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Review of Environmental Factors

DIVISION 5.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Currawang Road Rehabilitation Works (9.7km segment)

Including causeway upgrades, Tirrannaville, NSW.

Goulburn Mulwaree Council

August 2024

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Document Control and Review

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Glossary

Abbreviation	Definition
AHIMS	Aboriginal Heritage Information Management System
ASS	Acid Sulfate Soils
BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BC Act	*Biodiversity Conservation Act 2016*
BC SEPP	State Environmental Planning Policy (Biodiversity and Conservation) 2021
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offsets Scheme
BVM	Biodiversity Values Map
CEMP	Construction Environmental Management Plan
CM Act	*Coastal Management Act 2016*
Council	Goulburn Mulwaree Shire Council
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPBC Act	*Commonwealth Environment Protection and Biodiversity Conservation Act 1999*
ESCP	Erosion and Sediment Control Plan
FM Act	*Fisheries Management Act 1994*
Heritage Act	*NSW Heritage Act 1997*

Abbreviation	Definition
LALC	Pejar Local Aboriginal Land Council
LEP	Goulburn Mulwaree Local Environmental Plan 2009
LGA	Goulburn Mulwaree Local Government Area
NPW Act	*National Parks and Wildlife Act 1974*
POEO Act	*Protection of the Environment and Operations Act 1997*
R&H SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy
T&I SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021

Contents

1 Introduction

1.1 Proposal identification

Goulburn Mulwaree Council (Council) is responsible for the provision and maintenance of local road infrastructure in the Goulburn Mulwaree Local Government Area (LGA) as part of their responsibilities to their ratepayers and road users more generally.

Council has identified that the subject section of Currawang Road is in need of a series of upgrades to improve its safe operation for road users, resilience and dependability following high rainfall events, and improved traffic flow.

Currawang Road is an important rural road in the southwestern corner of the LGA servicing travellers between the Tirrannaville, Currawang and Collector districts and road users more broadly in this and neighbouring LGAs.

As part of this project, it is proposed to address minor vertical and horizontal improvements and ensuring the road travel surface is 7m wide, accommodating two 3.5m wide opposing traffic lanes and a 1 to 2m wide shoulder. Generally, the existing formation meets these criteria and will not require significant work. The existing sealed travel surface is between 6.8 and 7m wide however edges of seal are often broken, patched and deteriorating.

The works will also replace two existing low-level causeways with box culverts of prefabricated reinforced concrete construction.

Works will incorporate drainage and road furniture as required. See concept plans in Appendix 1.

The proposal location and study area are identified in 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.

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.

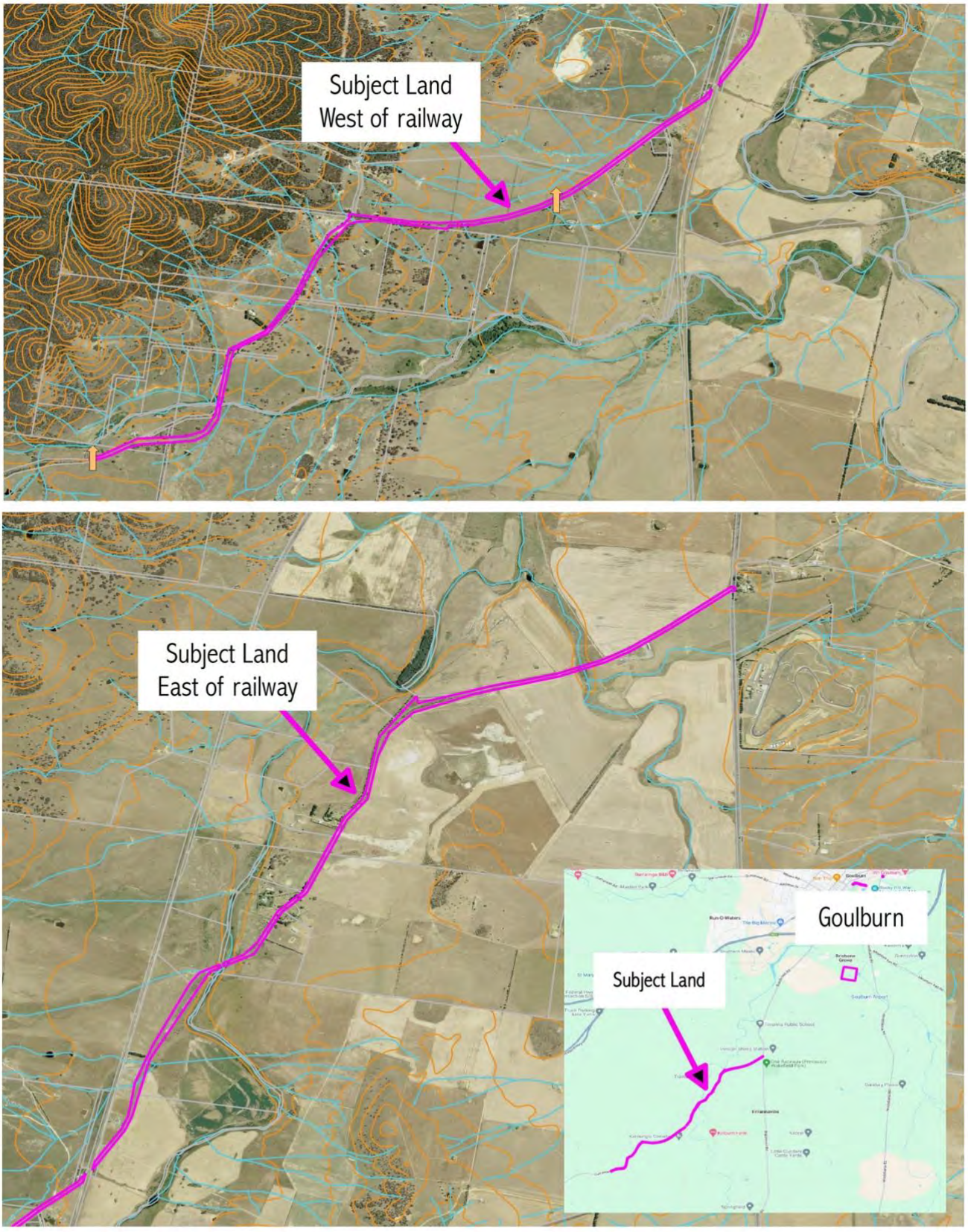
The purpose of the REF is to describe the proposal, to assess, quantify and document the possible impacts of the proposal on the environment, and to detail ameliorative measures to be implemented at the time of works and maintained after works have been completed in order for the proposal to have a minimal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



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Map 1-1
Subject Land and Locality

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2 Need and options considered

2.1 Strategic and community need for the proposal

The proposed works are needed to maintain this section of Currawang Road at a standard that allows residents, visitors and those operating businesses in the district to make use of the throughfare efficiently and without undue risk. This is particularly needed during and following periods of high rainfall when the road functionality significantly deteriorates due to flooding of the road at Saltpetre Creek (ch937) and at an unnamed drainage depression at ch2800. Anecdotal comments from the local community indicate that the causeways at these locations are inundated and closed several times a year due to high rainfall.

The existing state of this section of Currawang road requires ongoing and expensive maintenance to rehabilitate degrading edges and potholes particularly in regularly inundated areas. By undertaking the proposal and investing in this upgrade, Council is reducing the ongoing maintenance burden of maintaining the road in its current state.

By making improvements to road infrastructure, Council are contributing to their cumulative programme of supporting the local community's needs, improving road user safety and the reliability of the road network. Council are also 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 traffic flow and efficiency, particularly at times of high rainfall events.
- Improve the quality of the road thereby reducing the frequency of required maintenance.

2.3 Alternatives and options considered

Council have considered the options to '*do nothing'*, reconstruct existing causeways and to '*undertake the works as proposed*'. Council also considered the option of constructing temporary side tracks and crossings to maintain traffic flow on the site during replacement of the low level causeways.

'Do nothing' option

The '*do nothing*' option must be considered for public infrastructure projects. In this case Council found that doing nothing would fail to address safety and traffic flow concerns relating to the existing road design. The option of '*do nothing'* presents significant risk to the environment as the existing causeways are degrading and risk catastrophic failure during a major rainfall event. If this was to occur, it would lead to downstream sedimentation pollution issues for receiving waters. It would also result in the road being unusable for a period of time while arrangements could be made for repair of the crossing. Including delays for design, tendering and procurement, and environmental assessment which will be a significantly longer delay than would be required to proactively repair the crossings.

Reconstructing causeways

The option to reconstruct causeways at Saltpetre Creek (ch937) and unnamed drainage depression at ch2800 was considered. This option was not pursued further as it did not achieve the objective of improving traffic flow during high rainfall events as the road would continue to be inundated during these times.

It is also noted that reconstruction of causeways would not be supported by DPI Fisheries, as causeways are not considered a suitable crossing type and are unsupported by this agency due to their impacts on fish habitat and movement.

Traffic diversion via Thornford Road during construction

Council considered the option of diverting traffic via Thornford Road during construction to avoid constructing temporary access tracks alongside the causeway crossings at Saltpetre Creek (ch937) and unnamed drainage depression at ch2800.

Council currently require regular access to a quarry, located to the north of the project area on Mahoneys Road, for various Council projects. Use of Thornford Road (an unpaved road) as a detour would overly degrade the road and cause excessive dust impacts. The detour is not considered to be of a standard appropriate for use for heavy vehicles while the waterway crossings are completed. Therefore, the option to detour traffic via Thornford Road was not considered a viable alternative to constructing temporary side tracks.

Preferred option

Having regard to the above considerations, it is determined that the works proposed by Council to upgrade the subject section of road as proposed, including upgrading the two existing causeways at Saltpetre Creek (ch937) and unnamed drainage depression at ch2800 to multi-cell reinforced concrete box culverts, would provide the best value for money and greatest long-term benefit for the community and rate payers in general. Construction of temporary access tracks alongside the existing low-level causeways would provide a route which is sufficient for heavy vehicle access during the construction period. The upgrade of the existing causeways with box culverts is also an improvement to the aquatic environment allowing for improved aquatic vertebrate movement and habitat.

3 Description of the proposal

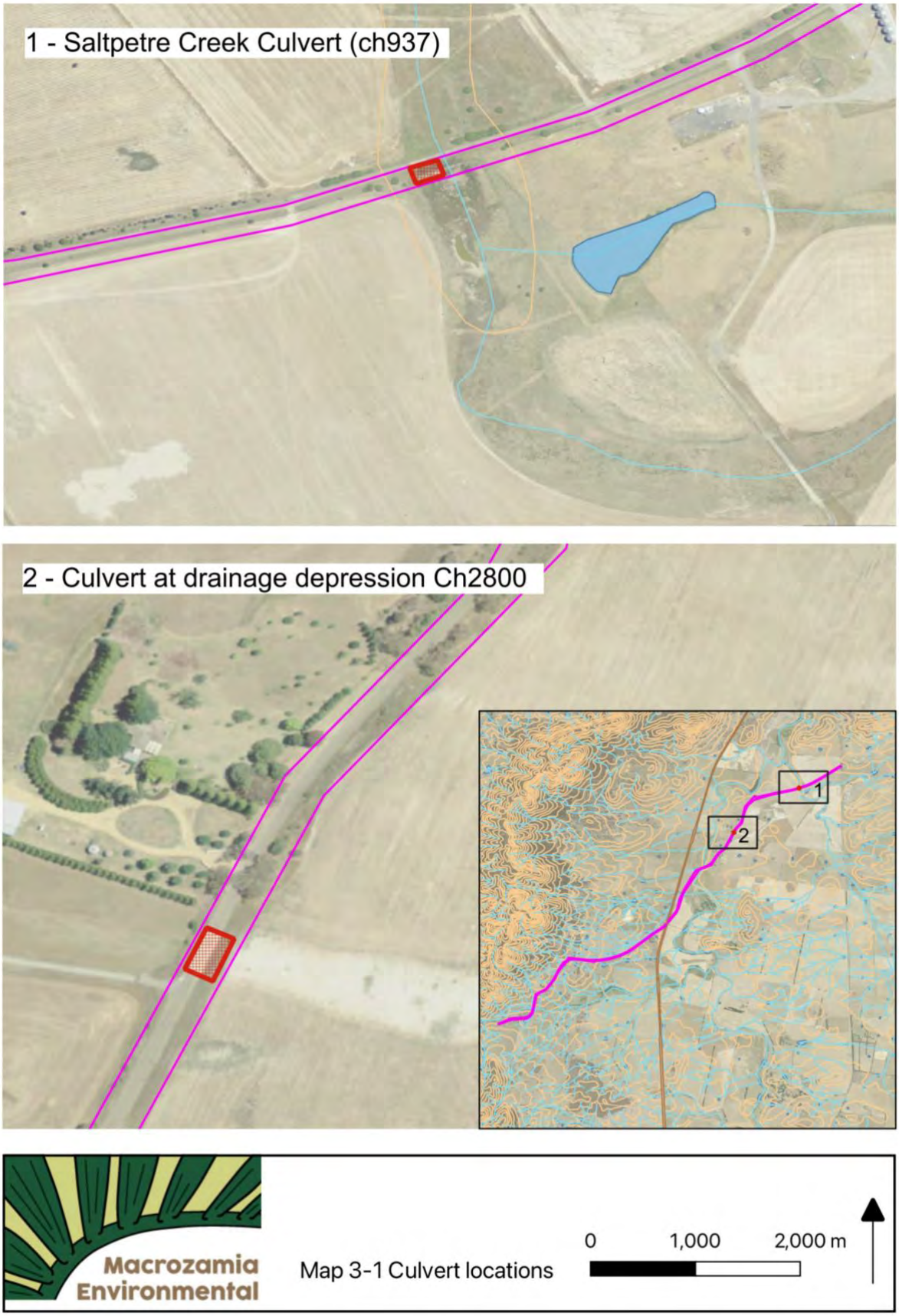
3.1 The proposal

The proposal will involve minor vertical and horizontal improvements to Currawang Road, ensuring a 7m wide road travel surface to accommodate two 3.5m wide traffic lanes and a 1 to 2m wide shoulder. The works will replace two existing low-level causeways with box culverts of prefabricated reinforced concrete construction at Saltpetre Creek (ch937) and at an unnamed drainage depression ch2800 (at -34.849060 149.660201, adjacent to 27 Currawang Road, Lot 1 DP 108561). The locations of the two proposed culverts are shown on Map 3-1 and the concept plans at Appendix 1.

It is intended that works will be completed between 2024 and 2027 depending on Council's operational schedule. Works will occur for short periods of time within this timeframe. The following summarises the activities involved:

- Completion of design and planning approvals/ licences and permits as required.
- Implementation of TMP, staged lane closures and road closures at causeways when required.
- Site preparation, including construction of access pads/ tracks, and temporary erosion and sediment controls.
- Clearing and grubbing as required.
- Formation construction/ reconstruction as required.
- Formation of two temporary side tracks at waterway crossings.
- Reconstruction of drainage structures as required.
- Worksite dewatering as required.
- Excavation of existing causeway structures.
- Installation of prefabricated box culverts.
- Construction of a concrete wearing surface over box culverts.
- Commissioning of new crossings.
- Asphalt resurfacing of wearing surfaces.
- Installation of road furniture including barriers, signage and line marking.
- Decommissioning and removal of temporary works including erosion and sediment controls.
- Post construction works including clean-up and site rehabilitation.

The concept plans at Appendix 1 detail the required works.


1 - Saltpetre Creek Culvert (ch937)
2 - Culvert at drainage depression Ch2800
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Macrozamia Environmental
Map 3-1 Culvert locations
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3.2 Stockpile and work compound sites

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

Suitable existing stockpile and works compound areas occur along Currawang Road. These areas are included within the 'subject land' on Map 1-1.

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 allowed to wash out concrete residue at the site.
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 and obtain licences or approvals 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 dewatering plan.
- Complete project inductions.

Site establishment and installation of traffic controls

- Installation of traffic controls in accordance with the TMP.
- 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 where required.
- Dewatering in accordance with dewatering plan as required for causeway works.
- Establishment of stockpile/ compound sites as required.

Construction of temporary access tracks at existing culvert locations

- Placement of pipe culverts and geofabric.
- Placement of geofabric and rock armour to create side-tracks batters.

Demolition of existing crossings

- Excavation of concrete directly to waiting truck.

Construction of new culverts

- Foundation excavation to meet design criteria.
- In situ construction of reinforced concrete base slab, to be finished 150mm below stream bed level.
- Installation of headwalls and backfilling.
- Installation of prefabricated reinforced concreate box culvert components.
- Construction of concrete wearing surface.
- Construction of abutment and approach formation matching to deck level.
- Gravel placement for approaches.

Rehabilitation of road

- Clearing and grubbing as required.
- Construction of formation shoulders and drainage structures.
- Asphalt resurfacing of wearing surfaces.

Road furniture construction

- Apply lane and other markings as required.
- Installation/ upgrade of advisory signs where required.
- Installation of guidepost delineation.

- Installation of road barriers.

Post construction works

- Soil stabilisation and 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 grasses of bare soil.
- 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.

  Works at other times will only be for short periods and required due to exceptional circumstances.

It is anticipated the works will commence in late 2024 and be completed within 12 weeks, 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
- Plant trailer
- Crane
- Excavator
- Water carts for dust suppression (if required)
- Hand tools.
- Concrete trucks.

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.
- Clearing and grubbing of the project area.
- Demolition of existing causeways and site preparation for new culvert construction.
- Stockpiling of aggregates and topsoil.
- Excavation as required and stockpiling of material.
- Excavation as required for footing construction.
- Cut and fill as required to achieve suitable vertical alignment.

Balanced earthworks will generally negate the need to import material, small quantities of suitable clean material may be imported as fill to match approaches of the new culverts to the road formation vertical alignment.

3.3.5 Source and quantity of materials

The following materials will be required to construct the proposal:

- Fuels and oils for the machinery and equipment.
- Formwork, reinforcing steel and concrete for base culvert foundations and deck.
- Prefabricated reinforced concrete box culvert components.
- Aggregates & bitumen for wearing surface and lime or cement stablisation.
- Road accessory materials such as prefabricated signs, barrier components and line marking paint.

The exact quantities of materials required will be confirmed during detailed design. Materials will be sourced from Council's existing 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

A TMP would be prepared in accordance with Council's policies and procedures for parts of the site accessible by public vehicles. Full road closure will not be required.

Due to the existing uses of the route of the pathways cyclist and pedestrian traffic must be considered, where appropriate, signage and barriers to ensure the safety of the public and construction workers will be used.

Temporary side tracks will be required during construction to divert traffic across waterways at the existing two low-level causeways. The design of the access tracks is shown in Concept Plans at Appendix 1.

3.4 Ancillary facilities

Construction of the works would not require new stockpile or compound areas, existing Council managed stockpile areas along Currawang Rd will be used.

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

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

Currawang road crosses a level railway crossing which is land owned by Transport for NSW and managed by UGL Regional Linx. Works are not required in this area of land.

No access to or impedance of access to other lands will be required as part of the works.

4 Statutory and planning framework

4.1 Local environmental plans

4.1.1 Goulburn Mulwaree Local Environmental Plan 2009

The proposed works occur in the Goulburn Mulwaree LGA and is subject to the Goulburn Mulwaree Local Environmental Plan 2009 (LEP).

As the proposal is permitted without consent under the State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP), the consent requirements of the LEP do not apply to the REF.

However, land use and other relevant clauses of the LEP have been considered for consistency and to assess the full extent of the proposal's potential impacts.

Land Use Table

Land zones are shown in Map 4-1. The zone objectives are considered against the proposal in the table below.

The works proposed are generally consistent with the objectives of each zone. Under the LEP the proposed works are permitted without consent in zones RU1 and RU2 and permitted with consent in zone C3.

Land Zoning	Objectives	Proposal consistency
RU1 Primary Production The majority of the project area, from Braidwood Road west to Bangalore Place	• 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 with adjoining zones. • To promote the use of agricultural land for efficient and effective agricultural production. • To avoid or minimise impacts on the natural environment and protect environmentally sensitive land. • To allow the development of non-agricultural land uses which are compatible with the character of the zone. • To allow the development of processing, service and value-adding industries	The proposal has been designed to minimise impacts to adjoining primary production. As the proposed upgrade works follow the existing road formation, the works are considered consistent with the objectives of this zone.

	related to agriculture and primary industry production. • To protect and enhance the water quality of receiving watercourses and groundwater systems to reduce land degradation. • To minimise the visual impact of development on the rural landscape.	
RU2 Rural Landscape The southern 1600m of the project area	• To encourage sustainable primary industry production by maintaining and enhancing the natural resource base. • To maintain the rural landscape character of the land. • To provide for a range of compatible land uses, including extensive agriculture. • To protect, manage and restore areas with high conservation, scientific, cultural or aesthetic values. • To protect and enhance the water quality of receiving watercourses and groundwater systems and reduce their degradation. • To preserve environmentally sensitive land, including catchment areas, and prevent development likely to result in environmental harm. • To minimise the potential for conflict between adjoining land uses.	The proposal has been designed to minimise the extent of land fragmentation where possible. As the proposed upgrade works follow the existing road formation, the works are considered consistent with the objectives of this zone.
C3 Environmental Management A short segment from Bangalore Place south	• To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values. • To provide for a limited range of development that does not have an adverse effect on those values.	The proposal is not inconsistent with the objectives with this zone as it has been designed to minimise impacts areas of ecological significance.

515m.	• To facilitate the management of water catchment areas, environmentally sensitive land and areas of high conservation value.	

Clause 7.2 Terrestrial biodiversity

The objectives of this clause are to protect, maintain or improve the diversity of the native vegetation, including:

- protecting biological diversity of native flora and fauna, and
- protecting the ecological processes necessary for their continued existence, and
- encouraging the recovery of threatened species, communities or populations and their habitats.

Under this Clause;

(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority has considered a report that addresses the following matters—

(a) identification of any potential adverse impact of the proposed development on any of the following—

(i) a native vegetation community,

(ii) the habitat of any threatened species, population or ecological community,

(iii) a regionally significant species of plant, animal or habitat,

(iv) a habitat corridor,

(v) a wetland,

(vi) the biodiversity values within a reserve, including a road reserve or a stock route, and

(b) a description of any proposed measures to be undertaken to ameliorate any such potential adverse impact.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development is consistent with the objectives of this clause and—

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

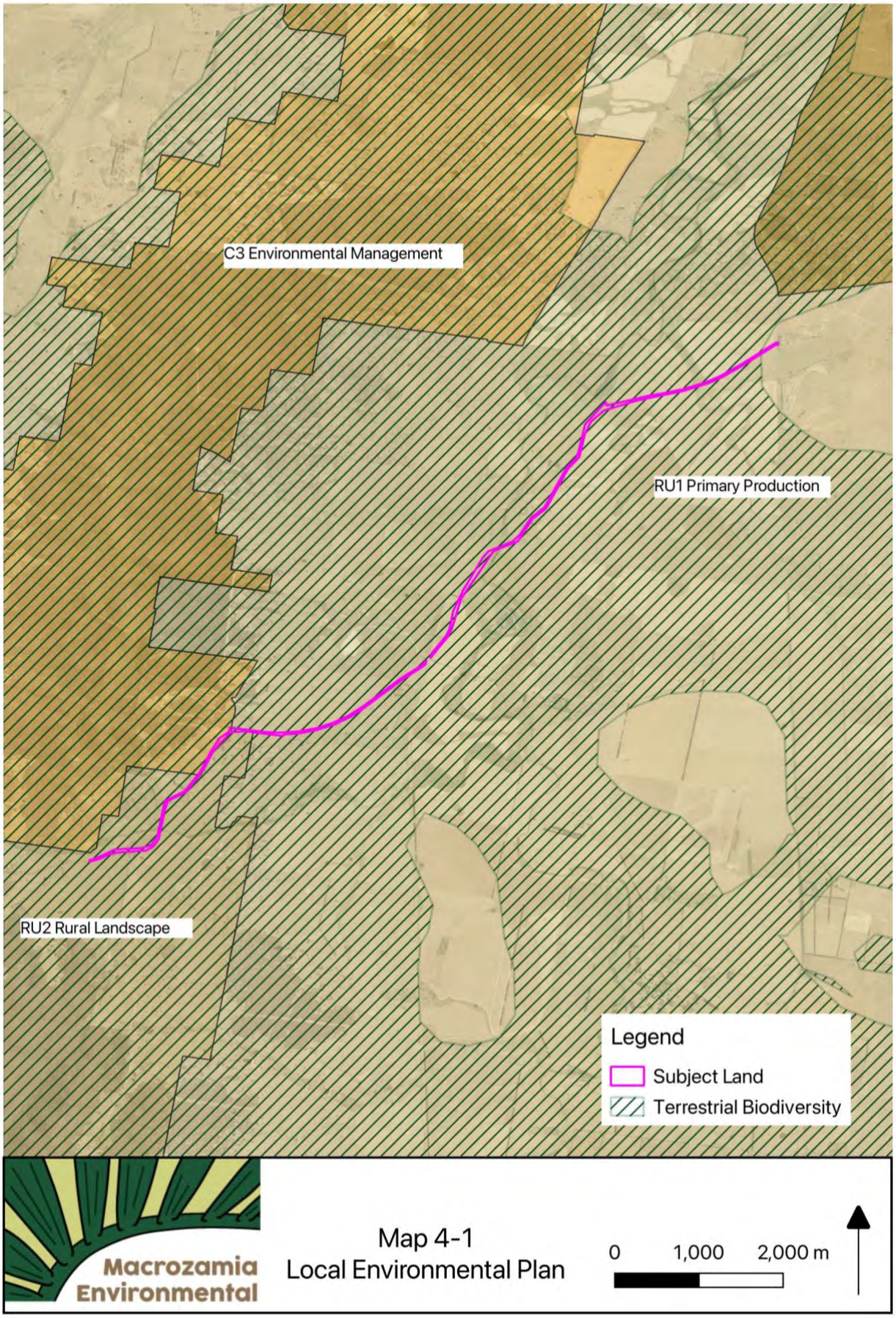
(b) if a potential adverse impact cannot be avoided, the development—

(i) is designed and sited so as to have minimum adverse impact, and

(ii) incorporates effective measures so as to have minimal adverse impact, and

(iii) mitigates any residual adverse impact through the restoration of any existing disturbed or modified area on the site.

The majority of the subject site is mapped by the LEP as "*Biodiversity*" as shown in Map 4-1. For the purpose of consistency with the LEP, the requirements of this Clause are addressed in the Biodiversity Assessment Report.


C3 Environmental Management
RU1 Primary Production
RU2 Rural Landscape
Legend
Subject Land
Terrestrial Biodiversity
Macrozamia Environmental
Map 4-1
Local Environmental Plan
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Clause 5.10 Heritage Conservation

The objectives of this clause are as follows

- to conserve the environmental heritage of Goulburn Mulwaree
- to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views
- to conserve archaeological sites
- to conserve Aboriginal objects and Aboriginal places of heritage significance.

The local heritage item I595 occurs on each side of Currawang Road from Braidwood Road Ch0 to Ch1779 and on the southern side of Currawang Road to Ch2728. This item is described as;

> *"Tirranna" homestead, gardens, Gibson family cemetery and veterans allotments (circa 1829) 4971–5071 Braidwood Road*
>
> *Lots 19 and 36, DP 750015; Lots 11 and 12, DP 1155686; Lot 3191, DP 1155815*

Works are not proposed on these lots though will occur on the adjoining road reserve.

An Aboriginal Heritage Information Management System extensive search was undertaken, included at Appendix 2 of this report, which indicates several Aboriginal sites and no Aboriginal places in the vicinity of the project area.

Heritage matters are addressed at Section 6.5 of this REF.

State environmental planning policies

4.1.2 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

4.1.3 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.

4.1.4 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.

4.2 Other relevant legislation

4.2.1 Environment Planning and Assessment Act 1979, Environment Planning and Assessment Regulation 2021 & Environmental

Planning and Assessment Amendment (Water Catchments) Regulation 2022

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.

For new activities under Part 5 of the EP&A Act, including State Significant Infrastructure (SSI), section 171A of the Environmental Planning and Assessment Amendment (Water Catchments) Regulation 2022 requires determining authorities to take into account whether the activity would have a neutral or beneficial effect on water quality before they carry out an activity, and whether the activity is consistent with the 2022 NorBe Assessment Guidelines including the incorporation of current recommended practices The template in Appendix 2 of these guidelines has been used to assess neutral or beneficial effect on water quality of the proposal under Section 6.3 of this REF.

4.2.2 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 through a Biodiversity Development Assessment Report (BDAR).

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.

Parts of the work area occur in BVM mapped areas however, as a Part V project entry to the BOS is optional, given the minor nature of the works, unless a significant impact to a threatened matter is found to likely result from the proposal a Biodiversity Assessment Reort (BAR) is an adequate level of biodiversity assessment and a BDAR not necessary. A BAR is included at Appendix 2 of this REF.

4.2.3 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.

The section of the Currawang Road being rehabilitated crosses three waterways that are mapped as Key Fish Habitat as shown in Map 6-1 Hydrology of this report, note that only one causeway proposed to be replaced occurs on mapped key fish habitat, key fish habitat also occurs at Bangalore Creek and the Mulwaree River, at these sites no works are proposed as existing bridges crossing these waterways are adequate. The causeway to be replaced on the unnamed drainage depression at Ch2800, while not mapped as Key Fish Habitat can be considered to meet the Key Fish Habitat definition guidelines of habitat included as the habitat is *Flood channels or flood runners that may normally be dry but would be used by fish to move/migrate across or along floodplains between habitats during high flow events.* The causeway itself is rarely inundated however wetlands occur immediately upstream and downstream that have potential to support fish habitation and during high flow events the site of the causeway will facilitate fish movement.

Potential impacts on mapped Key Fish Habitat have been considered in this REF.

Impacts to listed fish have been considered along with terrestrial matters in Section 6.2 of this REF.

Part 7 of the FM Act makes various provisions to protect aquatic habitats and regulates activities that may impact fish habitat. A Part 7 permit under the Fisheries Management Act 1994 is required as in-stream works are necessary. As a result of this, Council must publish this report on its website in accordance with section 171(4) of the EP&A Regulation.

4.2.4 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 occur in the vicinity of the project area.

Heritage issues are addressed in Section 6.6 of this REF.

4.3 Commonwealth legislation

4.3.1 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 project REF.

4.4 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. Goulburn Mulwaree Council is the proponent and determining authority for the proposal.

4.5 Publication of this document

In accordance with section 171(4) of the EP&A Regulation, this REF must be published on Council's website or the NSW planning portal as a permit is required under Part 7 of the FM Act.

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.

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 and reliability 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 periods of time, the road will not be fully closed at any time.

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 impact the existing stormwater infrastructure. The design of the development will direct stormwater downslope to the existing stormwater network
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.	The proposal will not involve connection 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	The proposal will not involve connection to a water supply network.
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 some disruption to vehicular traffic during construction, through traffic management on Currawang Road. This impact is considered to be minor and manageable interrupting traffic for less than 10 minute periods over 12 weeks. No significant traffic detours will be required.
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	Works are minor and small in size, they will not impact flood patterns.

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	Not applicable.

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.	
2.14 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),	Not applicable, works are not *specified development*.

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 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 consultation

5.4.1 NSW Department of Planning, Industry and Environment (Environment Energy and Science) (EES)

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

5.4.2 NSW Department of Primary Industries (Fisheries)

Council will consult with Fisheries regarding the proposal, particularly in regards to matters relating to a permit under Part 7 of the FM Act. This REF will accompany an application to Fisheries for this permit, advice provided by Fisheries will be incorporated where applicable to the design and methodology of the 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.

Council will seek feedback from Fisheries in relation to minimising impacts on fish and fish habitat through improvements in design and methodology. Council will abide by conditions provided as part of any Fisheries Permit for the works.

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 228(1)(b) of the *Environmental Planning and Assessment Regulation 2000*.

6.1 Traffic

6.1.1 Existing environment

The existing traffic is that serviced by a rural road connecting districts across the southeastern extent of the LGA, it is used largely by the local community who live and work in this rural district to access adjoining rural areas and access the Federal Highway or Goulburn City.

6.1.2 Potential impacts

Construction

Traffic impacts during construction will be the slowing and management of traffic using Currawang Road, making use of one lane while the opposing lane is being worked. Impacts will be intermittent over the 12 week construction period and it is not expected traffic will be stopped for longer than 10 minutes at a time. Additionally, temporary side tracks will be built adjacent to existing causeways during culvert construction to avoid the need for significant traffic detours and ensure access is of a standard suitable for heavy vehicle traffic.

Operation

The proposal is designed to improve road user safety and comfort, reduce its maintenance costs and the risk of the road being closed due to the crossings becoming unserviceable. 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 and reliability particularly during periods of high rainfall events 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

For detailed descriptions of the biodiversity of the project area see the attached BAR. A brief summary is provided below.

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. In some parts of the landscape native vegetation communities are relatively intact, particularly on upper slopes and ridges, however they can rarely be considered 'old growth' having suffered disturbance and clearing periodically in the past.

A variety of Plant Community Types (PCT) are mapped for the area in the State Vegetation Type Mappiong (SVTM), of these the following are typically reflective of vegetation observed on the site.

- PCT 3338 Goulburn Tableland Frost Hollow Grassy Woodland
- PCT 3747 Southern Tableland Western Hills Scribbly Gum Forest &
- PCT 3373 Goulburn Tableland Box-Gum Grassy Forest

The majority of the project area is vegetated with exotic grassland vegetation similar to surrounding agricultural paddocks. Despite this there are pockets of high conservation value woodland and grassland along the whole road reserve, particularly at the western end where there is very little exotic component in roadside vegetation.

The Threatened Species

- *Leucochrysum albicans subsp. tricolor*

  Hoary Sunray

And the Threatened Ecological Community

- *Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions*

Were recorded in the project area.

Tests of Significance were undertaken for the following matters in accordance with the NSW DPIE Threatened Species Test of Significance Guidelines;

- *Leucochrysum albicans subsp. tricolor*

  Hoary Sunray &
- *Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions*

These tests concluded the proposal was not likely to result in a significant impact to either matter.

6.2.2 Direct Impacts

The proposal will result in the following direct impacts on biodiversity;

- Removal of up to 3420m^2 of roadside secondary grassland and immature woody vegetation including non-indigenous native regeneration
- Removal of up to 17000m^2 of exotic grassland and understory vegetation along the existing road edges
- Temporary removal of up to 1165m^2 of grassland of native & exotic composition to accommodate the proposed temporary side tracks and crossings.

6.2.3 Indirect Impacts

Construction and operation impacts are confined to the subject land, it is very unlikely biodiversity will be indirectly impact by the development. There is potential however

for the works to spread weed material across the project area or to other sites, impact mitigation measures at Section 9 of the BAR mitigate this risk.

6.2.4 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Weed spread	The proponent must ensure that construction works do not import weed material to or from the project area, for example, in or on plant and equipment used to develop 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: a. 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. b. 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 - Construction
Impacts to retained vegetation & animal welfare	A vegetation management plan must be prepared by a suitably qualified and experienced person to manage the clearing and grubbing of native vegetation for the works and to protect vegetation that is not to be impacted. This plan is to be implemented and meet the following criteria: • The plan will be prepared with consideration of the final construction plans for the works. • The plan will ensure that snowgum woodland is not at risk of impact from the construction of temporary side tracks and include a remediation plan to be implemented following removal of side tracks that ensures these areas are rehabilitated	Council	Pre-construction - Construction

Impact	Environmental safeguards	Responsibility	Timing
	with native grasses suitable to the site • The plan will prescribe measures that will minimise the impact the works will have on the extent of vegetation impacted including methodology for the protection of retained vegetation. • Pre-clearing surveys will be undertaken to ensure sedentary fauna (such as nesting fauna) are not present during clearing, hollow bearing trees will be identified prior to clearing and will be removed under the supervision of an ecologist. • Results of preclearing surveys, removal of habitat and any other relevant matters will be documented in a post clearing report that may recommend ameliorative or offsetting measures. In order to protect diverse native grassland and threatened species habitat occurring on batters at the western end of the works the following measures are to be implemented west of Chainage 6318, measured from Braidwood Road as indicated in Figure 9-1 of the BAR. • Works are to be restricted to the existing road formation and drainage structures. • Vegetation on existing batters is not to be disturbed, including by excavation, parking or trafficking plant and machinery.		

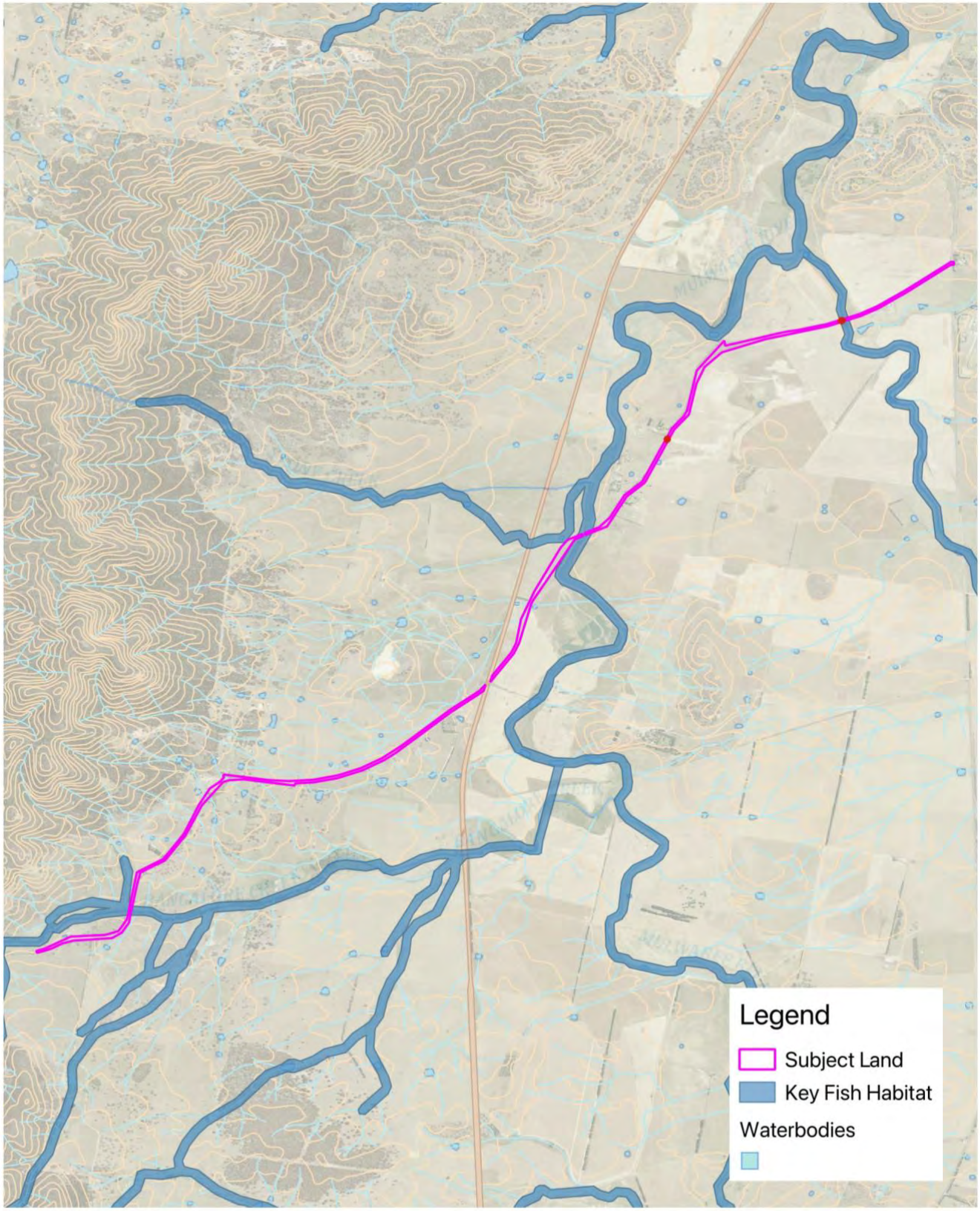
6.3 Soil and water

6.3.1 Existing environment

The proposed works occur in the Mulwaree Ponds Catchment, a tributary to the Wollondilly River, part of the Sydney water supply network.

Several drainage lines form minor depressions to 4th order streams which drain in the vicinity of the project area. The major hydrological features within the vicinity of the project area are shown in Map 6-2. This shows Saltpetre Creek as being mapped as Key Fish Habitat. Other sites of mapped Key Fish Habitat along this segment of Currawang Rd do not require works as existing bridges are adequate being the bridge over Mulwaree River and Bangalore Creek.

Soils in the project area are generally secure protected by stable slopes and vegetation.



Macrozamia Environmental

Map 6-1 Hydrology

0 1,000 2,000 m

Fish Habitat Sensitivity and Waterway Classification

Two causeways are to be replaced with box culvert crossings as part of this project. One of these, Saltpetre Creek, is mapped as Key Fish Habitat. The second, while not mapped as Key Fish Habitat, is an area that is regularly inundated during heavy rain events and potential impacts of the activity on fish and fish habitat is required to be assessed.

NSW DPI *Policy and guidelines for fish habitat conservation and management Update 2013* provides guidance to assess sensitivity and apply Parts 2 and 7 of the Fisheries Management Act 1994. Fish habitat sensitivity is the importance of the habitat to the survival of fish including all aquatic invertebrates. Table 1 of these guidelines provides a key fish habitat and associated sensitivity classification scheme.

In this table each of the waterways impacted by causeway upgrades are categorised as:

- **Type 2 Moderately sensitive key fish habitat** being;

  Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in Type 1.

Table 2 of these guidelines classifies waterways for fish passage it factors in the functionality of the waterway as fish habitat. This assessment relates primarily to watercourses and classifies these streams using indicators such as hydraulic geometry (stream shape and size), frequency of stream flows (perennial, intermittent or ephemeral), presence of aquatic habitat units (pools, riffles, vegetation, snags), presence of threatened or protected fish species and other native fish, and connection to adjacent habitats (e.g. floodplain wetlands).

In this table, the waterway Saltpetre Creek (ch937) is defined as:

- **Class 3 Minimal key fish habitat** being;

  Named or unnamed waterway with intermittent flow and sporadic refuge, breeding or feeding areas for aquatic fauna (e.g. fish, yabbies). Semi-permanent pools form within the waterway or adjacent wetlands after a rain event. Otherwise, any minor waterway that interconnects with wetlands or other CLASS 1-3 fish habitats.

The unnamed drainage depression at ch2800 is defined as:

- **Class 4 Unlikely key fish habitat** being;

  Waterway (generally unnamed) with intermittent flow following rain events only, little or no defined drainage channel, little or no flow or free standing water or pools post rain events (e.g. dry gullies or shallow floodplain depressions with no aquatic flora present).

Aquatic habitats

The aquatic environment in the vicinity of each causeway to be replaced is characterised by permanent/ semi-permanent pools linked by shallow ephemeral drainage depressions. The substrate is muddy and most vegetation is native grasses including *Poa labillardieri,* as well as rushes and sedges including *Carex appressa, Juncus australis, Juncus usitatus* and other *Juncus* species as well as Spike Rushes *Eleocharis acuta* and other Eleocharis spp. other wetland plants present include Nardoo *Marsilea mutica*, Variable Water *Milfoil Myriophyllum variifolium*, Water Ribbons *Triglochin spp.*, Hyssop Loosestrife *Lythrum hyssopifolia*, Variable Raspwort *Haloragis heterophylla* and Water Couch *Paspalum distichum.*

Fauna present include Plague minnow *Gambusia holbrooki*, Spiny Crayfish *Euastacus spp*. and Yabby *Cherax destructor*. It is possible other species defined as fish under

the FM Act occur including Floodplain Mussel *Velesunio ambiguus*, Carp Gudgeon *Hypseleotris sp*., and other Gudgeons *Philypnodon* spp. the large wetland area in the vicinity of the crossings, particularly up stream are likely to provide habitat for a wide variety of aquatic organisms including insect larvae, freshwater snails and bivalves, crustaceans, worms and other Osteichthyes.

Photos of each waterway crossing are provided below.

Saltpetre Creek (ch937)

Southern side of Currawang Rd, upstream

Northern side of Currawang Rd, downstream

Unnamed drainage depression at ch2800

Southern side of Currawang Rd, upstream

Northern side of Currawang Rd, downstream

6.3.2 Potential impacts

Construction impacts

There is potential for disturbances to soils through excavations, vehicle and plant movement and vegetation removal along the length of the alignment. Exposed soils if unmanaged will be placed at risk of accelerated erosion and therefore sedimentation of receiving waters. To mitigate this, disturbed soils are to be progressively stabilised.

Construction works associated with removing existing causeways have the potential to cause pollution impacts to waterways. This is because excavation works will be required in-stream to remove the existing concrete structures. During demolition of the causeways and construction of culverts, sediment booms/silt curtains are to be used to contain the area of suspended silt from construction works. It is recommended that causeway demolition material be removed from site immediately and loaded on to waiting trucks, rather than stockpiled on site to reduce risks associated with high rainfall events.

Temporary side tracks at Saltpetre Creek (ch937) and at an unnamed drainage depression ch2800 will need to be constructed in way that ensures adequate water flow is maintained.

Construction will require the implementation of appropriate measures, through an Erosion and Sediment Control Plan, to mitigate adverse impacts to receiving waterways. These measures will also be incorporated into the project CEMP.

As works are high in the catchment the consequences of impacts are minor on the Sydney drinking water catchment, 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. These measures will be incorporated into a spill management plan.

Operation impacts

Operation of the project will result in an overall positive environmental impact in the area. The improved road infrastructure will reduce sedimentation impacts on receiving waters through improved road surface and significantly improved waterway crossings. It will also ameliorate the current risk of catastrophic failure of the existing degraded causeways which present significant risk of downstream sedimentation.

Improvements to the road will result in less disturbance to soils, less traversing of streams by vehicles and a general safety improvement which will reduce the chances of motor vehicle accidents and the resulting pollution.

The proposed culverts at Saltpetre Creek (ch937) and the unnamed drainage depression at ch2800 (refer to Map 3-1) will be designed so that the culvert invert levels are 150mm below existing causeway levels. This design will prevent changes to upstream waterbody levels and ensure that there are no significant changes to water flow and depth.

The WaterNSW standard template for assessing whether there will be a neutral or beneficial effect on water quality has been applied below.

NorBE assessment – is there likely to be a neutral or beneficial effect on water quality? *(assessment must consider surface & ground waters and construction & operational stages)*	
1. Are there any identifiable potential impacts on **water quality**? What **pollutants** are likely? *Major potential pollutants are **sediments** (fine & coarse), **nitrogen**, **phosphorus**, **pathogens** and **hazardous chemicals and contaminants** such as oil/fuel.* At what stage do the impacts occur? *i.e. during construction and/or post construction?*	Yes, Construction will potentially release pollutants; • Fuels and oils from plant and equipment • Coarse and fine sediments from earthworks, excavation, demolition of causeway, gravel placement, stockpiles and exposed soils Operation may result in minor release of pollutants associated with the operation of a rural road however, this will be to a lesser extent than is currently the case.
2. For each pollutant list the **safeguards** needed to prevent or mitigate potential impacts on water quality? *These may be WaterNSW endorsed current recommended practices (CRPs) and/or equally effective other practices*)	• 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. • 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.
3. Will the **safeguards** be adequate for the time required? How will they need to be maintained?	Yes. They will be maintained at an effective standard and be monitored daily and after rainfall.
4. Will all **impacts** on water quality be effectively **contained on the site** by the identified **safeguards** (above) and not reach any watercourse, waterbody or drainage depression? Or will **impacts** on water quality be **transferred outside the site** for treatment? How? Why?	Yes, all impacts on water quality be effectively contained on the site.
5. Is it likely that a **neutral or beneficial effect** on water quality will occur? Justify	Yes, a **beneficial effect** on water quality will occur as all construction impacts are adequately managed through proven methodology. The operation phase of the project will result in decreased effects on receiving waters due to improved road quality and upgraded waterway crossings.

6.3.3 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
Hydrological impacts	• The construction methodology for causeway works must not allow upstream waterbodies to be drained. • Temporary side tracks must be designed to ensure adequate hydrological flow is maintained.	Council	Pre-Construction & Construction
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.	Council	Pre-Construction

Impact	Environmental safeguards	Responsibility	Timing
	• 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. • The ESCP must clearly identify controls at the sites of causeway demolition and culvert placement, including but not limited to, placement of sediment booms/silt curtains. • Causeway demolition works should be scheduled to avoid forecast wet weather periods. • During causeway demolition, material must be directly moved to waiting trucks rather than stockpiling material on-site.		
Water and soil pollution	• Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) is to be undertaken on a daily basis and after all rain events exceeding 10 mm to identify any potential spills or deficient erosion and sediment controls. Further monitoring including water quality laboratory testing may be required if visual monitoring identifies potential pollution incidents • A spill management plan must be developed which includes measures for refuelling, maintenance of	Council	Pre-construction & During construction

Impact	Environmental safeguards	Responsibility	Timing
	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.		

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 the local road network as well as routine agricultural operations. Thirteen dwellings occur within 150m of the work area some being close to the road reserve.

6.4.2 Potential impacts

Construction noise impacts

Given the nature of the works, noise generated is not expected to impact dwellings from the works area at any substantial level or for any extended duration.

Works will generate noise however not of a volume or duration that is of a safety concern to sensitive receivers. Works may result in complaints from nearby residents. Noise generated by the works is not likely to impact businesses or economic activities.

Construction vibration impacts

Vibration emitted by construction has potential to impact the comfort of nearby landholders and cause damage to architectural structures. As the works are minor and short term is a low risk of vibration impacts to any sensitive receivers.

Operational noise and vibration impacts

Works will result in noise and vibration impacts to sensitive receivers being reduced from current levels 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). Works at other times will only be for short periods and required due to exceptional circumstances.	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 Currawang Road and agricultural operations nearby 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 rehabilitation of Currawang Road is likely to result in improved air quality as the road travel surface and drainage will be in better condition.

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.	Council	Construction

Impact	Environmental safeguards	Responsibility	Timing
	• 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.		

6.6 Heritage

6.6.1 Existing environment

An AHIMS extensive search, included at Appendix 2, was undertaken which identifies several Aboriginal sites in the vicinity of the works, two sites occur within 200m of the road reserve and one 40m to the north of the road reserve. These sites are not at risk of impact by the proposal due to being outside the direct impact area.

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 2.

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

Yes, road works will require disturbance of the ground surface along the edges of the existing road for reforming, sealing 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?*

Yes AHIMS records occur in the vicinity.

> *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 formation, 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.

There is potential for un-expected items or artefacts of cultural significance to be present in the study area reflecting the long occupation of the land by Aboriginal and

non Aboriginal communities, the unexpected finds procedure safeguard below addresses this risk.

The local heritage item I595 occurs on each side of Currawang Road from Braidwood Road Ch0 to Ch1779 and on the southern side of Currawang Road to Ch2728. This item is described as;

> *"Tirranna" homestead, gardens, Gibson family cemetery and veterans allotments (circa 1829) 4971–5071 Braidwood Road*
>
> *Lots 19 and 36, DP 750015; Lots 11 and 12, DP 1155686; Lot 3191, DP 1155815*

Works are not proposed on these lots though will occur on the adjoining road reserve.

6.6.2 Potential impacts

Works will not impact local heritage item I595 or occur on its landholding, the minor nature of the works will not result in impacts on those lands or change the character or aesthetic nature of the environment.

No impacts to Aboriginal or non-Aboriginal heritage are expected however safeguards below will address 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 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

Impact	Environmental safeguards	Responsibility	Timing
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 centre of Goulburn. 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 Currawang 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 significant detours will be required during construction as temporary sidetracks will be constructed at the proposed box culvert crossings.

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

6.7.3 Safeguards and mitigation measures

Impact	Environmental safeguards	Responsibility	Timing
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 waste masonry from demolished causeway structures.

General waste would be temporarily stored on site prior to disposal at an appropriately licensed waste facility.

Waste concrete will be recycled in Councils projects and may be stored in existing Council stockpile areas.

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 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
Masonry waste	• Waste concrete and asphalt will be recycled in Councils projects and may be stored in existing Council stockpile areas	Council	Construction

6.9 Cumulative impacts

It is a requirement under Clause 228(2) of the *Environmental Planning and Assessment Regulation 2000* to consider 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 negative impacts.

6.10 Summary of beneficial effects

The proposal is expected to improve traffic safety and reduce maintenance costs of Currawang 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 temporary, they are considered acceptable given the benefits the proposal will generate.

7 Environmental management

7.1 Environmental management plans

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 residual impacts are considered acceptable given the benefit of the proposal to the community.

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 project REF. This CEMP, and any activity/ contractor specific subplans will provide a framework that clearly identifies the implementation of these measures including responsible officers and monitoring and review processes.

The CEMP and any subplans 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	Weed spread	The proponent must ensure that construction works do not import weed material to or from the project area, for example, in or on plant and equipment used to develop 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: a. 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. b. 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 - Construction
4	Impacts to retained	A vegetation management plan must be prepared by a suitably qualified and experienced person to manage the clearing and grubbing of native vegetation for the works and to protect vegetation that is not to be impacted. This plan is to be implemented and meet the following criteria:	Council	Pre-construction - Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	vegetation & animal welfare	• The plan will be prepared with consideration of the final construction plans for the works. • The plan will ensure that snowgum woodland is not at risk of impact from the construction of temporary side tracks and include a remediation plan to be implemented following removal of side tracks that ensures these areas are rehabilitated with native grasses suitable to the site • The plan will prescribe measures that will minimise the impact the works will have on the extent of vegetation impacted including methodology for the protection of retained vegetation. • Pre-clearing surveys will be undertaken to ensure sedentary fauna (such as nesting fauna) are not present during clearing, hollow bearing trees will be identified prior to clearing and will be removed under the supervision of an ecologist. • Results of preclearing surveys, removal of habitat and any other relevant matters will be documented in a post clearing report that may recommend ameliorative or offsetting measures. In order to protect diverse native grassland and threatened species habitat occurring on batters at the western end of the works the following measures are to be implemented west of Chainage 6318, measured from Braidwood Road as indicated in Figure 9-1 of the BAR. • Works are to be restricted to the existing road formation and drainage structures. • Vegetation on existing batters is not to be disturbed, including by excavation, parking or trafficking plant and machinery.		
5	Hydrological impacts	• Construction methodology for each causeway demolition and construction must not allow upstream waterbodies to be drained • Temporary side tracks must be designed to ensure adequate hydrological flow is maintained.	Council	Pre-Construction & Construction

No.	Impact	Environmental safeguards	Responsibility	Timing

6	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.
		• The ESCP must clearly identify controls at the sites of causeway demolition and culvert placement, including but not limited to, placement of sediment booms/silt curtains.
		• Causeway demolition works should be scheduled to avoid forecast wet weather periods.
		• During causeway demolition, material must be directly moved to waiting trucks rather than stockpiling material on-site.
			Council	Pre-construction, Construction & Post-construction

7	Water and soil pollution	• Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) is to be undertaken on a daily basis and after all rain events exceeding 10 mm to identify any potential spills or deficient erosion and sediment controls. Further monitoring including water quality laboratory testing may be required if visual monitoring identifies potential pollution incidents • 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:	Council	Pre-construction, Construction & Post-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		○ 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.		
8	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), Works at other times will only be for short periods and required due to exceptional circumstances. • 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.	Council	Pre-construction
9	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.	Council	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation.		
10	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
11	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
12	Changes in local access and traffic movement	• Road closures will be minimised as far as practical.	Council	Construction and operation
13	Complaints	• Complaints received are to be recorded and attended to promptly in accordance with Council's complaints handling procedures.	Council	Construction
14	Production of packaging materials and other	• 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

No.	Impact	Environmental safeguards	Responsibility	Timing
	construction waste			
15	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
16	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
17	Masonry waste, concrete & asphalt	• Waste concrete and asphalt will be recycled in Councils projects and may be stored in existing Council stockpile areas	Council	Construction

7.3 Licensing and approvals

A Permit under Part 7 of the Fisheries Management Act 1994 (NSW) will be required for works in watercourses associated with demolition of causeways and construction of culverts.

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 consistent with existing use and will not cause significant transformation.	Nil
c. The environmental impact on the ecosystems of the locality? The proposal will not significantly impact ecosystems.	Nil
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
i. Degradation of the quality of the environment? Short term amenity will be affected, no long-term degradation.	Minor short term

Factor	Impact
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
- 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.

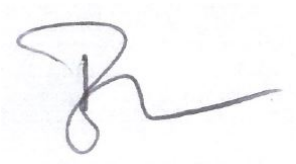
Pat Guinane

Environmental Consultant

Macrozamia Environmental

Date: 23 August 2024

I have examined this review of environmental factors and accept the review of environmental factors on behalf of Goulburn Mulwaree Council.



Brian Faulkner
Environment & Biodiversity Assessment Officer
Goulburn Mulwaree Council

Date: 05 September 2024

Appendix 1 – Works Concept Plans

Goulburn Mulwaree Council

CURRAWANG ROAD UPGRADE
CULVERT CONSTRUCTION
GOULBURN MULWAREE COUNCIL

SHEET INDEX

REVISION	DATE	DESCRIPTION
D	AUG 24	REVISED DESIGN
B	AUG 24	SIDETRACK CONCEPT
A	JUL 24	PRELIMINARY DESIGN

HIGHLANDS DESIGN & DRAFTING
S P FOWLER
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EMAIL fowlers202@gmail.com

HD &D

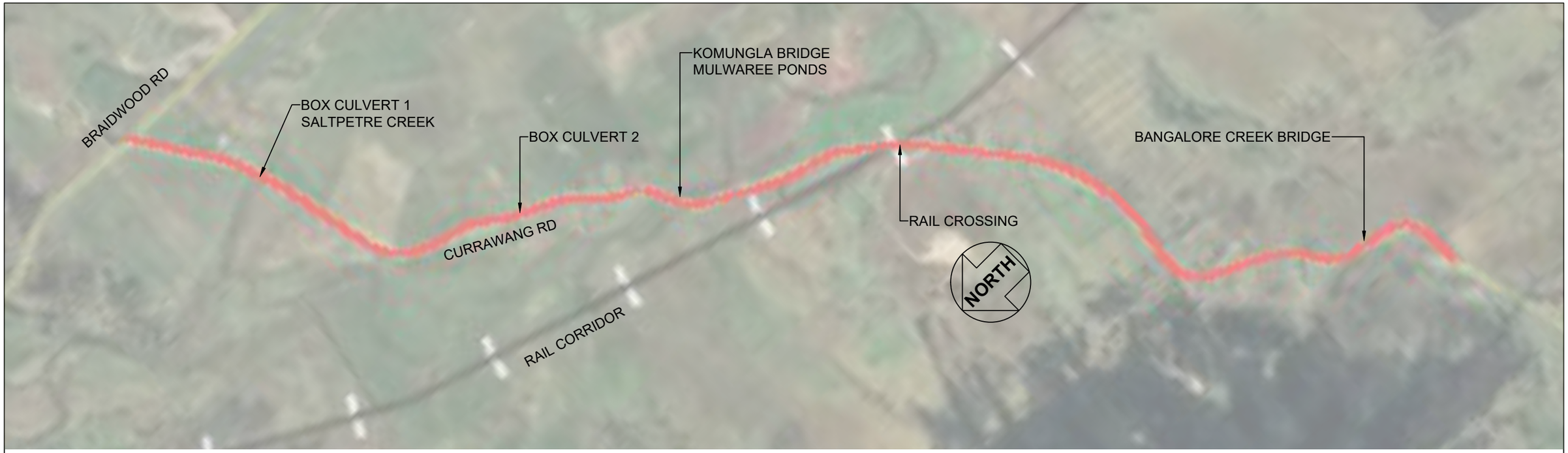
DRAWING TITLE; LOCATION; INDEX

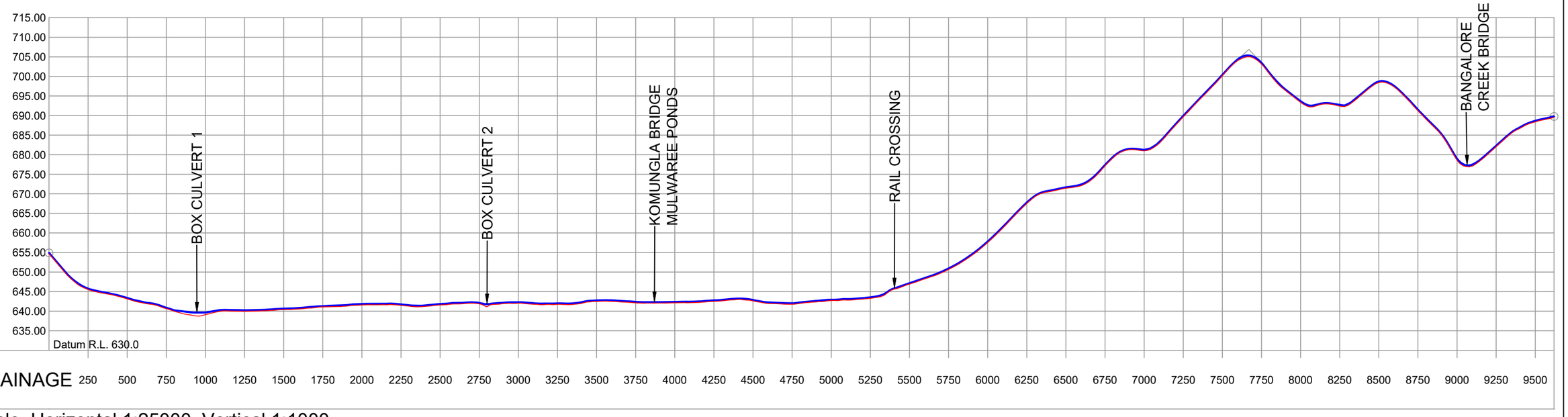
PROJECT CURRAWANG ROAD UPGRADE CULVERT CONSTRUCTION GOULBURN MULWAREE COUNCIL

REVISION D

Dwg No GMC 03.24

SHEET 1 OF 7





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REVISION	DATE	DESCRIPTION
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B	AUG 24	SIDETRACK CONCEPT
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S P FOWLER
ABN 38 736 450 419
PHONE 0412 626 126
EMAIL fowlers202@gmail.com

HD &D

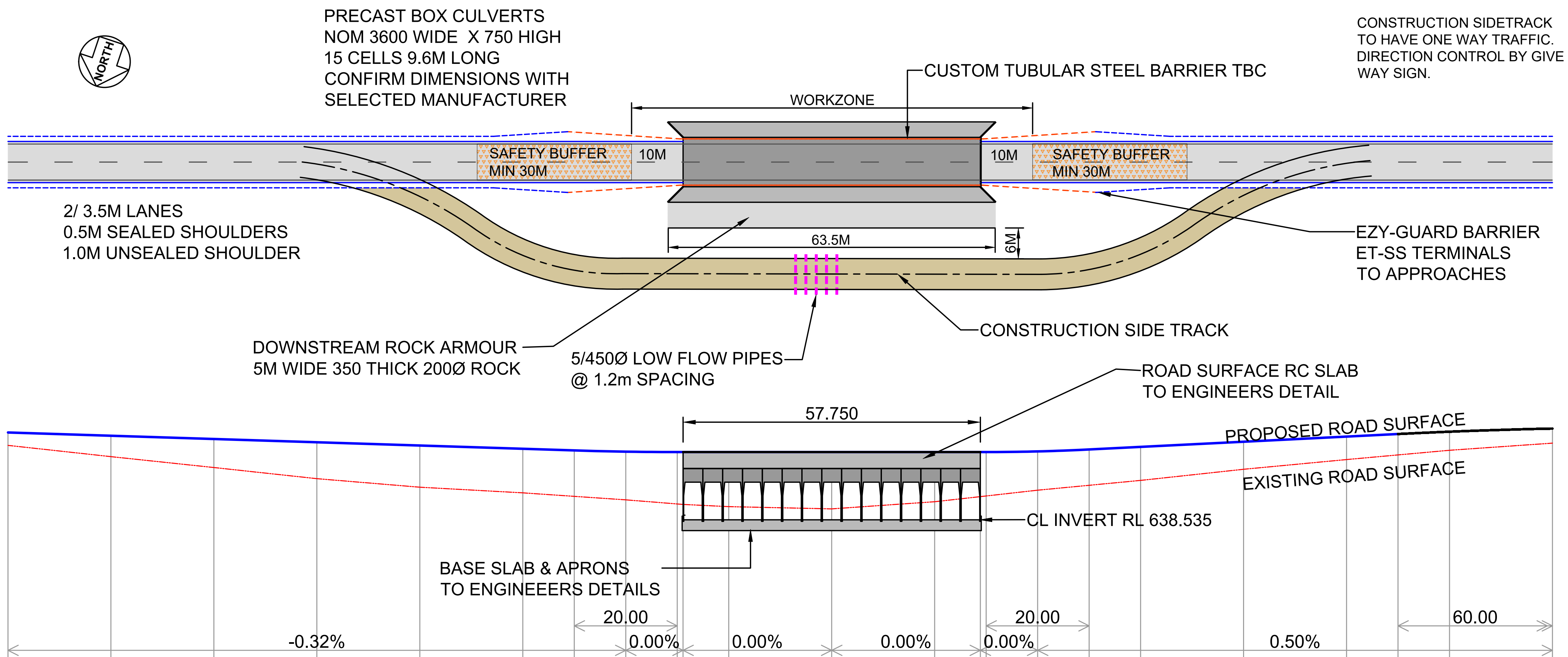
DRAWING TITLE; LOCATION; INDEX

PROJECT CURRAWANG ROAD UPGRADE
CULVERT CONSTRUCTION
GOULBURN MULWAREE COUNCIL

REVISION D

Dwg No GMC 03.24

SHEET 2 OF 7



Datum R.L. 635.00

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CUT/FILL	+0.250F	+0.405F	+0.553F	+0.706F	+0.809F	+0.855F		+0.936F		+1.017F	+1.060F	+1.103F
DESIGN	640.230	640.166	640.103	640.040	639.977	639.913	639.882	639.858	639.850	639.850	639.850	639.850
EXISTING	639.980	639.761	639.550	639.333	639.167	639.058		638.922		638.833	638.790	638.747

Station	980.00	988.87	990.00	1000.00	1010.00	1020.00	1040.00	1060.00	1070.00	1080.00	1100.00
CUT/FILL	+0.964F	+0.865F		+0.753F		+0.650F	+0.535F	+0.446F		+0.361F	+0.283F
DESIGN	639.850	639.850	639.850	639.862	639.900	639.950	640.050	640.150	640.200	640.245	640.306
EXISTING	638.886	638.985		639.110		639.300	639.515	639.704		639.885	640.023

Scale Horizontal 1:1000 Vertical 1:100

REVISION	DATE	DESCRIPTION
D	AUG 24	REVISED DESIGN
B	AUG 24	SIDETRACK CONCEPT
A	JUL 24	PRELIMINARY DESIGN

HIGHLANDS DESIGN & DRAFTING
S P FOWLER
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EMAIL fowlers202@gmail.com
HD &D

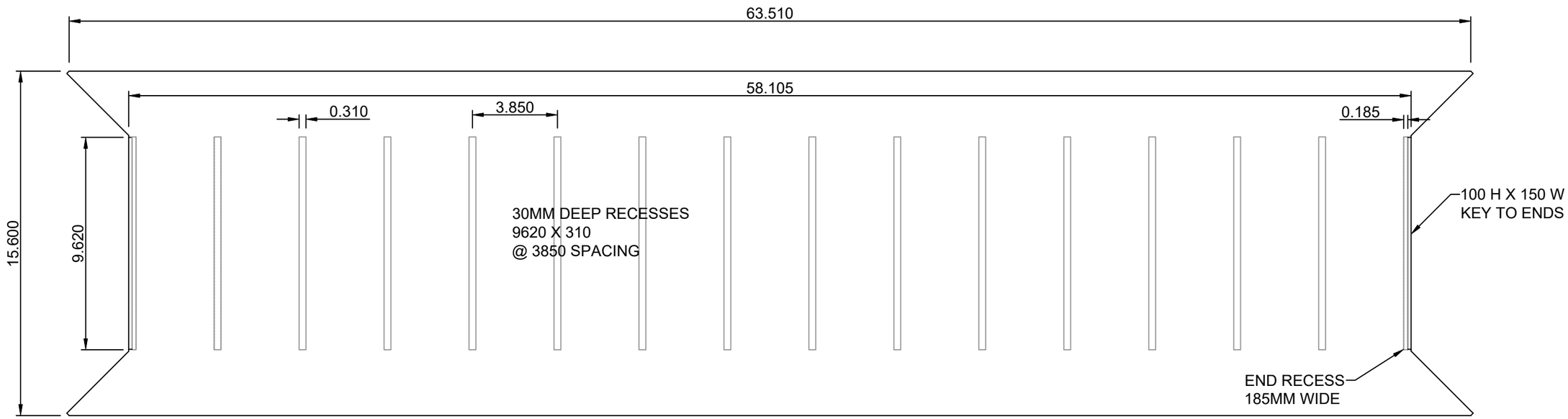
DRAWING BOX CULVERT 1- PLAN & LONGSECTION

PROJECT CURRAWANG ROAD UPGRADE
CULVERT CONSTRUCTION
GOULBURN MULWAREE COUNCIL

REVISION D

Dwg No GMC 03.24

SHEET 3 OF 7



BASE SLAB PLAN

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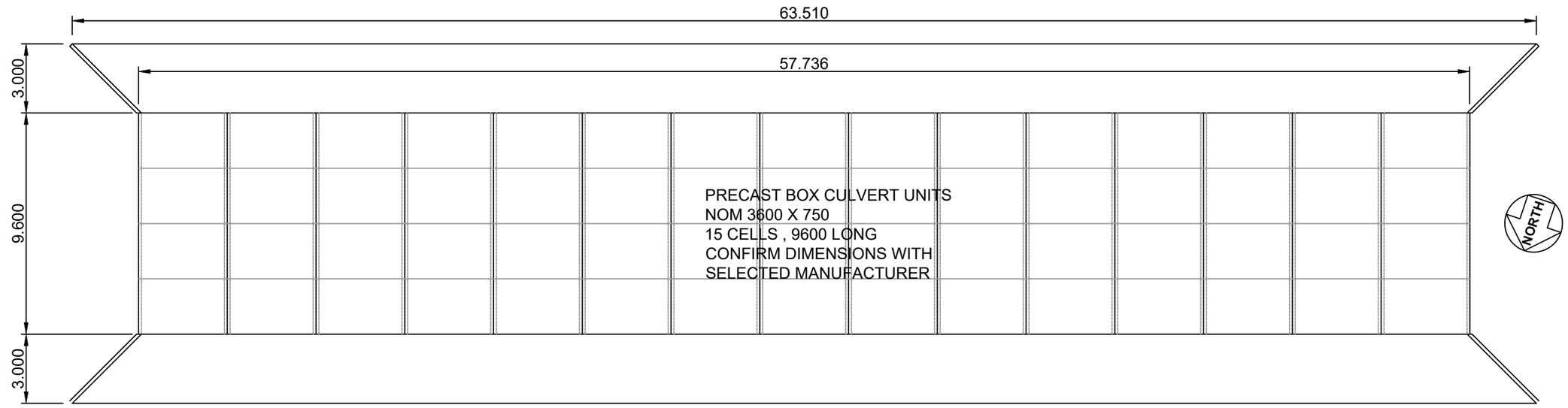

BOX CULVERT LAYOUT

SCALE 1:200 (A3)

SURFACE SLAB, BASE SLAB,
APRONS & WING WALLS
TO ENGINEERS DETAIL

REVISION	DATE	DESCRIPTION
D	AUG 24	REVISED DESIGN
B	AUG 24	SIDETRACK CONCEPT
A	JUL 24	PRELIMINARY DESIGN

HIGHLANDS DESIGN
& DRAFTING
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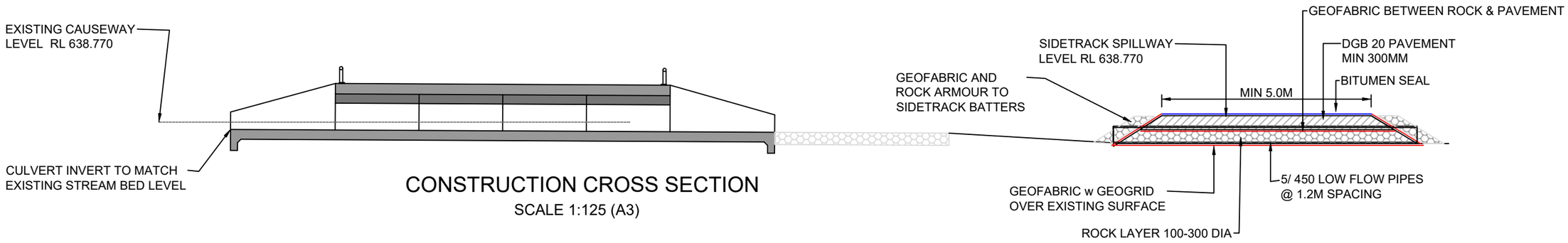
DRAWING BOX CULVERT 1 DETAILS

PROJECT CURRAWANG ROAD UPGRADE
CULVERT CONSTRUCTION
GOULBURN MULWAREE COUNCIL

REVISION D

Dwg No GMC 03.24

SHEET 4 OF 7



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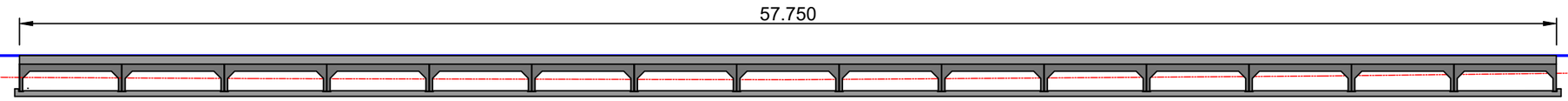
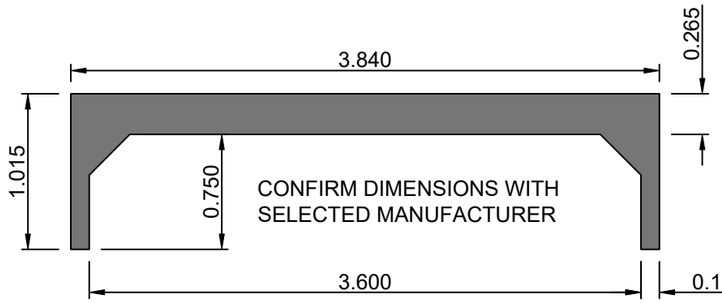


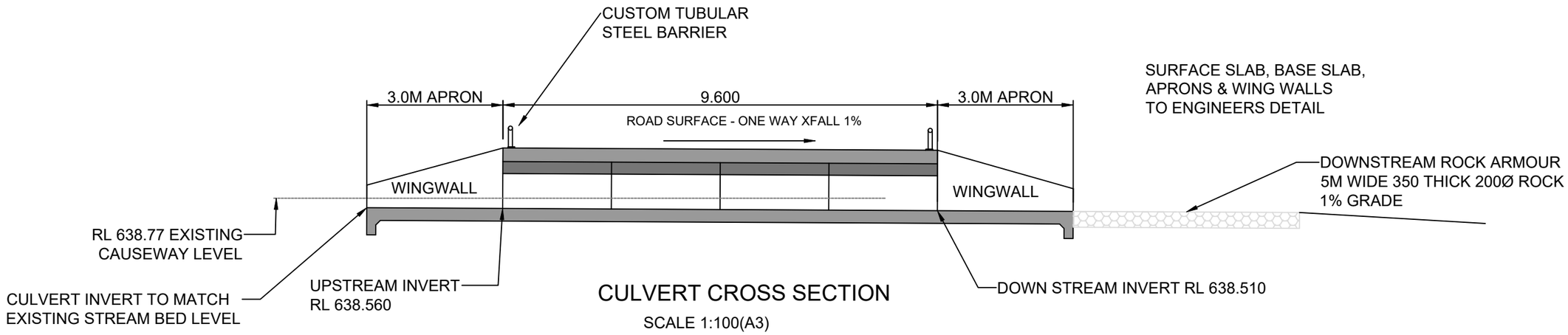
CULVERT LONGSECTION

SCALE 1:200 (A3)



PRECAST BOX CULVERT UNITS

SCALE 1:40 (A3)



CULVERT CROSS SECTION

SCALE 1:100(A3)

REVISION	DATE	DESCRIPTION
D	AUG 24	REVISED DESIGN
B	AUG 24	SIDETRACK CONCEPT
A	JUL 24	PRELIMINARY DESIGN

HIGHLANDS DESIGN
& DRAFTING
S P FOWLER
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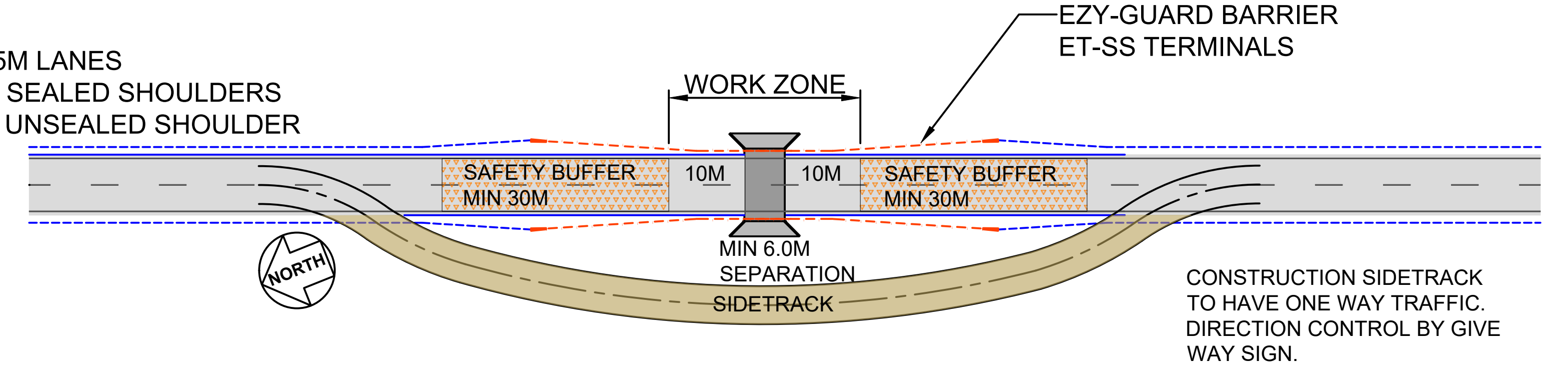
DRAWING BOX CULVERT 1 DETAILS

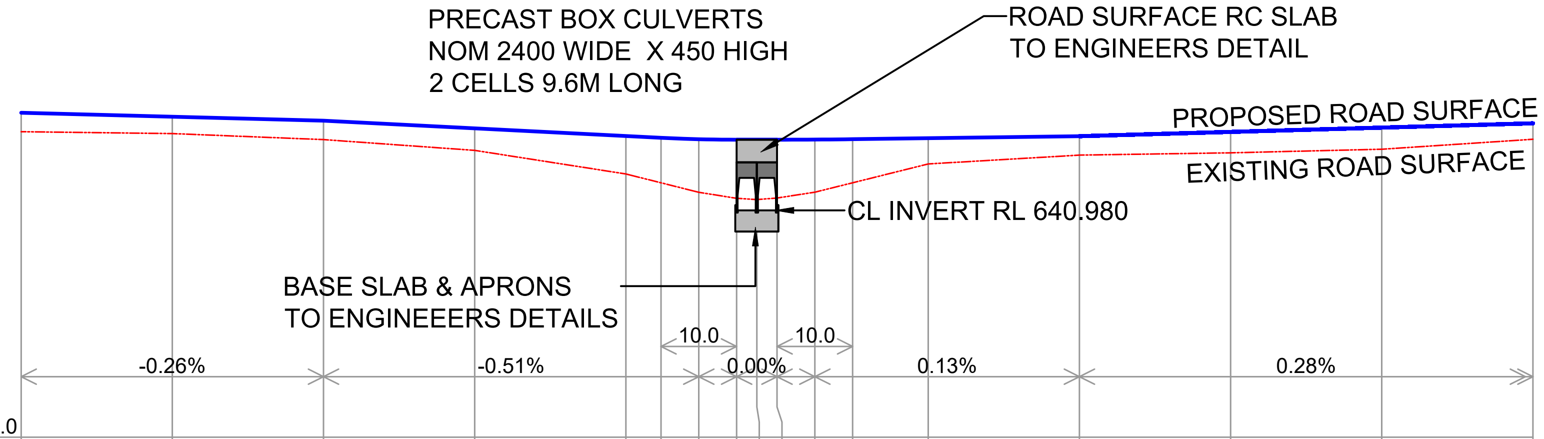
PROJECT CURRAWANG ROAD UPGRADE
CULVERT CONSTRUCTION
GOULBURN MULWAREE COUNCIL

REVISION D

Dwg No GMC 03.24

SHEET 5 OF 7





CHAINAGE	CUT/FILL	DESIGN	EXISTING
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2720.000	+0.223F	642.238	642.016
2740.000	+0.250F	642.186	641.936
2760.000	+0.291F	642.085	641.794
2780.000	+0.502F	641.984	641.482
2784.655		641.960	
2789.650	+0.702F	641.941	641.239
2794.650	+0.776F	641.935	641.159
2797.325	+0.792F	641.935	641.143
2800.000	+0.772F	641.935	641.163
2805.000	+0.696F	641.937	641.240
2809.995		641.942	
2820.000	+0.341F	641.955	641.614
2840.000	+0.250F	641.981	641.731
2860.000	+0.277F	642.038	641.761
2880.000	+0.286F	642.095	641.809
2900.000	+0.211F	642.151	641.941

Scale Horizontal 1:1000 Vertical 1:100

REVISION	DATE	DESCRIPTION
D	AUG 24	REVISED DESIGN
B	AUG 24	SIDETRACK CONCEPT
A	JUL 24	PRELIMINARY DESIGN

HIGHLANDS DESIGN & DRAFTING

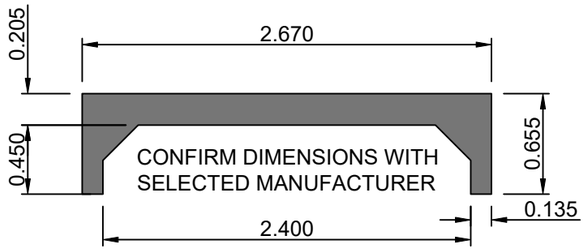
HD &D

S P FOWLER
ABN 38 736 450 419
PHONE 0412 626 126
EMAIL fowlers202@gmail.com

DRAWING TITLE; LOCATION; INDEX

PROJECT CURRAWANG ROAD UPGRADE
CULVERT CONSTRUCTION
GOULBURN MULWAREE COUNCIL

REVISION D
Dwg No GMC 03.24
SHEET 6 OF 7



PRECAST BOX CULVERT UNITS

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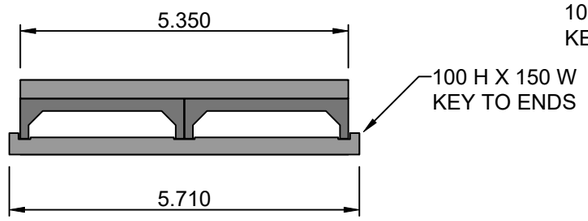
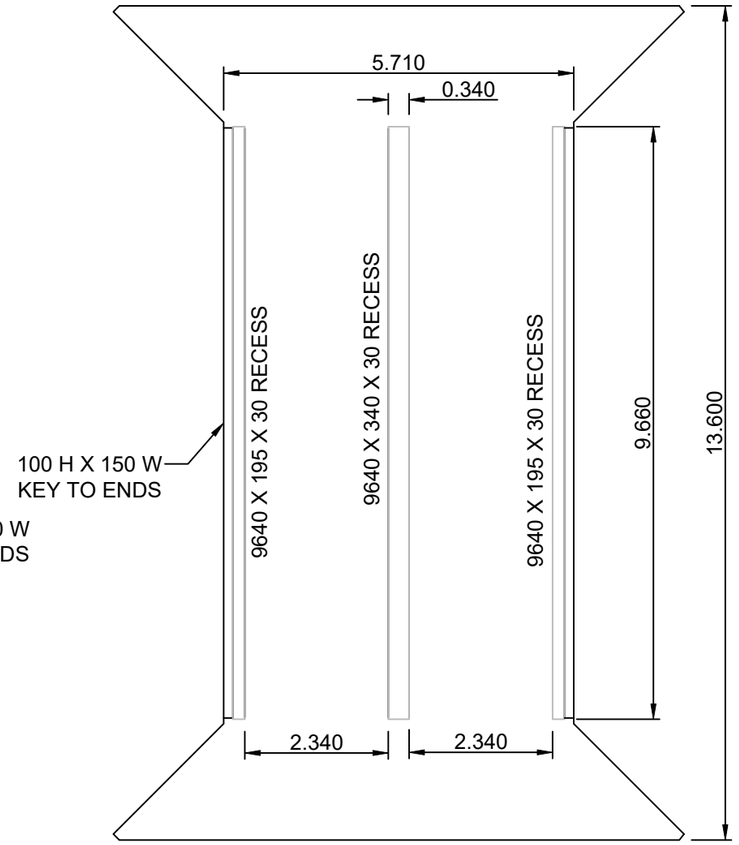


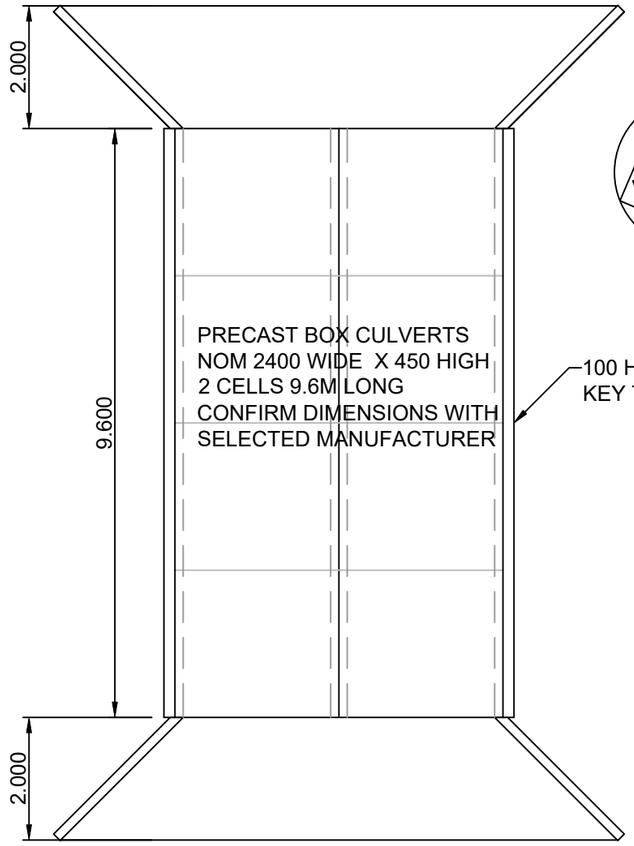
CULVERT LONGSECTION

SCALE 1:100 (A3)



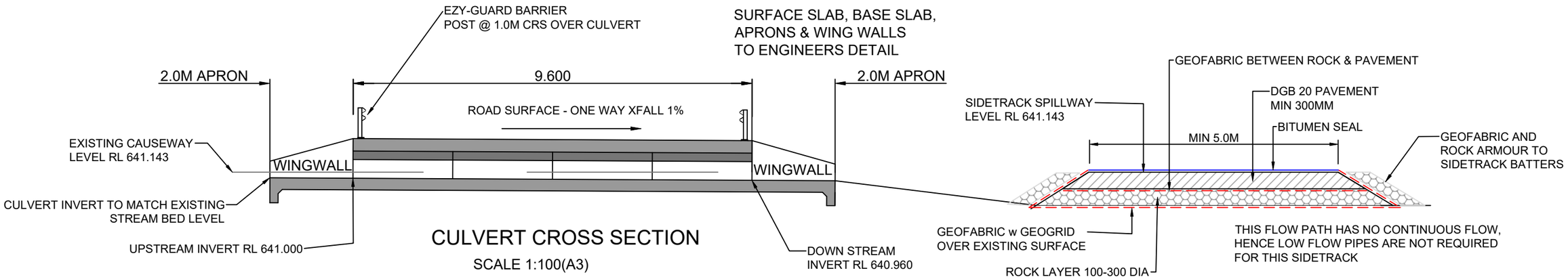
BASE SLAB PLAN

SCALE 1:100 (A3)



BOX CULVERT LAYOUT

SCALE 1:100 (A3)



CULVERT CROSS SECTION

SCALE 1:100(A3)

REVISION	DATE	DESCRIPTION
D	AUG 24	REVISED DESIGN
B	AUG 24	SIDETRACK CONCEPT
A	JUL 24	PRELIMINARY DESIGN

HIGHLANDS DESIGN & DRAFTING

S P FOWLER
ABN 38 736 450 419

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HD &D

DRAWING BOX CULVERT 2 DETAILS

REVISION D

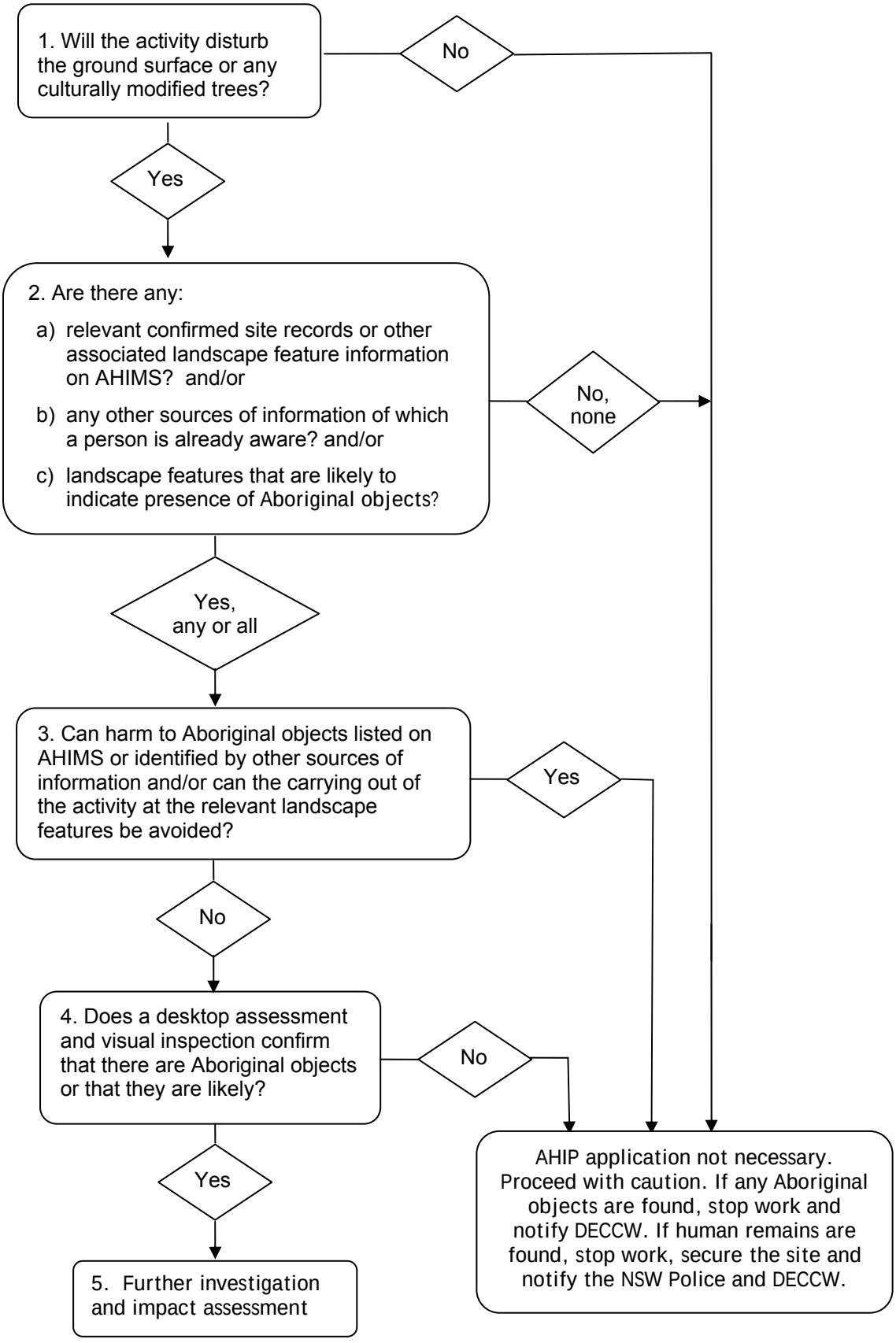
PROJECT CURRAWANG ROAD UPGRADE
CULVERT CONSTRUCTION
GOULBURN MULWAREE COUNCIL

Dwg No GMC 03.24

SHEET 7 OF 7

Appendix 2 – Aboriginal Heritage Information Management System Search Result

8 The generic due diligence process



AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Currawang Rd

Client Service ID : 904967

Macrozamia Environmental

473 Tathra Road
Kalaru New South Wales 2550

Attention: Pat Guinane

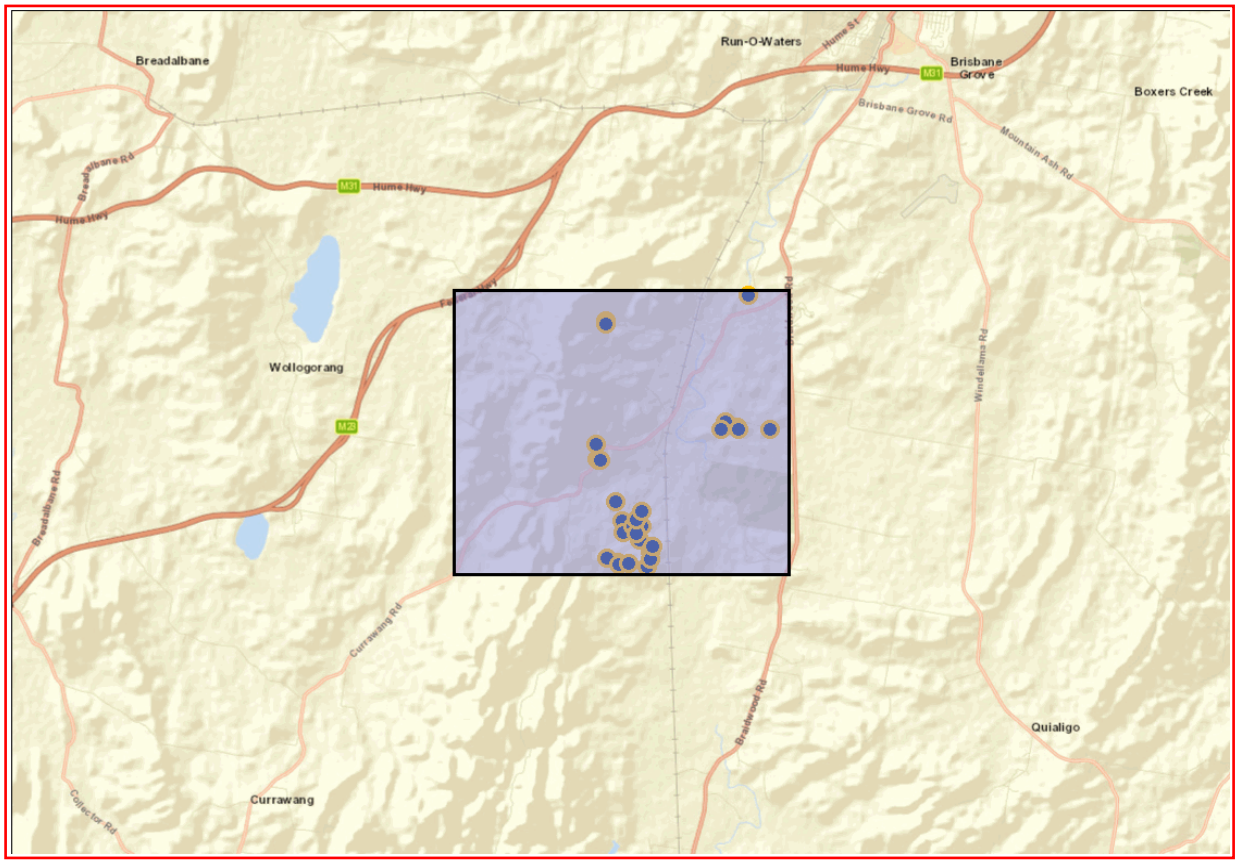
Email: pat@macrozamia.com.au

Date: 27 June 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -34.909960168294035, 149.57714752724212 - Lat, Long To : -34.83506369050062, 149.68318061441613, conducted by Pat Guinane on 27 June 2024.

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:

32	**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.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Currawang Rd

Client Service ID : 910662

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
51-6-0190	Springfield 19	AGD	55	740115	6133938	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0194	Springfield 23	AGD	55	741050	6134207	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0197	Springfield 26	AGD	55	740644	6134975	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0201	Springfield 30	AGD	55	740578	6134936	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0072	S2.	AGD	55	739940	6141030	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Rex Silcox					**Permits**		
51-6-0479	Kelburn 2	GDA	55	743762	6137983	Open site	Valid	Artefact : 1		
	Contact Searle	**Recorders**	Mr.Justin Boney					**Permits**		
51-6-0189	Springfield 18	AGD	55	739792	6134065	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0206	Springfield 35	AGD	55	740081	6135698	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0893	Bangalore Tributary Artefact 3	GDA	55	739727	6137141	Open site	Valid	Artefact : -		
	Contact	**Recorders**	South East Local Land Services - Goulburn,Ms.Jenny Schabel					**Permits**	4925	
51-6-0981	TL5_171_IA	GDA	55	744202	6141867	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Geordie Oakes,AECOM Australia Pty Ltd - Sydney					**Permits**		
51-6-0476	Kelburn 5	GDA	55	743441	6138140	Open site	Valid	Artefact : 8		
	Contact	**Recorders**	Mr.Justin Boney					**Permits**		
51-6-0478	Kelburn 3	GDA	55	743795	6137928	Open site	Valid	Artefact : 1		
	Contact Searle	**Recorders**	Mr.Justin Boney					**Permits**		
51-6-0192	Springfield 21	AGD	55	740944	6133791	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0198	Springfield 27	AGD	55	740834	6134977	Open site	Valid	Artefact : -		
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51-6-0199	Springfield 28	AGD	55	740738	6134574	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0480	Kelburn 1	GDA	55	744716	6137916	Open site	Valid	Artefact : 1		
	Contact Searle	**Recorders**	Mr.Justin Boney					**Permits**		
51-6-0193	Springfield 22	AGD	55	741051	6133984	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0204	Springfield 33	AGD	55	740609	6135047	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		

Report generated by AHIMS Web Service on 16/07/2024 for Pat Guinane for the following area at Lat, Long From : -34.909960168294035, 149.57714752724212 - Lat, Long To : -34.83506369050062, 149.68318061441613. Number of Aboriginal sites and Aboriginal objects found is 32

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Currawang Rd

Client Service ID : 910662

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
51-6-0203	Springfield 32	AGD	55	740246	6135143	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0892	Bangalore Tributary Artefact 1	GDA	55	739689	6137172	Open site	Valid	Artefact : -		
	Contact	**Recorders**	South East Local Land Services - Goulburn,Ms.Jenny Schabel					**Permits**	4925	
51-6-0078	Bangalore 1	AGD	55	739550	6137400	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Heritage Solutions-Alistair Grinbergs					**Permits**		
51-6-0188	Springfield 17	AGD	55	740128	6133862	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0191	Springfield 20	AGD	55	740413	6133885	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0196	Springfield 25	AGD	55	740283	6134808	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0202	Springfield 31	AGD	55	740564	6134991	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0083	S1.	AGD	55	739930	6140950	Open site	Valid	Artefact : -	Open Camp Site	3631
	Contact	**Recorders**	Rex Silcox					**Permits**		
51-6-0477	Kelburn 4	GDA	55	743311	6137949	Open site	Valid	Artefact : 1		
	Contact Searle	**Recorders**	Mr.Justin Boney					**Permits**		
51-6-0200	Springfield 29	AGD	55	740655	6134758	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0205	Springfield 34	AGD	55	740668	6135163	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0207	Springfield 36	AGD	55	740835	6135424	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Doctor.Julie Dibden					**Permits**		
51-6-0195	Springfield 24	AGD	55	741123	6134368	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Mr.Mark Dibben					**Permits**		
51-6-0894	Bangalore Tributary Artefact 2	GDA	55	739786	6137141	Open site	Valid	Artefact : -		
	Contact	**Recorders**	South East Local Land Services - Goulburn,Ms.Jenny Schabel					**Permits**	4925	

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 16/07/2024 for Pat Guinane for the following area at Lat, Long From : -34.909960168294035, 149.57714752724212 - Lat, Long To : -34.83506369050062, 149.68318061441613. Number of Aboriginal sites and Aboriginal objects found is 32

Appendix 3 – Biodiversity Assessment Report

Macrozamia Environmental

Macrozamia Environmental Consulting
consulting.macrozamia.com.au
info@macrozamia.com.au

Biodiversity Assessment Report

Proposed Currawang Road Rehabilitation Works (9.7km segment)

Including causeway upgrades, Tirrannaville, NSW.

Gundungurra Country

July 2024

Version	Final 2
Date	23 August 2024
Project Number	140274_2

Contents

1. Introduction

1.1. Background

This report has been prepared by Macrozamia Environmental on behalf of Goulburn Mulwaree Council (Council) to support a Review of Environmental Factors (REF) for a proposal to rehabilitate a 9.7Km segment of Currawang Road in the rural district of Tirannaville 10 to 18km southwest of Goulburn in the Southern Tablelands of NSW

Council has identified that the subject section of Currawang Road is in need of a series of improvements to improve its safe operation for road users, resilience and dependability following high rainfall events and improved traffic flow.

Currawang Road is an important rural road in the southwestern corner of the LGA servicing travellers between the Tirrannaville, Currowang and Collector districts and road users more broadly in this and neighbouring LGAs.

As part of this project it is proposed to address minor vertical and horizontal improvements & ensuring the road travel surface is 7m wide accommodating two 3.5m wide opposing traffic lanes and a 1 to 2m wide shoulder. Generally the existing formation meets this criteria and will not require significant work the existing sealed travel surface is between 6.8 and 7m wide however edges of seal are often broken, patched and deteriorating.

The works will also replace two existing low-level causeways with box culverts of prefabricated reinforced concrete construction.

Works will incorporate drainage and road furniture as required. See concept plans in Appendix 1 of the REF for detailed design.

The proposal location and study area are identified in Map 1-1 of this report.

The works occur in an over-cleared landscape dominated by grazing enterprises, land uses that have carried on in the district for over 200 years. The majority of the vegetation on the subject land is pasture grassland composed of both native and exotic species. Despite this and past land uses, the land offers a range of values to local biodiversity particularly through a range of vegetation structure and good continuity to woodland remnants throughout the assessment area.

This Biodiversity Assessment Report considers the potential impacts of the proposal on biodiversity matters including during the construction and operation phases of the development and both direct and indirect impacts.

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, generally within a buffer distance of 500m of the subject land.

Subject land refers to the parcel of land containing the proposed development, in this case it is the whole of the road reserve from Ch0 at Braidwood Road westerly to Ch9700.

Development footprint refers to the areas of direct impacts of the proposal, it includes the footprint of the development and any ancillary works, for this project it is the existing road formation, drainage and causeway/ culvert structures and an additional width of 1.5m from the existing formation

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.

1.2. Site Description

The assessment area occurs in a rural environment in the Southern Tablelands of NSW and has a long history of agricultural use, typically grazing. The vast majority of the lowlands in this landscape have been cleared of native vegetation and sown to pasture. Road reserves and drainage lines often support native woodland vegetation complementing paddock trees in providing continuity of biodiversity across the landscape forming both stepping stone or corridor habitat as well as providing refuges for flora and fauna, these remnants of woodland habitat are particularly important for biodiversity as they have been the most impacted by past land use. The upper hills are generally well vegetated with native forest communities having been spared much of the widespread clearing of the 1800s and 1900s due to poorer soils that offered little to agriculture.

The subject land is a length of rural road reserve with a sealed road of two opposing travel lanes and several culverts, bridges and causeways. Vegetation in the road reserve is widely varied, the eastern end tends to be more exotic with the notable exception of a stand of remnant native woodland. Several other stands of woody vegetation occur including native and exotic species and many non-local native species that have spread into the land from adjoining agricultural plantings. Native composition significantly increases in the groundcover, understory and canopy layers further west, the most westerly 2.8km being native dominant in most cases and woody vegetation becomes more frequent.

No areas of outstanding biodiversity value, as identified under the BC Act, occur within the subject land, assessment area or nearby.

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

   a. Chapter 3 Koala habitat protection 2020

      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.

(2) The council's determination of the development application must not be inconsistent with the plan of management.

The Koala SEPP has been addressed in Section 6 of this report.

iv. *Goulburn – Mulwaree Local Environmental Plan 2009* (LEP)

a. Clause 7.2 – Terrestrial Biodiversity

The objectives of this clause are to protect, maintain or improve the diversity of the native vegetation, including:

(a) protecting biological diversity of native flora and fauna, and

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

(c) encouraging the recovery of threatened species, communities or populations and their habitats.

This clause applies to development on land that is identified as "Biodiversity" on the Terrestrial Biodiversity Map.

The whole of the subject land is mapped as 'Biodiversity' by this map. This this report addresses each part of this clause throughout the report.

In summary, 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 &
- Meet the requirements of the environmental planning framework above.

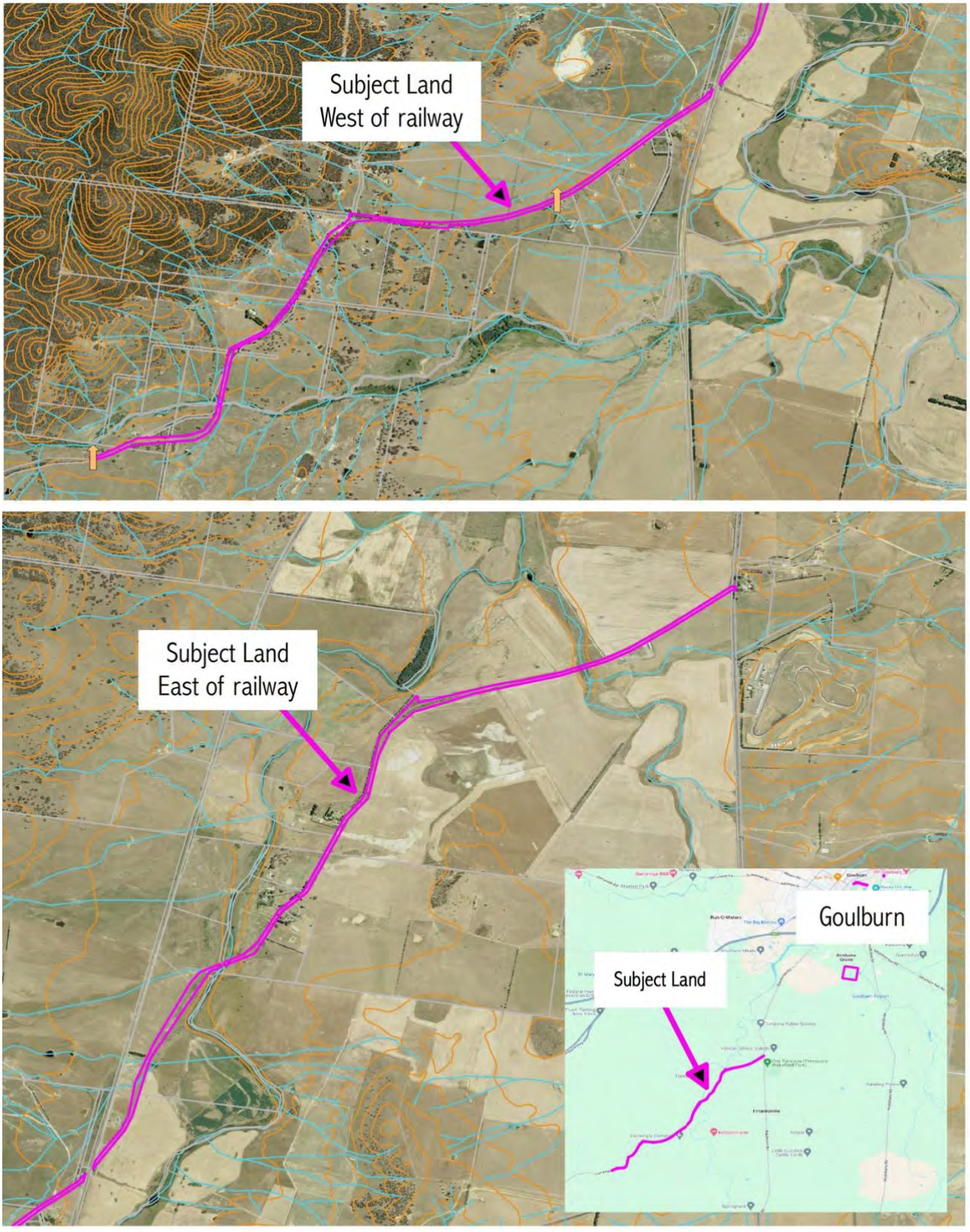
It is important to note that note all species that occur on or use this site, particularly fauna, could be identified without an extended survey period of several seasons and over numerous site visits. A survey of this extent is beyond the scope of this assessment. To compensate for this, habitats have been assessed with consideration of potentially occurring species applying the principle, particularly in relation to listed matters.

1.4. Description of Proposal

It is intended that works will be completed in the 2024 – 2025 financial year depending on Council's operational schedule. The timeframe is expected to be up to 12 weeks. The following summarises the activities involved;

- Completion of design and planning approvals/ licences and permits as required
- Implementation of traffic management plan, staged lane closures and road closures at causeways when required
- Site preparation, including construction of access pads/ tracks, and temporary erosion and sediment controls
- Clearing and grubbing as required to accommodate works
- Formation construction/ reconstruction as required to achieve 7m wide sealed surface
- Reconstruction of drainage structures as required
- Worksite dewatering as required
- Excavation of existing causeway structures
- Installation of prefabricated box culverts
- Construction of a concrete wearing surface over box culverts
- Commissioning of new crossings
- Sealing of wearing surfaces
- Installation of road furniture including barriers, signage and line marking
- Decommissioning and removal of temporary works including erosion and sediment controls
- Post construction works including clean-up and site rehabilitation.

The works will make use of Council's existing roadside stockpile areas, no temporary or auxiliary development is required. The concept plans at Appendix 1 of the REF detail the required works



Macrozamia Environmental

Map 1-1
Subject Land and Locality

0 1,000 2,000 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 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
- Commonwealth Government Species Profiles and Threats (SPRAT) database http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl
- Commonwealth Department of Climate Change, Energy, the Environment and Water Protected Matters Search Tool https://pmst.awe.gov.au/#/map?lng=131.50634765625003&lat=-28.671310915880834&zoom=5&baseLayers=Imagery,ImageryLabels
- NSW Threatened Biodivertsity Database Collection (TBDC) https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet
- Australia's IBRA Bioregions and sub-bioregions http://environment.gov.au/land/nrs/science/ibra/australias-bioregions-maps
- Department of Environment and Climate Change NSW (DECC) (2002). Descriptions for NSW (Mitchell) Landscapes, Version 2.
- NSW Government SEED Mapping & SEED Layer Intersection Tool
- ePlanning spatial viewer https://www.planningportal.nsw.gov.au/spatialviewer
- NSW Biodiversity Values Map
- State Vegetation Type Map (SVTM) Dec 2023
- NSW Spatial Services SixMaps https://maps.six.nsw.gov.au
- Goulburn Mulwaree Local Environment Plan

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

- 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 3 of this report.

2.2. Field Survey

The study area was surveyed by an ecologist on 13 July 2024 from late morning to late afternoon, conditions were clear and mild, rain had fallen over the previous week. Rainfall has been more than typical over the past three years which could impact the range of flora recorded.

Conditions were adequate for opportunistic fauna survey, an assessment of habitats present was made that also sufficiently considers the potential for fauna to occur on the site.

Surveys were adequate for and of sufficient time to satisfactorily assess each vegetation community in the vicinity of the project area, effort was focused on areas of direct impact of the proposal particularly the development footprint, along existing access tracks and existing bushfire asset protection zone. Other areas of the study area were also inspected briefly to confirm vegetation communities present, potential weed issues, habitats available including artificial structures and potential for threatened matters occurring.

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 including using RPA photography was made aiding in documenting the site characteristics and confirming flora identification.

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 and biodiverse areas 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.

Where present, artificial structures such as culverts, dams, service pits and structures were also considered for their habitat value.

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, Syd.

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. Despite this, 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 minimal nature of the proposal's impacts.

Surveys were adequate to determine native vegetation extent and therefore to calculate native vegetation clearing, the potentially reduced species richness detected does not result in environmental planning implications.

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;

3.1.1. Interim Biogeographic Regionalisation for Australia Version 7

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 Monaro Subregion of the South Eastern Highlands IBRA region.

3.1.2. Landform and drainage

The study area occurs at an elevation of 640 to 690m amsl and is gently undulating, generally draining to the west and north toward the Mulwaree Ponds and the Wollondilly River Catchment, part of the Sydney Water supply network.

The existing road has altered the natural drainage directing water flow from the road surface, along dish drains to the natural drainage system.

3.1.3. Soils and geology

The NSW Soil and Land Information Soil Landscape Mapping identifies the '*Blakney Creek*' Soil Landscape on the study area.

This soil landscape is found in the central and eastern parts of the state, associated with undifferentiated Ordovician and early Silurian sediments wherever they occur in conjunction with footslopes and valley floors or other landform patterns particular valleys within undulating low hills. Elevations from 600 – 900 m. Slope gradients are usually <10%. Local relief between 20 – 50 m. Closely to very widely spaced permanent erosional stream channels, form non-directional or convergent integrated tributary pattern. Many springs occur following good falls of rain.

Native vegetation is described as Savannah woodland of yellow box and blakelies redgum and dry sclerophyll forest dominated by red stringybark. Snow gum is found at higher altitudes and in frost pockets. Extensive clearing has taken place and only scattered trees remain.

Site conditions are consistent with these descriptions.

3.1.4. Environmental planning

3.1.4.1. Goulburn Mulwaree Local Environmental Plan 2009 (LEP)

Land Use Table

Under this instrument most of the project area is zoned RU1 Primary Production and Zone RU2 Rural Landscape, these zonings encourage primary production operations while catering for a range of uses while maintaining the rural character of the land. Objectives also encourage protection and management of areas of high conservation, scientific, cultural or aesthetic values and protection/ enhancement of receiving watercourses and groundwater systems. A small part of the works occur in Zone C3 Environmental Management which allows similar uses with a higher emphasis on protection of environmentally sensitive land and areas of high conservation value.

LEP Clause 7.2 Terrestrial biodiversity

The whole of the subject site is mapped by the LEP as "*Biodiversity*", as such Clause 7.2 Terrestrial biodiversity applies.

The objectives of this clause are to protect, maintain or improve the diversity of the native vegetation, including;

- protecting biological diversity of native flora and fauna, and
- protecting the ecological processes necessary for their continued existence, and
- encouraging the recovery of threatened species, communities or populations and their habitats.

Under this Clause;

(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority has considered a report that addresses the following matters—

(a) identification of any potential adverse impact of the proposed development on any of the following—

(i) a native vegetation community,

(ii) the habitat of any threatened species, population or ecological community,

(iii) a regionally significant species of plant, animal or habitat,

(iv) a habitat corridor,

(v) a wetland,

(vi) the biodiversity values within a reserve, including a road reserve or a stock route, and

(b) a description of any proposed measures to be undertaken to ameliorate any such potential adverse impact.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development is consistent with the objectives of this clause and—

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

(b) if a potential adverse impact cannot be avoided, the development—

(i) is designed and sited so as to have minimum adverse impact, and

(ii) incorporates effective measures so as to have minimal adverse impact, and

(iii) mitigates any residual adverse impact through the restoration of any existing disturbed or modified area on the site.

Requirements of this Clause is addressed throughout this report.

The proposed development has been designed, sited and managed to avoid potential adverse environmental impacts, effective measures are incorporated to minimise adverse impacts and are detailed in Section 9 of this report. The proponent considered alternatives for siting the works and subsequently determined that the least impact to biodiversity would result from siting the development in existing cleared and earth worked areas.

3.1.4.2. 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 land zoning, RU2 Rural Landscape.

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.

3.1.4.3. 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 3 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 has been 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.

3.1.4.4. Commonwealth 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 and have been addressed along with BC Act listed matters. Section 5 of this report addresses the EPBC Act.

3.1.5. 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 under the Biodiversity Assessment Method (BAM) and entry to the BC Act's Biodiversity Offset Scheme (BOS). The thresholds are a native vegetation area clearing trigger, the Biodiversity Values Map trigger and the significant impact to listed matters trigger,

while these triggers do not apply to Part V projects as they do to Part IV each are detailed below.

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

At this site the native vegetation clearing threshold to trigger the BOS is 10 000m^2. 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.

Vegetation clearing for the proposal is limited to up to 1.2m on each side of the existing road seal, often in parts of the existing road formation. Most of this vegetation is exotic, the westerly 2800m of the project impacts native vegetation, this totals 3360m^2 of native vegetation, an additional 54m^2 of native vegetation would need to be cleared on other parts of the site were regrowth is encroaching on the immediate edge of the road and where culvert extensions require clearing. The total of native vegetation impacted is up to 3420m^2.

As native vegetation clearing proposed is less than the 10 000m^2 trigger for this site, the native vegetation clearing trigger is not activated.

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

Three parts of the subject land are mapped on the BVM in riparian areas, the two most westerly would not be impacted by the works as they are where existing bridges occur that do not require works as part of the project. The most easterly BVM mapped area is at Saltpetre Creek where the existing culvert requires upgrading, see Figure 3-1 below. While this would trigger entry into the BOS for a Part IV project, as this proposal is being assessed under Part V, entry into the BOS is optional. As the works proposed are very minor and the impacted area is not of high biodiversity value it has been considered assessment through the BOS is not warranted and that biodiversity assessment and mitigation undertaken by this report is adequate.

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 3 and are discussed in Section 4 of this report. This assessment found that no listed matter is at risk of a significant impact and this trigger is not activated.

Application of the BAM

While the proposal does trigger two BAM thresholds entry is optional for a Part V project. Given the minor nature of the works and limited impact on biodiversity it has been found that entry to the BOS is not warranted and biodiversity impacts can be adequately assessed and managed through this Biodiversity Assessment Report.

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. In some parts of the landscape native vegetation communities are relatively intact, particularly on upper slopes and ridges, however they can rarely be considered 'old growth' having suffered disturbance and clearing periodically in the past.

Areas of native vegetation persisting in the landscape close to and on the subject land are mapped by the NSW State Vegetation Type Map as being of the following Plant Community Types (PCT) which are illustrated in Figure 3-2 SVTM Plant Community Types;

PCT ID	PCT Name	Vegetation Formation	Vegetation Class
3650	Goulburn-Lithgow Ranges Silvertop Ash Forest	Dry Sclerophyll Forests (Shrubby sub-formation)	South East Dry Sclerophyll Forests
3738	Goulburn-Lithgow Tableland Hills Grassy Forest	Dry Sclerophyll Forests (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests
3746	Southern Tableland Snow Gum-Candlebark Shrub Forest	Dry Sclerophyll Forests (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests
3747	Southern Tableland Western Hills Scribbly Gum Forest	Dry Sclerophyll Forests (Shrubby sub-formation)	Southern Tableland Dry Sclerophyll Forests
3932	Central and Southern Tableland Swamp Meadow Complex	Freshwater Wetlands	Montane Bogs and Fens
3415	Southern Tableland Red Grass-Spear Grass Grassland	Grasslands	Temperate Montane Grasslands
3373	Goulburn Tableland Box-Gum Grassy Forest	Grassy Woodlands	Southern Tableland Grassy Woodlands
3374	Goulburn Tableland Peppermint Grassy Forest	Grassy Woodlands	Southern Tableland Grassy Woodlands
3376	Southern Tableland Grassy Box Woodland	Grassy Woodlands	Southern Tableland Grassy Woodlands
3338	Goulburn Tableland Frost Hollow Grassy Woodland	Grassy Woodlands	Tableland Clay Grassy Woodlands
3303	Central Tableland Ribbon Gum Sheltered Forest	Wet Sclerophyll Forests (Grassy sub-formation)	Southern Tableland Wet Sclerophyll Forests

The following PCTs are associated with the Threatened Ecological Community listing;

Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions.

- 3415 Southern Tableland Red Grass-Spear Grass Grassland
- 3338 Goulburn Tableland Frost Hollow Grassy Woodland
- 3303 Central Tableland Ribbon Gum Sheltered Forest

The following PCTs are associated with the Threatened Ecological Community listing;

White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney

Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions.

- 3374 Goulburn Tableland Peppermint Grassy Forest
- 3373 Goulburn Tableland Box-Gum Grassy Forest
- 3376 Southern Tableland Grassy Box Woodland
- 3338 Goulburn Tableland Frost Hollow Grassy Woodland

Figure 3-2 SVTM Plant Community Type mapping in the vicinity of the project area.

Site conditions showed this mapping is generally accurate reflecting likely past distribution of plant communities however many remnants of native vegetation that are present do not appear in the mapping, under representing the native vegetation in the landscape.

PCT 3338 Goulburn Tableland Frost Hollow Grassy Woodland is mapped in the vicinity of the project area from Braidwood Road to west of the railway line. This community is described as;

> *A mid-high to tall sclerophyll grassy woodland to open forest found on gentle lower slopes and broad valley floors of undulating tableland landscapes in north-east parts of the Southern Tablelands. The known distribution is from Queanbeyan east to Braidwood and Charleyong, and north to Laggan, Taralga and Uringalla Creek. This PCT occurs at elevations of 600-950 metres asl, with means of 650-860 mm annual rainfall and 16-36 frost days annually. A sparse to mid-dense tree canopy very*

frequently includes Eucalyptus pauciflora, occasionally with Eucalyptus rubida. A distinct shrub layer is often absent, and the most common shrub species are occasional small sub-shrubs Pimelea curviflora and Bossiaea prostrata, with Astroloma humifusum, Melichrus urceolatus, or the taller Acacia mearnsii recorded rarely. The ground layer is characteristically grassy, almost always dominated by Themeda triandra, very frequently with other grasses Microlaena stipoides and Poa sieberiana, commonly with Elymus scaber and occasionally Aristida ramosa, Poa meionectes, Dichelachne micrantha or various Rytidosperma species (Rytidosperma caespitosum, R. pilosum, R. racemosum or R. laeve). The daisies Chrysocephalum apiculatum, Leptorhynchos squamatus and Calocephalus citreus are also common to occasional components of this community, along with a diverse suite of forbs that commonly include Hypericum gramineum, Gonocarpus tetragynus, Hydrocotyle laxiflora, Lomandra filiformis and Tricoryne elatior, and occasionally Asperula conferta, Plantago varia, Scleranthus biflorus or Dichondra repens. This community may grade into PCT 3373 on slightly higher parts of the landscape less subject to winter cold air pooling and frosts. On frequently damp soils along drainage lines it may be replaced by PCT 3347.

Remnants of PCT 3338 Goulburn Tableland Frost Hollow Grassy Woodland persist in the road reserve east of the railway line, this is mostly represented by clumps of or isolated *Eucalyptus pauciflora* (Snow Gum) and occasionally *Eucalyptus viminalis* (Manna Gum). Very few native understory or ground covers remain. Prior to clearing this PCT would have covered the low broad valleys of this part of the project area. Currently, the vast majority of the vegetation in this part of the project area is composed of exotic pasture grasses particularly *Phalaris aquatica* (Phalaris), the exotic shrub *Crataegus monogyna* (Hawthorn).

The PCT 3747 Southern Tableland Western Hills Scribbly Gum Forest is mapped in parts of the western end of the project area and parts of the adjoining slopes and ranges. This community is described as;

A mid-high to tall dry shrubby sclerophyll open forest of slopes and crests of dry, rocky tableland hills and ranges, at moderate altitudes across the Central Tablelands and northern parts of the Southern Tablelands. This PCT is widely distributed from Mullions Range east to the slopes of Mount Vincent and to Windeyer and Rylstone in the north, south to Mundoonen Range, Bungonia, and Cuumbeun east of Queanbeyan in the south. It generally occurs at elevations of 500-1200 metres asl and in locations receiving 600-920 mm mean annual rainfall, commonly on quartz-rich sedimentary, acid volcanic and granitoid substrates, with scattered occurrences in areas mapped as shales or mudstones. A sparse to mid-dense tree canopy very frequently includes Eucalyptus macrorhyncha and or Eucalyptus rossii, commonly with Eucalyptus mannifera and occasionally Eucalyptus goniocalyx. A sparse shrub layer very frequently includes Hibbertia obtusifolia, commonly with Daviesia leptophylla and Brachyloma daphnoides and occasionally Acacia gunnii, Monotoca scoparia or Melichrus urceolatus. The ground layer is sparse to mid-dense, and very frequently includes large tussocks of Rytidosperma pallidum, which dominates with a high cover, and Lomandra filiformis, Poa sieberiana, Dianella revoluta, Gonocarpus tetragynus and Goodenia hederacea. Also common is Hovea linearis (most records likely to be Hovea heterophylla), with Lomandra multiflora subsp. multiflora occasional. On lower slopes with increasing depth of accumulated soil, this community may grade into a variety of grassy open forest communities, such as PCT 3370 in relatively moist parts of its range or PCT 3372 in relatively dry parts. With decreasing rainfall and increasing temperatures it is replaced on similar rocky hills to the west by PCT 3353.

Along with others, the PCT 3373 Goulburn Tableland Box-Gum Grassy Forest is mapped in pockets along the project area and adjoining lower slopes, This community is described as;

A mid-high to tall dry sclerophyll grassy open forest to woodland of northern parts of

the Southern Tablelands, occurring from Canberra and Queanbeyan north to Pejar and east to Durran Durra and Canyonleigh, with a northern outlier at Golspie. It is found in landscape positions with moderately deep soil profiles, particularly footslopes of gently undulating low hills, on a wide range of substrates including sedimentary (sandstone, arenite, greywacke, shale), acid volcanic (ignimbrite, rhyolite) and granitic rocks. This PCT is found at elevations of 600-850 metres asl with mean annual rainfall of 650-800 mm. Remnants of this community often have a long history of disturbance and the tree canopy may be sparse to very sparse, commonly including Eucalyptus melliodora and occasionally with Eucalyptus macrorhyncha, Eucalyptus blakelyi or Eucalyptus dives. A very sparse shrub stratum commonly includes scattered Lissanthe strigosa, Pimelea curviflora, Melichrus urceolatus or Hibbertia obtusifolia, while the ground layer is predominantly grassy and commonly includes Themeda triandra, Microlaena stipoides, Poa sieberiana, Elymus scaber and Aristida ramosa, with occasional high cover of Rytidosperma laeve. Common forbs include Lomandra filiformis, Lomandra multiflora subsp. multiflora, Goodenia hederacea, Hydrocotyle laxiflora, Oxalis perennans, Chrysocephalum apiculatum, Tricoryne elatior, Gonocarpus tetragynus and Hypericum gramineum. In lower landscape positions subject to cold air drainage this community may be replaced by PCT 3338, while on stony dry hills it commonly grades into PCT 3747.

From the railway line westerly for 1020m, woody vegetation becoming established the road reserve is largely non indigenous native species spreading from nearby agricultural plantings. These invasions persist into natural communities continuing further westerly, on the lower slopes of the Komungla Range. Here several of the above PCTs integrate into one another for the remainder of the project area. Two PCTs most strongly represented are 3747 Southern Tableland Western Hills Scribbly Gum Forest and 3373 Goulburn Tableland Box-Gum Grassy Forest

The PCT 3747 Southern Tableland Western Hills Scribbly Gum Forest is represented by *Eucalyptus rossii* (Inland Scribbly Gum) and *E. macrorhyncha* (Red Stringybark) which are both common along the road reserve along the western third of the project area, pockets of 3373 Goulburn Tableland Box-Gum Grassy Forest are represented by the occasional *E. melliodora* (Yellow Box) tree and clumps of *E. amplifolia* (Cabbage Gum) or *E. bridgesiana* (Apple Box).

Understory and groundcover species for each of these PCTs are similar and those occurring on the site are common to both weakening delineation between these PCTs.

Acacia decurrens (Black Wattle) is a common understory species occurring along much of this alignment along, occasionally *Allocasuarina littoralis* (Black She-Oak) or *Cassinia sifton* (Sifton Bush) become abundant.

Native grassland derived from the above communities is also common in this section of road reserve. It is typically dominated by *Themeda triandra* (Kangaroo Grass) or in other places *Austrostipa spp*. Spear Grasses and *Rytidosperma spp*. (Wallaby Grasses). A range of common native forbs also occur. the general condition of vegetation across the site is illustrated by photos provided in Appendix 1 Site Photographs.

A full list of flora recorded is provided in Appendix 2.

The threatened species of daisy *Leucochrysum albicans subsp. tricolor* (Hoary Sunray) which is reasonably common in the Southern Tablelands was recorded in the project area. It is listed as Endangered under both the BC Act and the EPBC Act.

Two eucalypt species were recorded that are not indigenous to the local area though are listed as threatened species;

- *Eucalyptus crenulata* (Buxton gum) listed as Endangered under the EPBC Act and

as Endangered in the state of Victoria (Flora and Fauna Guarantee Act 1988, Victoria).

- *Eucalyptus nicholii* (Narrow-leaved Black Peppermint) listed as Vulnerable under the BC Act and Vulnerable under the EPBC Act.

While these are listed as threatened species their occurrence in the project area is un-natural, and are well outside their natural range having been introduced into nearby lands for agricultural plantings and have subsequently spread into the road reserve. While they do contribute to the local biodiversity to an extent they degrade the quality of locally occurring ecosystems that have evolved specific compositions that support flora and fauna that natural occur in the area. Due to their reduced conservation value in the local context they have not been considered further as species at risk of impact by the proposal.

No other flora species were recorded that are listed under the BC Act and EPBC Act.

The Threatened Ecological Community *Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions* was recorded in the project area.

Threatened matters recorded as part of this assessment are shown on Map 3-1, this map does not necessarily record every occurrence or habitat of illustrated species and communities. It must not be assumed that the absence of mapping indicates no biodiversity values are present, particularly in the road reserve outside the development footprint.

The exotic species Blackberry and Gorse were recorded on the subject land and are classed as a Weeds of National Significance listed under the Biosecurity Act 2015, the land manager must prevent, eliminate or minimise the biosecurity risk that this species poses so far is reasonably practical. The construction phase of the development must have strategies in place to prevent the spread of these species on the subject land as well as on other properties.

3.3. Fauna and Fauna Habitat

The subject land offers a range of habitat components that would support the habitation, foraging and movement of a wide range of native fauna. Arboreal habitat is common, particularly at the western end and widespread across the subject land, trees of a range of age classes and species are present, supporting fissures and small hollows suited to small birds, arboreal mammals and tree roosting bats. Trees and shrubs are also suited to nesting birds and drey building mammals.

Foraging habitat present is suited to fauna well adapted to dry sclerophyll forest and woodland ecosystems, particularly those that do well in cleared landscapes. The abundant wattles offer sap that is of use to several fauna particularly sugar gliders.

Seasonally flowering/ fruiting grasses and forbs offer nectar for short periods of the year which are an important part of the diet of many insects and birds.

Insectivorous birds and bats as well as carnivorous fauna are generally also able to forage across this site particularly at warmer times of the year during periods of greater biotic activity.

The several watercourses that traverse the project site are valuable habitat providing a water source for all fauna and habitat for frogs and other fauna making use of water plants. These wetland areas are in particularly good condition for a rural landscape and form a hub of ecological activity.

Continuity across the study area as well as beyond the study area across the landscape is good, generally there is very little disruption to connecting habitats, impediments include narrow tracks, minor roads, and cleared corridors of agricultural lands.

The subject land's close proximity to large areas of intact forest as well as woodland remnants across the landscape significantly increases its value to fauna, it is likely that a range of fauna make use of resources in the subject land periodically.

Common birds including Australian magpie, white wing chough and crimson rosellas were observed, along with signs of macropods.

As formal fauna surveys were not undertaken habitats available were considered for their potential to support threatened species.

No fauna species or fauna habitats were recorded or considered likely to occur that are important in the impacted area, for listed matters under the BC Act or the EPBC Act, see Appendix 3 for specific discussion of potentially occurring species.

3.4. Impacts

The proposal will rehabilitate 9.7km of a rural road, re-establishing degraded wearing surfaces, establishing a 1-2m shoulder and minor vertical and horizontal improvements. To complement these works accompanying causeways will be upgraded to box culverts and existing culverts will be widened, as required to accommodate the rehabilitated road design. Associated road furniture, barrier installation and line marking will occur.

These works will be retained within the existing worked area of the road formation and drainage, in many cases vegetation has encroached on these areas and will be impacted.

Construction impacts

Works outside the existing sealed road will require vegetation clearing up to 1.2m on each side of the existing road seal, often in parts of the existing road formation where vegetation has become established. Most of this vegetation is exotic, the westerly 2800m of the project impacts native vegetation, this totals 3360m^2 of native vegetation, an additional 54m^2 of native vegetation would need to be cleared on other parts of the site were regrowth is encroaching on the immediate edge of the road and where culvert extensions require clearing.

The total of native vegetation permanently impacted is up to 3420m^2 of roadside secondary grassland and immature woody vegetation including non-indigenous native regeneration.

Other impacts to vegetation is the removal of up to 17000m^2 of exotic grassland and understory.

Temporary impacts

Stockpiling during construction will occur in existing stockpile areas on Currawang Road.

Erosion and sediment controls will be employed where required and be low impact, not requiring the removal of mature trees.

Each proposed culvert replacement will require a temporary side track and crossing this will require temporary impacts to existing grassland vegetation as follows;

- Up to 800m^2 (5m wide impact area for 160m) of native and exotic grassland for culvert at ch960 &
- Up to 365m^2 (5m wide impact area for 80m -35m^2 existing driveway) of native and exotic grassland for culvert at ch2797

All temporary impacts to vegetation will be remediated through planting of native vegetation.

Operation phase impacts

The operation of the development would result in impacts consistent with the existing uses of the subject land.

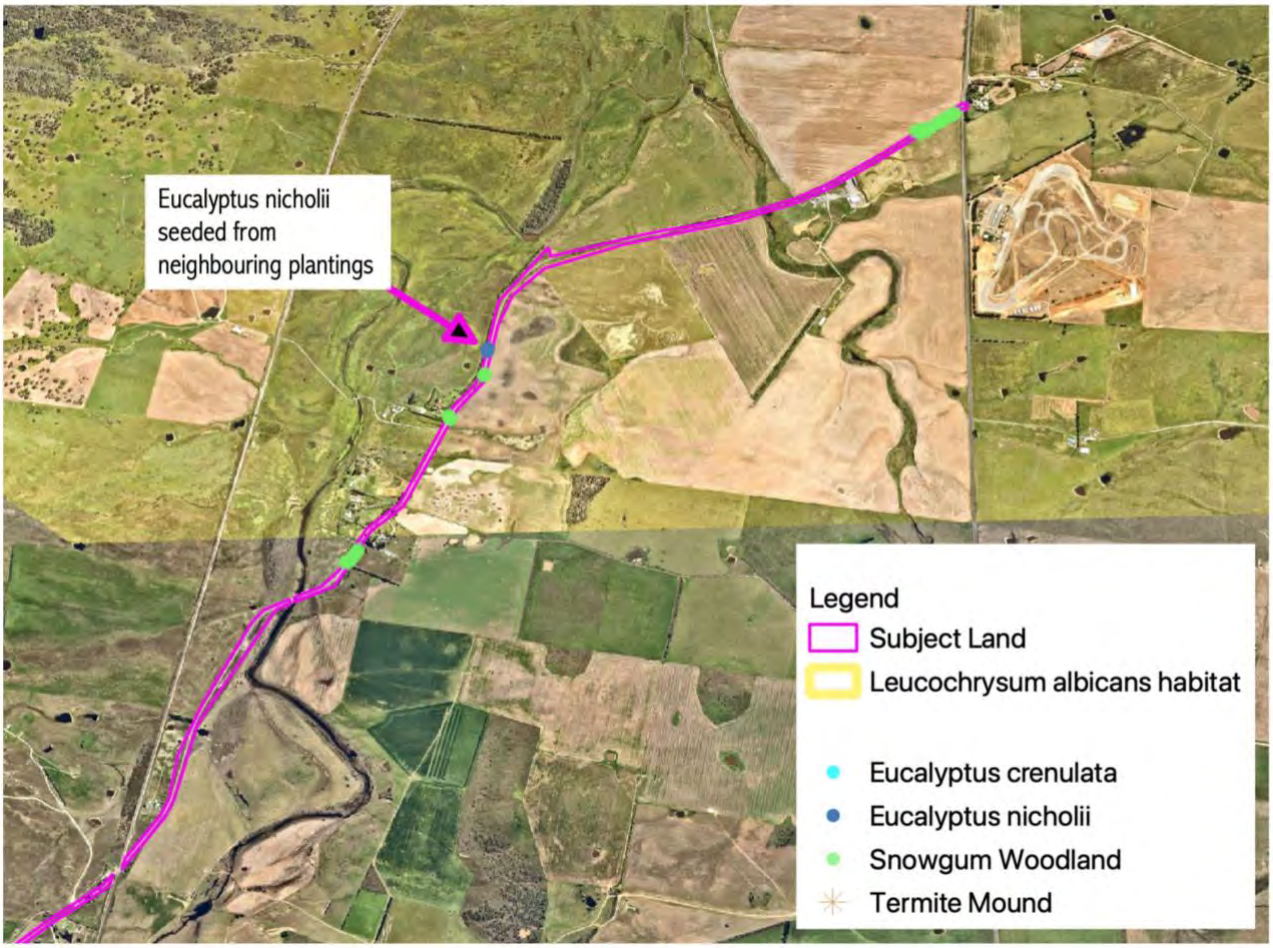
Cumulative impacts

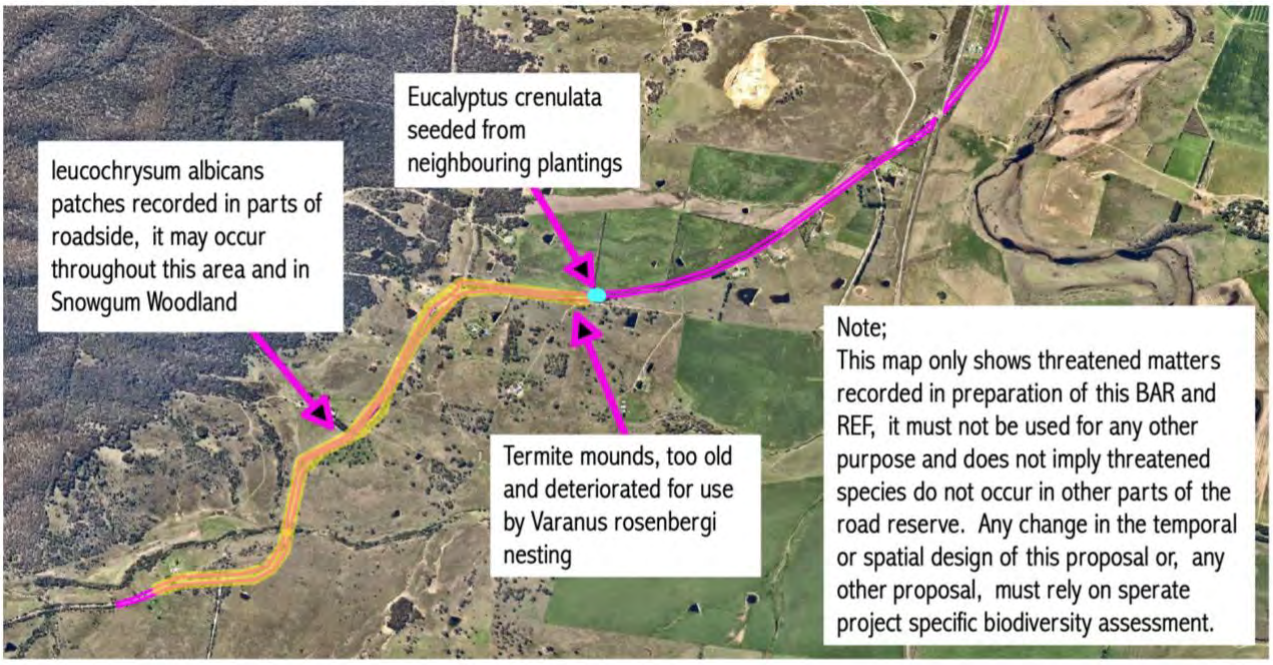
The proposal is consistent with the permitted activities of the land zoning and consistent with controls of the local planning environment.

If well managed and appropriately assessed under the current planning framework cumulative impacts of this and subsequent developments will result in acceptable cumulative impacts.

Consideration of combined impacts

The magnitude of impact on biodiversity values of the proposed development are low, no vegetation communities or habitats will be significantly modified or impacted to an extent that they would become limited in the landscape or hinder biological continuity.





Macrozamia Environmental

Map 3-1
Threatened Matters
Recorded on Subject Land

0 500 1,000 m

4. Threatened Species, Populations and Ecological Communities

The potential for protected matters to be impacted by the proposed development has been assessed in the threatened matter evaluations table at Appendix 3 of this report.

The findings of this assessment are as follows;

4.1. Threatened species

Appendix 3 addressed several listed species that have been recorded within 10km of the study area or wider areas of the Southern Tablelands and considered to have some potential to occur on the site.

Following this assessment, it was considered that one species warranted further assessment, A Test of Significance was undertaken in line with the Threatened Species Test of Significance Guidelines, OEH 2018. This test concluded;

A significant impact on;

- *Leucochrysum albicans subsp. tricolor*

  Hoary Sunray

Is found to be **not likely** as a result of the proposal;

- The proposal will not affect the lifecycle of this species such that the local population will be at risk of loss
- The proposal will not remove any potential important habitat for this species
- The proposal will not fragment or isolate potential habitat for this species
- Key threatening processes are minor and not permanent
- The proposal will not impact areas of Outstanding Biodiversity Value
- Indirect impacts are not of a scale that are likely to impact these species or their habitat.

No other Threatened Species listed under the BC Act were considered likely to occur on the site or be impacted by the proposal.

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. Threatened Ecological Communities

Appendix 3 addressed 2 listed communities, following this assessment, it was considered that one community warranted further assessment; A Test of Significance was undertaken in line with the Threatened Species Test of Significance Guidelines, OEH 2018. This test concluded;

A significant impact on;

- *Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions*

  Temperate Grassy Woodland

Is found to be **not likely** as a result of the proposal;

- The proposal will not affect the lifecycle of this species such that the local population will be at risk of loss
- The proposal will not remove any potential important habitat for this species

- The proposal will not fragment or isolate potential habitat for this species
- Key threatening processes are minor and not permanent
- The proposal will not impact areas of Outstanding Biodiversity Value
- Indirect impacts are not of a scale that are likely to impact these species or their habitat.

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" of the nine matters of national environmental significance, 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 3 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 additional matters were considered likely to be 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 habitat.

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.

6.1. Chapter 3 Koala habitat protection 2020

Chapter 3 Koala habitat protection 2020 applies to the majority of the project area where zoned RU1 Primary Production and RU2 Rural Landscape.

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. In the context of this proposal the following sections are applied;

> *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.*

1. Is the land potential koala habitat?

Potential koala habitat is present in the road reserve including *BC SEPP Schedule 1 Feed tree species—Chapter 3* species.

2. Is the land core koala habitat?

The BC SEPP defines *core koala habitat* as *an area of land with a resident population of koalas, evidenced by attributes such as breeding females, being females with young, and recent sightings of and historical records of a population*.

No indications of a resident koala population were detected on the project area, it is unlikely to be *core koala habitat*.

6.2. Chapter 4 Koala habitat protection 2021

This Chapter applies to the small part of the project area zoned C3 Environmental Management, it aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. This Chapter states;

4.9 Development assessment process—no approved koala plan of management for land

(1) This section applies to land to which this Chapter applies if the land—

(a) has an area of at least 1 hectare (including adjoining land within the same ownership), and

(b) does not have an approved koala plan of management applying to the land.

(2) Before a council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat.

(3) If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application.

(4) If the council is satisfied that the development is likely to have a higher level of impact on koalas or koala habitat, the council must, in deciding whether to grant consent to the development application, take into account a koala assessment report for the development.

While koala habitat is present in the road reserve, the development area is outside koala habitat, no koala habitat will be impacted directly by the works.

Given the minor and short-term nature of the works it's unlikely indirect impacts are of a magnitude that would impact nearby koala habitat.

The proposal *is likely to have low or no impact on koalas or koala habitat*.

7. NSW 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.

This BAR considers the parts of the FM Act that relate to biodiversity.

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.

Saltpetre Creek is mapped as Key Fish Habitat. However, the proposed upgrade of the existing causeway crossing and its replacement with a Box culvert crossing at the Saltpetre Creek will not cause any long-term alteration to water levels or flow, and is not likely to lead to any long-term adverse impacts on fish habitat or passage. The replacement of the existing causeway crossing located at Chainage 2800 also will not cause any long-term alteration to water levels or flow and is not likely to lead to any long-term adverse impacts on fish habitat or passage.

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

The proposal will result in the following direct impacts on biodiversity;

- Removal of up to 3420m^2 of roadside secondary grassland and immature woody vegetation including non-indigenous native regeneration
- Removal of up to 17000m^2 of exotic grassland and understory vegetation along the existing road edges
- Temporary removal of up to 1165m^2 of exotic grassland to accommodate the proposed temporary side tracks and crossings.

8.2. Indirect Impacts

Construction and operation impacts are confined to the subject land, it is very unlikely biodiversity will be indirectly impact by the development. There is potential however for the works to spread weed material across the project area or to other sites, impact mitigation measures at Section 9 of this report mitigate this risk.

8.3. Potential Impacts on Flora

Vegetation impacts described above will not significantly impact any threatened flora or endangered ecological communities. Land uses will be consistent with current land uses of the site.

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

8.4. Potential Impacts on Fauna and Habitat

No areas important habitat components for fauna will be impacted. Habitat resources impacted are all common and widespread throughout the landscape. Impacts will not fragment habitat to any extent than is currently the case and will not impede the movement of fauna.

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 The proponent must ensure that construction works do not import weed material to or from the project area, for example, in or on plant and equipment used to develop 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;
    a. 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
    b. 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 A vegetation management plan must be prepared by a suitably qualified and experienced person to manage the clearing and grubbing of native vegetation for the works and to protect vegetation that is not to be impacted. This plan is to be implemented and meet the following criteria;

- The plan will be prepared with consideration of the final construction plans for the works
- The plan will ensure that snowgum woodland is not at risk of impact from the construction of temporary side tracks and include a remediation plan to be implemented following removal of side tracks that ensures these areas are rehabilitated with native grasses suitable to the site
- The plan will prescribe measures that will minimise the impact the works will have on the extent of vegetation impacted including methodology for the protection of retained vegetation
- Pre-clearing surveys will be undertaken to ensure sedentary fauna (such as nesting fauna) are not present during clearing, hollow bearing trees will be identified prior to clearing and will be removed under the supervision of an ecologist
- Results of preclearing surveys, removal of habitat and any other relevant matters will be documented in a post clearing report that may recommend ameliorative or offsetting measures.

9.3 In order to protect diverse native grassland and threatened species habitat occurring on batters at the western end of the works the following measures are to be implemented west of Chainage 6318, measured from Braidwood Road as indicated in Figure 9-1.

- Works are to be restricted to the existing road formation and drainage structures
- Vegetation on existing batters is not to be disturbed, including by excavation, parking or trafficking plant and machinery.

Figure 9-1, applicable area for Impact Mitigation Measure 9.3, indicated in green dotted line.

10. Conclusion

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

The proposed development has been designed and sited so as to avoid and minimise impacts to biodiversity values. Residual impacts have been considered through this assessment which has found impacts on biodiversity to be low.

Tests of Significance were undertaken for the following matters in accordance with the NSW DPIE Threatened Species Test of Significance Guidelines;

- *Leucochrysum albicans subsp. tricolor*

  Hoary Sunray &
- *Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions*

These tests concluded the proposal was not likely to result in a significant impact to either matter.

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

The proposal is not likely to have a significant impact on listed threatened species, populations or ecological communities.

There are no other biodiversity issues associated with this proposal the net impact of this proposal on flora and fauna and biodiversity generally will be negligible.

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Appendix 1 – Site Photographs

Photo 1; typical view of project area, eastern end. Exotic Hawthorn on roadside foreground, Snowgum Woodland in background.

Photo 2; Saltpetre Creek causeway requiring replacement, facing west.

Photo 3; Causeway at Ch1864 requiring replacement, facing west

Photo 4; Native dominant roadside vegetation at western end of works, batters are often colonised by native grassland in this area of the project

Photo 5; Existing stockpile area in road reserve.

Photo 6, *Leucochrysum albicans subsp. tricolor* (Hoary Sunray) a threatened species growing on the existing road formation, 14 individuals of this species can be seen in this image.

Appendix 2 – Flora Recorded

Flora Recorded

Family	Name	Common Name	BC Listing	EPBC Listing	Exotic
Anthericaceae	*Tricoryne elatior*	Yellow Autumn-lily			
Apiaceae	*Centella asiatica*	Indian Pennywort			
Apiaceae	*Hydrocotyle laxiflora*	Stinking Pennywort			
Asphodelaceae	*Bulbine bulbosa*	Bulbine Lily			
Asphodelaceae	*Dianella revoluta*	Blueberry Lily			
Asteraceae	*Arctotheca calendula*	Capeweed			*
Asteraceae	*Cassinia sifton*	Sifton Bush			
Asteraceae	*Chrysocephalum apiculatum*	Common Everlasting			
Asteraceae	*Cirsium vulgare*	Spear Thistle			*
Asteraceae	*Conyza spp.*				*
Asteraceae	*Cotula australis*	Common Cotula			
Asteraceae	*Cymbonotus lawsonianus*	Bear's Ear			
Asteraceae	*Euchiton spp.*				
Asteraceae	*Hypochaeris radicata*	Catsear			*
Asteraceae	*Leucochrysum albicans subsp. tricolor*	Hoary Sunray	E1	E	
Asteraceae	*Onopordum acanthium subsp. acanthium*	Scotch Thistle			*
Asteraceae	*Sonchus asper*	Prickly Sowthistle			*
Asteraceae	*Taraxacum officinale*	Dandelion			*
Asteraceae	*Triptilodiscus pygmaeus*	Common Sunray			
Boraginaceae	*Echium plantagineum*	Patterson's Curse			*
Campanulaceae	*Wahlenbergia spp.*	Bluebell			
Caryophyllaceae	*Petrorhagia nanteuilii*	Proliferous Pink			*
Casuarinaceae	*Allocasuarina littoralis*	Black She-Oak			
Chenopodiaceae	*Einadia nutans*	Climbing Saltbush			

Family	Name	Common Name	BC Listing	EPBC Listing	Exotic
Cyperaceae	*Carex appressa*	Tall Sedge			
Cyperaceae	*Cyperus eragrostis*	Umbrella Sedge			*
Cyperaceae	*Lepidosperma laterale*	Variable Sword-sedge			
Dennstaedtiaceae	*pteridium esculentum*	Bracken			
Ericaceae	*Astroloma humifusum*	Native Cranberry			
Ericaceae	*Brachyloma daphnoides*	Daphne Heath			
Ericaceae	*Lissanthe strigosa*	Peach Heath			
Ericaceae	*Melichrus urceolatus*	Urn Heath			
Fabaceae (Faboideae)	*Daviesia latifolia*	Bitter-pea			
Fabaceae (Faboideae)	*Hardenbergia violacea*	Hardenbergia			
Fabaceae (Faboideae)	*Trifolium spp.*				*
Fabaceae (Faboideae)	*Ulex europaeus*	Gorse			*
Fabaceae (Faboideae)	*Vicia sativa*	Common vetch			*
Fabaceae (Mimosoideae)	*Acacia decurrens*	Black Wattle			
Fabaceae (Mimosoideae)	*Acacia falciformis*	Broad-leaved Hickory			
Gentianaceae	*Centaurium erythraea*	Common Centaury			*
Geraniaceae	*Erodium cicutarium*	Common Crowfoot			*
Geraniaceae	*Geranium solanderi*	Native Geranium			
Goodeniaceae	*Goodenia hederacea*	Ivy Goodenia			
Haloragaceae	*Gonocarpus tetragynus*	Poverty Raspwort			
Haloragaceae	*Haloragis heterophylla*	Variable Raspwort			
Juncaceae	*Juncus spp.*				
Lomandraceae	*Lomandra filiformis*	Wattle Matt-rush			
Lomandraceae	*Lomandra longifolia*	Spiny-headed Mat-rush			

Family	Name	Common Name	BC Listing	EPBC Listing	Exotic
Malaceae	*Crataegus monogyna*	Hawthorn			*
Myrtaceae	*Eucalyptus amplifolia*	Cabbage Gum			
Myrtaceae	*Eucalyptus blakelyi*	Blakely's Red Gum			
Myrtaceae	*Eucalyptus bridgesiana*	Apple Box			
Myrtaceae	*Eucalyptus cinnerea*	Argyle Apple			
Myrtaceae	*Eucalyptus crenulata*	Buxton gum		E	**
Myrtaceae	*Eucalyptus macrorhyncha*	Red Stringybark			
Myrtaceae	*Eucalyptus melliodora*	Yellow Box			
Myrtaceae	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	V	V	**
Myrtaceae	*Eucalyptus pauciflora*	Snow Gum			
Myrtaceae	*Eucalyptus rossii*	Inland Scribbly Gum			
Myrtaceae	*Eucalyptus viminalis*	Manna Gum			
Oleaceae	*Ligustrum sinense*	Narrow-leaf Privit			*
Oxalidaceae	*Oxalis perennans*	Oxalis			
Oxalidaceae	*Oxalis sp.*	Oxalis			*
Pinaceae	*Pinus radiata*	Radiata Pine			*
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongues			*
Poaceae	*Aira spp.*				*
Poaceae	*Aristida ramosa*	Purple Wiregrass			
Poaceae	*Aristida spp.*				
Poaceae	*Austrostipa densiflora*	Foxtail Speargrass			
Poaceae	*Austrostipa spp.*				
Poaceae	*Bothriochloa macra*	Red Grass			
Poaceae	*Briza maxima*	Quaking Grass			*
Poaceae	*Bromus spp.*				
Poaceae	*Cynodon dactylon*	Common Couch			
Poaceae	*Dichelachne spp.*				

Family	Name	Common Name	BC Listing	EPBC Listing	Exotic
Poaceae	*Echinopogon sp.*	Hedgehog Grass			
Poaceae	*Eleusine tristachya*	Goose Grass			*
Poaceae	*Eragrostis brownii*	Brown's Lovegrass			
Poaceae	*Eragrostis curvula*	African Lovegrass			*
Poaceae	*Festuca elatior*	Tall Fescue			*
Poaceae	*Holcus lanatus*	Yorkshire Fog			*
Poaceae	*Hordeum leporinum*	Barley Grass			*
Poaceae	*Imperata cylindrica*	Blady Grass			
Poaceae	*Lolium perenne*	Perennial Ryegrass			*
Poaceae	*Microlaena stipoides*	Weeping Grass			
Poaceae	*Paspalum dilatatum*	Paspalum			*
Poaceae	*Phalaris aquatica*	Phalaris			*
Poaceae	*Poa labillardierei var. labillardierei*	Tussock			
Poaceae	*Poa sieberiana*	Snowgrass			
Poaceae	*Rytidosperma spp.*				
Poaceae	*Setaria parviflora*	Bristlegrass			*
Poaceae	*Themeda triandra*	Kangaroo Grass			
Polygonaceae	*Acetosella vulgaris*	Sheep Sorrel			*
Polygonaceae	*Rumex brownii*	Swamp Dock			
Pteridaceae	*Cheilanthes sieberi*	Rock Fern			
Pteridaceae	*Cheilanthes sieberi*	Rock Fern			
Rosaceae	*Acaena novae-zelandiae*	Bidgee-widgee			
Rosaceae	*Pyracantha sp.*	Pyracantha			*
Rosaceae	*Rosa rubiginosa*	Sweet Briar			*
Rosaceae	*Rubus fruticosus sp. agg.*	Blackberry complex			*
Salicaceae	*Populus sp.*	Poplar			*
Santalaceae	*Exocarpos cupressiformis*	Cherry Ballart			
Santalaceae	*Leptomeria acida*	Sour Current			
Scrophulariaceae	*Verbascum sp.*	Mullein			*
Solanaceae	*Lycium ferocissimum*	African Boxthorn			*
Solanaceae	*Solanum nigrum*	Black-berry Nightshade			*

Appendix 3 – 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* applying the *2018 Threatened Species Test of Significance Guidelines.*

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.

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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 visitor to this landscape	Not likely to be impacted Proposal will impact insignificant area of 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 impact insignificant area of 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	V		Potential habitat present	Possible occasional visitor to this landscape	Not likely to be impacted Proposal will impact insignificant area of

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	the species 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.					potential habitat
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 impact likely
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 impact likely
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,	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of 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.*	V		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	gymnathera. Belah (*Casuarina cristata*) is also utilised and may be a critical food source for some 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.					insignificant area of potential habitat
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	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of 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	Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat
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		V	Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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 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.					insignificant area of potential habitat
Neophema pulchella Turquoise Parrot	The male Turquoise Parrot is a highly distinctive bird with bright green upperparts and a turquoise-blue crown and face, its range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter. Forages quietly and may be quite tolerant of disturbance. However, if flushed it will fly to a nearby tree and then return to the ground to browse as soon as the danger has passed. Nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust.	V		Present across landscape	Possible to pass through or forage on site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential foraging habitat
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		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
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	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat
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		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat
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,	V		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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.					
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		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of 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, and young fledge in early summer. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion.	V		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat
Lophoictinia isura Square-tailed Kite	Adults have a white face with thick black streaks on the crown and finer streaks elsewhere. The saddle, rump and central upper tail coverts are blackish with grey-brown barring. The underparts are predominantly grey-brown with black tips on the grey, square-tipped tail and wing edges. Occurs along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of	V		Marginal habitat in landscape	Possible subject land is part of a home range	Unlikely, proposal will not impact potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage. Appears to occupy large hunting ranges of more than 100 square km. Breeding is from July to February, with nest sites generally located along or near watercourses, in a fork or on large horizontal limbs.					
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 occurs, it is likely to forage opportunistically on occasion	Incidental occurrence is possible, unlikely to land on site	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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	E		No specific habitat component for	Incidental occurrence is possible	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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 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.			this species occur		
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.	V		Possible foraging habitat	Possible – may be part of home range	Unlikely to be impacted – no impacts

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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 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.					to required habitat
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	Possible – may be part of home range	Unlikely to be impacted – no impacts to required habitat
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	V		Absent	Possible – may be part of home range	Unlikely to be impacted – no impacts

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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.					to required habitat
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		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat
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		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
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. 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).	V		Present in landscape	Possible to pass through site on occasion	Not likely to be impacted Proposal will impact insignificant area of potential habitat
Ephippiorhynchus asiaticus Black-necked Stork	A distinctive black-and-white waterbird stands 1.3m tall and has a wingspan of around 2m. Widespread in coastal and subcoastal northern and eastern Australia, as far south as central NSW (although vagrants may occur further south or inland, well away from breeding areas). In NSW, the species becomes increasingly uncommon south of the Clarence Valley, and rarely occurs south of Sydney. Since 1995, breeding has been recorded as far south as Buladelah. Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. Storks usually forage in water 5-30cm deep for vertebrate and invertebrate prey. Eels regularly contribute the greatest biomass to their diet, but they feed on a wide variety of animals, including other fish, frogs and invertebrates (such as beetles, grasshoppers, crickets and crayfish). Black-necked Storks build large nests high in tall trees close to water. Trees usually provide clear observation of the surroundings and are at low elevation (reflecting the floodplain habitat). In NSW, breeding activity occurs May - January; incubation May - October; nestlings July - January; fledging from September. Parents share nest duties and in one study about 1.3-1.7 birds were fledged per nest. The NSW breeding population has been estimated at about 75 pairs. Territories are large and variable in size. They have been estimated to average	E		Present in landscape	Possible to pass through site on occasion, the project area borders potential habitat however, this species is considered vagrant this far south in NSW, one has been recorded in the LGA over 25 years ago.	Not likely to be impacted Proposal will impact insignificant area of potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	about 9,000ha, ranging from 3,000-6,000ha in high quality habitat and 10,000-15,000ha in areas where habitat is poor or dispersed.					
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	Potential foraging habitat present	Possible incidental occurrence on occasion	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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 roost and foraging habitat in forests onsite and nearby	Possible	Not likely, potential impacts will not be to habitat present
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 features. Found in well-timbered areas containing gullies. This species probably forages for small, flying insects below the forest canopy.	V	V	Absent	Unlikely	Not unlikely to be impacted, proposal will not significantly impact potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
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		Potential roost and foraging in wider landscape	Possible	Not likely, potential impacts will not be to habitat present
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		Absent, roosting habitat absent.	Unlikely	Unlikely to be impacted
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 two species may form mixed clusters. Only five nursery sites /maternity colonies are known in Australia.	V		Absent, roosting habitat absent.	Possible incidental occurrence	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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	V		Woodland habitat present in landscape	Possible	Not likely, potential impacts will not be to

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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.					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	Possible incidental occurrence	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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.	Possible, 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.	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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	V		Absent	Unlikely	Not unlikely to be impacted, proposal will not significantly impact potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum dreys or thickets of vegetation, (e.g. grass-tree skirts).					
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 in wider landscape however in poor quality.	Unlikely, habitats in landscape do not support this species.	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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
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

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
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.	E	E	Present	Possible	Not likely, potential impacts will not be to habitat present
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, this species is not known from this environment	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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	The majority of records are from within the Sydney Basin Bioregion with only scattered records south to the Victorian border and this		V	Absent, no breeding habitat	Unlikely	Unlikely to be impacted

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Littlejohn's Tree Frog, Health Frog	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.			(permanent streams)		
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		Potential habitat in landscape, no good habitat on site	Possible	Not likely to be impacted Proposal will impact insignificant area of potential habitat
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	Potential habitat in landscape, no good habitat on site	Possible	Not likely to be impacted Proposal will impact insignificant area of potential habitat
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. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.		V	Potential habitat in landscape, no good habitat on site	Possible	Not likely to be impacted Proposal will impact insignificant area of potential habitat

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Tympanocryptis lineata Grassland Earless Dragon	This is a small dragon, with a maximum adult head and body length of around 7 cm, and a maximum overall length of 16 cm. It has three thin white lines running from the neck, along the body and down the tail. These lines divide an irregular pattern of light and dark brown or reddish cross-bands on the back. The only populations now known are in the ACT and adjacent NSW at Queanbeyan, and on the Monaro Basalt Plains between Cooma and south-west of Nimmitabel. Formerly known from Victoria, though no recent records. Within its habitat, apparently prefers areas with a more open structure, characterised by small patches of bare ground between the grasses and herbs. In addition to tussocks, partially embedded surface rocks, and spider and insect holes are used for shelter. These are important micro-habitat elements within the grassland habitat. Rocks and arthropod holes provide important thermal refuges during temperature extremes. Feeds on small invertebrates, including ants and spiders. Tends to be inactive beneath rocks or in arthropod burrows during the winter months.	CE	E	Potential habitat in landscape, no good habitat on site	Possible	Not likely to be impacted Proposal will impact insignificant area of potential habitat
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		Potential habitat in landscape, no good habitat on site	Possible – site may be part of home range	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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,	E	E	Absent, no permanent waterways in project area.	No	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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.					
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 impact
Keyacris scurra Key's Matchstick Grasshopper	Key's Matchstick Grasshopper is a small slender, wingless grasshopper characterised by its slanted face, splayed hind femora (longest segment of the hind leg) and sword-shaped antennae usually found in native grasslands but it has also been recorded in other vegetation associations containing a native grass understory (especially *Themeda triandra*) and known food plants (particularly Asteraceae). Although it does not appear to feed on kangaroo grass, it may be important for providing protection from predators. More recently, however, opportunistic sightings of Key's Matchstick Grasshopper have been reported in a wide range of vegetation types in south-east NSW including wet sclerophyll forest, montane low forest, dry woodlands, heathland and montane grasslands.	E		Potential habitat in landscape, no good habitat on site	Possible	Not unlikely to be impacted, proposal will not significantly impact potential habitat
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	V	V	Absent	Not detected during field surveys –	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	sandstone in the Yerranderie area. Occurs in low woodland on loamy soil in the Windellama area.				unlikely to occur	
Commersonia prostrata Dwarf Kerrawang	A ground-hugging shrub that forms mats to more than 1 m across. Its leaves are up to 4 cm long and 2.5 cm wide, on 5 to 20 mm long leaf-stalks. Occurs on the Southern Highlands and Southern Tablelands (one plant at Penrose State Forest, one plant at Tallong, a small population near the Corang and about 2000 plants at Rowes Lagoon), a larger population in the Thirlmere Lakes area (particularly among the dying reeds at the edge of the water), and on the North Coast (less than 100 plants at the Tomago sandbeds north of Newcastle). It is also found in Victoria Occurs on sandy, sometimes peaty soils in a wide variety of habitats: Snow Gum (Eucalyptus pauciflora) Woodland and Ephemeral Wetland floor at Rowes Lagoon; Blue leaved Stringybark (E. agglomerata) Open Forest at Tallong; and in Brittle Gum (E. mannifera) Low Open Woodland at Penrose; Scribbly Gum (E. haemostoma)/ Swamp Mahogany (E. robusta) Ecotonal Forest at Tomago. Associated native species may include Imperata cylindrica, Empodisma minus and Leptospermum continentale. Appears to respond positively to some forms of disturbance (e.g. some Victorian records are from gravel road surfaces and the Tomago population is on an area previously subject to sandmining), however, there are conflicting reports about the response of the species to fire. The population at the Thirlmere lakes is most abundant in the areas of prior lake bed exposed by the dropping water levels. It is uncertain how long this may remain the case, as many of the individuals are very large, growing among the decomposing bases of bulrushes. It is also found among wattle thickets in the drainage line between the lakes.	E	E	Potential	Not detected during field surveys – unlikely to occur	No impact
Lepidium aschersonii Spiny Peppercress	Erect perennial herb to 30 cm high, hairy and intricately branched, with the smaller branches spinescent. Plants become woody and more spinose in dry conditions. Not widespread, occurring in the marginal central-western slopes and north-western plains regions of	V	V	Absent	Not detected during field surveys –	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	NSW (and potentially the south western plains). In the north of the State recent surveys have recorded a number of new sites including Brigalow Nature Reserve, Brigalow State Conservation Area, Leard State Conservation Area and Bobbiwaa State Conservation Area. Also known from the West Wyalong in the south of the State. Records from Barmedman and Temora areas are likely to be no longer present. Approximately 50% of the total Lepidium aschersonii recorded for Australia occurs in NSW Found on ridges of gilgai clays dominated by Brigalow (Acacia harpophylla), Belah (Casuarina cristata), Buloke (Allocasuarina luehmanii) and Grey Box (Eucalyptus microcarpa). In the south has been recorded growing in Bull Mallee (Eucalyptus behriana). Often the understorey is dominated by introduced plants. The species grows as a a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense, with sparse grassy understorey and occasional heavy litter. Flowers from spring to autumn. Plants in the Narrabri population have been observed producing abundant seed, and as the species is believed to be short-lived and large numbers of plants were present at the site, Lepidium aschersonii appears to be successfully reproducing. Populations have been known to immediately disappear following inundation by flooding, reappearing several seasons later. An apparent increase in numbers during drought conditions has also been observed. The species is reported to be salt tolerant and also grows well under dry conditions. Recorded population sizes vary from 18 to 5000+ plants. Plant numbers decrease with increasing overstorey density, and plants were not found where the Brigalow canopy cover exceeded about 60%. The species is often described as a “weed” where it dominates paddocks.				unlikely to occur	
Persoonia mollis subsp. revoluta	A prostrate to decumbent shrub, 10-50 cm high, up to 4m diameter. Leaves are glossy-green, pliable but not soft, almost fleshy, elliptical to oblong-ovate to oblong-lanceolate, obtuse, parsely silky-pubescent	V	V	Absent	Not detected during field surveys –	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
Revolute Geebung	to glabrous on the undersurface when young. Endemic to New South Wales where it is currently known to occur in seven populations, primarily in the area between Mittagong, Paddys River and High Range in the Southern Highlands with an outlying population in the Bindook Highlands. Most of the populations occur between 600 and 800m a.s.l.,and with an average annual rainfall across the range of between 700 and 900 mm. Mainly on relatively deep sandy soils on broad ridgetops and upper slopes. Frequently on Hawkesbury Sandstone on Soapy Flat or Sandy Flat soil landscapes				unlikely to occur	
Dillwynia glaucula Michelago Parrot-pea	An erect shrub to 2.5 m tall. Its leaves are up to 7 mm long and very narrow; they are hairless, becoming bluish-green with age. The yellow and red pea-like flowers are borne singly in the axils of the leaves and are clustered towards the ends of the branchlets. recorded from five areas on the NSW Southern Tablelands: near Windellama, where the species is locally abundant, near Mongarlowe, in Nadgigomar Nature Reserve near Braidwood, north-east of Michelago and at Numeralla. There is potential habitat between the known sites. Occurs on exposed patches of clay or on rocky outcrops in eucalypt woodland often dominated by Scribbly Gum (*Eucalyptus rossii*), Snow Gum (*E. pauciflora*), Broad-leafed Peppermint (E.*dives*) and Red Stringybark (*E. macrorhyncha*). The understorey may be either grassy or shrubby. Grows adjacent to Natural Temperate Grassland in the Michelago area.	E		Present	Not detected during field surveys, no similar species recorded – unlikely to occur	No impact – any potential undetected occurrence unlikely to be significantly impacted due to minor nature of works
Swainsona recta Small Purple-pea	A slender, erect perennial herb growing to 30 cm tall. The leaves are divided into up to six pairs of 10 mm long, very narrow leaflets, each with a pointed tip. Recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. It is also known from the ACT and a single population of four plants near Chiltern in Victoria.	E	E	Present	Not detected during field surveys, no similar species recorded	No impact – any potential undetected occurrence unlikely to be significantly impacted due to minor

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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.					nature of works
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 impact
Prasophyllum petilum Tarengo Leek Orchid	Reaches to 35 cm tall. This species can be distinguished from the more common onion orchids (Microtis spp.) that grow in its habitat by the pinkish-purple base to the leaf. Known from a total of five sites in NSW. These are near Boorowa, Queanbeyan area, Ilford, Delegate and a newly recognised population c.10 km west of Muswellbrook. It also occurs at Hall in the Australian Capital Territory. This species has also been recorded at Bowning Cemetery where it was experimentally introduced, though it is not known whether this population has persisted. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock Poa labillardieri, Black Gum Eucalyptus aggregata and tea-trees Leptospermum spp. near Queanbeyan and	E	E	Possible	Unlikely, there are no nearby records of this species	Unlikely to be impacted, works are largely restricted to areas already substantially disturbed in the past

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	within the grassy groundlayer dominated by Kanagroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Apparently highly susceptible to grazing, being retained only at little-grazed travelling stock reserves (Boorowa & Delegate) and in cemeteries (near Queanbeyan, Ilford and Hall). Flowers in October at Boorowa and Ilford, and December at sites near Queanbeyan and Delegate. Population density at the Boorowa site is higher in the open grassland dominated by wallaby grasses Austrodanthonia spp., compared to that within the denser stands of Kangaroo Grass Themeda australis. Highly colonial, with very large numbers present and very conspicuous at the Boorowa site, but cryptic at the Queanbeyan, Ilford and Delegate sites where low numbers are recorded. The population near Muswellbrook is also small. Flowers are followed by fleshy seed capsules in summer. Plants retreat into subterranean tubers after fruiting, so are not visible above-ground outside of growing periods.					
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 impact
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,		V	Absent	Not detected during field surveys – unlikely to occur	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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. 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.					
Lepidium hyssopifolium Basalt Pepper-cress	In NSW, there is a small population near Bathurst, one populations at Bungendore, and one near Crookwell. In NSW the species was known to have occurred in both woodland with a grassy understorey and in grassland. The species may be a disturbance opportunist. The cryptic and non-descript nature (appearing like several weed species) of the species makes it hard to detect.		E	Absent	Unlikely	No impact
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, this species thrives in disturbed areas	Occurs in project area	See Test of Significance
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, this is a distinct species which was not recorded on the site	No impact
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.	V	V	Absent	Unlikely, this is a distinct species which was not	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	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*).				recorded on the site	
Calotis glandulosa Mauve Burr-daisy	A sprawling, branched herb that grows to 20 cm tall and up to 1 m wide. The soft, bright green, hairy leaves have indented edges. They are up to 3 cm long and 9 mm wide. The 2 cm wide flower-heads are solitary, mauve, and have a yellow centre. The distribution of the Mauve Burr-daisy is centred on the Monaro and Kosciuszko regions. There are three known sites in the upper Shoalhaven catchment. There are old and possibly dubious records from near Oberon, the Dubbo area and Mt Imlay. Found in montane and subalpine grasslands in the Australian Alps also in subalpine grassland (dominated by Poa spp.), and montane or natural temperate grassland dominated by Kangaroo Grass (Themeda australis) and Snow Gum (Eucalyptus pauciflora) Woodlands on the Monaro and Shoalhaven area. Appears to be a coloniser of bare patches, which explains why it often occurs on roadsides. Apparently common on roadsides in parts of the Monaro, though it does not persist for long in such sites. Does not persist in heavily-grazed pastures of the Monaro or the Shoalhaven area. Dispersed by animals which carry the sticky burrs to new sites.	V	V	Absent, occurs in similar habitats as present however in the alpine, Monaro and Shoalhaven areas	Unlikely, no records occur in the LGA	No impact
Senecio macrocarpus Large-fruit Groundsel	erect long-lived herb or a small shrub (40–70 cm tall). It has greyish stalkless, linear, alternate leaves that are about 10 cm long and 2–5 mm wide which are covered in hairs that give a cobweb-like appearance. Previously a widespread species occurring from the Yorke Peninsula in the west of South Australia, across to Victoria in an area bounded by Wimmera in the north to the Melbourne district in the east. In NSW, Large-fruit Fireweed occurs in partly cleared dry forests and box-gum woodlands which transition to Brittle Gum Forest with a relatively undisturbed understorey of native grasses, forbs and subshrubs.	-	V	Present	Unlikely, this species was not recorded during surveys	No impact

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
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 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 *Pomaderris* species were recorded	No impact
Pomaderris pallida Pale Pomaderris	A compact, rounded shrub to 1.5 m tall, recorded from near Kydra Trig (north-west of Nimmitabel), Tinderry Nature Reserve, the Queanbeyan River (near Queanbeyan), the Shoalhaven River (between Bungonia and Warri), the Murrumbidgee River west of the ACT and the Byadbo area in Kosciuszko National Park. It is also found along the Murrumbidgee River in the ACT and has been recently recorded in eastern Victoria. Usually grows in shrub communities surrounded by Brittle Gum (*Eucalyptus mannifera*) and Red Stringybark (*E. macrorhyncha*) or Callitris spp. woodland	V	V	Absent	Unlikely – no *Pomaderris* species were recorded	No impact
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 impact
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		CE	Possible in landscape	NTG does not occur in the project area. Native	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 (NTG)	even 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).				grassland present does not meet the EPBC definition	
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	ranges in structure from woodland to low open woodland. It is characterised by a sparse to very sparse (woodland to open woodland) tree layer dominated by *Eucalyptus pauciflora* (snowgum) either in single species stands or with *E. rubida* (candlebark) as a co-dominant. Other tree species have been recorded within the community, although very infrequently and always as canopy sub-dominants. Tree height and cover vary as a function of moisture availability, drainage and past land management. The tree layer becomes shorter and sparser with declining moisture availability or increasing levels of soil waterlogging. Trees may be reduced or absent due to historic management. A continuous ground layer is usually present,although this may vary in composition and cover due to natural variation and historic management. The ground layer is typically dominated by *Themeda triandra* (syn. *T. australis*; kangaroo grass), *Gonocarpus tetragynus*, *Microlaena stipoides* (weeping grass), *Austrostipa bigeniculata* (tall speargrass), *Hypericum gramineum* (small St. John's	CEEC		Present	Recorded in project area	See Test of Significance

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	wort), *Poa sieberiana* (snowgrass), *Asperula conferta* (common woodruff), *Lomandra filiformis* (wattle mat-rush), *Anthosachne scabra* (syn. *Elymus scaber*; tall wheatgrass), *Hydrocotyle laxiflora* (stinking pennywort), *Leptorhynchos squamatus* (scaly buttons), *Haloragis heterophylla*(rough raspwort), *Oxalis perennans*, *Schoenus apogon* (common bog-rush), *Tricoryne elatior* (yellow Autumn-lily), *Plantago varia* (variable plantain), *Acaena ovina*, *Carex inversa*, *Panicum effusum* (hairy panic), *Calocephalus citreus* (lemon beauty-heads) and *Chrysocephalum apiculatum* (common everlasting). Species of sub-shrubs such as *Pimelea curviflora*, *Astroloma humifusum* (native cranberry) and *Hibbertia obtusifolia* (hoary guinea flower) may be interspersed with grasses and forbs at some sites. Sites regenerating following tree removal, or the cessation of stock grazing may support a second, shorter layer of *Eucalyptus* species of variable density					
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW	Boxgum 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. calignosa*), 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	CEEC	CE	Present in landscape	Does not occur on subject land	Not likely to be impacted.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
South Western Slopes, South East Corner and Riverina Bioregions (Boxgum Woodland)	most commonly encountered include Kangaroo Grass (*Themeda australis*), Poa Tussock (*Poa sieberiana*), wallaby grasses (*Austrodanthonia* spp.), spear-grasses (*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.					
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, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/ shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest.		M	Absent, suitable ecosystems absent.	Unlikely.	No.
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		M	Absent, large water bodies absent.	Unlikely.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
	also make short flights to take prey from the air or follow grazing livestock to take insects stirred up as they feed.					
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 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.		M	Absent.	Unlikely.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
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 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.		M	Absent.	Unlikely.	No.

Species name	Habitat requirements	TSC Act	EPBC Act	Presence of habitat	Likelihood of occurrence	Potential impact
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 4 – Threatened Species Tests of Significance

Threatened Species Test of Significance

Tests of significance are prepared in accordance with the NSW DPIE Threatened Species Test of Significance Guidelines (OEH 2018) in the context of the proposed development and expected future uses as outlined in the Biodiversity Assessment Report, specifically;

Road upgrade works for a 9.7km segment of Currawang Road including minor widening and realignment, upgrading of culverts and replacement of causeways with concrete culverts. Temporary works include routine erosion and sediment controls, dewatering and use of existing stockpile sites. Direct impacts to biodiversity are summarised as;

- Removal of up to 3420m^2 of roadside secondary native grassland and immature woody vegetation including non-indigenous native regeneration
- Removal of up to 17000m^2 of exotic grassland and understory vegetation.

Conditions provided at Section 9 of the Biodiversity Assessment must be implemented.

Assessment of Significance for the threatened species;

- *Leucochrysum albicans subsp. tricolor*

  Hoary Sunray

Listed as;

- BC Act Endangered
- EPBC Act Endangered

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,

This daisy is commonly found in the Southern Tablelands along roadsides and in other areas where disturbance occurs intermittently in a wide variety of habitats including grassland, woodland and forest. It is dependent on bare ground for establishment. In the local area it occurs across the district to the south of Goulburn on relatively heavy soils where it is commonly seen in roadsides.

The Threatened Species Test of Significance Guidelines (OEH 2018) define the local population as;

> *The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area*.

The works will impact many individuals of this species that are in the development area where they have established on the existing road formation, in many cases rooted in road base, and in secondary native grassland on roadsides and road batters. They occur commonly west of Chainage 6318 and may also occur in other parts of the road reserve where exotic vegetation is less abundant, it is considered the local population occurs across an area of habitat of at least 3.3ha.

The proposal will not fragment the local population or disrupt its lifecycle processes in any way, indirect impacts are not of a magnitude that will have an adverse effect on the life cycle of the species and its viability is not at risk of decline due to the proposal.

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,

Not Applicable, entity is not a community.

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,

Works will impact Hoary Sunray plants occurring on the road formation or drainage structures. This is an area of up to 3000m^2. This impact will remove individual plants however, as this species responds well to disturbance and requires bare ground to establish it is likely that works will increase potential habitat for the species and allow the population to increase.

The local population of Hoary Sunray covers a much larger area than the area of habitat impacted by works.

Works will not fragment or isolate any potential habitat for this species.

The habitat impacted by the works occurs immediately on the road edge this habitat is not important to the long term survival of the species.

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),

There are no areas of declared areas of outstanding biodiversity value in proximity of the project area, due to this separation there is no chance that the activity will either directly or indirectly impact an Area of Outstanding Biodiversity Value.

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.

The action includes the key threatening process;

- Clearing of native vegetation

Up to 3420m^2 of roadside secondary native grassland and immature woody vegetation including non-indigenous native regeneration.

Conclusions
Following the above assessment, a significant impact on;

- *Leucochrysum albicans subsp. tricolor*
  Hoary Sunray

Is found to be **not likely** as a result of the proposal;

- The proposal will not affect the lifecycle of this species such that the local population will be at risk of loss
- The proposal will not remove any potential important habitat for this species
- The proposal will not fragment or isolate potential habitat for this species
- Key threatening processes are minor and not permanent
- The proposal will not impact areas of Outstanding Biodiversity Value
- Indirect impacts are not of a scale that are likely to impact these species or their habitat.

Assessment of Significance for the threatened Communities;

- *Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions*

  Temperate Grassy Woodland

Listed as;

- BC Act Critically Endangered
- EPBC Act not listed

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,

Not Applicable, entity is not a species

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,

The extent of Temperate Grassy Woodland will not be changed by the proposal, all areas of this woodland are sufficiently separated from the directly impacted development area and will not be removed. Indirect impacts are not of a scale or magnitude that would likely adversely modify the composition of the ecological community in the road reserve.

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,

works are restricted to existing worked areas including the road formation, batters and drainage structures. No works will require the removal, fragmentation, isolation or modification of habitat for Temperate Grassy Woodland.

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),

There are no areas of declared areas of outstanding biodiversity value in proximity of the project area, due to this separation there is no chance that the activity will either directly or indirectly impact an Area of Outstanding Biodiversity Value.

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.

The action includes the key threatening process;

- Clearing of native vegetation

Up to 3420m^2 of roadside secondary native grassland and immature woody vegetation including non-indigenous native regeneration.

Conclusions

Following the above assessment, a significant impact on;

- *Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions*

  Temperate Grassy Woodland

Is found to be **not likely** as a result of the proposal;

- The proposal will not affect the lifecycle of this species such that the local population will be at risk of loss
- The proposal will not remove any potential important habitat for this species
- The proposal will not fragment or isolate potential habitat for this species
- Key threatening processes are minor and not permanent
- The proposal will not impact areas of Outstanding Biodiversity Value
- Indirect impacts are not of a scale that are likely to impact these species or their habitat.