further Education & Training

- First Aid/CPR
- White Card

## Ecological Field Experience

- Plant knowledge
- Grounds maintenance
- Landscape equipment operation
- Landscaping plans
- Environmental remediation
- Impact Assessment

## Relevant Employment History

**April 22 – Current** **Ecologist**
Anderson Environment and Planning, Newcastle

**May 2021 – Current** **Tree Service Groundman**
Affordable Tree Services, Newcastle

- Trimmed Greenery, shrubs and hedges to maintain uniform appearance.
- Organised materials, tools and equipment to supply team members.
- Used Shears, pruners and chainsaws to prune and trim hedges and shrubs.
- Operated chainsaws.
- Limbed and pruned variety of tree species.
- Operated shredded and chipping equipment and fed limbs and brush into machines.
- Quickly learned new skills and applied them to daily tasks, improving efficiency and productivity.
- Carried out day-day-day duties accurately and efficiently.
- Demonstrated respect, friendliness and willingness to help wherever needed.

# Brendon Young

Curriculum Vitae

*Brendon works with AEP in the role of Ecologist. He graduated with a Bachelor of Applied Science (Honours) and a Masters in Environmental Management, majoring in fish conservation and management. Brendon has previously worked in large retail operations in staff and budget/data management, reporting and quality assurance which adds to the experience that he currently contributes to the AEP team.*

**Qualifications**

- CPR and First Aid (Completed on 30/11/21)
- White Card (Completed on 11/02/22)

**Further Education & Training**

- Master of Environmental Management (Natural Resources)
- Graduate Certificate of Fish Conservation and Management (Charles Sturt University)
- Bachelor of Applied Science (Fisheries) with Honours

**Fields of Competence**

- Training with aquatic sampling techniques such as seine nets, gill nets and fyke nets.
- Training in the use of mist netting, bat harp traps, Elliot traps, pitfall traps and camera traps.
- Experience identifying fish, reptiles, insects, and plants to species level through honours research and other projects while studying.

**Relevant Employment History**

**2022 – Present** **Ecologist**
Anderson Environment & Planning, Newcastle

**2013-2022** **Department Manager**
Woolworths Pty Ltd

Provision of leadership and coaching for a team of 5 to 20 members. Coach and guide daily activities to a high standard and achieve key performance indicators. Manage wage, sales, and wastage budgets. Plan for periodical events and long-term direction of the department.

**March 2019-Oct 2019** **Produce Quality Control Officer**
Woolworths Pty Ltd

Inspection of produce as it arrives at the warehouse to ensure the required specifications for quality, size, weight and ripeness were met. Rejection of stock that did not meet company specification.

# Natalie Black

## Curriculum Vitae

Natalie works with AEP in the role of Senior Environmental Manager. She has extensive knowledge in environmental management, environmental planning, and report writing and assessment. With a detail understanding of planning, catchment management, coastal management and rehabilitation. Natalie has had a successful career with both state and local government in conservation, planning and field investigation roles. Natalie has also gained extensive communication skills and project management through her previous career in lecturing. Her background and experience in the ecological and planning fields is utilised in a diverse array of application in her current role.

## Qualifications

- B.Sc (Hons), University of Newcastle, 2002 Sustainable Resource Management and Marine Science.
- Master Planning, University of Technology Sydney 2007.
- Certificate IV Training and Assessment at NSW TAFE 2012.
- BAM Assessor; accreditation number: BAAS19076.

## Further Education & Training

- Evidence Gathering and Legal Process (Australian Institute of Environmental Health).
- Conflict Resolution Course (LGSA).
- Report Writing Course (LGSA).
- Powerful Presentation (LGSA).
- NSW Rural Fire Services Bush Fire Assessment
- Relocation of Threatened Species (Botanical Gardens Sydney).
- Sustainable Home Assessment Reduction Revolution.
- Flora and Fauna Survey Assessments Niche Environment and Heritage.
- First Aid TAFE.

## Fields of Competence

- Environmental Planning
- Environmental Management and rehabilitation of catchments coastal waterways. Statement of Environmental Effects (preparation and assessing).
- Fish Passage
- Marine ecosystems including; mangroves, seagrasses, algae, Fauna and habitat assessment.
- vegetation.
- Communicating with a wide range of stakeholders.
- Development Application.
- Education in both Environmental and Planning industries.
- Koala Plans of Management.
- Policy Development.

## Relevant Employment History

| | |
|---|---|
| **2019 – Present** | **Senior Environmental Manager** |
| | Anderson Environment & Planning, Newcastle |
| **2010 - 2019** | **Principal Environmental Planner** |
| | Black Earth |
| **2003-2010** | **Natural Resource Manager and** |
| | **Development Assessment Officer** |
| | Lismore City |
| **2002- 2003** | **Jervis Bay Indigenous Fishing Strategy** |