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REVIEW OF ENVIRONMENTAL FACTORS

PART 5 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Proposed Bridge Replacement Works

Tantulean Creek Bridge

Little River Road, Mongarlowe NSW

Queanbeyan Palerang Regional Council

July 2023

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Document Control and Review

Review of Environmental Factors.

Proposed Bridge Replacement Works, Tantulean Creek Bridge

Little River Road, Mongarlow, NSW.

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1 Introduction

1.1 Proposal identification

Queanbeyan Palerang Regional Council (Council) are responsible for the provision and maintenance of local road infrastructure in this Local Government Area as part of their responsibilities to their ratepayers. Council has identified that the bridge on Little River Road, crossing Tantulean Creek is reaching the end of its useful life and is at risk of becoming unserviceable. This bridge is an important asset on Little River Road providing vehicular access to the Mongarlowe community to the east of Tantulean Creek.

The existing bridge is single lane and of timber construction including abutment walls, joists and deck.

The proposal is to demolish the existing bridge and construct in its place a single lane concrete cast in place bridge structure crossing Tantulean Creek.

During works Little River Road will be closed at the works site and traffic diverted via Northangera Road.

The scope of the works is summarised as follows;

1. Traffic management, during works Little River Road will be closed at the works site and traffic detoured via Northangera Road
2. Installation of temporary erosion and sediment controls
3. Demolition of existing bridge structure and removal of components, foundation of central pier to remain in place so as to not disturb creek bed
4. Construction of new approaches and formation matched to existing road surface
5. Construction of cast in place headwalls and deck
6. Sealing of deck matched to approaches
7. Drainage and construction as required
8. Installation of traffic signage and bridge furniture including barriers
9. Commissioning of new crossing
10. Rehabilitation of site including removal of temporary erosion control structures & all waste materials and ensuring site is not subject to accelerated erosion.

The proposal location and study area are identified on Map 1-1 of this report. The study area includes the site of the works and adjoining lands to the extent that they may be impacted by the works.

The environment is characterised by a rural setting of cleared agricultural paddocks and a third order stream.

Vegetation in the road reserve is native dominant on the edge of intact native forest. Some weed species are present though do not pose an environmental risk.

1.2 Purpose of the report

This Review of Environmental Factors (REF) has been prepared by Macrozamia Environmental on behalf of Council under Part 5 of the *Environmental Planning and*

Assessment Act 1979 (EP&A Act). For these works Council is the proponent and the determining authority under this Act.

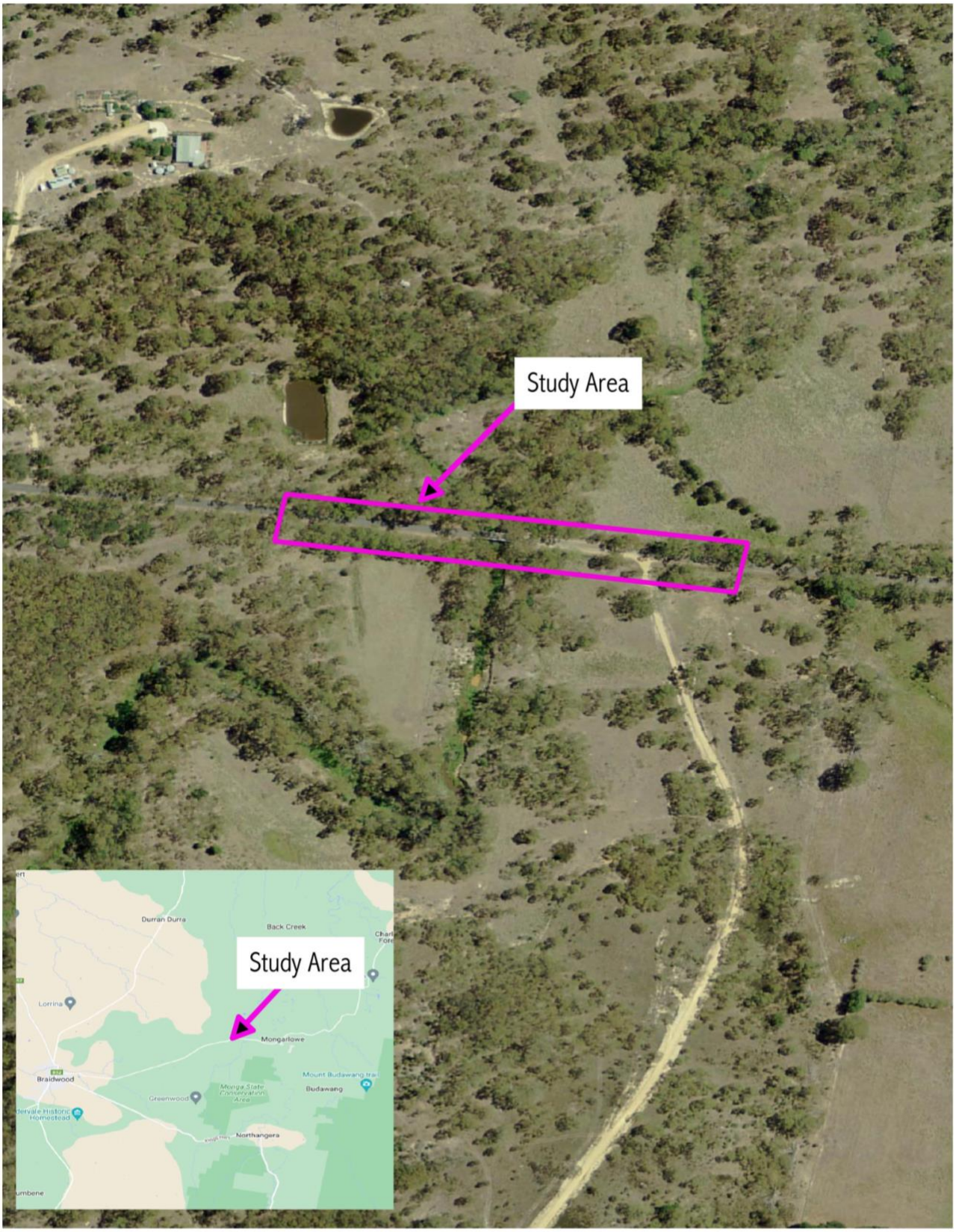
The purpose of the REF is to describe the proposal, to assess, quantify and document the possible impacts of the proposal on the environment, and to detail ameliorative measures to be implemented at the time of works and maintained after works have been completed in order for the proposal to have a minimal and acceptable environmental impact.

This REF considers the study area to be the site of the proposed works and immediately adjoining lands to the extent that they could potentially be impacted, including the site of the works area. Map 1-1 in this report shows this area.

The description of the proposed works and associated environmental impacts have been undertaken in context of clause 171 of the *Environmental Planning and Assessment Regulation 2021*, the *Biodiversity Conservation Act 2016* (BC Act), and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of Section 5.5 (Duty to consider environmental impact) of the EP&A Act; that Council examines and takes into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF will be considered by the consent authority when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under Part 5 of the EP&A Act
- The significance of any impact on threatened species as defined by the BC Act and/or NSW *Fisheries Management Act 1994* (FM Act)
- The potential impact on Aboriginal Objects or places protected by the *National Parks and Wildlife Act 1974* (NP&W Act)
- The potential for the proposal to significantly impact a matter of national environmental significance or other Commonwealth matter and the need to make a referral to the Australian Government Department of the Environment for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.



Macrozamia Environmental

Map 1-1
Study Area and Locality

0 50 100 m

2 Need and options considered

2.1 Strategic and community need for the proposal

The proposed works are needed to improve the safety and comfort for road users as well as improving longevity of the road and its resilience during high flow events and bushfire.

Little River Road is the primary throughfare for the Mongarlowe district to the east of the bridge providing access to many private land holdings including dwellings and agricultural enterprises as well as the Village of Mongarlowe.

Along with the increased reliability and reduced maintenance costs, the upgrade of the existing timber bridge to a concrete structure will significantly improve safety of egress during bushfire as it will be unlikely to be damaged during fire to the extent that the timber bridge would.

By making improvements to road infrastructure, Council is contributing to their cumulative programme of supporting the local community's needs, improving road user safety and the reliability of the road network. By undertaking the works Council are providing value for money to ratepayers while meeting their duty to provide and maintain adequate, safe facilities to the community.

2.2 Proposal objectives

The objectives of the proposal are to:

- Improve road user safety and comfort
- Improve the quality of the road thereby reducing the frequency of required maintenance
- Improve the reliability of the bridge, particularly during bushfire.

2.3 Alternatives and options considered

Council have considered the options to '*do nothing'*, to '*undertake the works as proposed*'.

The '*do nothing*' option must be considered for public infrastructure projects. In this case Council found that doing nothing would fail to address safety concerns relating to the aging bridge structure and the ongoing maintenance cost associated with the timber bridge.

The proposed option of replacing the existing bridge with a modern structure capable of supporting the traffic demands of the route and upgrading approaches meets all the objectives of the project without undue cost to Council.

Having regard to the above considerations it is determined that the works proposed by Council would provide the best value for money and greatest long-term benefit for the community.

3 Description of the proposal

3.1 The proposal

Council is proposing to remove the existing bridge and replace it with a greater capacity cast in place structure.

During works Little River Road will be closed at the works site and traffic detoured via Northangera Road.

It is intended that works will be completed in one stage in the 2023 – 2024 financial year, the timeframe for works is expected to be up to 6 weeks though this may be impacted by Council's operational schedule and weather conditions.

The following summarises the activities involved;

- Completion of design and planning approvals/ licences and permits as required
- Implementation of traffic management plan and closing of the road in the works area
- Site preparation, including construction of access pads/ tracks, and temporary erosion and sediment controls
- Demolition of existing bridge and removal of its components
- Construction of approaches, formation and drainage as required
- Install permanent formwork & steel reinforcing for headwalls and deck
- Pour cast in place headwalls & deck
- Sealing of deck wearing surface 2 coat 14mm/7mm bitumen seal matched to approaches
- Installation of railings/ traffic barriers and signage as required
- Commissioning of new works
- Decommissioning and removal of temporary works including erosion and sediment controls
- Post construction works including clean-up and site rehabilitation.

3.2 Stockpile & work compound sites

Works compounds are used to store construction materials, machinery and chemicals that are typically used during road construction projects.

Suitable stockpile & works compound areas occur in the south side of the road reserve 68m to the east of the existing bridge. Council may consider the use of adjoining private lands for use as a stockpiling area, once agreement is attained impacted areas must be assessed and this REF amended to include them.

For any stockpiling area, controls need to be designed to prevent contamination of receiving waters from runoff from any stockpile area or compound. In the establishment and management of works compounds and stockpile areas the following general criteria must be complied with:

1. Be in areas previously cleared of native vegetation
2. Not be located in areas subject to flooding, outside the 1 in 10 year Average Recurrence Interval (ARI)
3. Be provided with erosion and sediment controls prior to occupation

4. Drainage controls including diversion drains and perimeter banks, and the bunding of liquid storage areas must be installed prior to the compounds being occupied and must be maintained and renewed as necessary during the construction period to ensure their effectiveness
5. Not unduly interfere with the business or other economic activities in the area
6. Allow access that is safe to use for site workers
7. Be restored at the completion of the occupation
8. Preference should be given to re-occupying previously established works compound sites, stockpile sites or other highly disturbed areas
9. Concrete trucks must not be washed out outside a suitably designed, designated concreate washout bund
10. The works compound should be securely fenced against theft and vandalism if considered necessary by the Project Manager
11. Plant and machinery should be secured against theft/ vandalism and unauthorised access when not in use
12. All chemicals stored on-site should be stored in a lockable storage facility with a floor and bund that is able to contain at least 110% of the volume of the largest container stored in it
13. Materials for the cleaning up of any chemical spills such as hydrocarbon absorbent booms (for use in waterways) and loose absorbent material would be kept at the works compound. Fire extinguishers of a type appropriate to the materials stored at the compound would also be kept on site
14. No fuels would be stored at the works compound. Plant and equipment should be refuelled from refuelling trucks on-site, or at a contractor's depot off-site. Refuelling and other machinery maintenance would be undertaken in specially designated bunded areas designed to enable any spilled fuels and oils to be contained on-site and cleaned up.

3.3 Project activities

3.3.1 Work methodology

Works will be completed in one stage as follows;

Preliminary activities

- Undertake environmental assessment & obtain licences or approvals as required
- Identify/ locate services as required
- Complete and commence implementation of Construction Environmental Management Plan (CEMP)
- Complete Erosion and Sediment Control Plan (ESCP)
- Complete Traffic Management Plan (TMP)
- Complete project inductions

Site establishment and installation of traffic controls

- Installation of traffic controls in accordance with the traffic management plan
- Marking of the limit of works

- Installation of staged erosion and sediment controls in accordance with the ESCP and environmental specifications prescribed for the proposal and licence conditions if required
- Implement staged de-watering plan
- Establishment of stockpile/ compound site

Demolition of existing bridge

- Removal of bridge components with crane directly to waiting truck

Construction of new bridge

- Construction of new road formation/ approaches & drainage
- Installation of permanent cast-in-place formwork and steel reinforcement for deck and abutments
- Pour concrete into formwork to meet design criteria and cure
- Sealing of wearing surface wide 2 coat 14mm/7mm bitumen seal matched to bridge deck

Road furniture construction

- Installation/ upgrade of advisory signs where required
- Install traffic barriers as required
- Line marking as required

Post construction works

- Soil stabilisation & maintenance of erosion and sediment controls
- Rehabilitation of erosion and sediment controls in the event of failure, replacement of any reserved topsoils and revegetation with locally occurring grasses of the works compound site including replacement of trees
- Removal of traffic controls.

3.3.2 Construction hours and duration

The proposed works would be undertaken within the following working hours:

- Monday – Friday: 7:00am to 6:00pm
- Saturday: 7:00am to 5:00pm
- Sunday and Public Holidays: no work.

It is anticipated the works will commence in the 2023 – 2024 financial year and be completed within 6 weeks, however, weather conditions and competing priorities of Council may alter this timeframe

3.3.3 Plant and equipment

Machinery to be used will consist of:

- Light vehicles
- Medium/ heavy ridged trucks
- Concrete agitator truck
- Plant trailer
- Excavator
- Water carts for dust suppression

- Hand tools.

There may be a need to bring in other machinery as the need arises.

3.3.4 Earthworks

Earthworks will be required as follows;

- Construction of access pads/ tracks for stockpile area and sediment management structures
- Stockpiling of aggregates and topsoil
- Reshaping of road formation, batters and drainage construction.

Generally balanced earthworks will negate the need to import material.

3.3.5 Source and quantity of materials

- Fuels and oils for the machinery and equipment
- Cast in place formwork and reinforcing
- Concrete
- Aggregates & bitumen for road construction.

Materials will be sourced from local suppliers and it is not expected to create a shortage of any materials available to the local economy.

3.3.6 Traffic management and access

The works occur on a rural road providing the main thoroughfare for residents of the Mongarlow District to access the rural centre of Braidwood. A Traffic Management Plan (TMP) must be prepared in accordance with Council's policies and procedures to be implemented during the works.

Council must ensure that the work site is maintained in a safe and secure state with consideration of cyclist traffic incorporate appropriate signage and barriers as required.

3.4 Ancillary facilities

Construction of the proposal would require one stockpile/ compound site. There are suitable lands in the road reserve to develop these temporary facilities

Any sites to be used for ancillary facilities will be located by Council in accordance with criteria identified in section 3.2 of this REF and within the study area of this REF. If these facilities are to be constructed outside the study area of this REF an assessment of the proposed area will be required.

3.5 Property acquisition and land access

Works occur on Council owned and managed road reserve, no access to private lands is intended, however if the need arises to make use of private lands for stockpiling Council will ensure a written agreement is in place with the owner for the use of the land is in place including compensation and rehabilitation conditions prior to accessing the land.

Council should ensure that cadastral information is up to date and that any discrepancies in land boundaries are ameliorated prior to commencing on ground works.

The proposal will not require restriction of access to private lands.

4 Statutory and planning framework

4.1 Local Environmental Plans

4.1.1 Queanbeyan-Palerang Regional Local Environmental Plan 2022 (LEP)

Under this instrument the project area is zoned RU1 Primary Production, the objectives of this zone are as follows;

RU1 Primary Production;

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To minimise the impact of any development on the natural environment.
- To ensure that development does not unreasonably increase the demand for public services or facilities.

The works proposed are consistent with the objectives of this zone and roads are permitted with consent in RU1 Primary Production.

Clause 5.10 Heritage Conservation

The objectives of this clause are as follows

(a) to conserve the environmental heritage of the Queanbeyan-Palerang Regional local government area,

(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,

(c) to conserve archaeological sites,

(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

The LEP lists no local heritage items in the vicinity of the project area.

The Aboriginal Heritage Information Management System (AHIMS) identifies no Aboriginal sites or Aboriginal places in the vicinity of the project area.

Heritage matters are addressed in section 6.6 of this report.

Part 6 Additional local provisions

7.2 Terrestrial Biodiversity

The whole of the project area is mapped as '*Biodiversity*' on the *Terrestrial Biodiversity Map*, consequently the following sub parts of this clause applies;

(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider—

(a) whether the development is likely to have—

(i) an adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and

(ii) an adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and

(iii) the potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and

(iv) an adverse impact on the habitat elements providing connectivity on the land, and

(b) appropriate measures to avoid, minimise or mitigate the impacts of the development.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied—

(a) the development is designed, sited and will be managed to avoid a significant adverse environmental impact, or

(b) if a significant adverse environmental impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise the impact.

This clause of the LEP has been addressed in the attached Biodiversity Assessment Report.

7.3 Drinking water catchments

The project area is mapped as "*Drinking Water Catchment*" on the *Drinking Water Catchment Map*, as such the following clause applies;

(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider the following—

(a) whether or not the development is likely to have any adverse impact on the quality and quantity of water entering the drinking water storage, having regard to the following—

(i) the distance between the development and any waterway that feeds into the drinking water storage,

(ii) the on-site use, storage and disposal of any chemicals on the land,

(iii) the treatment, storage and disposal of waste water and solid waste generated or used by the development,

(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

By employing best management practices for earthworks and fuel and oil storage the proposal is not likely to have adverse impacts on downstream water users. These best management practices are prescribed in this REF, Section 7 and are to be incorporated during construction works through implementation of the CEMP.

Works are located over 200km upstream of any water storage, no chemicals will be stored in association with the operation of the road, waste will be disposed of outside the waterway area in appropriately licenced facilities.

Operation of the new road will have lower potential impacts on receiving waters than is currently the case as the new road will be safer for motorists due to improved design and will require less ongoing maintenance due to improved design and road construction methodology.

7.4 Riparian land and watercourses

The project area, is mapped as "*Riparian Land*" on the *Riparian Lands and Watercourses Map*, as such the following clause applies;

> *(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider—*
>
> > *(a) whether or not the development is likely to have any adverse impact on the following—*
> >
> > > *(i) the water quality and flows within the watercourse,*
> > >
> > > *(ii) aquatic and riparian species, habitats and ecosystems of the watercourse,*
> > >
> > > *(iii) the stability of the bed and banks of the watercourse,*
> > >
> > > *(iv) the free passage of fish and other aquatic organisms within or along the watercourse,*
> > >
> > > *(v) any future rehabilitation of the watercourse and riparian areas, and*
> >
> > *(b) whether or not the development is likely to increase water extraction from the watercourse, and*
> >
> > *(c) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.*

This REF considers these matters in Section 6, recommendations ensure appropriate measures are implemented to avoid, minimise or mitigate the impacts of the development on soils and water.

Other additional local provisions

The project site is not mapped by other additional local provisions maps including *Flood Planning*.

4.2 State Environmental Planning Policies

4.2.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

Chapter 2 of the State Environmental Planning Policy (Transport and Infrastructure) SEPP (T&ISEPP) aims to facilitate the effective delivery of infrastructure across the State by—

> (a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and
>
> (b) providing greater flexibility in the location of infrastructure and service facilities, and
>
> (c) allowing for the efficient development, redevelopment or disposal of surplus government owned land, and
>
> (d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying

certain development of minimal environmental impact as exempt development), and

(e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and

(f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing, and

(g) providing opportunities for infrastructure to demonstrate good design outcomes.

Division 1 of Chapter 2 of the T&ISEPP makes provisions for public authorities to consult with local Councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by T&ISEPP (where applicable), is discussed in Section 5 of this REF.

4.2.2 State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 4 Remediation of land

(1) The object of this Chapter is to provide for a Statewide planning approach to the remediation of contaminated land.

(2) In particular, this Chapter aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment—

(a) by specifying when consent is required, and when it is not required, for a remediation work, and

(b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and

(c) by requiring that a remediation work meet certain standards and notification requirements.

A consent authority must not consent to the carrying out of any development on land unless:

- it has considered whether the land is contaminated, and
- if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
- if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

Contaminated land was considered on this site, signs of previous land uses such as sheep dips, waste materials, signs of past structures or land fill were considered, and none found. Additionally, the NSW EPA online search tool for contaminated land was used which found no contaminated sites on this database in the vicinity of the works.

Due to an absence of any signs of potentially contaminating activities in the past no further investigation under this SEPP was considered necessary. However, if any

signs of contaminated land are revealed during works, works must cease and the potential for contaminated land to be considered guided by actions in this SEPP.

4.2.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP) consolidates several repealed SEPPs that help to manage conservation of biodiversity.

Chapter 3 Koala habitat protection 2020 of the BC SEPP applies to this project due to its RU 1 Primary Production land zoning.

This Chapter aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline—

(a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and

(b) by encouraging the identification of areas of core koala habitat, and

(c) by encouraging the inclusion of areas of core koala habitat in environment protection zones.

Under this Chapter the following steps are to be taken;

3.6 Step 1—Is the land potential koala habitat?

(1) Before a council may grant consent to a development application for consent to carry out development on land to which this Part applies, the council must be satisfied as to whether or not the land is a potential koala habitat.

(2) The council may be satisfied as to whether or not land is a potential koala habitat only on information obtained by it, or by the applicant, from a person who is qualified and experienced in tree identification.

(3) If the council is satisfied—

(a) that the land is not a potential koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a potential koala habitat, it must comply with section 3.7.

3.7 Step 2—Is the land core koala habitat?

(1) Before a council may grant consent to a development application for consent to carry out development on land to which this Part applies that it is satisfied is a potential koala habitat, it must satisfy itself as to whether or not the land is a core koala habitat.

(2) The council may be satisfied as to whether or not land is a core koala habitat only on information obtained by it, or by the applicant, from a person with appropriate qualifications and experience in biological science and fauna survey and management.

(3) If the council is satisfied—

(a) that the land is not a core koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a core koala habitat, it must comply with section 3.8.

3.8 Step 3—Can development consent be granted in relation to core koala habitat?

(1) Before granting consent to a development application for consent to carry out development on land to which this Part applies that it is satisfied is a core koala habitat, there must be a plan of management prepared in accordance with Part 3 that applies to the land.

This SEPP is addressed in Section 6 of the attached Biodiversity Assessment which concludes that core Koala habitat is not present on the project footprint though occur nearby. Koalas may occur in the area but are not likely to persist in the project area due to inadequate habitat on the road alignment.

4.3 Other relevant legislation

4.3.1 Environmental Planning and Assessment Act 1979 & Environmental Planning and Assessment Regulation 2021

The Environmental Planning and Assessment Act 1979 (EP&A Act) supports a range of objects that encourage appropriate development across the state. It meets varied outcomes associated with promotion of social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources and economically and environmentally sustainable development.

The Environmental Planning and Assessment Regulation 2021 (The Regulation) is a Statutory Instrument that supports the EP&A Act.

Clause 171 of Part 8 of The Regulation provides a list of factors to be taken into account when consideration is being given to the likely impact of an activity on the environment. Section 8 of this REF addresses these factors describing the nature of any impacts.

4.3.2 Biodiversity Conservation Act 2016

The purpose of the Biodiversity Conservation Act 2016 (BC Act) is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. Specifically, it aims to conserve biodiversity at bioregional and state scales, providing mechanisms to assess extinction risk of species and ecological communities, and identify key threatening processes to biodiversity values, support biodiversity conservation on private land, avoid, minimise and offset the impacts of proposed developments and land use changes on biodiversity and an offset scheme providing a market based offset trading economy.

The BC Act provides a clearing threshold, Biodiversity Values Map and test of significance triggers to determine the necessity for the impacts on biodiversity of a development to be assessed using the BC Act's Biodiversity Assessment Methodology (BAM) through a Biodiversity Development Assessment Report (BDAR). While assessment under the BAM is optional for Part V proposals the potential to impact matters protected under the BC Act have been considered.

Sections 7.2 and 7.3 of the BC Act considers the likelihood of impact on threatened matters and the requirement for further assessment. If there is a chance of an impact on a BC Act listed matter a test of Significance is required to determine the significance of the impact. If this assessment establishes that there is a likelihood for a significant impact on threatened species, populations and their habitat or on ecological communities further assessment through a BDAR would be undertaken.

An initial assessment of the project identified biodiversity issues at risk of impact by the proposed works. Consequently a Biodiversity Assessment, including Assessments of Significance where required, have been prepared and is provided at Appendix 2 of this REF.

4.3.3 Fisheries Management Act 1994

The FM Act aims to conserve, develop and share the fishery resources of NSW for the benefit of present and future generations. In particular, the objects of this Act are to:

- Conserve fish stocks and key fish habitats
- Conserve threatened species, populations and ecological communities of fish and marine vegetation
- Promote ecologically sustainable development, including the conservation of biological diversity.

The FM Act identifies threatened aquatic species, populations and ecological communities and requires an Assessment of significance for potential significant impacts to any of these entities. Any potential significant impact triggers the need for a test of significance.

Impacts to listed fish have been considered along with terrestrial matters.

4.3.4 Heritage Act 1977 & National Parks and Wildlife Act 1974

The NSW *Heritage Act 1977* (Heritage Act) is a statutory tool designed to conserve the cultural heritage of NSW and used to regulate development impacts on the State's heritage assets. This Act details the statutory requirements for protecting historic buildings and places and includes any place, building, work, relic, movable object, or precinct, which may be of historic, scientific, cultural, social, archaeological, natural or aesthetic value.

The *National Parks and Wildlife Act 1974* (NPW Act) is the primary legislation for the protection of some aspects of Aboriginal cultural heritage in NSW. Under section 86 of the NPW Act, it is an offence to 'harm' an Aboriginal object. 'Harm' means any act or omission that:

- *Destroys, defaces, damages or desecrates the object*
- *Moves the object from the land on which it had been situated, or*
- *Causes or permits the object to be harmed.*

No state heritage matters have been identified in proximity to the works, heritage issues are addressed in Section 6.7 of this REF.

4.4 Commonwealth legislation

4.4.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land.

The EPBC Act identifies nine matters of national environmental significance being:

- *World Heritage properties*
- *National heritage places*
- *Wetlands of international importance (Ramsar wetlands)*
- *Threatened species and ecological communities*
- *Migratory species*
- *Commonwealth marine areas*

- *Nuclear actions*
- *Great Barrier Reef Marine Park*
- *Water impacts from coal seam gas and large coal mining actions*.

An assessment of the above matters has been undertaken and has concluded that none of these matters require further consideration due either to the absence of items of significance or relevance and the absence of suitable habitats for migratory and threatened flora and fauna and ecological communities. Any potentially occurring commonwealth listed biodiversity matters have been considered along with other biodiversity matters in this REF and the attached Biodiversity Assessment.

4.5 Confirmation of statutory position

By adopting the requirements of the T&ISEPP, the proposal may be carried out without the need for development consent. The proposal is subject to environmental impact assessment under Part 5 of the EP&A Act. Queanbeyan-Palerang Regional Council is the proponent and determining authority for the proposal.

5 Stakeholder and community consultation

5.1 Landowners and community

The project site occurs in a rural district, the local community is composed of those living and working in the rural environment largely in agriculture and home industry. The community is heavily reliant on the road network for transport in the absence of alternatives such as public transport, the remoteness of the community from urban centres also makes alternatives such as walking or cycling impractical. Consequently, the road network is essential to enable the community to access work, shopping, school and other economic activities and social commitments.

Adjoining landholders are all primary production enterprises, these businesses also heavily rely on the road network for productivity of their operations.

It is essential that Council engage with the community and adjoining landholders to adequately manage disruptions to these stakeholders and their day to day activities. Council must have in place a complaint handling process enabling concerned members of the community to contact Council in relation to the project and discuss their concerns.

Given the improvement to traffic flow efficiency and road safety that the project will result in, it is expected that the proposal will not be contentious in the community. The proposal will result in minor traffic disruptions for a short period of time, over a period of 6 weeks.

5.2 Aboriginal community involvement

It is possible that artefacts important to the Aboriginal community could be found in the project area during works, if suspected finds are made Council will invite the Local Aboriginal Land Council to comment on the works.

5.3 T&ISEPP consultation

Chapter 2 Division 1 of T&ISEPP require that public authorities undertake consultation with Councils and other public authorities, when proposing to carry out development without consent. Table 5-1 of this report lists these items and assesses whether these are relevant to the proposal.

Table 5-1 T&ISEPP Chapter 2 Division 1 Consultation Factors

Item	Response
Clause 2.10 Consultation with councils—development with impacts on council-related infrastructure or services	
A substantial impact on stormwater management services provided by a Council	Not applicable – the proposal would not involve substantial impacts to a stormwater system. The road design does allow for drainage and appropriate dispersal of water this is consistent with the existing design of the road.
Likely to generate traffic to an extent that will strain the capacity of the road system in a local government area.	While several truck movements would be required during the construction phase, they would be managed to limit impacts. Given the scale of the proposal, it is unlikely the capacity of the road system would be strained.
Involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a Council.	Not applicable – the proposal would not involve connection to or impacts to a sewerage system.
Involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a Council	Not applicable – the proposal would not involve connection to or substantial use of water from a Council-owned water supply system.
Involves the installation of a temporary structure on, or the enclosing of, a public place that is under a Council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential.	There will be disruption to vehicular traffic during construction, traffic using Little River Road will need to detour, via Northangera Road, this diversion will add 12 - 15 minutes to the typical journey time. This impact is considered to be moderate and manageable.
Involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a Council is the roads authority under the Roads Act 1993 (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath).	The proposal would involve minor excavation of existing road surfaces. Council is the proponent and relevant road authority for the roads affected by the proposal.
Clause 2.11 Consultation with councils—development with impacts on local heritage	
(1) This section applies to development carried out by or on behalf of a public	Not applicable – the proposal does not affect any local heritage items or

authority if the development— (a) is likely to affect the heritage significance of a local heritage item, or of a heritage conservation area, that is not also a State heritage item, in a way that is more than minor or inconsequential, and (b) is development that this Chapter provides may be carried out without consent. (2) A public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies unless the authority or the person has— (a) had an assessment of the impact prepared, and (b) given written notice of the intention to carry out the development, with a copy of the assessment and a scope of works, to the council for the area in which the heritage item or heritage conservation area (or the relevant part of such an area) is located, and (c) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.	heritage conservation areas.
Clause 2.12 Consultation with councils—development with impacts on flood liable land	
(1) In this section, flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the manual entitled Floodplain Development Manual: the management of flood liable land published by the New South Wales Government and as in force from time to time. (2) A public authority, or a person acting on behalf of a public authority, must not carry out, on flood liable land, development that this Chapter provides may be carried out without consent and that will change flood patterns other than to a minor extent unless the authority or person has— (a) given written notice of the intention to	Not applicable - the proposal will not be carried out on any flood liable land.

carry out the development (together with a scope of works) to the council for the area in which the land is located, and (b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.	
Clause 2.13 Consultation with State Emergency Service—development with impacts on flood liable land	
(1) A public authority, or a person acting on behalf of a public authority, must not carry out development on flood liable land that may be carried out without development consent under a relevant provision unless the authority or person has— (a) given written notice of the intention to carry out the development (together with a scope of works) to the State Emergency Service, and (b) taken into consideration any response to the notice that is received from the State Emergency Service within 21 days after the notice is given. (2) Any of the following provisions in Part 2.3 is a relevant provision— (a) Division 1 (Air transport facilities), (b) Division 2 (Correctional centres and correctional complexes), (c) Division 6 (Emergency services facilities and bush fire hazard reduction), (d) Division 10 (Health services facilities), (e) Division 14 (Public administration buildings and buildings of the Crown), (f) Division 15 (Railways), (g) Division 16 (Research and monitoring stations), (h) Division 17 (Roads and traffic), (i) Division 20 (Stormwater management systems). (3) This section does not apply in relation to the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance. (4) In this section, flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the manual entitled Floodplain Development Manual: the management of flood liable land	Not applicable, none of these circumstances apply to the proposed road upgrade works

published by the New South Wales Government and as in force from time to time.	
2.14 Consultation with councils—development with impacts on certain land within the coastal zone	
(1) This section applies to development on land that is within a coastal vulnerability area and is inconsistent with a certified coastal management program that applies to that land. (2) A public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies, which this Chapter provides may be carried out without development consent, unless the authority or person has— (a) given written notice of the intention to carry out the development to the council for the local government area in which the land is located, and (b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.	Not applicable, works do not occur in a coastal environment
2.15 Consultation with public authorities other than councils	
(1) A public authority, or a person acting on behalf of a public authority, must not carry out specified development that this Chapter provides may be carried out without consent unless the authority or person has— (a) given written notice of the intention to carry out the development (together with a scope of works) to the specified authority in relation to the development, and (b) taken into consideration any response to the notice that is received from that authority within 21 days after the notice is given. (2) For the purposes of subsection (1), the following development is specified development and the following authorities are specified authorities in relation to that development— (a) development adjacent to land reserved under the National Parks and Wildlife Act 1974 or to land acquired under Part 11 of that Act—the Office of	Not applicable, none of these circumstances apply to the proposed road upgrade works.

Environment and Heritage, (b) development on land in Zone E1 National Parks and Nature Reserves or in a land use zone that is equivalent to that zone, other than land reserved under the National Parks and Wildlife Act 1974—the Office of Environment and Heritage, (c) development comprising a fixed or floating structure in or over navigable waters—Transport for NSW, (d) development that may increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map—the Director of the Observatory, (e) development on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument—the Secretary of the Commonwealth Department of Defence, (f) development on land in a mine subsidence district within the meaning of the Mine Subsidence Compensation Act 1961—the Mine Subsidence Board.	

In relation to the above Clauses it is important to note Clause 2.17 Exceptions;

> (1) Sections 2.10–2.15 do not apply with respect to development to the extent that—
>
> (a) they would require notice of the intention to carry out the development to be given to a council or public authority from whom an approval is required in order for the development to be carried out lawfully, or
>
> (b) they would require notice to be given to a council or public authority with whom the public authority that is carrying out the development, or on whose behalf it is being carried out, has an agreed consultation protocol that applies to the development, or
>
> (c) they would require notice to be given to a council or public authority that is carrying out the development or on whose behalf it is being carried out, or
>
> (d) the development is exempt development or complying development under any environmental planning instrument (including this Chapter), or
>
> (e) the development comprises emergency works, or
>
> (f) the development is carried out in accordance with a code of practice approved by the Minister for the purposes of this section and published in the Gazette.

5.4 Government and utility consultation

NSW Department of Planning and Environment (Environment and Heritage)

Council will consult with EES if unforeseen heritage (including Aboriginal Heritage) or biodiversity issues are raised during works.

5.5 Ongoing or future consultation

Council will engage with the local community, the Aboriginal Community and Government Agencies as required during the works if unforeseen issues arise.

6 Environmental assessment

All potential environmental impacts associated with the construction and operation of the proposal, given its scale and use, are addressed below as required under Clause 171, Part 8 Infrastructure and environmental impact assessment, of the Environmental Planning and Assessment Regulation 2021.

6.1 Traffic

6.1.1 Existing environment

The existing traffic is that serviced by a rural road, it is used largely by the local community who live and work in this rural district to access the centres of Braidwood and Queanbeyan. Little River Road is the primary route for the residence of Mongarlowe to access shops, work and school.

6.1.2 Potential impacts

Construction
Traffic impacts during construction will be the closure of Little River Road at the bridge site over a period of up to 6 weeks. Traffic will be diverted via Northangera Road adding 12 to 15 minutes to the typical journey time. There is a higher risk of this route being impassable during high flow events in Warrambucca Creek and the Mongarlowe River.

Operation
The proposal is designed to improve road user safety and comfort and reduce road and bridge maintenance costs. Any increases in traffic at the project site during operation would be due to ordinary growth in the region, rather than as a result of the proposal.

The proposal would provide operational benefits with respect to increased safety, road network performance & reliability and reduced maintenance costs.

6.1.3 Safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing
Traffic and access	• A TMP must be prepared and controls established at the site in accordance with Council policies.	Council	Pre-construction
Access impacts	• Works must not disrupt property or business access.	Council	Construction

6.2 Biodiversity

6.2.1 Existing environment

Given the sensitive biodiversity in the landscape a Biodiversity Assessment has been undertaken and is included in Appendix 2 of this REF. A summary of the outcomes of this assessment are provided below.

6.2.2 Direct Impacts

Proposed works will not directly impact native vegetation, impacts are limited to bare ground, largely occupied by the existing roadway and bridge. There is potential the bridge structure may used by microbats for roosting, impact mitigation measures address this risk.

No woody vegetation including trees will be removed.

No aquatic vegetation will be impacted.

6.2.3 Indirect Impacts

There is a risk that plant and equipment used for the works may transport weed material along the site or from other sites and that if the site is not rehabilitated after works that erosion may become accelerated due to changes in surface-water flows. Mitigation measures provided in this REF address these risks.

6.2.4 Cumulative Impacts

Cumulative impacts have been considered as part of this assessment. Council aims to continually improve the condition of assets under its management. This programme improves safety for the community as well as reducing maintenance costs associated.

While construction impacts can affect local biodiversity to an extent, the cumulative environmental impact of improving and maintaining assets is generally positive.

6.2.5 Safeguards and mitigation measures

To minimise or eliminate potential adverse impacts on flora and fauna and to ensure that the project does not have a negative impact on biodiversity the following controls are recommended:

Impact	Environmental safeguards	Responsibility	Timing
Weed invasion	In order to manage the risk of indirect impacts of invasive species establishing in the project area, a weed management plan will be prepared and implemented to ensure the project does not increase the occurrence of weed species on the site or adjoining land the plan will incorporate the following practices; • Plant and equipment will be cleaned prior to entering any part of the site ensuring no mud/ soil or vegetation material is imported into the area • The site manager will ensure that procedures are in place to ensure plant and equipment entering the site are clean and free of mud, soil and vegetation material. A weed management plan will be prepared and implemented to ensure the project does not increase the occurrence of weed species on the site or adjoining land.	Council	Pre-construction & Post-construction

Impact	Environmental safeguards	Responsibility	Timing
Microbats roosting in existing bridge structure	Due to the possibility of the existing bridge structure becoming roosting habitat for the following threatened species of microbats a pre-demolition inspection for microbats is to be undertaken within three days before proposed demolition by a suitably experienced ecologist. If evidence of microbat presence is found an Assessment of Significance is to be undertaken. • Southern Myotis (*Myotis macropus*) • Little Bent-winged Bat (*Miniopterus australis*) • Large Bent-winged Bat (*Miniopterus orianae oceanensis*). In order to manage the risk of microbats roosting in the bridge structure the Construction Environmental Management Plan is to include an unexpected finds procedure for microbats including the following; • A daily inspection for microbats roosting in the bridge structure is to be undertaken and documented including investigating for bats, guano and sounds of bats • If bats or their signs are present a suitably qualified and experienced ecologist is to be engaged to investigate further • Any bats found are not to be touched	Council	Pre-construction & construction

6.3 Soil and water

6.3.1 Existing environment

The proposed works occur on Tantulean Creek a tributary to the Mongarlowe River sub-catchment of the Shoalhaven River. Runoff from the project area flows eventually to Tallawa Dam, over 200km downstream, which is part of the Sydney water supply network. Soils on the site are stable, protected by vegetation and gentle slopes.

6.3.2 Potential impacts

Construction impacts

There is potential for disturbances to soils through establishment of site compound and stockpile areas, excavations, vehicle and plant movement. Exposed soils if unmanaged will be placed at risk of accelerated erosion and therefore sedimentation of receiving waters.

As works are minor and high in the catchment the consequences of impacts are minor on downstream reservoirs, however, receiving waters will be at risk of impact if sediment laden runoff enters waterways. There is also a risk of oil spillage from broken hydraulic lines on plant and equipment. It is important to manage these risks to minimise the chances of them occurring and to be prepared in the event of a situation that may result in water pollution.

Operation impacts

Improvement of the road surfaces and bridge structure will reduce sedimentation impacts on receiving waters.

6.3.3 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Soil and Water Management	• An Erosion and Sediment Control Plan (ESCP) will be prepared to mitigate impacts during construction including the following: ○ Erosion and sedimentation controls are to be installed prior to construction. ○ Disturbed areas are to be progressively stabilised ○ Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request. ○ Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised. ○ Work areas are to be stabilised progressively during the works.	Council	Pre-Construction
Water and soil pollution	• A spill management plan must be developed which includes measures for refuelling, maintenance of machinery and response and notification procedures. It must also include the following measures: • Machinery must be regularly checked to ensure there is no	Council	Pre-construction & During construction

Impact	Environmental safeguards	Responsibility	Timing
	oil, fuel or other liquids leaking from the machinery, including daily checks of machinery and equipment to be used for construction. • A spill kit including boom must be stored on onsite at all times to manage any potential accident spills. • Where possible, re-fuelling of vehicles and equipment will be undertaken in an impervious bunded area at the compound site, located 50 metres from any creek or drainage line. • When re-fuelling remote from compound, trained staff will observe at all times and tanks will have an automatic cut off when full and vehicles will carry a temporary bund and spill kit. • If a spill occurs, follow the Environmental Incident Classification and Management Procedure and notify the Environmental Officer as soon as practicable.		

6.4 Noise and vibration

6.4.1 Existing environment

The project site occurs in an isolated rural area and is generally peaceful. The greatest source of noise and vibration currently in the vicinity is the traffic using Little River Road. Dwellings occur within 300 to 900m of the project site. No other sensitive noise receivers occur within 1km of the project area.

6.4.2 Potential impacts

Construction noise impacts

Given the nature of the works noise generated is not expected to impact dwellings.

There is very low risk that works may cause discomfort for those residing in the area. Noise generated by the works is not likely to impact businesses or economic activities.

Construction vibration impacts

Vibration emitted by road construction is unlikely to impact the comfort of nearby landholders or cause damage to architectural structures due to the distance from the project area and such structures

Operational noise & vibration impacts

Works will result in noise and vibration impacts to sensitive receivers being reduced due to improved quality of the road travel surface.

6.4.3 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Work hours	• Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 7am to 5pm Saturdays).	Council	Construction

6.5 Air quality

6.5.1 Existing environment

The existing air quality is high being a rural environment with minimal development. Traffic using Little River Road produce exhaust gases and generate dust intermittently interrupting air quality for relatively short periods of time.

6.5.2 Potential impacts

Construction

Earthworks, construction activities and vehicle movements will generate dust. This impact is very minor and insignificant if managed through current best practice.

Operation

The improvement of this part of Little River Road is likely to result in improved air quality as the bridge and road travel surface will be in better condition and require less braking of traffic.

6.5.3 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Air pollution	• Dust suppression measures (including watering and covering exposed areas) are to be used to minimise or prevent air pollution and dust. • Vehicles will be maintained to manufacturer's requirements and regular checks are to be made to ensure they are operating efficiently. • Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation.	Council	Construction

6.6 Heritage

6.6.1 Existing environment

An AHIMS search was undertaken which identifies no Aboriginal sites or places in the vicinity of the project area, included at Appendix 3.

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010* has been followed and summarised below, the generic due diligence process is shown in the flow diagram at Appendix 3.

> *Step 1; Will the activity disturb the ground surface or any culturally modified trees?*

Yes, road works will require minor disturbance of the ground surface for construction and drainage maintenance.

> *Step 2; Are there any:*
>
> *a) relevant confirmed site records or other associated landscape feature information on AHIMS? and/or*
>
> *b) any other sources of information of which a person is already aware? and/or*
>
> *c) landscape features that are likely to indicate presence of Aboriginal objects?*

No, AHIMS search identifies no records of Aboriginal Sites.

> *Step 3; Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?*

Yes, works will be restricted to existing road surfaces, bridge and drainage structures.

> *AHIP application not necessary. Proceed with caution. If any Aboriginal objects are found stop work and notify DECCW. If human remains are found, stop work, secure the site and notify the NSW Police and DECCW.*

The result of this due diligence process is that an Aboriginal Heritage Impact Permit is not required.

No LEP listed local heritage items occur nearby.

There is potential for unknown items or artefacts of cultural significance to be present in the study area reflecting the long occupation of the land by European and Aboriginal communities.

6.6.2 Potential impacts

No impacts to Aboriginal or non-Aboriginal heritage are expected however safeguards below will address nearby AHIMS records and unexpected finds.

6.6.3 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Unexpected Aboriginal heritage	• Any work crews employed in ground disturbing works within the study area must be made aware of the legislative protection of Aboriginal sites and objects at the induction and toolbox talks and will be recorded. • All site staff are to be advised that it is an offence under the NPW	Council	Continuous

Impact	Environmental safeguards	Responsibility	Timing
	Act to harm an Aboriginal object without appropriate approval. • If objects are encountered which are suspected to be of Aboriginal heritage value work is to stop and Council will seek advice from a representative of the Local Aboriginal Land Council and an archaeologist with expertise in Aboriginal heritage. The recommendations provided by any subsequent archaeological assessment should be implemented as part of the project.		
Unexpected heritage	• If historical artefacts that become evident during excavation, work in the immediate vicinity should cease until an investigation is undertaken with guidance from Council's heritage advisor.	Council	Continuous

6.7 Land use and socio-economic

6.7.1 Existing environment

The economic environment of this area is largely driven by agricultural production, a sparse population lives in the district that imports most of its products and services from the nearby rural centres of Braidwood and Queanbeyan. Road transport is critical to the maintenance of the economic environment of the local community.

6.7.2 Potential impacts

The potential to disrupt traffic using Little River Road is the only potential negative impact on the local economy. This is likely to be minor, short term and will not significantly impact any industry or business.

No access to a business or residence will be impeded during construction.

6.7.3 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Changes in local access and traffic movement	• Road closures will be minimised as far as practical • Detours will be adequately sign posted during road closure.	Council	Construction and operation
Complaints	• Complaints received are to be recorded and attended to promptly in accordance with Council's complaints handling procedures.	Council	Construction

6.8 Waste and resource management

Waste management would be undertaken in accordance with the *Waste Avoidance and Resource Recovery Act 2001*. The objectives of this Act that are applicable to the proposal are:

(a) to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development,

(b) to ensure that resource management options are considered against a hierarchy of the following order:

(i) avoidance of unnecessary resource consumption,

(ii) resource recovery (including reuse, reprocessing, recycling and energy recovery),

(iii) disposal,

(c) to provide for the continual reduction in waste generation,

(d) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,

(e) to assist in the achievement of the objectives of the Protection of the Environment Operations Act 1997.

6.8.1 Waste sources

The proposed works would generate general rubbish waste from works crews and timber bridge components.

General waste would be temporarily stored on site prior to disposal at an appropriately licensed waste facility. Waste timber will be reused in other Council projects or made available for community use.

6.8.2 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Production of packaging materials and other construction waste	• The resource management hierarchy must be followed at all times throughout the proposal: *avoid resource consumption → recover recyclable materials for reuse → dispose material unable to be recycled.*	Council	Construction
Waste on site	• Waste material, other than vegetation and tree mulch, must not be left on site once the works have been completed. • Working areas must be maintained, kept free of rubbish and cleaned up at the end of each working day.	Council	Construction
Production of solid	• Proper bins (with lids) must be available for the temporary storage of putrescible waste within the site	Council	Construction

Impact	Environmental safeguards	Responsibility	Timing
putrescibles waste	compound and then disposed of by a licensed contractor.		

6.9 Cumulative impacts

It is a requirement under Part 8 Infrastructure and Environmental Impact Assessment of the Environmental Planning and Assessment Regulation 2021 to take into account any cumulative environmental impacts with other existing or likely future activities. Cumulative impacts relate to the combined potential effects of different impact areas of the proposal as well as the potential interaction with other proposals in the local area.

6.9.1 Potential impacts

As this is a minor and beneficial proposal it is considered unlikely to be contributing in any significant way to any cumulative impacts.

6.10 Summary of beneficial effects

The proposal is expected to improve traffic safety and reduce costs of maintaining Little River Road. This will provide benefits to the local community and value for money for ratepayers.

6.11 Summary of adverse effects

Construction works will require temporary traffic disruptions and amenity impacts to the site. These impacts are relatively minor and considered acceptable given the benefits the proposal will generate. Council should consider ensuring Northangera Road is well maintained prior to works commencement to minimise the risks of damage to this road and interruption of this access to Mongarlowe Village.

7 Environmental management

7.1 Environmental management plans

Numerous safeguards and mitigation measures have been provided by this REF that manage potential adverse impacts of the proposal. Whilst these measures are implemented and incorporated into the detailed design and applied during the construction and operation of the proposal any impacts are considered acceptable given the benefit of the proposal.

A Construction Environmental Management Plan (CEMP) including an Erosion and Sediment Control Plan (ESCP) will be prepared that specifies safeguards and mitigation measures provided by this REF. This CEMP, and any activity/ contractor specific appendices will provide a framework that clearly identifies the implementation of these measures including responsible officers and monitoring and review processes.

The CEMP and any appendices will be prepared and certified by the Council Environment Officer prior to construction commencement. Plans will be working documents, subject to ongoing change and updated as necessary to respond to changing conditions.

7.2 Summary of safeguards and management measures

Environmental safeguards outlined in this document will be implemented during the project. These safeguards will minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised in Table 7-1 of this report and must be kept on the site during works, this may be via incorporation into the CEMP.

Table 7-1 Summary of safeguards and mitigation measures.

No.	Impact	Environmental safeguards	Responsibility	Timing
1	General	• All environmental safeguards must be incorporated within the following: ○ Construction Environmental Management Plan ○ Detailed design stage ○ Contract specifications for the proposal ○ Contractor's Environmental Management Plan	Council	Pre-construction
2	General	• All businesses and residences likely to be affected by the proposed works must be notified at least five working days prior to the commencement of the proposed activities.	Council	Pre-construction
3	Traffic and access	• A TMP must be prepared (in accordance with Roads and Maritime *Traffic Control at Work Sites Manual* (RTA, 2010) and Roads and Maritime QA Specification G10) and controls established at the site in accordance with Roads and Maritime's *Traffic Controls at Work Sites*.	Council	Pre-construction
4	Traffic delays	• Road users must be advised of the proposed work signage in the vicinity of the works. • Detours will be adequately sign posted during road closure.	Council	Pre-construction & Construction
5	Access impacts	• Residents in the vicinity of the works are to be notified of the proposed works at least two prior to commencement of works.	Council	Pre-construction
6	Weed invasion	In order to manage the risk of indirect impacts of invasive species establishing in the project area, a weed management plan will be prepared and implemented to ensure the project does not increase the occurrence of weed species on the site or adjoining land the plan will incorporate the following practices; • Plant and equipment will be cleaned prior to entering any part of the site ensuring no mud/ soil or vegetation material is imported into the area The site manager will ensure that procedures are in place to ensure plant and equipment entering the site are clean and free of mud, soil and vegetation material.	Council	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
7	Microbats roosting in existing bridge structure	Due to the possibility of the existing bridge structure becoming roosting habitat for the following threatened species of microbats a pre-demolition inspection for microbats is to be undertaken within three days before proposed demolition by a suitably experienced ecologist. If evidence of microbat presence is found an Assessment of Significance is to be undertaken. • Southern Myotis (*Myotis macropus*) • Little Bent-winged Bat (*Miniopterus australis*) • Large Bent-winged Bat (*Miniopterus orianae oceanensis*). In order to manage the risk of microbats roosting in the bridge structure the Construction Environmental Management Plan is to include an unexpected finds procedure for microbats including the following; • A daily inspection for microbats roosting in the bridge structure is to be undertaken and documented including investigating for bats, guano and sounds of bats • If bats or their signs are present a suitably qualified and experienced ecologist is to be engaged to investigate further Any bats found are not to be touched	Council	Pre-construction & construction

8	Soil and Water Management	• An Erosion and Sediment Control Plan (ESCP) will be prepared to mitigate impacts during construction including the following:
		  • Erosion and sedimentation controls are to be installed prior to construction.
		  • Disturbed areas are to be progressively stabilised
		  • Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.
		  • Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised.
		  • Work areas are to be stabilised progressively during the works.
			Council	Pre-construction, Construction & Post-construction

No.	Impact	Environmental safeguards	Responsibility	Timing

9	Water and soil pollution	• A spill management plan must be developed which includes measures for refuelling, maintenance of machinery and response and notification procedures. It must also include the following measures:
		  • Machinery must be regularly checked to ensure there is no oil, fuel or other liquids leaking from the machinery, including daily checks of machinery and equipment to be used for construction.
		  • A spill kit including boom must be stored on onsite at all times to manage any potential accident spills.
		  • Where possible, re-fuelling of vehicles and equipment will be undertaken in an impervious bunded area at the compound site, located 50 metres from any creek or drainage line.
		  • When re-fuelling remote from compound, trained staff will observe at all times and tanks will have an automatic cut off when full and vehicles will carry a temporary bund and spill kit.
		  • If a spill occurs, follow the Environmental Incident Classification and Management Procedure and notify the Environmental Officer as soon as practicable.
			Council	Pre-construction, Construction & Post-construction

10	Construction noise and vibration	• Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 7am to 5pm Saturdays). • A complaints register is to be established. All complaints received during the works will be recorded into the register. Complaints will be responded to promptly. • Noise monitoring would be undertaken at any sensitive receivers which lodge a noise complaint, and methods of reducing noise levels to an acceptable level will be investigated. • Construction works must be carried out in accordance with Roads and Maritime Environmental Noise Management Manual (G36 Specification). • Noise impacts are to be minimised in accordance with Practice Note 7 in the RTA's Environmental Noise Management Manual and RTA's Environmental fact sheet No. 2- Noise management and Night Works.	Council	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
11	Air pollution	• Dust suppression measures (including watering and covering exposed areas) are to be used to minimise or prevent air pollution and dust. • Vehicles will be maintained to manufacturer's requirements and regular checks are to be made to ensure they are operating efficiently. • Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation.	Council	Construction
12	Aboriginal heritage	• Any work crews employed in ground disturbing works within the study area must be made aware of the legislative protection of Aboriginal sites and objects at the induction and toolbox talks and will be recorded. • All site staff are to be advised that it is an offence under the NPW Act to harm an Aboriginal object without appropriate approval. • If objects are encountered which are suspected to be of Aboriginal heritage value work is to stop and Council will seek advice from a representative of the Local Aboriginal Land Council and an archaeologist with expertise in Aboriginal heritage. The recommendations provided by any subsequent archaeological assessment should be implemented as part of the project.	Council	Continuous
13	Unexpected heritage	• If historical artefacts that become evident during excavation, work in the immediate vicinity should cease until an investigation is undertaken with guidance from Council's heritage advisor.	Council	Continuous
14	Changes in local access and traffic movement	• Road closures will be minimised as far as practical.	Council	Construction and operation
15	Complaints	• Complaints received are to be recorded and attended to promptly in accordance with Council's complaints handling procedures.	Council	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
16	Production of packaging materials and other construction waste	• The resource management hierarchy must be followed at all times throughout the proposal: *avoid resource consumption → recover recyclable materials for reuse → dispose material unable to be recycled.*	Council	Construction
17	Waste on site	• Waste material, other than vegetation and tree mulch, must not be left on site once the works have been completed. • Working areas must be maintained, kept free of rubbish and cleaned up at the end of each working day.	Council	Construction
18	Production of solid putrescibles waste	• Proper bins (with lids) must be available for the temporary storage of putrescible waste within the site compound and then disposed of by a licensed contractor.	Council	Construction

7.3 Licensing and approvals

A Part 7 permit under the Fisheries Management Act 1994 is required as in-stream works and fish passage obstruction are may be required and the site is defined as key fish habitat.

This will require application to Department of Primary Industries (Fisheries).

No other licences or approvals have been identified as being necessary for this proposal. If the scope of works were to change, this requirement may change.

8 Cl171 Review of environmental factors

In addition to the requirements of the *Is an EIS required?* guideline as detailed earlier in this document, the following factors, provided in clause 171 of the Environmental Planning and Assessment Regulation 2021, have also been considered to assess the likely impacts of the proposal on the environment.

Factor	Impact
a. The environmental impact on a community? The proposal would improve infrastructure and services/ economic activity for the community.	Long term positive
b. The transformation of a locality? The proposal is maintenance to existing assets and will not cause significant transformation.	Nil
c. The environmental impact on the ecosystems of the locality? The proposal will not significantly impact terrestrial ecosystems.	Minor
d. Reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? The proposal would have a short-term impact of visual amenity during construction however no long term impacts are likely.	Minor short term
e. Any effects on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations? The proposal is unlikely to impact these anthropological factors.	Nil
f. The impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)? No impact.	Nil
g. The endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? The proposal would not endanger any species of animal, plant or other form of life.	Nil
h. Long-term effects on the environment? The proposal would not significantly change the environment, long term effects will be positive, due to improved road integrity.	Positive

Factor	Impact
i. Degradation of the quality of the environment? Short term amenity will be affected, no long-term degradation.	Minor short term
j. Risk to the safety of the environment? The proposal would pose minimal risk to the safety of the environment. Recommendations in this report ameliorate residual risk.	Manageable
k. Reduction in the range of beneficial uses of the environment? There would be no reduction in the range of beneficial uses of the environment.	Nil
l. Pollution of the environment? The proposal would be likely to result in short term air quality and noise impacts. These would be managed accordingly and are considered short term and minor.	Minor short-term negative
m. Environmental problems associated with the disposal of waste? Waste generated is minor and managed within Council's existing services.	Nil
n. Increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? The proposal is unlikely to result in materials becoming in short supply, fuel use will be consistent with existing requirements of Council.	Nil
o. Cumulative environmental effect with other existing or likely future activities? The proposal will have insignificant cumulative effects.	Nil
p. Impact on coastal processes and coastal hazards, including those under projected climate change conditions? As the site is not in a coastal area there would be no impact on coastal processes and coastal hazards, including those under projected climate change conditions.	Nil
(q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Nil
(r) other relevant environmental factors.	Nil

9 Conclusion

This proposal has been assessed under Part 5 of the EP&A Act REF process. It has examined and taken into account to the fullest extent practical all matters affecting or likely to affect the environment by reason of the proposed activity. This has included consideration of impacts on threatened species, populations and ecological communities and their habitats, critical habitat, other protected fauna and native vegetation. The REF has also considered soil and water impacts, Aboriginal and non-Aboriginal heritage impacts and a range of socio economic and amenity impacts.

From the assessment of the biophysical, socio-economic and legislative environment above it is concluded that there is likely to be no significant impact on the environment if this proposal proceeds incorporating recommendations provided by this REF.

- No significant impacts on terrestrial biodiversity are likely, recommendations in this report manage residual risk.
- No significant impacts on heritage values are likely, recommendations in this report manage residual risk.
- Potential pollution impacts on air, soils and water are manageable through current best practices
- The proposal has the potential to cause minor short term visual and noise impacts during construction. These are considered acceptable and manageable impacts

Environmental impacts of the proposal are not likely to be significant and therefore it is not necessary for an environmental impact statement to be prepared and approval to be sought for the proposal from the Minister for Planning under Part 5.1 of the EP&A Act. The proposal is unlikely to affect threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act or FM Act, therefore a Species Impact Statement is not required.

The proposal is also unlikely to affect Commonwealth land or have an impact on any matters of national environmental significance and therefore referral to the Commonwealth Environment Minster for approval is not required.

10 Certification

This review of environmental factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

Patrick Guinane

Environmental Consultant

Macrozamia Environmental

Date: 6 September 2023

I have examined this review of environmental factors and accept the review of environmental factors on behalf of Queanbeyan Palerang Regional Council.

Name _____

Title _____

Queanbeyan Palerang Regional Council

Date: _____

Appendix 1 – Works Concept Plans

Queanbeyan Palerang Regional Council

Appendix 2 – Biodiversity Assessment

Macrozamia Environmental

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BIODIVERSITY ASSESSMENT REPORT

Proposed Bridge Replacement Works
Tantulean Creek Bridge
Little River Road, Mongarlowe NSW

Queanbeyan Palerang Regional Council

August 2023

Version	Final
Date	30 Aug 2023
Project Number	140241_2

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1. Introduction

1.1. Background

This report has been prepared by Macrozamia Environmental for Queanbeyan Palerang Regional Council (Council) to support a Review of Environmental Factors (REF) for a proposal to replace the existing timber bridge on Little River Road, crossing Tantulean Creek. Council has identified that this bridge is reaching the end of its useful life and is at risk of becoming unserviceable. This bridge is an important asset on Little River Road providing vehicular access to the Mongarlowe community to the east of Tantulean Creek.

The existing bridge is single lane and of timber construction including abutment walls, joists and deck.

The proposal is to demolish the existing bridge and construct in its place a single lane concrete cast in place bridge structure crossing Tantulean Creek.

During works Little River Road will be closed at the works site and traffic diverted via Northangera Road.

The scope of the works is summarised as follows;

1. Traffic management, during works Little River Road will be closed at the works site and traffic detoured via Northangera Road
2. Installation of temporary erosion and sediment controls
3. Demolition of existing bridge structure and removal of components, foundation of central pier to remain in place so as to not disturb creek bed
4. Construction of new approaches and formation matched to existing road surface
5. Construction of cast in place headwalls and deck
6. Sealing of deck matched to approaches
7. Drainage and construction as required
8. Installation of traffic signage and bridge furniture including barriers
9. Commissioning of new crossing
10. Rehabilitation of site including removal of temporary erosion control structures & all waste materials and ensuring site is not subject to accelerated erosion.

The proposal location and study area are identified on Map 1-1 of this report. The study area includes the site of the works and adjoining lands to the extent that they may be impacted by the works.

The environment is characterised by a rural setting with significant areas of remnant vegetation broken by cleared agricultural paddocks. Vegetation in the road reserve is a native forest community with little exotic component.

This Biodiversity Assessment Report considers the potential impacts of the proposal on biodiversity matters. The proposal requires the establishment of a temporary stockpile area, removal of the existing bridge and construction works.

This assessment considers the impacts on biodiversity of all components of the project, the concept plans at Appendix 1 of the REF detail the design of the proposal.

1.2. Site Description

The subject land occurs in a rural landscape dominated by grazing enterprises and forest managed for conservation, nearby lands are occupied by large tracts of native forest, the

riparian corridor is well vegetated with native forest with a diverse understory and groundcover, weed species are sparse.

Terminology used in this report aims to be consistent with the NSW Biodiversity Assessment Method 2020;

Assessment area refers to the local environment surrounding the subject land within a buffer distance of 1500m of the subject land.

Subject Land refers to the parcels of land impacted by the works, in this case the road reserve extending 50m north and south of the development footprint.

Development footprint refers to the areas of direct impacts of the proposal, it includes the footprint of the development and any ancillary works, facilities and accesses that support the construction or operation of the development.

The proposal location and subject land are identified on Map 1-1 of this report and the development footprint is detailed in the concept plans at Appendix 1 of the REF.

1.3. Aims of this Report

The purpose of this report is to identify and assess the terrestrial biodiversity, including flora, fauna and ecological communities occurring in the study area and the likely impacts of the proposed development on these matters, with consideration of the site's landscape context. This report addresses the legislative framework below;

i. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

   a. Biodiversity Matters of National Environmental Significance

      Identification of protected matters at risk of impact and assessment of significance of any impact

ii. NSW *Biodiversity Conservation Act 2016* (BC Act)

   a. Part 4, Divisions 2 and 5

      Consideration of listed species, ecological communities and key threatening processes to be considered under s7.3

   b. Section 7.3

      Test of Significance, for determining whether proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats

iii. NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)

   a. Part 5, Infrastructure and environmental impact assessment

iv. NSW *State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP)*

      Part 2 Development control of koala habitats

v. Queanbeyan-Palerang Regional Local Environmental Plan 2022 (LEP)

   Clause 7.2 Terrestrial Biodiversity

      (1)The objective of this clause is to maintain terrestrial and aquatic biodiversity including—

      (a) protecting native fauna and flora, and

      (b) protecting the ecological processes necessary for their continued existence, and

(c) encouraging the recovery of native fauna and flora, and their habitats.

(2) This clause applies to land identified as “sensitive land” on the Natural Resources Sensitivity—Biodiversity Map.

This Biodiversity Assessment aims to;

- Provide a description of the subject site and study area
- Describe the methods used to assess biodiversity
- Identify the key flora and fauna species & vegetation communities present in the study area, including an assessment of potential habitat values of the site and their interaction with habitats outside the study area
- Identifies the listed threatened species, populations migratory species & ecological communities with potential to occur in the study area
- Define the potential impacts of the proposal on biodiversity and assess the significance of potential impacts on threatened species, populations and ecological communities and migratory species.

It is important to note that not all species that occur on or use this site could be identified without an extended survey period of several seasons and over numerous site visits. A survey of this extent is beyond the scope of this assessment. To compensate for this, habitats have been assessed with consideration of potentially occurring species applying the principle, particularly in relation to listed matters.

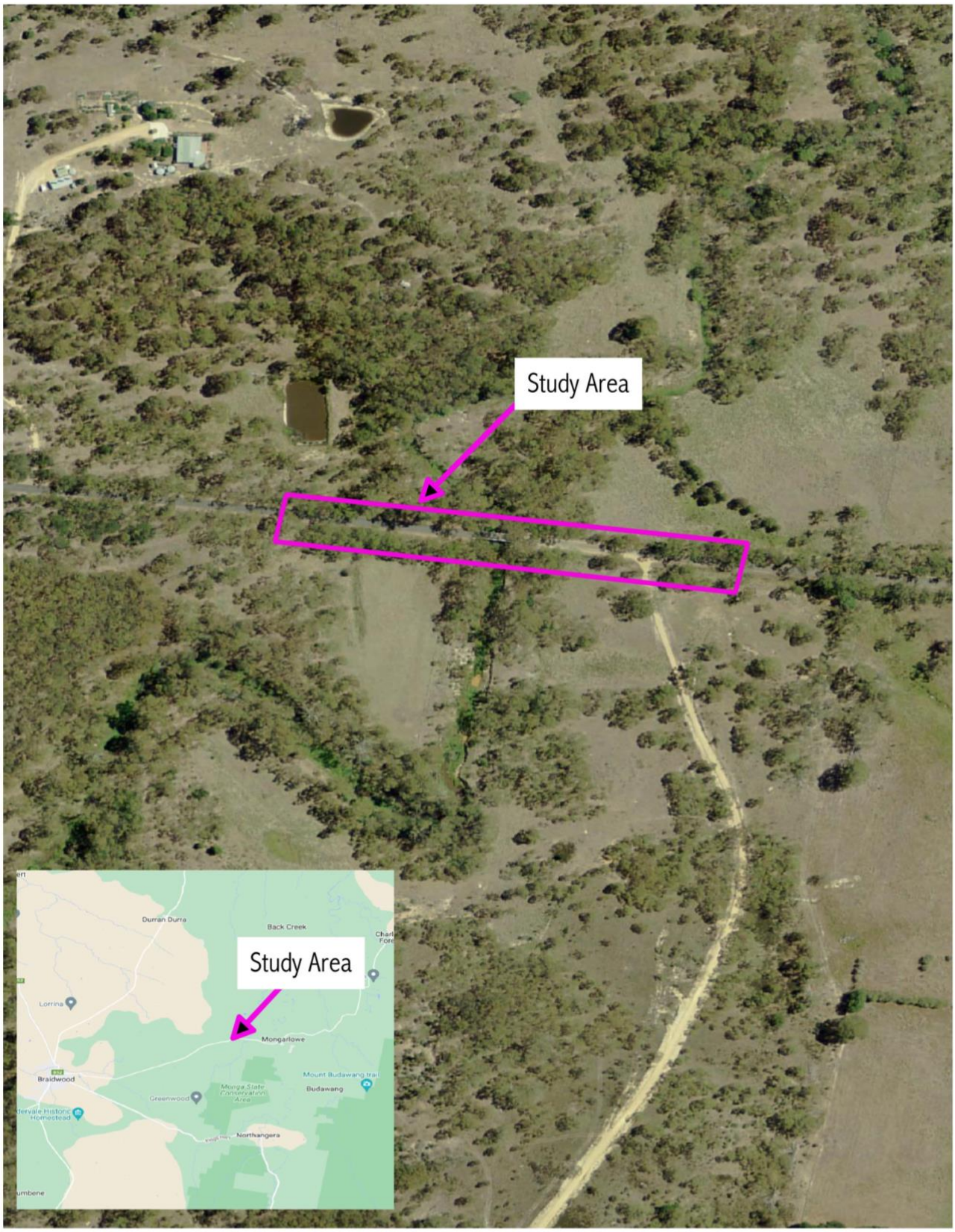
1.4. Description of Proposal

Council is proposing to remove the existing bridge and replace it with a greater capacity cast in place structure. During works Little River Road will be closed at the works site and traffic detoured via Northangera Road.

It is intended that works will be completed in one stage in the 2023 – 2024 financial year, the timeframe for works is expected to be up to 6 weeks though this may be impacted by Council’s operational schedule and weather conditions.

The following summarises the activities involved;

- Completion of design and planning approvals/ licences and permits as required
- Implementation of traffic management plan and closing of the road in the works area
- Site preparation, including construction of access pads/ tracks, and temporary erosion and sediment controls
- Demolition of existing bridge and removal of its components
- Construction of approaches, formation and drainage as required
- Install permanent formwork & steel reinforcing for headwalls and deck
- Pour cast in place headwalls & deck
- Sealing of deck wearing surface 2 coat 14mm/7mm bitumen seal matched to approaches
- Installation of railings/ traffic barriers and signage as required
- Commissioning of new works
- Decommissioning and removal of temporary works including erosion and sediment controls
- Post construction works including clean-up and site rehabilitation.



Macrozamia Environmental

Map 1-1
Study Area and Locality

0 50 100 m

2. Methods

2.1. Literature and Database Review

The study area and its landscape context were considered through a literature and database review in preparation for field survey and to inform survey aims and threatened biodiversity assessments. Aerial photography, NSW Government GIS data and NSW & Commonwealth databases as well as Macrozamia Environmental's records from previous surveys in the landscape all informed this review, the following sources being key to this assessment;

- Current versions of legislation referred to in section 1.3 of this Biodiversity Assessment, NSW Legislation website
- NSW ePlanning Spatial Viewer, NSW Department of Planning, Industry and Environment
- BioNet Atlas of NSW Wildlife, NSW Office of Environment and Heritage
- Threatened Biodiversity Profiles, NSW Office of Environment and Heritage
- NSW Vegetation Information System, NSW Office of Environment and Heritage
- Land and Property Information SIX Map Topographic and Cadastral Data for this Local Government Area, periodically updated on our GIS
- EPBC Protected Matters Search Tool, Commonwealth Department of Agriculture, Water and the Environment.

Wherever applicable, NSW and Commonwealth policies and guidelines have been adopted in the undertaking of this assessment, the following have been key to preparation of this report;

- Threatened Species Test of Significance Guidelines NSW Office of Environment and Heritage 2018
- The EPBC Act Matters of National Environmental Significance: Significant Impact Guidelines, Department of Environment, Water, Heritage and the Arts 2013.

Threatened species, populations and migratory species that were recorded within 10km of the study area in the BioNet Atlas of NSW Wildlife and listed in the EPBC Protected Matters Search Tool were considered for their likelihood of occurrence in the study area the following factors informed this assessment;

- The location, habitats and dates of records
- Habitat within the study area and habitats in the landscape including the continuity of suitable habitats for the matter under consideration
- Scientific literature pertaining to each matter and applying ecological knowledge to the assessment.

The potential for each threatened matter or migratory species to occur was then considered and the necessity for targeted field surveys was determined. Following field surveys and review of habitat occurring in the study area, the potential for species, communities or populations to use the study area or to be impacted directly or indirectly by the proposal was assessed, this assessment is summarised in the table at Appendix 1 of this report.

2.2. Field Survey

The study area was surveyed by an ecologist on 18 July 2023. Conditions were clear and cool, it was considered conditions were adequate for opportunistic fauna survey and of sufficient time to adequately assess each vegetation community throughout the area of the works. During site inspections the study area was defined, vegetation communities mapped

and notes made on the flora and fauna species identified within and adjacent to the impact area of the proposal, a photo/ videographic record was also made aiding in documenting the site characteristics.

2.3. Flora and Vegetation Communities

All flora and fauna species identified were recorded along with ecological communities and habitat components occurring on the site.

Flora was surveyed using the random meander technique (Cropper 1993) focusing on each vegetation community occurring in the study area. Notes were made of individual plant species present and vegetation communities mapped and defined then compared with OEH defined Plant Community Types and checked against described listed vegetation communities.

Targeted surveys were undertaken for threatened species of plants that were considered to have potential to occur on the site based on desktop research or where habitats on site were found to be suitable.

Floral nomenclature is consistent with *The Plant Information Network System of The Royal Botanic Gardens and Domain Trust* PlantNET online resource.

2.4. Fauna and Fauna Habitats

Incidental fauna survey was undertaken for birds, amphibians, reptiles and mammals, which included opportunistic observations of fauna, active searching of signs of direct and indirect occurrence including scats, tracks, scratch & feeding marks, burrows, calls, pellets and remnants such as bones, fur and feathers.

Where suitable habitat components were present, targeted searches were undertaken for fauna presence or signs of past presence. For example loose rocks and timber were lifted in search of reptiles and rocky areas observing for basking reptiles, wet areas were approached quietly to listen for frogs and in suitable habitat bird calls were used for identification.

Habitat components that may be used for foraging, roosting, breeding or nesting by any potentially occurring fauna were considered, along with the continuity of habitat present within the study area as well as stepping stone or corridor habitat that may connect the study area to other parts of the landscape, particularly to areas of quality habitat or conservation areas.

Habitat surveys targeted tree hollows, stags, bird nests, possum dreys, decorticating bark, rock shelters, rock outcrops / crevices, mature / old growth trees, food species particularly nectar producing and palatable species such as mistletoes and proteaceae species.

Artificial structures such as bridges/ culverts, dams, service pits and other structures were also considered for their habitat value and investigated for the presence of microbats including their sounds and guano deposits.

Faunal nomenclature is consistent with;

- Cogger, H. (1992). Reptiles and Amphibians of Australia, Revised Edition. Reed, Sydney.
- Morcombe, M. (2000). Field Guide to Australian Birds. Steve Parish Publishing Pty Ltd, Queensland.
- Strahan, R. (1995). The Mammals of Australia. Australian Museum/Reed Books, Sydney.

2.5. Survey Limitations

The flora survey aimed to record all the key and most frequent species occurring on the study area in order to accurately describe vegetation characteristics and classify plant community types present as well as all important weed species. Beyond this, as many flora species as

practically could be recorded were, however, a definitive list of the flora occurring in the study area cannot be derived without structured surveys over several seasons. Such survey effort is beyond the scope of this assessment given past land uses on the site, its degraded nature and the nature of the proposal's impacts.

Despite these limitations the biodiversity assessment undertaken for flora, vegetation communities and fauna is adequate to undertake appropriate biodiversity impact assessment. Further flora species would be recorded during longer surveys over different seasons however sufficient data has been collected to detect flora and habitats of threatened matters.

Biodiversity survey following OEH's published threatened species survey and assessment guidelines was not undertaken as sufficient detail to determine the likelihood of occurrence of threatened species and communities as well as potentially occurring migratory species for the purposes of this assessment has been achieved through flora and habitat assessment during the field survey.

3. Results

3.1. Literature and Database Review

Desktop assessment has identified the following characteristics of the site;

Interim Biogeographic Regionalisation for Australia (IBRA)

The Interim Biogeographic Regionalisation for Australia (IBRA) is a geospatial system for categorising landscapes into assemblages of common characteristics including climate, geology, landform, native vegetation and species assemblages. The 89 IBRA regions are further apportioned into a total of 419 subregions across the continent which are more localised and homogenous geomorphological divisions.

This system of categorisation based on broad environmental features enables for more effective management biodiversity and helps to define Plant Community Types as well as predict likelihood of threatened species and communities occurring.

The subject land occurs in the Bungonia subregion of the South Eastern Highlands Bioregion and 3km east of the South East Coastal Ranges subregion.

Landform and drainage

The study area occurs at an elevation of 650m asl is gently sloping toward Tantulean Creek and draining to the north.

The existing road is drained through artificial formation to Tantulean Creek.

Soils and geology

Soil landscape mapping indicates the Soil landscape *Eastfields Creek* occurs in the vicinity of the project area, this soils landscape is described as occurring on Quaternary alluvium consisting of gravel, sand, silt and clay on valley flats and swampy depressions of Oallen Relict Rises physiographic region. Topography is long, thin, generally <100 m wide, valley flat and swamp units. Minor floodplain and terrace units. Little or no rock outcrop. Running and ponded water is common as is waterlogging vegetation is described as grass and sedgeland with some *Eucalyptus stellulata* (black sally), *E. ovata* (swamp gum) and *E. viminalis* (ribbon gum).

These descriptions of this soil landscape are consistent with observations on the site.

In the project area soil stability is good, well protected by gentle slopes and high vegetative cover.

Environmental planning

Queanbeyan-Palerang Regional Local Environmental Plan 2022 (LEP)

7.2 Terrestrial biodiversity

The objective of this clause is to maintain terrestrial biodiversity by

(a) protecting native fauna and flora, and

(b) protecting the ecological processes necessary for the continued existence of native fauna and flora, and

(c) encouraging the conservation and recovery of native fauna and flora and their habitats.

The whole of the project site are mapped as '*Terrestrial Biodiversity*' on the *Terrestrial Biodiversity Map*, as such the following clause applies;

> *(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider—*
>
> *(a) whether the development is likely to have—*

(i) any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and

(ii) any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and

(iii) any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and

(iv) any adverse impact on the habitat elements providing connectivity on the land, and

(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

This Biodiversity Assessment addresses this clause throughout the report.

The State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP) consolidates several repealed SEPPs that help to manage conservation of biodiversity.

Chapter 3 Koala habitat protection 2020 of the BC SEPP applies to this project due to its Rural land zoning.

This Chapter aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline—

(a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and

(b) by encouraging the identification of areas of core koala habitat, and

(c) by encouraging the inclusion of areas of core koala habitat in environment protection zones.

Under this Chapter the following steps are to be taken;

3.6 Step 1—Is the land potential koala habitat?

(1) Before a council may grant consent to a development application for consent to carry out development on land to which this Part applies, the council must be satisfied as to whether or not the land is a potential koala habitat.

(2) The council may be satisfied as to whether or not land is a potential koala habitat only on information obtained by it, or by the applicant, from a person who is qualified and experienced in tree identification.

(3) If the council is satisfied—

(a) that the land is not a potential koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a potential koala habitat, it must comply with section 3.7.

3.7 Step 2—Is the land core koala habitat?

(1) Before a council may grant consent to a development application for consent to carry out development on land to which this Part applies that it is satisfied is a potential koala habitat, it must satisfy itself as to whether or not the land is a core koala habitat.

(2) The council may be satisfied as to whether or not land is a core koala habitat only on information obtained by it, or by the applicant, from a person with appropriate

qualifications and experience in biological science and fauna survey and management.

(3) If the council is satisfied—

(a) that the land is not a core koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a core koala habitat, it must comply with section 3.8.

3.8 Step 3—Can development consent be granted in relation to core koala habitat?

(1) Before granting consent to a development application for consent to carry out development on land to which this Part applies that it is satisfied is a core koala habitat, there must be a plan of management prepared in accordance with Part 3 that applies to the land.

This SEPP is addressed in Section 6 of this report.

NSW Biodiversity Conservation Act 2016

The NSW Biodiversity Conservation Act 2016 (BC Act) has been designed to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. It is a broad legislative tool and the key piece of NSW legislation addressing conservation matters in the state. In terms of development impact assessment and planning, the BC Act works in conjunction with the EP&A Act to deliver the NSW Biodiversity Assessment Method and the Test of Significance assessment for threatened biodiversity matters as well as the listings of threatened matters and key threatening processes.

Clause 7.2 (1) defines *"likely to significantly affect threatened species"* as;

(1) For the purposes of this Part, development or an activity is likely to significantly affect threatened species if—

(a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or

(b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or

(c) it is carried out in a declared area of outstanding biodiversity value.

An inventory of BC Act listed matters that occur or may occur in the landscape of the project site has been curated in Appendix 1 of this report. Based on the biology of each matter, its known geographic range and nearby records an assessment of risk of impact on the matter has been made, any matter that has been determined as having a real chance or possibility of being impacted must be further assessed through a Test of Significance;

7.3 Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats

(1) 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—

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

(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

(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,

(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.

Section 4, Threatened Species Populations & Ecological Communities, of this report addresses findings of desktop review of threatened biodiversity.

Application of the Biodiversity Assessment Method

The BC Act provides a series of native vegetation clearing thresholds and the Biodiversity Values Map (BVM) to determine the necessity for the impacts on biodiversity of a development to be assessed using the BC Act's Biodiversity Assessment Method (BAM). The thresholds are a native vegetation area clearing trigger, the Biodiversity Values Map trigger and the significant impact to listed matters trigger, as detailed below.

1. **Native vegetation area clearing trigger;**

At this site the native vegetation clearing threshold to trigger the BAM is 1ha. Native vegetation as defined by the BC Act includes all vegetation that is native to NSW, regardless of whether it is native to the subject site's bioregion or has been planted. Clearing includes all removal or destruction of native vegetation including through expected future uses of the development.

The proposal requires no clearing of native vegetation.

2. **Biodiversity Values Map (BVM) trigger;**

The riparian lands of Bedding Ground Creek are mapped on the BVM map. This would be a trigger for the BAM as works occur in the mapped area however, as a Part 5 infrastructure project assessed through an REF entry to the BOS is optional.

See Figure 3-2 below showing BVM mapping in solid purple and the project site in pink outline.

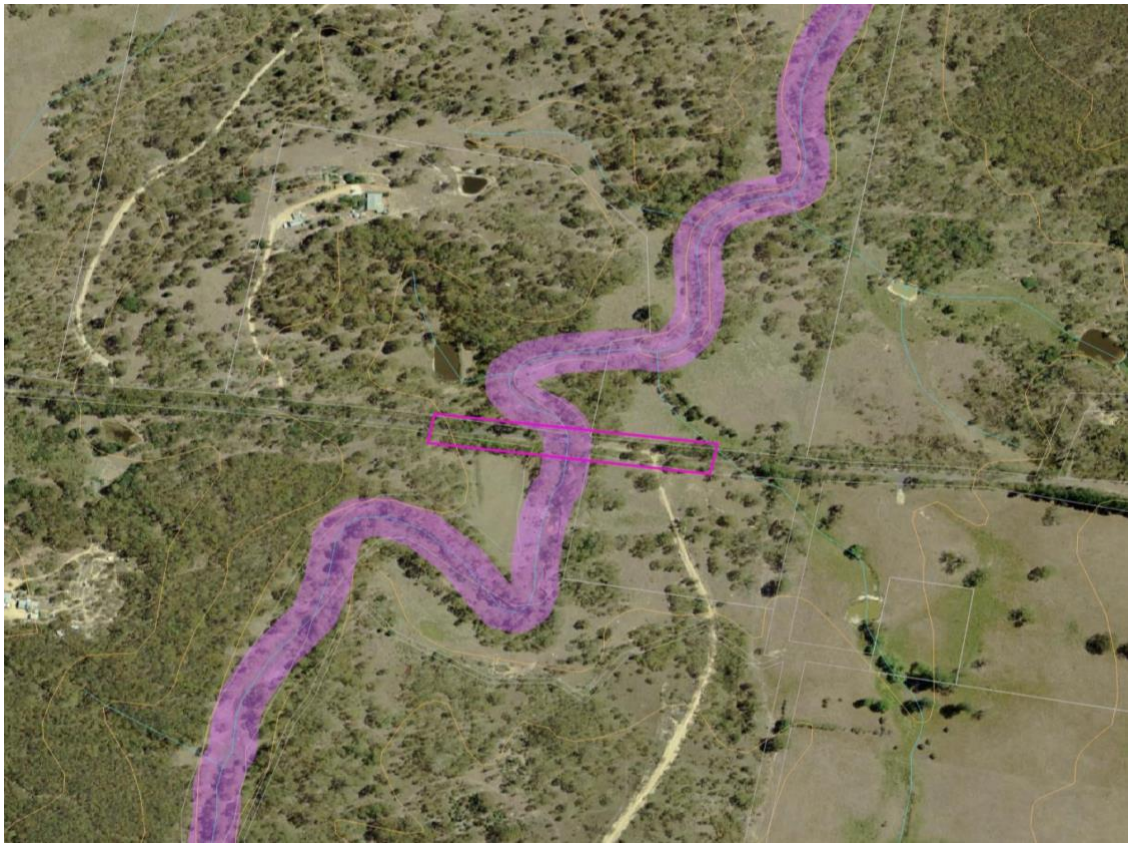


Figure 3-1 BVM Mapping in the vicinity of the project area, subject site indicated in pink, BVM mapping in purple.

3. **Significant impact to listed matters trigger;**

Where there is potential for BC Act listed matters (species, populations or ecological communities) to be impacted by the proposal a test of significance must be undertaken to determine the significance of any impact.

Where this test determines a significant impact is likely the BAM is triggered.

The potential for protected matters occurring in the study area has been assessed in the threatened matter evaluations table at Appendix 1 and are discussed in Section 4 of this report. The result of this assessment is the finding that no listsd matters are at risk of significant impact by the proposal.

Application of the BAM

The proposal would trigger the BAM as a Part IV project due to BVM mapping and would be eligible for assessment through the Biodiversity Offsets Scheme, however as the project is being assessed as a Part 5 infrastructure project through an REF entry to the BOS is optional and has not been considered a necessary pathway for the minor nature of the works, and the negligible impact on native vegetation.

3.2. Vegetation communities and flora species

The study area occurs in an environment that has supported eucalypt dominated woodland and forest for many years prior to European settlement. These ecosystems have been progressively modified over the past 200 years, intersected by road and utility corridors and cleared for urban development and agriculture, typically grazing enterprises in the lower flatter parts of the landscape while hill tops and ridges have typically been cleared for timber and allowed to regenerate over time. Large areas of the nearby landscape are occupied by native woody vegetation communities that are generally relatively intact. Rural residential land uses

have become common in the assessment area, such holdings are often well vegetated with varying levels of simplification of forest communities, often grazed by domestic animals and managed for bushfire risk mitigation. Several large areas of agricultural paddocks with sparse trees, including exotic and native, also occur as well as areas rehabilitated as planted forest for conservation outcomes.

Native forest extends into the road reserve at the subject site, this vegetation community is mapped as the plant community type (PCT) 3304 Southern Tableland Swamp Flats Shrub Woodland by the NSW State Vegetation Type Mapping, Figure 3-2. This community is described as follows.

A tall shrubby sclerophyll woodland associated with small intermittently waterlogged headwater flats on sandy clay soils along the eastern edge of the South Eastern Highlands, known from Bindook and Hilltop south to Monga. This PCT occurs in intermittently damp situations where the soil water table remains high for long periods while the surface may periodically dry out, allowing trees and shrubs tolerant of waterlogging to persist in combination with ground layer species not dominated by aquatics. It occurs at elevations of 530-840 metres asl with mean annual precipitation of 800-1000mm, commonly on soils derived from sandstones of the Abercrombie Formation, Hawkesbury or Nowra Sandstones or at their margins with finer-grained siltstones or shales. The sparse canopy very frequently includes Eucalyptus ovata, occasionally with Eucalyptus dalrympleana or Eucalyptus radiata and rarely Eucalyptus viminalis. The shrub layer is sparse to mid-dense and commonly includes patches of Leptospermum polygalifolium, with occasional scattered Epacris microphylla or rarely Leptospermum continentale. The ground layer is mid-dense to dense and almost always includes Lomandra longifolia, Microlaena stipoides, Dichondra repens and Gonocarpus tetragynus, commonly with Hydrocotyle sibthorpioides, Centella asiatica, Hypericum gramineum, Poa sieberiana, Viola betonicifolia, Poranthera microphylla, Lobelia purpurascens, Entolasia stricta, Glycine clandestina, Senecio prenanthoides and Veronica plebeia. In lower parts of drainage systems with greater catchment areas this community may be replaced by more permanently swampy PCTs such as 3932 and 3949 or where cold air ponding occurs, by PCT 3746.

The vegetation in the vicinity of the project area is consistent with this description, the canopy dominated by *Eucalyptus viminalis*, in nearby areas further from the bridge site to the southeast the canopy becomes dominated by *E. pauciflora* and *E. stellulata*.

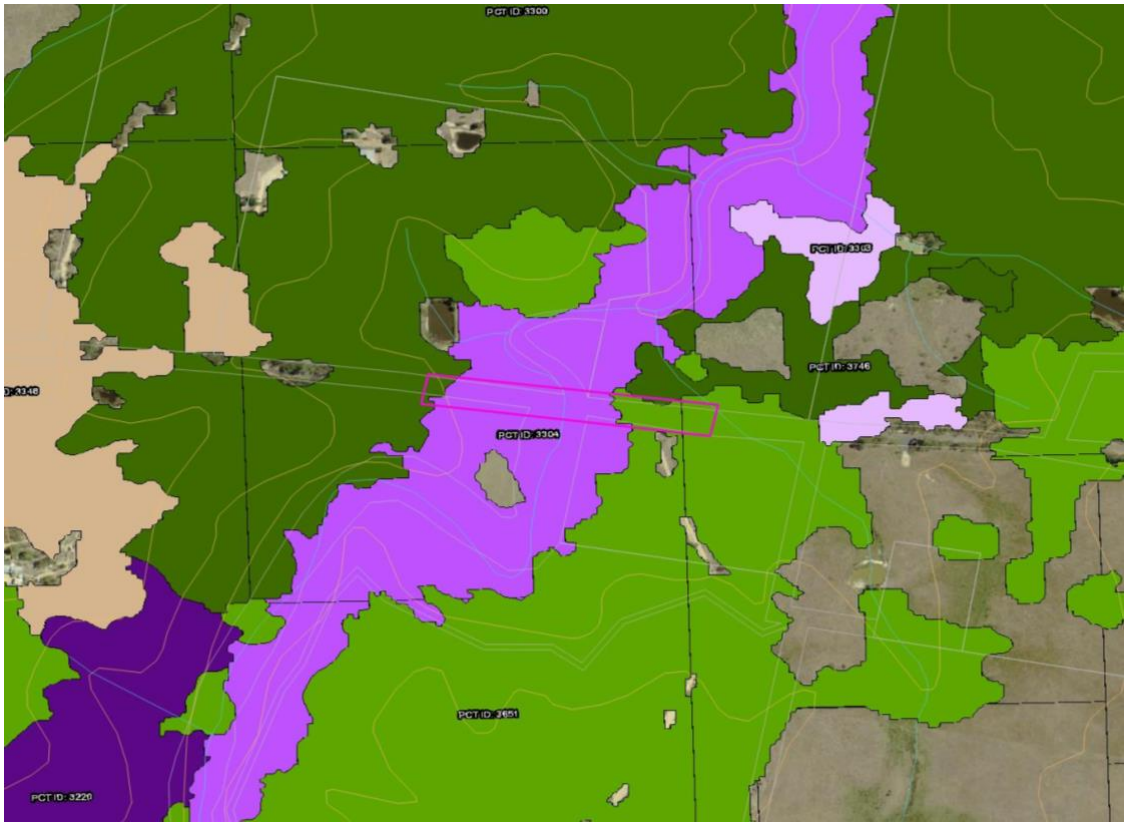


Figure 3-2 SVTM in the vicinity of the project area, subject site indicated in pink.

PCT 3304 Southern Tableland Swamp Flats Shrub Woodland is not associated with a threatened ecological community however, the nearby Snowgum dominated woodland could be defined as the threatened ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* which is listed as a Critically Endangered Ecological Community under the NSW BC Act.

This threatened ecological community is not at risk of impact by the proposal occurring well outside the works area.

No other flora species or communities were recorded or considered likely to occur that are listed matters under the BC Act or the EPBC Act.

Figure 3-3, Subject bridge viewed from the northeastern side. Native forest (*E. viminalis*) evident in the road reserve.

Figure 3-4, Subject bridge viewed from western side. Native forest (*E. viminalis*) evident in the road reserve, bare ground shoulder in foreground.

Figure 3-5, Subject bridge viewed from eastern side. Native forest (*E. viminalis* & *E. stellulata*) evident in the road reserve, bare ground shoulder in foreground.

3.3. Fauna and Fauna Habitat

Due to the limited survey period and lack of habitat diversity, few fauna were found using the site, however, the potential for fauna to use the site, particularly threatened species has been considered based on the habitats present.

The presence of relatively intact native forest and a well vegetated riparian corridor in the project area with the presence of canopy, understory and groundcover layers offers a diversity of habitat to a range of fauna. It is likely that a diversity of birds, mammals and reptiles as well as a plethora of invertebrates make use of the habitats in the vicinity of the project area.

The bridge itself is also of potential habitat value to fauna that may roost or build nests in its structure, including threatened microbats.

The watercourse is a very valuable habitat component for fauna providing a water source, microhabitats and a movement corridor.

The continuity of the habitat present with a diversity of habitats across the landscape significantly amplifies the value of the habitat present.

No fauna species or fauna habitats were recorded or considered likely to occur that are listed matters under the BC Act or the EPBC Act.

3.4. Impacts

The proposal's impacts to vegetation will be negligible and restricted to exotic grasslands. The proposal is to be retained within the existing road alignment, a stockpile area will temporarily impact a small area of exotic grassland.

Works, plant and equipment will not impact or be parked near native woody vegetation.

4. Threatened Species, Populations and Ecological Communities

The BC Act provides a series of thresholds including area of native vegetation clearing, the Biodiversity Values Map (BVM) and significant impacts to listed matters to determine the necessity for the impacts on biodiversity of a development to be assessed using the BC Act's Biodiversity Assessment Method (BAM). As this project is being assessed under Part V of the EP&A Act it is exempt from this criteria however clearing involved would not trigger the BAM and no part of the site is mapped on the BVM.

Where there is potential for BC Act listed matters (species, populations or ecological communities) to be impacted by the proposal a test of significance must be undertaken to determine the significance of any impact.

The potential for protected matters occurring in the area to be impacted has been assessed in the threatened matter evaluations table at Appendix 1 of this report.

The findings of this assessment are as follows;

4.1. Threatened species

Appendix 1 addressed several listed species that have been recorded within 10km of the of the study area in the past or in other parts of the Southern Tablelands and considered to have some potential to occur on the site.

Following this assessment, no Threatened Species listed under the BC Act were considered likely to occur on the site or be impacted by the proposal.

While no signs of microbats making use of the bridge structure were found during site inspections, there is potential for the following threatened species of microbats to make use of the existing bridge prior to its demolition;

- Southern Myotis (*Myotis macropus*)
- Little Bent-winged Bat (*Miniopterus australis*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*)

To manage this risk, the bridge structure must be inspected prior demolition, if any signs of microbats are present impact to these species must be reconsidered and an Assessment of Significance undertaken.

4.1. Endangered Populations

No Endangered Populations listed under the BC Act have been considered likely to be at risk of impact by the proposal.

4.2. Endangered Ecological Communities

Appendix 1 addressed 3 listed communities, no endangered ecological communities were found to be at risk of impact of this proposal.

5. Environment Protection and Biodiversity Conservation Act 1999

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) specifies that approval is required from the Commonwealth Minister for the Environment for actions that have, will have or are likely to have a significant impact on a matter of "national environmental significance".

The Act identifies nine matters of national environmental significance being:

1) World Heritage properties
2) National heritage places
3) Wetlands of international importance (Ramsar wetlands)
4) Threatened species and ecological communities
5) Migratory species
6) Commonwealth marine areas
7) Nuclear actions (including uranium mining)
8) Great Barrier Reef Marine Park
9) Water impacts from coal seam gas and large coal mining actions

Matters number 4 (Threatened species, ecological communities) and 5 (Migratory species) are relevant to this proposal.

5.1. Threatened Species & Ecological Communities:

Threatened species listed under this act have been considered in the Appendix 1 assessment along with NSW BC Act listed species.

The Commonwealth Environment Department protected matters search tool was used to highlight any maters of national environmental significance that could be of concern. No matters were considered likely to be negatively impacted by the proposal.

5.2. Migratory Species:

In addition to threatened species and ecological communities, the EPBC Act allows for the listing of internationally protected migratory species, i.e. species listed under the Japan-Australia Migratory Bird Agreement (JAMBA), the China - Australia Migratory Bird Agreement (CAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

No protected migratory species were observed on site at the time of this assessment or considered likely to occur on the site or rely on resources provided by its habit.

6. State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP) consolidates several repealed SEPPs that help to manage conservation of biodiversity.

Chapter 3 Koala habitat protection 2020 of the BC SEPP applies to this project due to its RU1 Primary Production zoning.

This Chapter aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline—

(a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and

(b) by encouraging the identification of areas of core koala habitat, and

(c) by encouraging the inclusion of areas of core koala habitat in environment protection zones.

Under this Chapter the following steps are to be taken;

3.6 Step 1—Is the land potential koala habitat?

(1) Before a council may grant consent to a development application for consent to carry out development on land to which this Part applies, the council must be satisfied as to whether or not the land is a potential koala habitat.

(2) The council may be satisfied as to whether or not land is a potential koala habitat only on information obtained by it, or by the applicant, from a person who is qualified and experienced in tree identification.

(3) If the council is satisfied—

(a) that the land is not a potential koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a potential koala habitat, it must comply with section 3.7.

3.7 Step 2—Is the land core koala habitat?

(1) Before a council may grant consent to a development application for consent to carry out development on land to which this Part applies that it is satisfied is a potential koala habitat, it must satisfy itself as to whether or not the land is a core koala habitat.

(2) The council may be satisfied as to whether or not land is a core koala habitat only on information obtained by it, or by the applicant, from a person with appropriate qualifications and experience in biological science and fauna survey and management.

(3) If the council is satisfied—

(a) that the land is not a core koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a core koala habitat, it must comply with section 3.8.

3.8 Step 3—Can development consent be granted in relation to core koala habitat?

(1) Before granting consent to a development application for consent to carry out development on land to which this Part applies that it is satisfied is a core koala habitat, there must be a plan of management prepared in accordance with Part 3 that

applies to the land.

Vegetation in the road corridor and landscape supports good quality koala habitat and will at times support koala populations. The works however are restricted to the existing road and bridge structures.

The proposal will not require the removal of core koala habitat, consequently the *development is likely to have low or no impact on Koalas or Koala habitat*.

7. NSW Fisheries Management Act 1994

The Fisheries Management Act 1994 provides for the protection of fish and marine vegetation, endangered populations and ecological communities by a listing process. No species, populations or communities listed under this act were recorded on site at the time of this assessment or are considered likely to occur on this site.

No Tests of Significance have been prepared for species protected by this act in relation to the proposed development.

8. Assessment of the Biodiversity Impact

Considering the information detailed above that has been summarised from information collected during field and desktop investigations and assessments of significance for threatened species and communities the following final assessments are made.

8.1. Direct Impacts

Proposed works will not directly impact native vegetation.

Works will remove the existing bridge structure which has potential to be used by fauna, impact mitigation measures in Section 9 of this report mitigate this impact.

8.2. Indirect Impacts

There is a risk that plant and equipment used for the works may transport weed material on the site or from other sites. Impact mitigation measures in Section 9 of this report address this risk.

8.3. Potential Impacts on Flora

Impacts described above will not significantly impact any threatened flora or endangered ecological communities.

The proposal will not involve the removal of any significant vegetation, plant habitats or significantly degrade the ecological value of the study area.

8.4. Potential Impacts on Fauna and Habitat

No areas of important habitat or unique habitat components that are infrequent in the landscape will be removed as part of this proposal.

The impact of the proposal on fauna populations and their habitats is considered likely to be insignificant. This is largely due to the minor nature of the works. It is possible the bridge structure provides some habitat for native fauna however it is not likely to be an important habitat resource in the landscape.

There is a possibility that the existing bridge structure may be utilised by fauna, including threatened microbats, impact mitigation measures Section 9 of this report mitigate this risk.

No listed threatened fauna or their habitats are considered at risk of impact by this proposal.

9. Impact Mitigation Measures

The following impact mitigation measures are recommended for adoption to reduce the likelihood of any negative impacts on flora and fauna associated with this proposal both in the short and long term.

9.1 Council must ensure that they do not import weed material to the site, for example, in or on plant and equipment used on the site. At a minimum the following actions will be undertaken to achieve this;

- In order to manage the risk of indirect impacts of invasive species establishing in the project area, a weed management plan will be prepared and implemented to ensure the project does not increase the occurrence of weed species on the site or adjoining land the plan will incorporate the following practices;
- Plant and equipment will be cleaned prior to entering any part of the site ensuring no mud/ soil or vegetation material is imported into the area
- The site manager will ensure that procedures are in place to ensure plant and equipment entering the site are clean and free of mud, soil and vegetation material.

9.2 Due to the possibility of the existing bridge structure becoming roosting habitat for the following threatened species of microbats a pre-demolition inspection for microbats is to be undertaken within three days before proposed demolition by a suitably experienced ecologist. If evidence of microbat presence is found an Assessment of Significance is to be undertaken.

- Southern Myotis (*Myotis macropus*)
- Little Bent-winged Bat (*Miniopterus australis*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*).

9.3 In order to manage the risk of microbats roosting in the bridge structure the Construction Environmental Management Plan is to include an unexpected finds procedure for microbats including the following;

- A daily inspection for microbats roosting in the bridge structure is to be undertaken and documented including investigating for bats, guano and sounds of bats
- If bats or their signs are present a suitably qualified and experienced ecologist is to be engaged to investigate further
- Any bats found are not to be touched.

10. Conclusion

This Biodiversity Assessment Report has assessed the flora and fauna associated with this site and the extent and nature of impacts on biodiversity of the proposed works.

It is essential that this report's impact mitigation measures be implemented in order to minimise and offset vegetation or habitat loss and to manage potential weed issues on the site and ensure that adjoining lands are not impacted.

There are no other biodiversity issues associated with this proposal and if the impact mitigation measures recommended by this report are implemented the overall impact of this proposal on flora and fauna will be negligible.

11. References

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Appendix 1 – Threatened Matter Evaluations Table

Threatened Species Evaluations

The following table present the evaluations for threatened species, endangered ecological communities and endangered populations found either

1. Within a 10km buffer of the study site in the Atlas of NSW Wildlife (Bionet).
2. Identified as potentially occurring in the area by the Commonwealth EPBC Protected Matters Search Tool.
3. Considered to have potential to occur in the landscape given habitats available

The assessment of potential for impact to the species or ecological community is based on the nature of the proposal, it's direct and indirect impacts and the ecology of the species. Where a potential impact to a threatened species, ecological community or endangered populations has been identified a *Test of Significance* for determining whether proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats has been undertaken in line with Section 7.3 of the *Biodiversity Conservation Act 2016*.

Abbreviations

Matter status under each act, *NSW Biodiversity Conservation Act 2016* (BC Act) or the *Commonwealth Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act) (depending on the table column the abbreviation is placed in) are abbreviated as follows;

- E: listed as endangered
- V: listed as vulnerable
- CE: listed as Critically Endangered
- EEC: listed as an Endangered Ecological Community
- CEEC: listed as a Critically Endangered Ecological Community
- M: Migratory Species under the EPBC Act.

References

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Office of Environment and Heritage. Threatened Species Profile Search. [Online]. Available from: http://www.environment.nsw.gov.au/threatenedspeciesapp/.

Department of Primary Industries. Listed threatened species, populations and ecological communities. [Online]. Available from: http://www.dpi.nsw.gov.au/fishing/species-protection/conservation.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Fauna						
Birds						
Anthochaera Phrygia Regent Honeyeater	The regent honeyeater inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Also utilises *E. microcarpa, E. punctata, E. polyanthemos, E. moluccana, Corymbia robusta, E. crebra, E. caleyi, Corymbia maculata, E. mckieana, E. macrorhyncha, E. laevopinea*, and *Angophora floribunda*. Nectar and fruit from the mistletoes *Amyema miquelii, A. pendula and A. cambagei* are also utilised. When nectar is scarce lerp and honeydew can comprise a large proportion of the diet.	CE	CE	Present in landscape, feed trees and mistletoe present in close proximity of site	Possible rare visitor to this landscape	Not likely to be impacted Proposal will not impact potential habitat
Grantiella picta Painted Honeyeater	Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*. Insects and nectar from mistletoe or eucalypts are occasionally eaten. Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches.	V	V	Present, woodland habitat and mistletoe present in landscape	Possible occasional visitor to this landscape	Not likely to be impacted Proposal will not impact potential habitat
Melithreptus gularis gularis Black-chinned Honeyeater (eastern subspecies)	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. Feeding territories are large making the species	V		Absent	Unlikely	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	locally nomadic. The Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares.					
Botaurus poiciloptilus Australasian Bittern	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.		E	Absent	Unlikely	No
Calidris ferruginea Curlew Sandpiper	The curlew sandpiper generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.		CE,M	Absent	Unlikely	No
Callocephalon fimbriatum Gang-gang Cockatoo	In spring and summer, the species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. Favours old growth forest and woodland attributes for nesting and roosting. Feed mainly on seeds of native and introduced trees and shrubs, with a preference for eucalypts, wattles and introduced hawthorns. They will also eat berries, fruits, nuts and insects and their larvae. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts.	V		Present in landscape, hollow bearing trees and foraging habitat in nearby forest	Possible, while passing through landscape	Unlikely to be impacted Proposal will not significantly impact potential habitat
Calyptorhynchus lathami Glossy Black-Cockatoo	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. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, *Allocasuaraina diminuta*, and *A. gymnathera*. Belah (*Casuarina cristata*) is also utilised and may be a critical food source for some	V		Absent	Unlikely	No unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	populations. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites.					
Glossopsitta pusilla Little Lorikeet	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. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards. Roosts in treetops, often distant from feeding areas. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). Riparian trees often chosen, including species like *Allocasuarina*.	V		Present in landscape	Unlikely but may pass through site	No unlikely to be impacted Proposal will not significantly impact potential habitat
Lathamus discolour Swift Parrot	On the Australian mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. Return to some foraging sites on a cyclic basis depending on food availability.	E	CE	Absent	Unlikely, favoured feed trees absent	No
Polytelis swainsonii Superb Parrot	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. May forage up to 10 km from nesting sites, primarily in grassy box woodland. Feed		V	Food source present in landscape	Unlikely but may pass through site	No - Potential impacts will not be to habitat present.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain.					
Chthonicola sagittata Speckled Warbler	The Speckled Warbler lives in a wide range of *Eucalyptus* dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding.	V		Absent	Unlikely	Unlikely to be impacted
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	V		Present in landscape	Unlikely, no suitable habitat on or near site	Unlikely to be impacted
Daphoenositta chrysoptera Varied Sittella	The varied sitella inhabits eucalypt forests and woodlands, especially those with 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.	V		Not present	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Artamus cyanopterus cyanopterus Dusky Woodswallow	Dusky woodswallows are widespread in eastern, southern and south western Australia. 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. They 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. Dusky woodswallows eat invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed. Can be resident year round or migratory, depending on climatic conditions. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland.	V		Present in landscape	Possible as stepping stone habitat	Unlikely to be impacted Proposal will not significantly impact potential habitat
Melanodryas cucullata cucullata Hooded Robin (south-eastern form)	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Often perches on low dead stumps and fallen timber or on low-hanging branches. Territories range from around 10 ha during the breeding season, to 30 ha in the non-breeding season.	V		Absent	Unlikely	Unlikely to be impacted Proposal will not significantly impact Potential habitat
Hieraaetus morphnoides Little Eagle	Occupies open eucalypt forest, woodland or open woodland. Sheoak or *Acacia* woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Lays two or three eggs during spring,	V		Small examples present, landscape habitat will	Possible, as stepping stone habitat	Unlikely to be impacted Proposal will not

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	and young fledge in early summer. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion.			support this species		significantly impact potential habitat
Haliaeetus leucogaster White Bellied Sea Eagle	The White-bellied Sea-Eagle is a large eagle that has long broad wings and a short, wedge-shaped tail, it is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. It is widespread along the east coast, and along all major inland rivers and waterways. Habitats require the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass.	V		No specific habitat component for this species occur	Incidental occurrence is possible, unlikely to land on site	Unlikely to be impacted
Falco hypoleucos Grey Falcon	This 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. 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. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of	E		No specific habitat component for this species occur	Incidental occurrence is possible	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid.					
Falco subniger Black Falcon	Widely but sparsely distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring.	V		Absent	Unlikely	Unlikely to be impacted
Circus assimilis Spotted Harrier	Occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months. Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion.	V		Absent	Unlikely	Unlikely to be impacted
Ninox connivens Barking Owl	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile soils. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as *Acacia* and *Casuarina* species. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Ringtail Possums, but when loss of tree hollows decreases these	V		Absent	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	prey populations the owl becomes more reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits. Requires very large permanent territories in most habitats due to sparse prey densities. Monogamous pairs hunt over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats.					
Ninox strenua Powerful Owl	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. It requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. It roosts by day in dense vegetation comprising species such as Turpentine *Syncarpia glomulifera*, Black She-oak *Allocasuarina littoralis*, Blackwood *Acacia melanoxylon*, Rough-barked Apple *Angophora floribunda*, Cherry Ballart *Exocarpus cupressiformis* and a number of eucalypt species. The main prey items are medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. As most prey species require hollows and a shrub layer, these are important habitat components for the owl. In good habitats 400 ha can support a pair of Powerful Owls; where hollow trees and prey have been depleted the owls need up to 4000 ha. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	V		Absent	Unlikely	Unlikely to be impacted
Tyto novaehollandiae Masked Owl	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. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 500 to 1000 hectares. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	V		Absent	Unlikely	Unlikely to be impacted
Numenius madagascariensis Eastern Curlew	In Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbors, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass.		CE, M	Absent	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Petroica phoenicea Flame Robin	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer 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. In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees.	V		Potential habitat in landscape	Possible occasional visitor	Unlikely to be impacted, no important habitat impacted
Petroica boodang Scarlet Robin	Found from south east Queensland to south east South Australia and 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. This 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. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees.	V		Potential habitat in landscape	Possible occasional visitor	Unlikely to be impacted, no potential habitat impacted
Stagonopleura guttata Diamond Firetail	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	V		Potential habitat in landscape	Possible occasional visitor	Unlikely to be impacted, no potential habitat impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season).					
Rostratula australis Australian Painted Snipe	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	E	E	Absent	Unlikely	Unlikely to be impacted
Mammals						
Pteropus poliocephalus Grey-headed Flying-fox	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. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km. Feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia*, and fruits of rainforest trees and vines.	V	V	Absent, suitable habitat absent.	Unlikely, may fly over site or forage on nearby tree	Unlikely to be impacted
Myotis macropus Southern Myotis	Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	V		Potential habitat in nearby forests & bridge	Possible habitat in bridge structure	Unlikely to be impacted, no signs of microbat activity on existing bridge, to be inspected prior to demolition
Chalinolobus dwyeri Large-eared Pied Bat	It is generally rare with a very patchy distribution in NSW. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin, frequenting low to mid-elevation dry open forest and woodland close to these	V	V	Absent	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	features. Found in well-timbered areas containing gullies. This species probably forages for small, flying insects below the forest canopy.					
Micronomus norfolkensis Eastern Coastal Free-tailed Bat	Found along the east coast of Australia from south Queensland to southern NSW. Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. It roosts mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	V		Very small component of habitat present in eucalypt trees.	Possible, rarely, recorded nearby in Bionet Atlas.	Unlikely to be impacted
Falsistrellus tasmaniensis Eastern False Pipistrelle	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy.	V		Absent, trees taller than 20 m absent.	Unlikely.	Unlikely to be impacted
Miniopterus schreibersii oceanensis Large Bentwing-bat	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. Hunt in forested areas, catching moths and other flying insects above the tree top.	V		Potential habitat in nearby forests & bridge	Possible habitat in bridge structure	Unlikely to be impacted, no signs of microbat activity on existing bridge, to be inspected prior to demolition
Miniopterus australis Little Bentwing-bat	Occurs along east coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Prefers 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. They often share roosting sites with the Common Bentwing-bat and, in winter, the	V		Potential habitat in nearby forests & bridge	Possible habitat in bridge structure	Unlikely to be impacted, no signs of microbat activity on existing bridge, to be inspected

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	two species may form mixed clusters. Only five nursery sites /maternity colonies are known in Australia.					prior to demolition
Scoteanax rueppellii Greater Broad-nosed Bat	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species.	V		Woodland habitat present in landscape	Possible	Unlikely, potential impacts will not be to habitat present.
Saccolaimus flaviventris Yellow-bellied Sheathtail Bat	Occurs across northern and eastern Australia it is a rare visitor in late summer and autumn in the most southerly parts of its range, being most of Victoria, south-western NSW and adjacent South Australia. There are scattered records of this species across the New England Tablelands and North West Slopes. Forages in most habitats across its very wide range, with and without trees appears to defend an aerial territory. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn.	V		Potential habitat present in landscape	It is possible this bat would pass through the site at times	No, this bat does not rely on habitats on the site
Dasyurus maculatus Spotted-tailed Quoll	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. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. A generalist predator with a preference for medium-sized (500g-5kg) mammals. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Females occupy home ranges up to about 750 hectares and males up to 3500 hectares. Are known to traverse their home ranges along densely vegetated creeklines.	V	E	No caves, rock outcrops or densely vegetated creeklines.	Unlikely, this species requires a very large home range and while it may occur on the site from time to time this would be very rare.	No, no habitat affected
Pseudomys novaehollandiae New Holland Mouse	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. It is known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes. It is a social animal, living		V	Potential poor examples of habitat	Unlikely, habitat is poor	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	predominantly in burrows shared with other individuals. Distribution is patchy in time and space, with peaks in abundance during early to mid stages of vegetation succession typically induced by fire.					
Cercartetus nanus Eastern Pygmy-possum	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; soft fruits are eaten when flowers are unavailable. Also feeds on insects throughout the year; this feed source may be more important in habitats where flowers are less abundant such as wet forests. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum dreys or thickets of vegetation, (e.g. grass-tree skirts).	V		Absent	Unlikely	No - Potential impacts will not be to habitat present.
Petauroides volans Greater Glider	The Greater Glider occurs in eucalypt forests and woodlands. 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.		V	Habitat association and food source present however in poor quality.	Unlikely, habitats in landscape do not support this species.	No - Potential impacts will not be to habitat present.
Petaurus australis Yellow-bellied Glider	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. It inhabits a wide range of forest types but prefers resource rich forests where mature trees provide nesting hollows and tree species composition provides year-round continuity of food resources. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Den, often in family groups, in hollows of large trees. Very mobile and occupy large home ranges between 20 to 85 ha.	V		Absent	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Petaurus norfolcensis Squirrel Glider	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Require abundant tree hollows for refuge and nest sites. Diet varies seasonally and consists of *Acacia* gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.	V		Absent	Unlikely	Unlikely to be impacted
Petrogale penicillata Brush-tailed Rock-wallaby	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Highly territorial and have strong site fidelity with an average home range size of about 15 ha.	E	V	Absent, no rock escarpments in study area.	Unlikely	Unlikely to be impacted
Phascolarctos cinereus Koala	Inhabits a range of eucalypt forest and woodland communities, including coastal forests, the woodlands of the tablelands and western slopes, and the riparian communities of the western plains. 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. Spend most of their time in trees, but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	V	V	Absent	Unlikely	Unlikely to be impacted
Amphibians						
Litoria aurea Green and Golden Bell Frog	There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas.		V	Present, dams containing rushes present.	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Litoria booroolongensis Booroolong Frog	Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins. Shelter under rocks or amongst vegetation near the ground on the stream edge.	E	E	Absent, no permanent streams.	Unlikely	Unlikely to be impacted
Litoria littlejohni Littlejohn's Tree Frog, Health Frog	The majority of records are from within the Sydney Basin Bioregion with only scattered records south to the Victorian border and this species has not been recorded in southern NSW within the last decade. Records are isolated and tend to be at high altitude. This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground.		V	Absent, no breeding habitat (permanent streams)	Unlikely	Unlikely to be impacted
Reptiles						
Suta flagellum Little Whip Snake	The Little Whip Snake is found within an area bounded by Crookwell in the north, Bombala in the south, Tumbarumba to the west and Braidwood to the east. Occurs in Natural Temperate Grasslands and grassy woodlands as well as in secondary grasslands derived from clearing of woodlands. Found on well drained hillsides, mostly associated with scattered loose rocks.	V		No suitable habitat in study area	Unlikely.	Unlikely to be impacted
Aprasia parapulchella Pink-tailed Legless Lizard	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks.	V	V	Absent	Unlikely	Unlikely to be impacted
Delma impar Striped Legless Lizard	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis*, spear-grasses *Austrostipa* spp. and poa tussocks *Poa* spp., and occasionally wallaby grasses *Rytidosperma* spp.		V	Absent	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.					
Varanus rosenbergi Rosenberg's Goanna	Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component. Individuals require large areas of habitat. Feeds on carrion, birds, eggs, reptiles and small mammals. Shelters in hollow logs, rock crevices and in burrows, which they may dig for themselves, or they may use other species' burrows, such as rabbit warrens. Generally slow moving; on the tablelands likely only to be seen on the hottest days.	V		Absent	Unlikely	Unlikely to be impacted
Fish						
Macquaria australasica Macquarie Perch	While extant populations are still found across the Murray-Darling Basin and in an east coast catchment, populations are often small and geographically separated. In New South Wales, extant populations are known to occur in the upper reaches of the Lachlan, Murrumbidgee and Murray catchments in the Murray-Darling Basin, and in the Hawkesbury/Nepean catchment on the east coast. Macquarie perch spawn at sites located at the downstream end of pools, with eggs then drifting downstream to lodge amongst gravel in riffles.	E	E	Absent, no permanent waterways in study area.	No	No
Insects						
Synemon plana Golden Sun Moth	found in the area between Queanbeyan, Gunning, Young and Tumut. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses *Austrodanthonia spp*. the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Adults are short-lived (one to four days) and do not feed - having no functional mouthparts; the larvae are thought to feed exclusively on the roots of wallaby grasses.	E	CE	Requires very specific habitat criteria, not present.	No	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Flora						
Bossiaea oligosperma Few-seeded Bossiaea	The Few-seeded Bossiaea is known from two disjunct areas - the lower Blue Mountains in the Warragamba area and the Windellama area where it is locally abundant. Occurs on stony slopes or ridges on sandstone in the Yerranderie area. Occurs in low woodland on loamy soil in the Windellama area.	V	V	Absent	Not detected during field surveys – unlikely to occur	No
Caladenia tessellate Thick-lipped Spider-orchid	The Thick Lip Spider Orchid is known from the Sydney area, Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. The single leaf regrows each year. Flowers appear between September and November.		V	Absent	Unlikely	No
Diuris aequalis Buttercup Doubletail	The Buttercup Doubletail has been recorded in Kanangra-Boyd National Park, Gurnang State Forest, towards Wombeyan Caves, the Taralga - Goulburn area, and the ranges between Braidwood, Tarago and Bungendore. Recorded in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands (especially on the Great Dividing Range). Leaves die back each year and resprout just before flowering. Populations tend to contain few, scattered individuals; despite extensive surveys, only about 200 plants in total, from 20 populations are known.	E	V	Absent	Unlikely	No
Eucalyptus aggregata Black Gum	Black Gum is found in the NSW Central and Southern Tablelands, with small isolated populations in Victoria and the ACT. Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands, for example in the Blayney, Crookwell, Goulburn, Braidwood and Bungendore districts. Grows in the lowest parts of the landscape. Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Often grows with other cold-adapted eucalypts, such as Snow Gum (*Eucalyptus pauciflora*), Ribbon Gum (*E. viminalis*), Candlebark (*E.*		V	Present	Does not occur, this is a distinct species that was not found on site despite targeted searches	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	rubida), Black Sallee (*E. stellulata*) and Swamp Gum (*E. ovata*). Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock (*Poa labillardierei*) or Kangaroo Grass (*Themeda australis*), but with few shrubs.					
Leucochrysum albicans var. tricolor Hoary Sunray	In NSW and ACT, Hoary Sunray occurs in grasslands, grassy areas in woodlands and dry open forests, and modified habitats, on a variety of soil types including clays, clay loams, stony and gravely soil. Plants can be found in natural or semi-natural vegetation and grazed or ungrazed habitat. The Hoary Sunray is a low tufted to mounding perennial straw daisy. It grows to 15 cm tall and flowers in spring and summer. After flowering it dries out to rootstock.		E	Present	Not recorded	Likely to be positively impacted – thrives in disturbed areas
Rutidosis leptorrhynchoides Button Wrinklewort	Local populations at Goulburn, the Canberra - Queanbeyan area and at Michelago. Other populations occur in Victoria. Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities.	E	E	Absent	Unlikely	No
Ammobium craspedioides Yass Daisy	Found from near Crookwell on the Southern Tablelands to near Wagga Wagga on the South Western Slopes. Most populations are in the Yass region. Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Grows in association with a large range of eucalypts (*Eucalyptus blakelyi, E. bridgesiana, E. dives, E. goniocalyx, E. macrorhyncha, E. mannifera, E. melliodora, E. polyanthemos, E. rubida*).	V	V	Absent	Unlikely	No
Dodonaea procumbens Trailing Hop-bush	Creeping Hop-bush is found in the dry areas of the Monaro, between Michelago and Dalgety. Here it occurs mostly in Natural Temperate Grassland or Snow Gum Eucalyptus pauciflora Woodland. There is one population at Lake Bathurst (the northern-most occurrence of the species). Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (*Eucalyptus pauciflora*), in open bare patches where there is little competition from other species. It is found on sandy-clay soils, usually on or near vertically-tilted shale outcrops. Often occurs on roadside batters			Absent	Unlikely	No

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Pomaderris delicata Delicate Pomaderris	Delicate Pomaderris is known from only two sites; between Goulburn and Bungonia and south of Windellama. At both known sites the Delicate Pomaderris grows in dry open forest dominated by *Eucalyptus sieberi* with a dense she-oak understorey.	CE	CE	Absent	Unlikely	No
Thesium austral Austral Toadflax	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*).		V	Absent	Unlikely	No
Swainsona sericea Silky Swainson-pea	The Silky Swainson-pea is a prostrate or erect perennial, growing to 10 cm tall. It is found in Natural Temperate Grassland and Snow Gum Eucalyptus pauciflora Woodland on the Monaro and in Box-Gum Woodland in the Southern Tablelands and South West Slopes. Sometimes found in association with cypress-pines Callitris spp	V		Present	Unlikely, targeted searches failed to record this species	Unlikely
Swainsona recta *Small Purple*-pea	Small Purple-pea is a slender, erect perennial herb growing to 30 cm tall. Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum Eucalyptus blakelyi, Yellow Box E. melliodora, Candlebark Gum E. rubida and Long-leaf Box E. goniocalyx. Grows in association with understorey dominants that include Kangaroo Grass Themeda australis, poa tussocks Poa spp. and spear-grasses Austrostipa spp. Plants die back in summer, surviving as a rootstocks until they shoot again in autumn. Flowers throughout spring, with a peak in October. Seeds ripen at the end of the year. Individual plants have been known to live for up to 20 years. Generally tolerant of fire, which also enhances germination by breaking the seed coat and reduces competition from other species.	E	E	Present	Unlikely, targeted searches failed to record this species	Unlikely
Ecological Communities						
Natural Temperate Grassland of the Southern	The ecological community is characterised by a dominance of native perennial tussock grasses. There is usually a second, lower stratum of shorter perennial and annual grasses and forbs growing between the taller tussocks, and there may be a third discontinuous stratum of even		CE	Present	Occurs in landscape, not in impact area	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Tablelands of NSW and the Australian Capital Territory	smaller forbs, grasses and cryptogams. Sedges and rushes may also occur, particularly in seasonally wet areas. A tree and shrub stratum may be present, but with only up to 10% projective foliage cover of each being present. Variation in the composition and structure of the ecological community occurs as a result of intrinsic site factors (e.g. drainage patterns, soil characteristics) and agricultural practices applied since post-1788 settlement. The major dominant or co-dominant grass species are: *Themeda triandra* (kangaroo grass), *Poa sieberiana* (snowgrass), *Poa labillardierei* (river tussock grass), *Austrostipa bigeniculata* (kneed speargrass), *Austrostipa scabra* (slender speargrass), *Bothriochloa macra* (red grass), various *Rytidosperma* species syn. *Austrodanthonia* species (wallaby grasses), *Lachnagrostis filiformis* (blowngrass) and *Sorghum leiocladum* (wild sorghum).					
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Commonwealth) White Box Yellow Box Blakely's Red Gum Woodland (NSW)	Box – Gum Grassy Woodlands and Derived Grasslands are characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees. The tree-cover is generally discontinuous and consists of widely-spaced trees of medium height in which the canopies are clearly separated. Associated and occasionally co-dominant trees include, but are not restricted to: Grey Box (*Eucalyptus microcarpa*), Fuzzy Box (*E. conica*), Apple Box (*E. bridgesiana*), Red Box (*E. polyanthemos*), Red Stringybark (*E. macrorhyncha*), White Cypress Pine (*Callitris glaucophylla*), Black Cypress Pine (*C. enderlicheri*), Long-leaved Box (*E. goniocalyx*), New England Stringybark (*E. caliginosa*), Brittle Gum (*E. mannifera*), Candlebark (*E. rubida*), Argyle Apple (*E. cinerea*), Kurrajong (*Brachychiton populneus*) and Drooping She-oak (*Allocasuarina verticillata*). The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include Kangaroo Grass (*Themeda australis*), Poa Tussock (*Poa sieberiana*), wallaby grasses (*Austrodanthonia* spp.), spear-grasses	CEEC	CE	Absent	Absent	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	(*Austrostipa* spp.), Common Everlasting (*Chrysocephalum apiculatum*), Scrambled Eggs (*Goodenia pinnatifida*), Small St John's Wort (*Hypericum gramineum*), Narrow-leafed New Holland Daisy (*Vittadinia muelleri*) and blue-bells (*Wahlenbergia* spp.). This ecological community occurs in areas where rainfall is between 400 and 1200 mm per annum, on moderate to highly fertile soils where resources such as water and nutrients are abundant.					
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands	Monaro Tablelands Cool Temperate Grassy Woodland is a woodland to low open woodland community. It is characterised by a sparse to very sparse tree (woodland to open woodland) layer dominated by *Eucalyptus pauciflora* (snow gum) either as a single species or with any of *Acacia melanoxylon* (blackwood), *E. rubida* (candlebark), *E. stellulata* (black sallee) and/or *E. viminalis* (ribbon gum) as co-dominants. Other tree species may occur within the community, although very infrequently and always as canopy sub-dominants. The tree layer becomes shorter and sparser with declining moisture availability or increasing levels of soil water logging. Tree cover may be reduced or absent due to historic land management practices.	CEEC		Present	Occurs in landscape, not in impact area	No impact
Migratory Species						
Hirundapus caudacutus White-throated Needletail	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks.		M	Absent.	Unlikely, aerial species, rarely lands in Australia.	No.
Monarcha melanopsis Black-faced Monarch	In NSW and the ACT, the species occurs around the eastern slopes and tablelands of the Great Dividing Range. The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest,		M	Absent, suitable ecosystems absent.	Unlikely.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/ shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest.					
Motacilla flava Yellow Wagtail	This insectivorous bird inhabits open country near water, such as wet grassland. Has been recorded in short grass, bare ground, swamp margins, sewage ponds, saltmarshes, ploughed land, town lawns. It picks small invertebrates from the ground or water surface, but may also make short flights to take prey from the air or follow grazing livestock to take insects stirred up as they feed.		M	Absent, large water bodies absent.	Unlikely.	No.
Myiagra cyanoleuca Satin Flycatcher	Satin Flycatchers are mainly recorded in eucalypt forests, especially wet tall sclerophyll forest, often dominated by eucalypts such as Brown Barrel, *Eucalypt fastigata*, Mountain Gum, *E. dalrympleana*, Mountain Grey Gum, Narrow-leaved Peppermint, Ribbon Gum, or occasionally Mountain Ash, *E. regnans*. Such forests usually have a tall shrubby understorey of tall acacia. In higher altitude Black Sallee, *E. stellulata*, woodlands, they are often associated with tea-trees and tree-ferns. They sometimes also occur in dry sclerophyll forests and woodlands, usually dominated by eucalypts such as Blakely's Red Gum, *E. blakelyi*, Mugga Ironbark, *E. sideroxylon*, Yellow Box, White Box, *E. albens*, Manna Gum or stringybarks, including Red Stringybark, *E.macrorhyncha* and Broad-leaved Stringybark, usually with open grassy understorey		M	Present, dry sclerophyll forests and woodlands containing preferred species occur.	Possible.	No - Potential impacts will not be to habitat present.
Rhipidura rufifrons Rufous Fantail	The Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (*Eucalyptus microcorys*), Mountain Grey Gum (*E. cypellocarpa*), Narrow-leaved Peppermint (*E. radiata*), Mountain Ash (*E. regnans*), Alpine Ash (*E. delegatensis*), Blackbutt (*E. pilularis*) or Red Mahogany (*E. resinifera*); usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests; where they are recorded in temperate Lilly Pilly (*Acmena smithi*) rainforest, with Grey Myrtle (*Backhousia myrtifolia*), Sassafras (*Doryphora sassafras*) and Sweet Pittosporum (*Pittosporum*		M	Absent.	Unlikely.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	undulatum) subdominants. They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. Sometimes recorded in drier sclerophyll forests and woodlands, including Spotted Gum (*Eucalyptus maculata*), Yellow Box (*E. melliodora*), ironbarks or stringybarks, often with a shrubby or heath understorey.					
Actitis hypoleucos Common Sandpiper	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands.		M	Absent.	Unlikely.	No.
Calidris acuminata Sharp-tailed Sandpiper	The Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry.		M	Absent.	Unlikely.	No.
Calidris melanotos Pectoral Sandpiper	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire.		M	Absent.	Unlikely.	No.
Gallinago hardwickii Latham's Snipe	Latham's Snipe occurs in a wide variety of permanent and ephemeral wetlands. They usually occur in open, freshwater wetlands that have some form of shelter (usually low and dense vegetation) nearby. They generally occupy flooded meadows, seasonal or semi-permanent		M	Absent.	Unlikely.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	swamps, or open waters, but various other freshwater habitats can be used including bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains. They may be found in a variety of vegetation types or communities including tussock grasslands with rushes, reeds and sedges, coastal and alpine heathlands, lignum or tea-tree scrub, button-grass plains, alpine herbfields and open forest.					
Pandion haliaetus Osprey	Eastern Ospreys occur in coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging. They frequent a variety of wetland habitats. They may occur over atypical habitats such as heath, woodland or forest when travelling to and from foraging sites.		M	Absent.	Unlikely.	No.

Appendix 3 – AHIMS Search Results & Due Diligence Chart

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Little River Road

Client Service ID : 814931

Macrozamia Environmental

473 Tathra Road
Kalaru New South Wales 2550

Attention: Pat Guinane

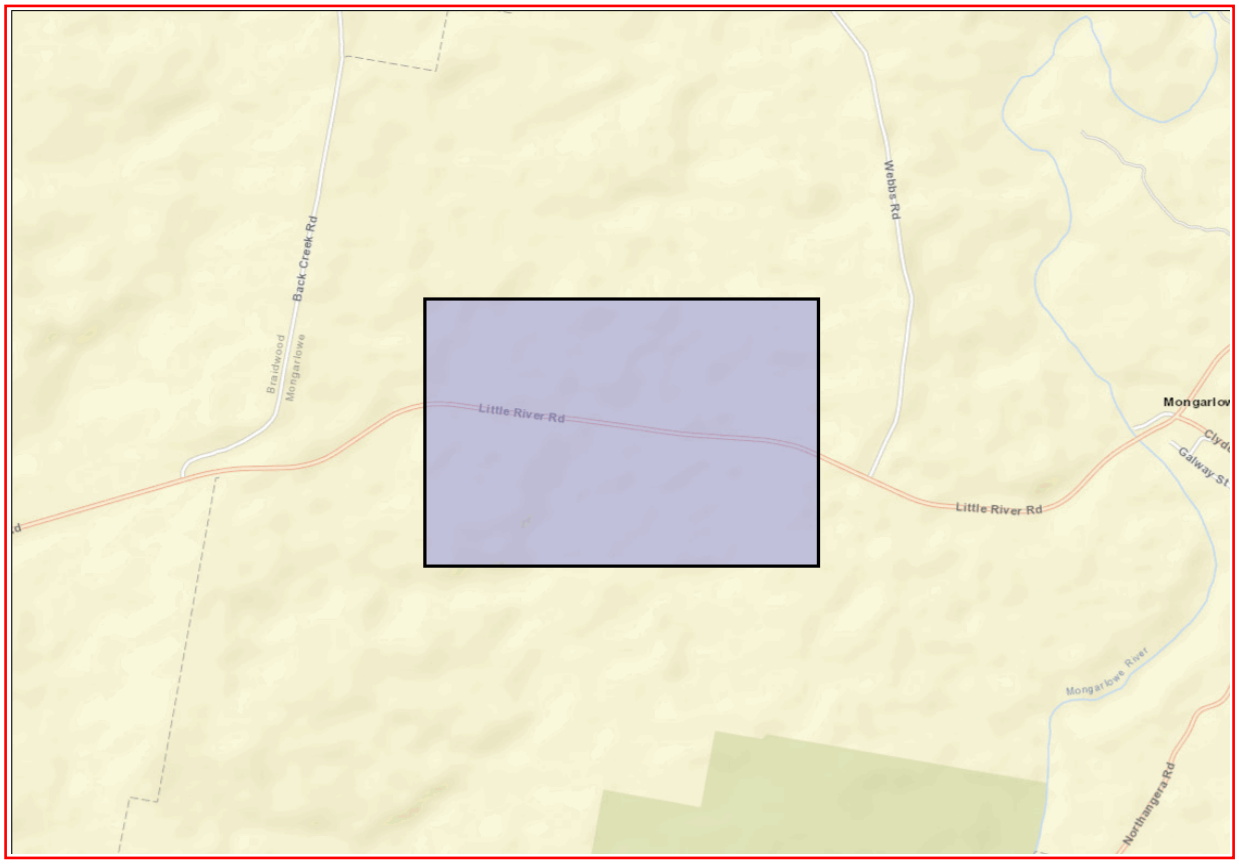
Email: pat@macrozamia.com.au

Date: 30 August 2023

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -35.4263, 149.9085 - Lat, Long To : -35.4175, 149.924, conducted by Pat Guinane on 30 August 2023.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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8 The generic due diligence process