

Review of Environmental Factors

Jerrara Road Blackspot Project 2024

(Australian Government Blackspot Program – Capital Works)

Design & Asset Management
Goulburn Mulwaree Council

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EXECUTIVE SUMMARY

This Review of Environmental Factors (REF) has been prepared on behalf of Design and Asset Management, Goulburn Mulwaree Council for the proposed rehabilitation and upgrade of a section of the Jerrara Road, being funded under the Australian Government Black Spot Program.

This REF provides an assessment of the environmental impact of the proposed works and includes a description of all mitigation measures to be implemented.

The environmental assessment and determination of the proposal has been undertaken in accordance with Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

For this proposal, Goulburn Mulwaree Council is both a public authority proponent (EP&A Act s5.3) and the determining authority (EP&A Act s5.1). The REF has been prepared in accordance with Clause 171 of the EP&A Regulation (2021).

The purpose of this REF is to assist Goulburn Mulwaree Council to fulfil its obligations as the determining authority for the proposal in accordance with Part 5 of the EP&A Act and Part 14 of the EP&A Regulation.

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INTRODUCTION

The Jerrara Road is a sealed road leading from the Hume Highway at Marulan to the Mountain Ash Road, leading to the village of Bungonia. The Jerrara Road is heavily used by a wide variety of vehicles, as it:

- Is the main route leading from the Hume Highway to Bungonia and to the Bungonia National Park. As such it provides access for visitors to the area, local residents, school bus services and emergency services.
- Is the main route leading from the Hume Highway to Oallen Ford Road and is part of a trough route via Bungonia, Windellama and beyond to Nerriga, Braidwood and ultimately Nowra and the coast.
- Provides access to a range of commercial enterprises along Jerrara Road and in the Bungonia area including the Pheasant Wood Motorsport Facility and Tobas Archery.
- Is heavily utilised by haulage trucks and other vehicles servicing Ardmore Park Quarry (Multiquip).

Due to continuing development of the local area, the volume of traffic has increased substantially in recent years and this increase is predicted to continue.

The Jerrara Road is maintained by Goulburn Mulwaree Council and has been identified as being in need of urgent upgrading for a variety of safety reasons.

This section of the Jerrara Road has been identified as a “Road Black Spot” (a section of road that records show is significantly accident prone). The increasing volume of traffic, in particular heavy vehicles has resulted in significant and substantial road damage in parts. In addition, there are issues with line of sight on parts of the road. Due to current safety concerns, the speed limit on parts of Jerrara Road is currently reduced until upgrades can be completed.

The proposed works are for a project to upgrade and rehabilitate a section of the Jerrara Road, commencing at Latitude -34.784029 Longitude 149.961203 (adjacent to 669 Jerrara Road) and ending at Latitude -34.750207 Longitude 149.974521 (adjacent to 234 Jerrara Road) and see Figure 1.

The project is to be implemented in two stages as shown in Figure 2. Stage 1 involves some road widening and reshaping of batters. The section of Jerrara Road to be remediated as Stage 1 also requires replacement of an existing small pipe culvert, the extension of 4 existing small pipe culverts and the extension of an existing Box culvert crossing at Sawyers Creek.

The section of the Jerrara Road involved in this project crosses four waterways mapped as KFH (Key Fish Habitat). However, the project will only involve impacts on KFH at one location. The extension of the Box culvert crossing at Sawyers Creek will have an impact on mapped KFH and will require a permit from Fisheries NSW. At other places where the road crosses KFH, there are not anticipated to be any impacts as works will not involve activities in the watercourse but will be restricted to rehabilitation of the existing road structure. The other culvert works will not have any significant impact on any waterways mapped as KFH.

Stage 2 primarily involves work on remediating roadside drains, installing guardrails and line marking. Due to logistical issues, work on Stage 2 is expected to commence before work on Stage 1

Funding for this project has been secured under the Australian Government Black Spot Program. Council is also using a portion of the (Regional Emergency Road Repair Program (RERRP)) as a co-contribution to this project. The budget for this project is (\$2,563,062.00).

Upgrading and rehabilitating this section of the Jerrara Road and roadside drainage structures will make it safer for users, reduce long term maintenance costs, reduce potential sedimentation impacts on local waterways and facilitate safe, efficient traffic flow between Goulburn and Bungonia, Windellama, Oallen, Nerriga and Nowra.

Subject site means the area directly affected by the proposal. The subject site includes the footprint of the development and any ancillary works, facilities, accesses or hazard reduction zones that support the construction or operation of the development or activity. For the purposes of this REF the subject site is considered to be a strip 14 metres wide, including provision for an 8 m wide road and a 3 m wide strip along immediately adjacent edges on both sides to allow for shoulder and drainage works (from start to end of the proposed road works).

Study area means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account. For the purposes of this REF the study area is defined as the entire width of the road reserve (from start to end of the proposed road works). The study area is shown in Figures 3a, 3b and 3c.

The environmental assessment and determination of this proposal has been undertaken in accordance with Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). For this proposal, Goulburn Mulwaree Council is both a public authority proponent (EP&A Act s5.3) and the determining authority (EP&A Act s5.1). The REF has been prepared in accordance with Clause 171 of the EP&A Regulation (2021). Table 1 outlines the proponent contact details.

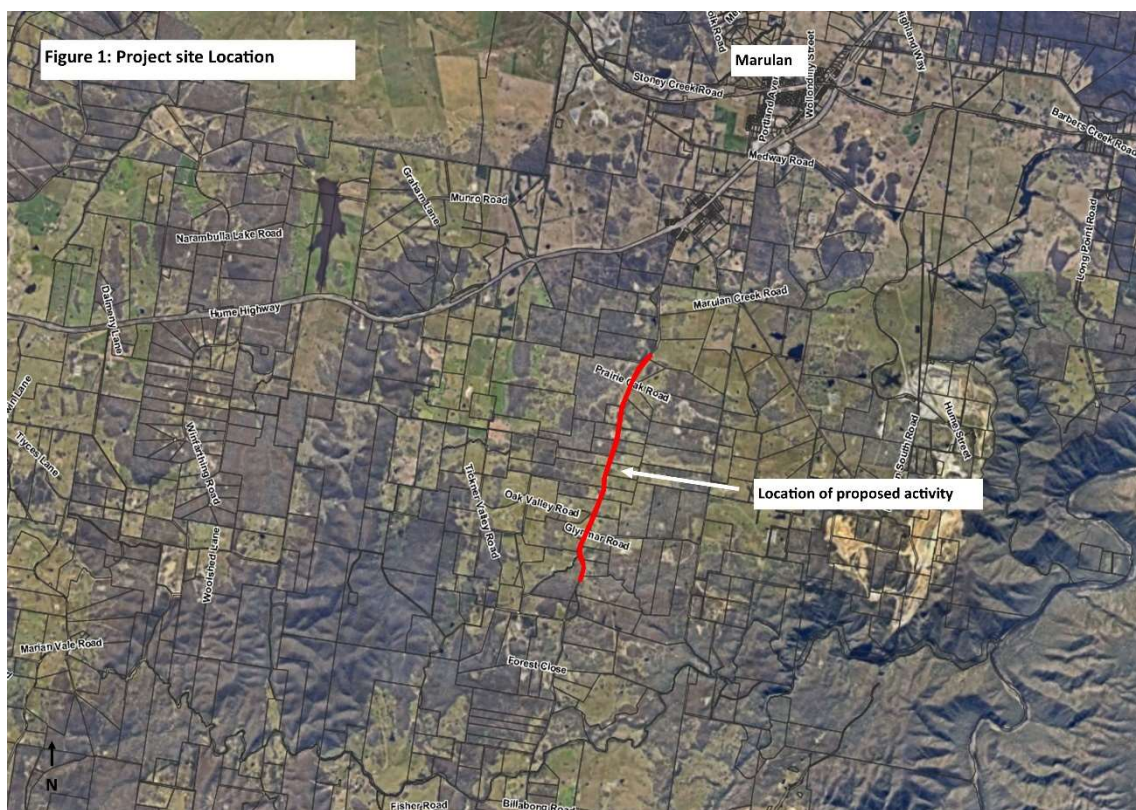
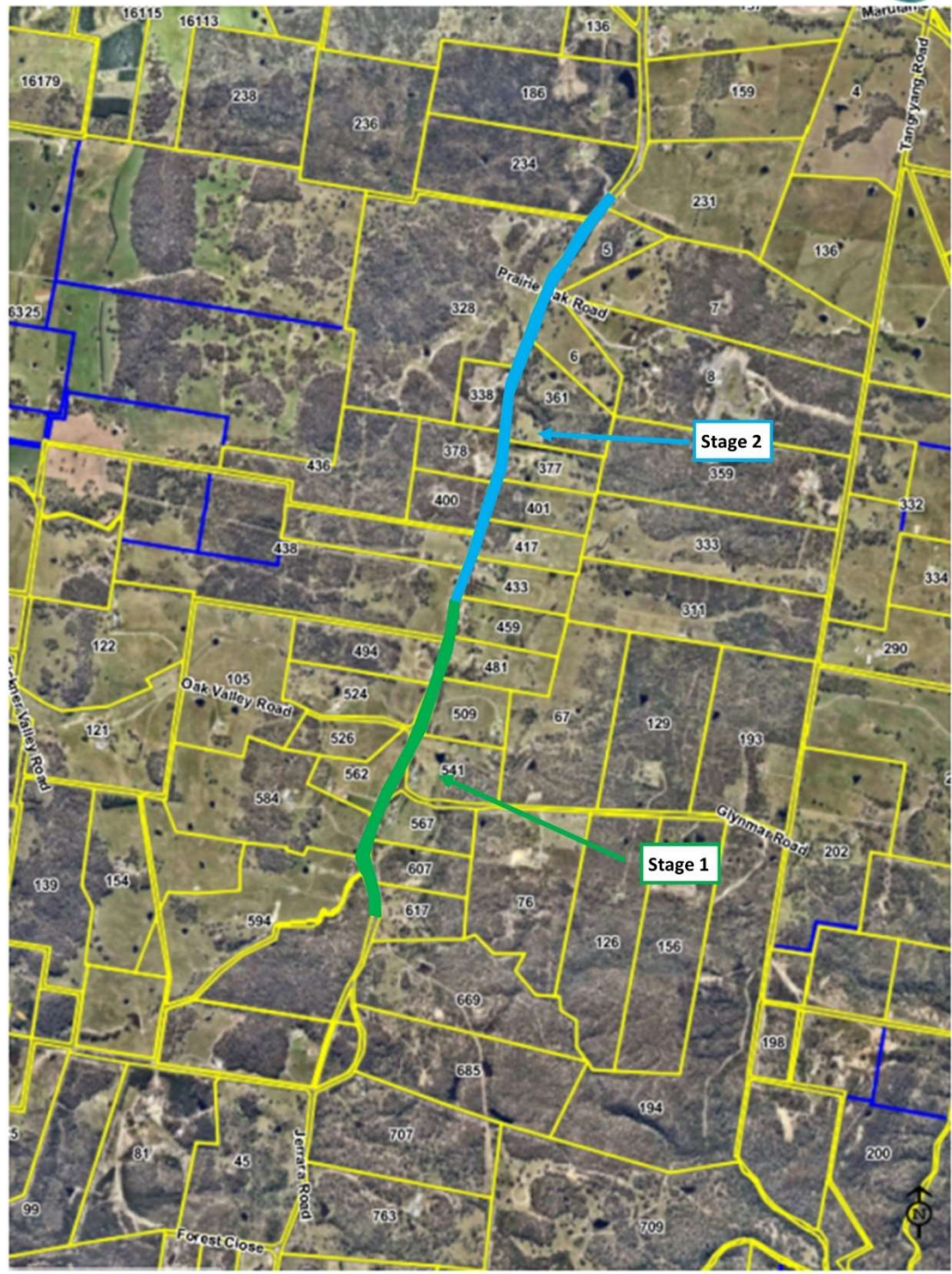


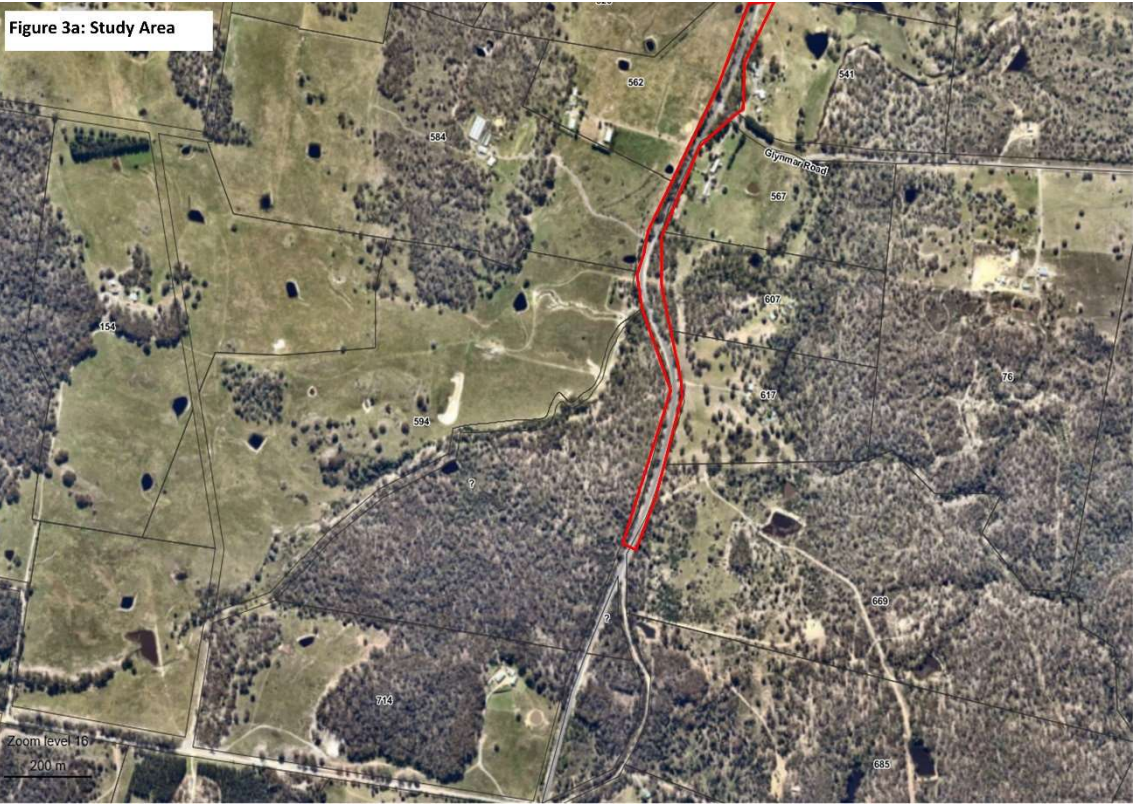
Figure 2: Stages 1 and 2



500 m

Scale = 25000

This map is provided for the purpose of showing basic locality information over the Goulburn Mulwaree Council LGA. It has been created for illustration purposes only. Locations of services and boundaries are approximate, and may not be accurate to surveying or engineering standards. Map information is subject to constant changes, may not be complete, accurate or current. The council assumes no liability for damages incurred as a result of incomplete, incorrect or omitted information.



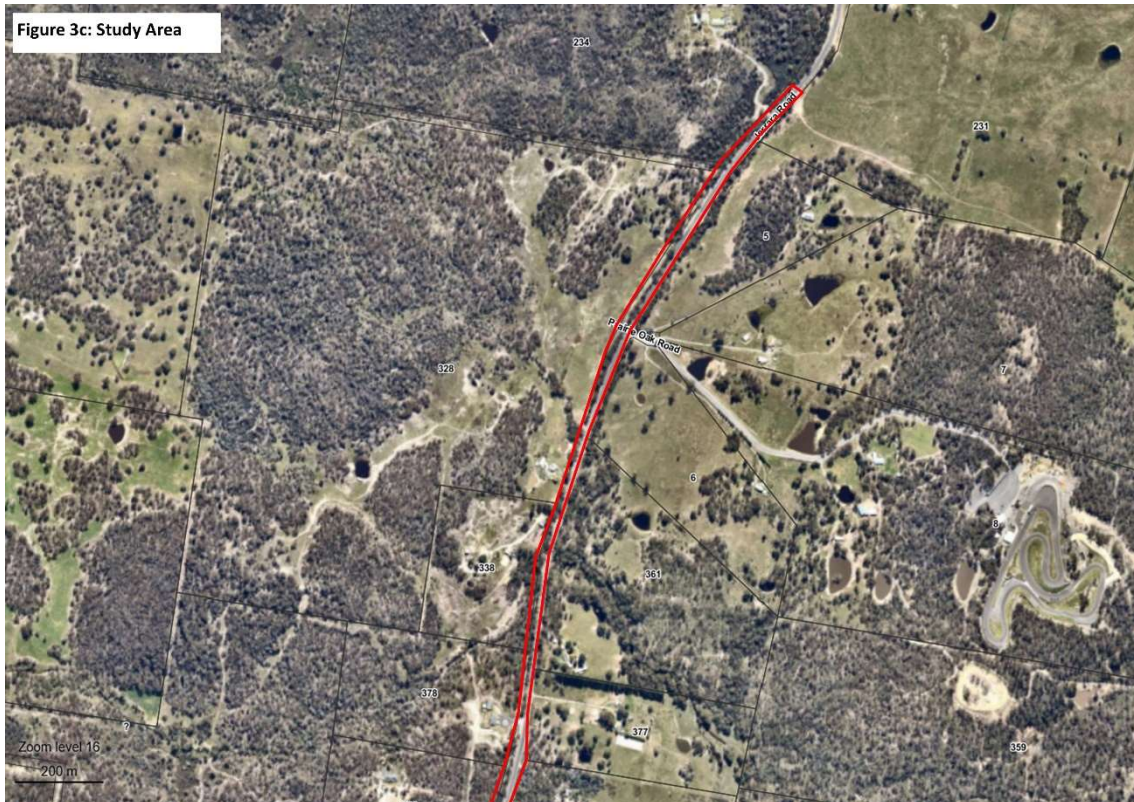


Table 1: Proponent details	
Project Name	Jerrara Road 2.9 km Blackspot Project 2024
Proponent Name	Goulburn Mulwaree Council
Project Engineer/Manager (Consultant)	Garry Anable
Position	Director – Reliance Engineering Services Pty Ltd
Contact phone	0407 100 912
Contact email	Garry.anable@relianceengineering.au

1.1. Project Description and Background

1.1.1. Detailed Scope of Works

The activity footprint comprises upgrading and rehabilitation of a section of the Jerrara Road, commencing at Latitude -34.784029 Longitude 149.961203 (adjacent to 669 Jerrara Road) and ending at Latitude -34.750207 Longitude 149.974521 (adjacent to 234 Jerrara Road) and see Figure 1.

The project is to be implemented in two stages as shown in Figure 2. Stage 1 involves some road widening and reshaping of batters, in addition to roadside drainage works, resurfacing, installation of guard rails and line marking.

The section of Jerrara Road to be remediated as Stage 1 also requires replacement of an existing small pipe culvert and extension of an existing Box culvert crossing at Sawyers Creek, which is mapped as KFH (Key Fish Habitat). Locations of these culverts are shown in Figure 4.

Figure 4: Locations of Culverts to be upgraded



As shown in Figure 9 of this report, the Jerrara Road crosses four waterways mapped as KFH. However, only the Sawyers Creek crossing will be impacted by the project, as works at the other crossings will not involve any disturbance of the waterways.

Stage 2 primarily involves work on remediating roadside drains, installing guardrails and line marking. Due to logistical issues, work on Stage 2 is expected to commence before work on Stage 1

The proposed activity will have minimal impact on adjoining, undisturbed land. Impacts will be mostly limited to the existing road surface and a width of 3 m from each formed road edge.

The following rehabilitation works are planned:

- Building up the shoulder by resheeting and grading.
- Repairing edge drop off by shoulder resheeting and strip sealing.
- Removing rutting and shoving by pavement stabilisation and gravel overlay.
- Installation of guide rails, audio tactile edge lines, reflective pavement markers and advisory signage.
- Vegetation clearance to accommodate the works and maintain a safe roadway may be required within 3 m of each formed road edge.
- Upgrade of two existing culverts and extension of 4 existing small culverts.

Proposed works

- Traffic management: During works, traffic will continue to use the existing road and will be managed as required, eg through temporary speed limits, signage. At times traffic will be restricted to one lane and managed through traffic signals and/or traffic management personnel.
- Vegetation removal as required to facilitate works.
- Shoulder grading and/or reshaping as required up to 3 m from the formed edge of the existing sealed or formed road.
- Batter reshaping, extension and improvement to drainage including table drain upgrades.
- Installation of erosion and sediment control measures as required.
- Upgrades of culverts. Details on upgrade of the Sawyers Creek culvert are provided under a separate heading below.
- Gravel replacement and resealing of wearing surface 8 m wide, 2 coat 14 mm/7mm bitumen seal.
- Guide rail installation, audio tactile edge lines, reflective pavement markers, signage and line marking.
- Commissioning of rehabilitated road.
- Rehabilitation of site, including removal of temporary erosion and sediment control measures, removal of all waste materials.
- Seed and rehabilitate disturbed areas.

Sawyers Creek culvert upgrade

- It is proposed that a small bund will be positioned upstream between the proposed culvert extension and the property boundary fence.
- A clean water by-pass pipe (plastic) will commence on the top side of the above mentioned bund and extend under the existing culvert/bridge across the outlet side culvert extension footprint to convey the 'clean' water from upstream to downstream.

- Within the disturbed area (excavation) pump(s) will pump 'dirty' water from the site and discharge into a temporary sediment trap lined with geofabric. This sediment trap will discharge onto heavily vegetated ground approximately 30m to the south of the site.
- As a secondary line of treatment, silt fence will be installed below the sediment trap, where the pumped water will continue to be filtered through the heavily vegetated ground into the environment.
- It is anticipated that the Sawyers Creek culvert upgrade will block fish passage for approximately three weeks whilst the Box culvert base slab extension is being constructed.

1.1.2. Anticipated Machinery and Equipment

Excavator (14T-30T)

Heavy Rigid Tipper Truck

Truck & Dog

Padfoot Roller

Smoothdrum Roller

Multi Tyre Roller

Watercart

Grader

Stabilising Mixer

Stabilisation Spreader

Skid Steer Loader

Loader

Bitumen Tanker

Bitumen Spray Truck

Guardrail Installation Team

Concreting Team

1.1.3. Access and Ancillary Works

Temporary stockpile area and works compound will be established as shown in Figure 5.

The proposed temporary stockpile area and works compound sites are:

- Located on an area that has previously been cleared/disturbed and used for this purpose
- Not located in or near any waterway or otherwise potentially sensitive areas
- Will not have any significant impact on native fauna or flora

Figure 5: Locations of proposed temporary stockpile areas



1.1.4. Duration and Working Hours

The works are long term, as outlined in Table 2.

Table 2: Project timeframes	
Stage 1	
Commencement Date	Estimated Commencement Date: August 2024 Estimated Completion Date: January 2025
Work Duration	Approximately 6 months
Work Hours	7.00 am to 5.00 pm Monday to Friday 7.00 am to 5.00 pm Saturday if required No work on Sundays or Public Holidays Monday to Friday hours are compliant with Interim Construction Noise Guidelines. Saturday work hours are consistent with Goulburn Mulwaree Council work hours.
Stage 2	
Commencement Date	Estimated Commencement Date: June 2024 Estimated Completion Date: August 2024
Work Duration	Approximately 3 months
Work Hours	7.00 am to 5.00 pm Monday to Friday 7.00 am to 5.00 pm Saturday if required No work on Sundays or Public Holidays Monday to Friday hours are compliant with Interim Construction Noise Guidelines. Saturday work hours are consistent with Goulburn Mulwaree Council work hours.

1.2. Project Location and Context

1.2.1. Location of the Proposed Activity

The activity footprint comprises upgrading and rehabilitation of a section of the Jerrara Road, commencing at Latitude -34.784029 Longitude 149.961203 (adjacent to 669 Jerrara Road) and ending at Latitude -34.750207 Longitude 149.974521 (adjacent to 234 Jerrra Road) and see Figure 1.

This REF is focussed on the site of the proposed works and the immediately adjoining lands.

However, consideration is also given to potential impacts on threatened ecological communities, populations and species that may occur in the general vicinity of the proposed works.

1.2.2. Site Context

The land surrounding the proposed works site comprises mostly agricultural land, zoned RU2 Rural Landscape. A small part of the proposed work site, located from the Glynmar Road intersection and heading south runs through land zoned C3 Environmental Management. There are no residential dwellings in the immediate vicinity of the proposed works.

The road reserve in the study area has been largely historically cleared and disturbed, but the outer parts contain remnant woodland and forest dry sclerophyll vegetation. SEED NSW SVTM Extant PCT Mapping (2024) indicates that the remnant vegetation in most parts of the area comprises *PCT 3486 Wollondilly Shoalhaven Slopes Open Forest*, as shown in Figure 6.

A flora survey conducted on 14/02/2022 found that outer parts of the road reserve contains a mix of canopy trees that broadly support this identification. This has also been confirmed during subsequent site inspections.

Small parts of the study area are also mapped as containing *PCT 3304 Southern Tableland Swamp Flats Shrub Woodland* and *PCT 3643 Bungonia Tableland Silvertop Ash – Stringybark Forest*.

None of these ecological communities (PCT 3486, PCT 3304 & PCT 3643). are listed as threatened under either NSW or Commonwealth legislation.

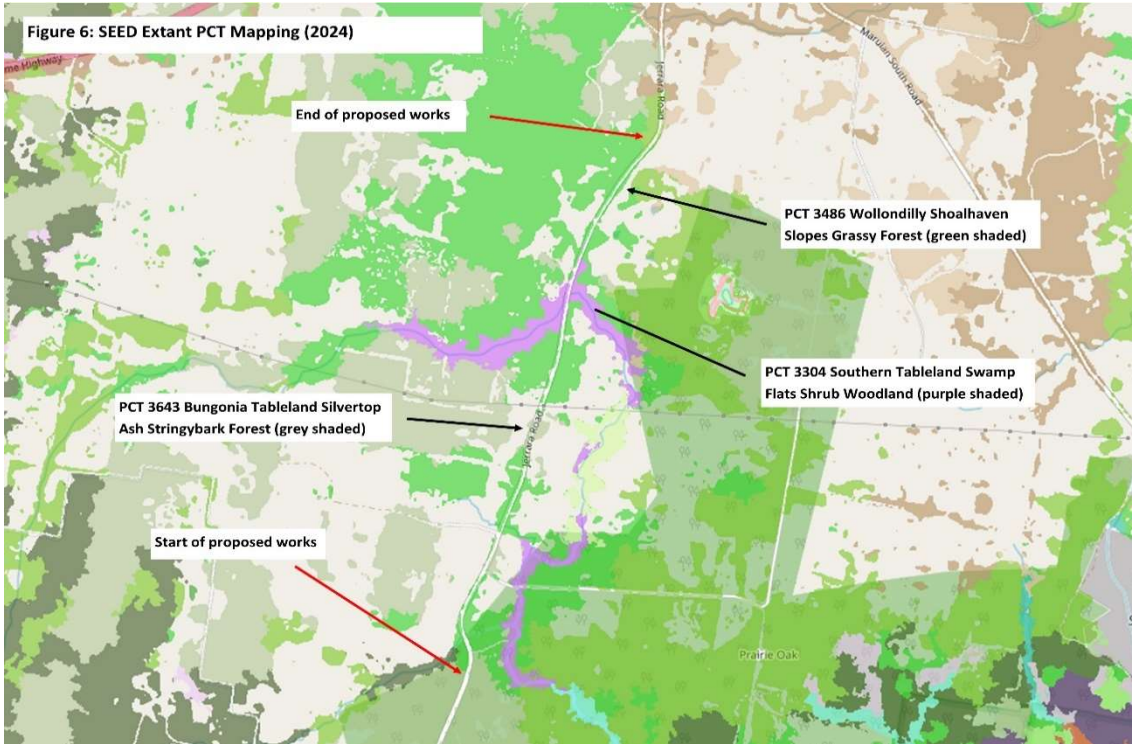
Potential impacts of the proposed activity and measures to avoid, minimise and mitigate impacts on these ecological communities are presented in section 5 of this report.

The project site is mapped on eSPADE as lying entirely within the Bindook Road soil landscape (S15512br YP-br). Underlying geology is described as being porphyritic and typical vegetation on this soil landscape is described as being a dry sclerophyll forest with Red Stringybark (*Eucalyptus macrorhyncha*) dominant. However, the vegetation in the study area contains a significant component of Yellow Box (*Eucalyptus melliodora*), Cabbage Gum (*Eucalyptus amplifolia*), Inland Scribbly Gum (*Eucalyptus rossii*), Brittle Gum (*Eucalyptus mannifera*) and other trees, and that the vegetation is not Red Stringybark dominant.

A search of the AHIMS database conducted on 28/03/2024 found no records of any Aboriginal places, sites or artefacts within the study area. However, consultation with Jennie Gordon of the Mulwaree Aboriginal Community Incorporated has revealed that there are several significant Aboriginal Scar Trees located in parts of the Jerrara Road reserve. Goulburn Mulwaree Council is assisting with mapping, recording and uploading data on these culturally significant trees into the AHIMS database. Potential impacts of the proposed activity on Aboriginal Scar Trees (and any other significant Aboriginal sites or artefacts) and measures to avoid, minimise and mitigate these impacts are presented in section 5 of this report.

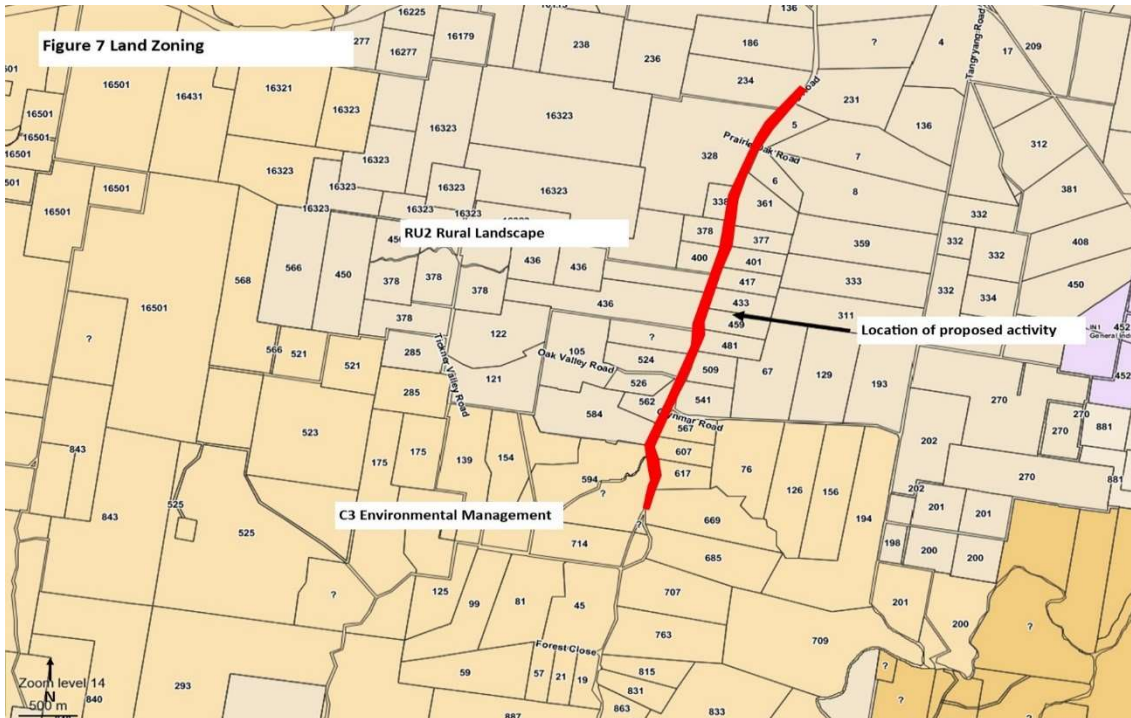
As parts of the road reserve within three metres of the sealed edge have been historically cleared, native plants in the area to be impacted mostly comprise relatively recent regrowth. Most native plants and larger shrubs and trees are also confined to the outer parts of the road reserve and are not likely to be adversely impacted by the proposed activity. No threatened flora or fauna species were found to be present in the road reserve during the survey, which was focussed on targeted searches for threatened species predicted to be present from a search of the EPBC Protected Matters Search Tool and BioNet Atlas records.

The study area and proposed works lie within the Shoalhaven River Catchment, which is itself part of the Sydney Drinking Water Catchment. In the sections contained within the study area, the Jerrara Road crosses four waterways that are mapped as Key Fish Habitat. The proposed activity does require upgrade of an existing culvert where the road crosses Sawyers Creek and as such the proposed activity may have an impact on fish habitat. A permit is required from Fisheries NSW prior to undertaking works on the Sawyers Creek Box culvert upgrade.



1.2.3. Land Use, ownership and zoning

The project site is a council maintained rural road that runs through privately owned agricultural land. Most of the land is zoned RU2 Rural Landscape. From the start of the proposed works to Glynmar Road the land is zoned C3 Environmental Management. See Figure 7.



1.2.4. Project Justification and Consideration of Alternatives

As the authority charged with maintaining the Jerrara Road, Council has a legal duty of care to road users and is required to maintain the road in a trafficable and safe condition.

The proposed works are justified for many reasons, including:

- This section of the Jerrara Road has been identified as a “Road Black Spot” (a section of road that records show is significantly accident prone).
- As the road surface is also in a degraded state, there have been issues with potholes, cracks/fissures and general wear and tear, creating potential for damage to vehicles and raising safety concerns for motorists using the road. Refer to supporting photographs.
- Due to the current condition of the road and safety concerns, temporary reduced speed limits are in operation pending road upgrade and rehabilitation.
- Ongoing temporary maintenance has been required to keep it in a trafficable and safe condition. This is a significant ongoing cost to ratepayers.
- The road is regularly used by a wide variety of vehicles and traffic volume is anticipated to increase significantly with further development of the area.
- Funding for the proposed works has been secured through the Australian Government Black Spot Program.

The alternatives to this proposal would be to continue ad hoc, piecemeal road maintenance as issues arise, or to do nothing.

The “do nothing” option is clearly unacceptable. The road is unsafe and subject to temporary speed limit reduction due to safety concerns.

There are no suitable alternative routes linking the Hume Highway to Bungonia.

While Tiyces Lane and Marian Vale Roads connect from the Hume Highway to Mountain Ash Road, using this route as a detour or alternative will merely transfer the problem to another location and also result in serious damage to these roads.

It is not practicable to expect southbound traffic to access Mountain Ash Road via Goulburn as this will add approximately 90 kilometres of extra travel to the journey, have significant impacts on Goulburn and increase adverse impacts on Mountain Ash Road from the Goulburn end.

Ad hoc, piecemeal road maintenance is unsatisfactory as it is an ongoing cost and a “band-aid” solution at best.

The repercussions of the do-nothing option are that Council would be failing in its legal duty of care to road users to maintain the road in a trafficable and safe condition.

Given that funding is available to undertake the works, this is undoubtedly the preferred option.

2. Statutory and Planning Context

2.1. Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) provide the framework for development and environmental assessment in NSW.

As council is the proponent, the works have been assessed as ‘development permissible without consent’ under Part 5 of the EP&A Act. Accordingly, council must satisfy Sections 5.5, 5.6 and 5.7 of that Act, by examining and taking into account to the fullest extent possible, all matters which are likely to affect the environment.

This REF is intended to address council’s compliance with the EP&A Act including Sections 5.5, 5.6 and 5.7 and the requirements of clause 171 of the EP&A Regulation 2021. Environmental Planning Instruments made under the EP&A Act 1979 may also be relevant and are addressed below.

2.2. Environmental Planning and Assessment Regulation 2021 – Clause 171 (4)

Clause 171 Review of environmental factors – the Act, s 5.10(a)

Under Clause 171 (4) it is a requirement that a REF must be published on the determining authority’s website or the NSW Planning Portal if:

- (a) the activity has a capital investment value of more than \$5 million, or
- (b) the activity requires an approval or permit as referred to in any of the following provisions before it may be carried out—
 - (i) [Fisheries Management Act 1994](#), sections 144, 200, 205 or 219,
 - (ii) [Heritage Act 1977](#), section 57,
 - (iii) [National Parks and Wildlife Act 1974](#), section 90,
 - (iv) [Protection of the Environment Operations Act 1997](#), sections 47–49 or 122, or
- (c) the determining authority considers that it is in the public interest to publish the review.
- (5) The review must be published under subsection (4)—
 - (a) before the activity commences, or
 - (b) if publishing the review before the activity commences is not practicable—as soon as practicable, and no later than 1 month, after the activity commences.

Following review of requirements of Clause 171(4) of the EP&A Regulation, it has been determined that publication of this REF is required, as the proposed works requires a permit under the Fisheries Management Act 1994.

In the interests of accountability and transparency, this REF should be made available on request to any relevant stakeholders who may raise concerns about this project.

2.3. State Environmental Planning Policy (Infrastructure) 2007

The State Environmental Planning Policy (Infrastructure) 2017 (Infrastructure SEPP) aims to facilitate the delivery of infrastructure across NSW by identifying whether certain types of infrastructure require consent, can be carried out without consent or are exempt development.

Pursuant to clause 94 of the SEPP, development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land. The proposed works are therefore assessed under Part 5 of the EP&A Act.

2.4. Other Environmental Legislation

Table 3 outlines how the project has been considered under other relevant Commonwealth and State environmental legislation.

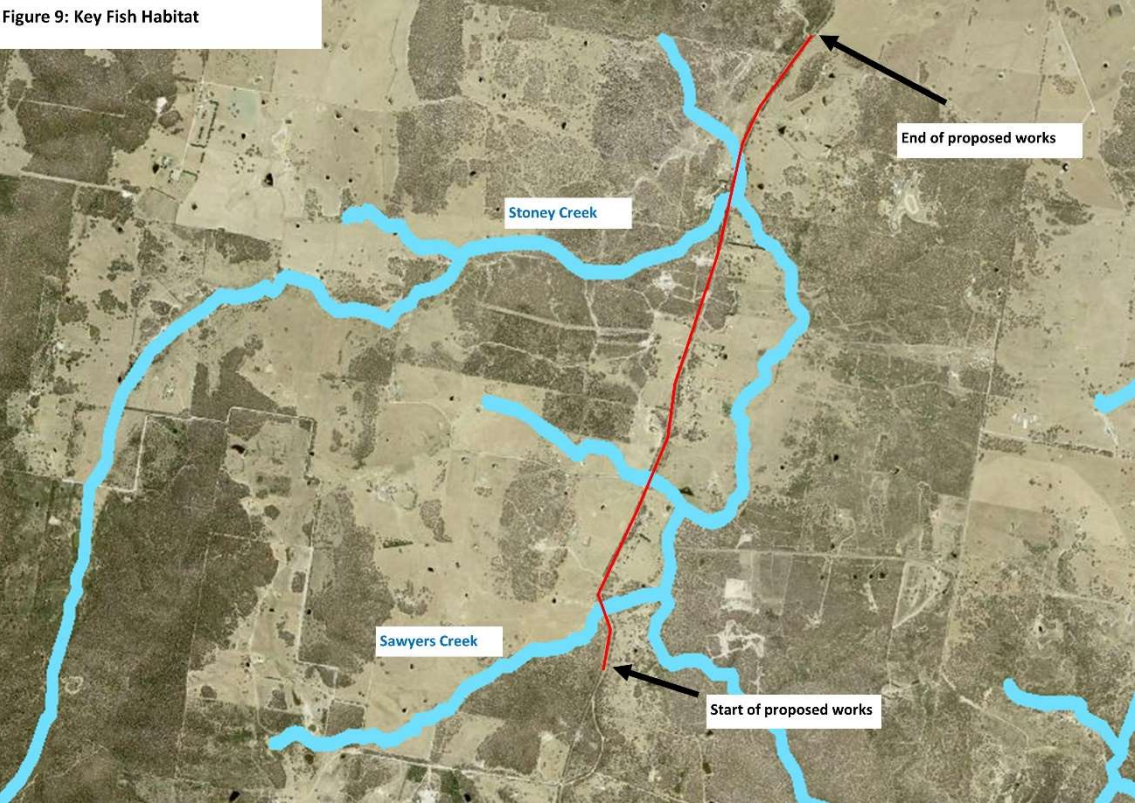
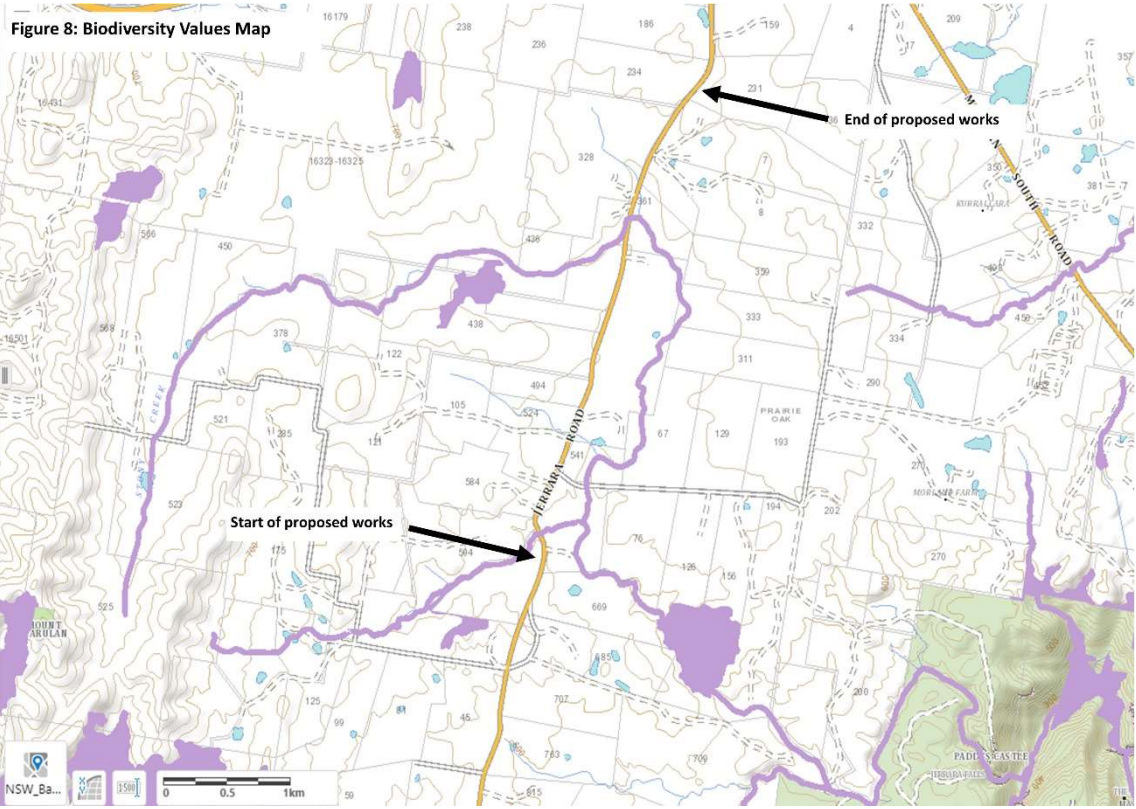
Table 3: Other environmental legislation	
Legislation	Relevance to the proposed activity
COMMONWEALTH LEGISLATION	
Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)	<p>The EPBC Act protects matters of National Environmental Significance (NES), such as threatened species and ecological communities, migratory species (protected under international agreements), and National Heritage places (among others).</p> <p>An assessment of matters of National Environmental Significance has been undertaken and has concluded that none of these matters will be significantly impacted by the proposed activity.</p>
STATE LEGISLATION	
Biodiversity Conservation Act 2016 (BC Act)	<p>Part 7 of the BC Act provides the environmental assessment requirements for activities being assessed under Part 5 of the EP&A Act 1979. If a significant impact is likely on a Threatened Species, a Species Impact Statement is required. A Threatened Species is defined as a Critically Endangered Species, an Endangered Species or a Vulnerable Species listed under Schedule 1 of the BC Act, or a Critically Endangered Ecological Community or Endangered Ecological Community listed in Schedule 2 of the BC Act. A biodiversity development assessment report may also be required if the proponent elects for this. Sections 7.2(1)(a) and 7.3 describe the assessment requirements and thresholds for what is considered a significant impact. Note: If a development occurs in a declared area of outstanding biodiversity value, it is automatically considered to be likely to significantly affect threatened species.</p> <p>The proposed activity is not being conducted in a declared area of outstanding biodiversity value.</p> <p>Two watercourses in the area within the study area for the project (as defined in Figures 3a, 3b & 3c) are flagged on the Biodiversity Values Map (See Figure 8). However, database review and site inspections have revealed that no threatened species are likely to be significantly impacted by the proposed activity.</p>

Local Land Services Act 2013 (LLS Act)	The objects of the LLS Act include ‘to ensure the proper management of natural resources in the social, economic and environmental interests of the State, consistently with the principles of ecologically sustainable development. The Act regulates the clearing of native vegetation, however section 60(O)(b)(ii) excludes the need for consent under the LLS Act where the clearing is an activity carried out by a determining authority within the meaning of Part 5 of the EP&A Act 1979.
Fisheries Management Act 1994 (FM Act)	The FM Act provides for the protection, conservation, and recovery of threatened species, populations and ecological communities of fish and marine vegetation and fish habitats, as well as promoting the development and sharing of fishery resources in NSW. The land involved in this proposed activity is immediately adjacent to and contains four creek crossings that have been identified as key fish habitat as shown in Figure 9. The proposed works are anticipated to have an impact on one of these and this will require a permit for one culvert upgrade, where the road crosses Sawyers Creek.
National Parks and Wildlife Act 1974 (NPW Act)	The NPW Act regulates the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas. The main aim of the Act is to conserve the natural and cultural heritage of NSW. Where works will disturb Aboriginal objects, an Aboriginal Heritage Impact Permit (AHIP) is required. Initial database searches revealed no Aboriginal places or sites within the study area, and assessment has concluded that it is unlikely that any Aboriginal objects will be disturbed as a result of the proposed activity. However, GMC has been notified of several trees of Aboriginal significance on the Jerrara Road by Jennie Gordon of the Mulwaree Aboriginal Community Incorporated. These are larger trees with DBH generally > 1m. Under the precautionary principle no tree with DBH >0.5 m is to be removed without prior assessment.
Heritage Act 1977	The proposed activity does not involve an item or place listed on the NSW State Heritage Register or the subject of an interim heritage order or listing and is therefore not a controlled activity. Approval of works on the site is therefore not required] under Part 4 of the Heritage Act.
Protection of the Environment Operations Act 1997 (POEO Act)	The POEO Act is the key environmental protection and pollution statute. The POEO Act is administered by the EPA and establishes a licensing regime for waste, air, water and pollution. Relevant sections of the Act are listed below: <ul style="list-style-type: none"> • Part 5.3 Water Pollution • Part 5.4 Air Pollution • Part 5.5 Noise Pollution

	<ul style="list-style-type: none"> Part 5.6 Land Pollution and Waste <p>Any work potentially resulting in pollution must comply with the POEO Act. Relevant licences must be obtained if required.</p> <p>No licences have been identified as being required including an Environmental Protection Licence (EPL).</p>
Water Management Act 2000 (WM Act)	<p>The WM Act's main objective is to manage NSW water in a sustainable and integrated manner that will benefit today's generations without compromising future generations' ability to meet their needs. Section 91E of the Act establishes an approval regime for controlled activities within waterfront land. However, clause 41 of the Water Management (General) Regulation 2018 provides an exemption for public authorities in relation to all controlled activities on waterfront land.</p> <p>Note: Although formal approval under the WM Act is not required, if a proposed activity is within 40m of a waterway, an attempt should be made to comply with the requirements of controlled activities in order to reduce risks to waterways.</p>
Roads Act 1993	<p>Section 88 of the Roads Act states that a roads authority may, despite any other Act or law to the contrary, remove or lop any tree or other vegetation that is on or overhanging a public road if, in its opinion it is necessary to do so for the purposes of carrying out road work or removing a traffic hazard. However, the environmental safeguards outlined in this REF still apply.</p>
Biosecurity Act 2015	<p>The Biosecurity Act 2015 and regulations provide requirements for state level priority weeds. The Act regulates all plants, with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Section 5 considers the likelihood of encountering weeds and appropriate mitigation measures to reduce the risk of spreading.</p>
State Environmental Planning Policy (Biodiversity & Conservation) 2021 – Chapter 2 Vegetation in non-rural areas	<p>Clause 2.7 of the SEPP states that an authority to clear vegetation under this policy is not required if it is a clearing authorised under s60(O) of the Local Land Services Act 2013. Section 60(O) provides an exemption for clearing under Part 5 of the EP&A Act and therefore consent is not required under the SEPP.</p>
State Environmental Planning Policy (Biodiversity & Conservation) 2021 – Chapter 4 Koala Habitat Protection 2021	<p>The Koala Habitat Protection chapters of the SEPP aim to encourage the proper conservation and management of areas of natural vegetation that provide habitat for <i>Phascolarctos cinereus</i> (Koala) to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline. Chapter 4 Koala</p>

	<p>Habitat Protection 2021 applies to development under part 4 of the EP&A Act 1979. As the proposed activity is not ‘development’, Koala Habitat Protection SEPP does not apply. Regardless, consideration of impacts to koala and koala habitat may still be relevant under the BC Act 2016 for some activities.</p>
<p>State Environmental Planning Policy (Biodiversity & Conservation) 2021 – Chapter 8 Sydney Drinking Water Catchment</p>	<p>The aims of this Policy are:</p> <ul style="list-style-type: none"> (a) to provide for healthy water catchments that will deliver high quality water while permitting development that is compatible with that goal, and (b) to provide that a consent authority must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality, and (c) to support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment. <p>The SEPP applies to land within the Sydney drinking water catchment. Any development or activity proposed to be carried out on land to which this Policy applies should incorporate Water NSW’s current recommended practices and standards.</p> <p>Council will ensure that the proposed works will incorporate Water NSW’s current recommended practices and standards.</p>
<p>State Environmental Planning Policy No 55 - Remediation of Land</p>	<ul style="list-style-type: none"> (1) The object of this Policy is to provide for a Statewide planning approach to the remediation of contaminated land. (2) In particular, this Policy 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— <ul style="list-style-type: none"> (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. (1) A consent authority must not consent to the carrying out of any development on land unless— <ul style="list-style-type: none"> (a) it has considered whether the land is contaminated, and (b) 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

(c) 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.



3. Existing Environment and Impact Assessment

3.1. Landform, Geology and Soils

3.1.1. Existing Environment

The proposed works site comprises rehabilitation and upgrade of a section of the Jerrara Road.

The Jerrara Road is a rural road and provides a major thoroughfare for access between the Hume Highway at Marulan and Bungonia, Windellama, Oallen and beyond to Nerriga and Nowra.

The project site is located at an elevation lying between approximately 620 m and 660 m ASL. The landscape can be described as very gently undulating to relatively flat. The underlying geology comprises predominantly porphyritic igneous rocks, overlain by loam soils.

NorBE mapping indicates that there are no significant salinity or erosion risks present.

3.1.2. Impact Assessment

As the proposed works site is an existing and long-established road, the proposed works will be impacting on an already disturbed and highly modified site. It is considered that there will be only minor and temporary impacts on the existing environment, with the biggest impacts occurring while construction works are underway. General environmental impacts will mostly involve temporary disruption to use of this section of the road.

Mitigation measures will include:

- Construction Environment Management Plan (CEMP) to be prepared prior to works commencing, which will include relevant REF Environmental Safeguards and Mitigation Measures.
- All key stakeholders to be notified at least five days prior to commencement of proposed works.
- The road will remain open during the road works, with a traffic management and suitable traffic control measures in place. Traffic control may include traffic lights, stop/slow, or spotters, depending on the work being carried out.
- All personnel working on the site will receive training to ensure awareness of environmental protection requirements to be implemented during the project.
- Construction works to be conducted during standard work hours to mitigate/minimise impacts of noise.

3.2. Contaminated Land, Acid Sulfate Soils and Salinity

3.2.1. Existing Environment

Database searches have revealed no risk of potential acid sulphate soils, contamination or salinity issues in the study area and subject land.

3.2.2. Impact Assessment

Based on database searches, there is unlikely to be any impact of the proposed works on contaminated land (or acid sulphate soils or salinity).

However, if any contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the

contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with relevant government agencies.

Acid sulphate soils typically are associated with waterlogged, anaerobic sites rich in iron sulphide minerals. Such conditions are not present in the subject site. If at any time it appears that Acid Sulfate Soils will or may be disturbed an Acid Sulfate Soils Management Plan will be prepared and implemented as part of the CEMP.

3.3. Water Quality and Hydrology

3.3.1. Existing Environment

The subject site lies within the Shoalhaven River Catchment, which is one of Sydney's key drinking water catchments. The proposed works cross two named creeks (Stoney Creek and Sawyers Creek) and five ephemeral drainage lines that flow into Stoney Creek, which in turn ultimately joins with the Shoalhaven River.

3.3.2. Impact Assessment

The proposed activity is not likely to have any significant long term adverse impacts on water quality and hydrology. Overall, the long-term impacts of the proposed works will be beneficial as there will be a reduction in potential for run-off waters to be carrying suspended sediments. There is unlikely to be any significant impact on groundwater aquifers.

In the short term, while construction works are underway, there is a small risk of run-off waters carrying suspended sediments and other potential pollutants into local waterways. These risks will be managed through preparation and implementation of a Soil and Water Management Plan (SWMP) and site-specific erosion and sediment control plan (ESCP) as part of the CEMP.

Site management will incorporate best management erosion and sediment control practices such as those found in the Department of Housing's "Blue Book" (4th Edition) on erosion and sediment control.

Details of specific environmental safeguards and mitigation measures relating to water quality and hydrology are provided in Table 7.

3.4. Biodiversity

3.4.1. Existing Environment

The following database searches have been conducted as part of this REF:

- Threatened species search of the NSW Bionet Atlas
- EPBC Protected Matters search tool
- Biodiversity Values Map
- SEED mapping for PCT and EEC
- GMC SSA mapping

Adjoining lands comprise a mix of partly cleared pastures, remnant grassy woodlands and dry sclerophyll forest. The SEED SCIVI database maps most of the areas adjoining the Jerrara Road as containing the plant community known as *PCT 3486 Wollondilly Shoalhaven Slopes Grassy Open Forest*.

Typical representative plant species that would be expected in this plant community include:

Trees: *Eucalyptus melliodora*, *Eucalyptus bridgesiana*, *Eucalyptus blakelyi*, *Eucalyptus dives*, *Eucalyptus mannifera*, *Eucalyptus rossii* and *Eucalyptus macrorhyncha*.

Shrubs: *Melichrus urceolatus* and *Lissanthe strigosa*.

Groundcover: *Goodenia hederacea*, *Microlaena stipoides*, *Bothriochloa macra*, *Themeda triandra*, *Gonocarpus tetragynus*, *Hydrocotyle laxiflora* and *Lomandra filiformis*.

Site inspections have confirmed broadly speaking that this type of vegetation is present, but that Blakely's Red Gum (*Eucalyptus blakelyi*) is replaced by the closely related Cabbage Gum (*Eucalyptus amplifolia*) and that other canopy tree species also include Coastal Grey Box *Eucalyptus bosistoana*, Silver Top Ash (*Eucalyptus sieberi*), White Stringybark (*Eucalyptus globoidea*) and Blue Leaf Stringybark (*Eucalyptus agglomerata*).

This ecological community is not associated with any listed Threatened Ecological Communities under either NSW State or Commonwealth legislation.

Targeted flora and fauna surveys of the road reserve did not find any evidence of any threatened plants or animals in the area to be impacted by the proposed activity.

Matters of National Environmental Significance

Database searching revealed that there are no World Heritage Properties, National Heritage Places or Wetlands of International Importance located on or near the subject site.

Thirteen migratory fauna species were identified as having the potential to utilise the site or adjacent lands. As the study site contains no wetlands or marine habitats, migratory wetlands and marine species have been excluded from the analysis. However, all listed threatened species are included.

Threatened Ecological Communities, Flora and Fauna with potential to occur on or near the subject site

Two Threatened Ecological Communities/MNES were identified as having the potential to occur on the subject site or on adjacent lands.

Ten Threatened Flora Species/MNES were identified as having the potential to occur on the subject site or on adjacent lands.

Forty-seven Threatened Fauna Species/MNES were identified as having the potential to occur on the subject site or on adjacent lands.

Stoney Creek and Sawyers Creek lie within the Study Area and are flagged on the Biodiversity Values Map. (See Figure 8).

Table 4: Threatened/ Endangered Ecological Communities with potential to occur on or near the subject site

Threatened Ecological Community Name	NSW Status	Commonwealth Status
Natural Temperate Grassland of the South Eastern Highlands		Critically Endangered
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Critically Endangered

Table 4: Threatened Flora Species with potential to occur on or near the subject site

V = Vulnerable, E = Endangered

Scientific Name	Common Name	NSW Status	EPBC Status	BioNet Record	EPBC PMST
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V		Yes
<i>Dodonaea procumbens</i>	Creeping Hop Bush	V	V		Yes
<i>Eucalyptus aggregata</i>	Black Gum	V	V		Yes
<i>Haloragis exalata exalata</i>	Wingless Raspwort	V	V		Yes
<i>Leucochrysum albicans tricolor</i>	Hoary Sunray		E	Yes	Yes
<i>Pomaderris cotoneaster</i>	Cotoneaster Pomaderris	E	E		Yes
<i>Pomaderris delicata</i>	Delicate Pomaderris	E	CE		Yes
<i>Pomaderris pallida</i>	Pale Pomaderris	V	V		Yes
<i>Rhizanthella slateri</i>	Eastern Underground Orchid	V	E		Yes
<i>Thesium australe</i>	Austral Toadflax	V	V		Yes

Table 4: Threatened Fauna Species with potential to occur on or near the subject site
V = Vulnerable, E = Endangered, CE = Critically Endangered, M = Migratory (EPBC Act)

Scientific Name	Common Name	NSW Status	EPBC Status	BioNet Record	EPBC PMST
AMPHIBIANS					
<i>Litoria aurea</i>	Green and Gold Bell Frog	E	V	Yes	
BIRDS					
<i>Acanthochaera phrygia</i>	Regent Honeyeater	E	CE	Yes	Yes
<i>Aphelocephala leucopsis</i>	Southern Whiteface	V	V		Yes
<i>Actitis hypoleucos</i>	Common Sandpiper		M		Yes
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V		Yes	
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	Yes	Yes
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper		M		
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE, M		Yes
<i>Calidris melanotos</i>	Pectoral Sandpiper		M		Yes
<i>Calocephalon fimbriatum</i>	Gang Gang Cockatoo	V		Yes	
<i>Calyptorhynchus lathami lathami</i>	Glossy Black Cockatoo	V		Yes	
<i>Chthonicola sagittata</i>	Speckled Warbler	V		Yes	
<i>Daphoenositta chrysoptera</i>	Varied Sitella	V		Yes	
<i>Falco hypoleucos</i>	Grey Falcon	E			Yes
<i>Gallinoga hardwickii</i>	Latham's Snipe		M		Yes

<i>Grantiella picta</i>	Painted Honeyeater	V	V		Yes
<i>Hirundapus caudacutus</i>	White-throated Needletail		V, M		Yes
<i>Lathamus discolor</i>	Swift Parrot	E	CE	Yes	Yes
<i>Melanodryas cucullata cucullata</i>	Hooded Robin	V		Yes	
<i>Melithreptus gularis gularis</i>	Black Chinned Honeyeater	V		Yes	
<i>Monarcha melanopsis</i>	Black Faced Monarch		M		Yes
<i>Motacilla flava</i>	Yellow Wagtail		M		Yes
<i>Myiagra cyanoleuca</i>	Satin Flycatcher		M		Yes
<i>Neophema chrysostoma</i>	Blue-winged Parrot	V	V		Yes
<i>Numenius madagascariensis</i>	Eastern Curlew		CE, M		Yes
<i>Petroica boodang</i>	Scarlet Robin	V		Yes	
<i>Polytelis swainsonii</i>	Superb Parrot	V	V		Yes
<i>Pycnoptilus floccosus</i>	Pilot Bird		V		Yes
<i>Rhipidura rufifrons</i>	Rufous Fantail		M		Yes
<i>Rostratula australis</i>	Australian Painted Snipe	E	E		Yes
<i>Stagonopleura guttata</i>	Diamond Firetail	V		Yes	
<i>Tyto novaehollandiae</i>	Masked Owl	V		Yes	
MAMMALS					
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Yes	Yes
<i>Dasyurus maculatus maculatus</i>	Spotted Tail Quoll	V	E		Yes
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V		Yes	
<i>Myotis macropus</i>	Southern Myotis	V		Yes	

Petauroides volans	Greater Glider		V	Yes	Yes
Petaurus australis	Yellow Bellied Glider	V		Yes	
Petaurus norfolcensis	Squirrel Glider	V		Yes	
Petrogale penicillata	Brush-tailed Rock Wallaby		V		Yes
Phascolarctos cinereus	Koala	V	V	Yes	Yes
Pseudomys novaehollandiae	New Holland Mouse		V		Yes
Pteropus poliocephalus	Grey Headed Flying Fox	V	V	Yes	Yes
REPTILES					
Aprasia parapulchella	Pink Tailed Worm Lizard	V	V		Yes
Delma impar	Striped Legless Lizard	V	V		Yes
FISH					
Macquaria australasica	Macquarie Perch		E		Yes
Protoroctes maraena	Australian Grayling		V		Yes

3.4.2. Impact Assessment

Site inspections on 14/02/2022, 18/02/2022 and 21/03/2024 showed that, although native plant species are found in parts of the road reserve, the road reserve areas immediately adjacent to the sealed road edge are largely dominated by exotic plants and recent regrowth. A full list of plant species identified during site inspections is provided in Appendix C.

A minor amount of native vegetation will be cleared/ modified/ disturbed / impacted as part of the proposed activity. This mostly comprises grasses and grass-like plants, plus some forbs and shrubs.

No large, hollow bearing trees will be impacted, and there is not likely to be any significant impact on any arboreal fauna. It is possible that some woodland and forest bird species may occasionally utilise shrubs in parts of the road reserve for foraging, but it is highly unlikely that the proposed activity will have any significant impact on these species, as the area does not provide optimum habitat and adjoining lands provide much higher quality foraging areas.

Some priority or regionally significant weeds were identified as occurring in the study site. These include African Lovegrass (*Eragrostis curvula*), Blackberry (*Rubus fruticosus*) and Serrated Tussock Grass (*Nassella trichotoma*). These constitute relatively minor infestations that are being managed by on-going routine roadside maintenance activities. It is considered unlikely that the proposed activity will lead to any significant increase in weed infestations or impact.

Clearing of some vegetation is required as part of the proposed activity as part of widening and sealing the road, plus construction of roadside drainage works and extending the culvert at Shaw's Creek. This will require removal of one medium sized Cabbage Gum (*Eucalyptus amplifolia*) (DBH approximately 57 cm), but this is unlikely to have a significant impact on biodiversity values.

A small number of dead trees adjacent to the road and overhanging it will need to either be removed or have larger limbs removed for safety reasons, but these trees do not contain nesting hollows and there will be minimal impacts on biodiversity. The Box culvert at Sawyers Creek has been examined for possible presence of Southern Myotis Bats (*Myotis macropus*), but no evidence of Myotis or any other bats was found.

The 'likelihood of occurrence assessment' methodology applied in preparing this REF involved both field survey and desktop assessment.

Field survey effort involved a qualified ecologist assessing vegetation within the study area on both sides of the road and the areas adjacent to the intersection. No threatened fauna or flora species were detected during field survey work.

Desktop survey: Conservative approach to likelihood of occurrence assessment has been taken ie, if in doubt it would be assumed that the species is likely to be present/ has potential to occur on site.

Consideration was given to the potential impact of the proposed activity on each species assessed as potentially occurring in the REF Study Area.

See Appendix A for the full likelihood of occurrence assessment and consideration of potential impacts for each flora and fauna species identified in the 10km search of the NSW Bionet Atlas and EPBC Protected Matters Search Tool. This analysis concluded that only one threatened ecological community and two threatened species were considered to occur or be likely to use habitats in the REF Study Area.

It has been determined that the activity would have a low chance of having an impact on most of these species. However, an Assessment of Significance as per s7.3 of the Biodiversity Conservation Act 2016 has been undertaken for those threatened communities and species where a low to moderate impact was considered possible, these being Diamond Firetail *Stagonopleura guttata* and Masked Owl *Tyto novaehollandiae*.

The analysis has concluded that the proposed activity is not likely to have a significant adverse impact on these threatened entities. (See Appendix B for details).

3.5. Aboriginal Heritage

3.5.1. Existing Environment

A search of the Goulburn Mulwaree database and search of the AHIMS database (conducted on 28/03/2024) found no records of any Aboriginal places, sites or artefacts within the study area. However consultation with Jennie Gordon of the Mulwaree Aboriginal Community Incorporated has revealed that there are several significant Aboriginal Scar Trees located along the Jerrara Road. Most of the identified trees are not located within the study area for this project, with only three trees being identified in parts of the road reserve adjacent to the proposed works. These trees will not be impacted by the proposed works.

While there are no records of any AHIMS Aboriginal sites in the general area (Appendix B), almost the entire area is flagged on the Goulburn Mulwaree Council mapping database as having the potential to contain Aboriginal artefacts. See Figure 10.



3.5.2. Impact Assessment

As the project site involves an already disturbed site, the proposed activity is not likely to result in any impacts to listed/known Aboriginal objects or items. However, there is the possibility that work activities may uncover previously undiscovered Aboriginal objects or items.

No Aboriginal significant trees or sites are likely to be impacted by the proposed activity, but under the precautionary principle, any very large trees (those with a DBH >50 cm) will be protected and

only removed if absolutely necessary for safety reasons. Any such trees will be re-assessed prior to removal, both for potential Aboriginal significance and for fauna habitat value.

All site personnel will be briefed on the possibility of uncovering unexpected Aboriginal objects or items and legislative requirements. If any Aboriginal objects or items are found, all works in the vicinity of the find must cease and the Project Manager be contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed.

3.6. Non-Aboriginal Heritage

3.6.1. Existing Environment

Database searches of the NSW State Heritage Register, Register of National Estate and LEP Heritage have shown no evidence of heritage items in the study area. However due to the long history of European settlement and usage of the area, it is possible that unknown heritage items may be located in or near the subject site.

3.6.2. Impact Assessment

The proposed activity is not likely to result in any impacts to any listed/known non-Aboriginal heritage items. However, if any heritage objects or items are found, all works in the vicinity of the find must cease and the Project Manager be contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed.

3.7. Noise and Vibration

3.7.1. Existing Environment

The site for the proposed activity comprises a rural road surrounded by land that is used for agricultural activities. There are no buildings and no sensitive noise and/or vibration receivers in close proximity to the subject site.

The greatest source of noise at present is from vehicular traffic utilising the Jerrara Road.

3.7.2. Impact Assessment

There will be a temporary increase in noise levels due to machinery involved in construction works while the proposed activity is carried out. On completion of the proposed works, noise levels are likely to be less significant as the road will be in better condition and less likely to generate vibrational noise from vehicles travelling over a rough, poorly maintained road. It is not anticipated that rehabilitating the road will lead to any change in current traffic volume.

Local residents/road users will be notified of intended works at least 5 working days prior to the commencement of works.

Road works will be carried out 7.00 am to 5.00 pm Monday to Friday, 7.00 am to 5.00 pm Saturday if required. No night works will be involved.

No work on Sundays or Public Holidays

Monday to Friday hours are compliant with Interim Construction Noise Guidelines.

Saturday work hours are consistent with Goulburn Mulwaree Council work hours.

3.8. Air Quality

3.8.1. Existing Environment

Air quality in the study area and surrounds is generally very good, as it is a rural landscape with no nearby sources of industrial pollution. Vehicles utilising the road generate a small amount of exhaust fumes, but there are no major issues relating to air quality.

3.8.2. Impact Assessment

There will be a small increase in exhaust fumes from vehicles and machinery while the proposed works are under construction. There may be a small amount of dust generation, but this is considered to be minor because traffic will be slowed and dust suppression (wetting down) will be undertaken by road works crew.

Works will not be carried out in extreme weather conditions that are likely to contribute to dust problems (eg no work in hot, dry weather with high wind conditions).

Vehicles and machinery are to be well maintained and not left idling unnecessarily.

Stockpiles will be constructed, maintained and managed to minimise dust generation.

In the long term there will be a significant positive impact on air quality after rehabilitation of the road and roadside drains, as this will minimise dust generation.

3.9. Waste and Chemical Management

The proposed works may generate a small amount of waste from excavated materials and vegetative material associated with site preparation. Wherever possible, these will be re-used on site. Clean fill may be used on other sites managed by Council, or alternatively surplus materials will be transported to a licenced waste management facility for disposal.

There is a small risk of fuel and oil leaks from vehicles and machinery. This will be managed by ensuring that:

- There will be no bulk storage of fuels, lubricants/oils or any hazardous chemical substances or liquids on site.
- If there is to be any storage of fuels, oils or hazardous chemicals, these must be in impervious, secure, bunded areas.
- If any refuelling or servicing of vehicles or machinery is to occur on site, it must be undertaken in a manner that minimises risk of spillage or pollution of the environment. Such activities must not occur in any area where there is a direct risk of fuels, lubricants or chemicals leaching or flowing into any waterway.
- Emergency spill procedures are to be included in site induction/toolbox talks and to be displayed prominently on site.
- A spill kit and appropriately trained personnel are to be present on site
- Any spillages will be cleaned up immediately.

3.10. Traffic

While traffic flow will be slowed during the proposed works due to the need for traffic control measures, there is not likely to be an additional significant adverse impact on road users while works are underway.

In the long term, the upgrading and rehabilitation of this road will lead to a significant positive impact on traffic.

It is intended that the Jerrara Road will remain open during the proposed works, with suitable traffic control measures in place, either traffic lights, stop slow, or spotters depending on the works being carried out. A Traffic Management Plan will be prepared and implemented in line with Council policies and procedures.

Road users will be advised of the proposed works, with signage in the approaches to the works from each end, and in the immediate vicinity of the works.

Owners of properties along the Jerrara Road will be notified of the proposed works at least five working days prior to commencement of the works.

3.11. Visual Amenity/ Landscape

The proposed works have minimal impacts on visual amenity as they involve the rehabilitation of an existing road. There are no major structures that would have a significant visual amenity impact.

In addition, there are no residences or buildings in the near vicinity of the proposed works that could be impacted by any visual amenity issues.

There will be a minor impact while construction works are underway, in the form of vehicles and machinery on site, signage and temporary stockpiles. These will be entirely removed and the site rehabilitated as part of the decommissioning process on completion of construction

3.12. Socio-Economic Considerations

The proposed works, on completion, will improve traffic access and movement along the Jerrara Road. This includes improved conditions for school bus services, delivery vehicles and emergency services vehicles, as well as for residents in the local area.

The proposed works will not have any adverse impact on any community services or infrastructure.

The proposed works will not have any adverse impacts on public safety.

The proposed works will not have any impacts on sites considered to be recreationally important to the local community.

The proposed works are not likely to have any adverse impacts on economic factors, including employment and industry. The proposed works may have a minor impact on property prices, as these are likely to increase due to better access through provision of a sealed road.

No increased demands on resources are anticipated as a result of the proposed works.

3.13. Cumulative Impacts

It is not anticipated that there will be any negative cumulative effect on the region as the proposed activity comprises the rehabilitation of an existing road.

The proposed works will have an overall long term beneficial environmental effect. Rehabilitation of the Jerrara Road will improve road safety and ultimately reduce sedimentation and dust issues.

4. Clause 171 of the EP&A Regulation

Clause 171 of the EP& A Regulation 2021 sets out factors that need to be considered when assessing environmental impact under Part 5 of the EP&A Act. These are summarised below.

Table 5: Clause 171 (2) Assessment		
Relevant Clause	Impact Assessment (Positive/Negative/Neutral)	Reason
(a) Any environmental impact on a community?	Short term minor during construction, long term positive	The proposed works will have minor environmental impacts during construction. On completion, the works will result in improved public safety and utilisation of the Jerrara Road.
(b) Any transformation of a locality?	Beneficial	The proposed works consist of upgrading of existing road. There will be no significant adverse transformation of the locality.
(c) Any environmental impact on the ecosystems of the locality?	Neutral	This REF has considered environmental impacts. Through application of controls and mitigation measures identified in the REF, there will be no significant adverse impacts on the ecosystems of the locality.
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Neutral	There will be no reduction in aesthetic, recreational, scientific or other environmental qualities or values of the locality.
(e) (i) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance?	Neutral	The proposed works will not have any adverse impact on these factors.
(e) (ii) Any effect on a locality, place or building having other special value for present or future generations?	Neutral	The proposed works will not have any significant effects on a locality, place or building having other special value for present or future generations.
(f) Any impact on the habitat of protected animals (within the meaning of the	Neutral	This REF has considered potential impacts on habitat of protected animals. The REF

Biodiversity Conservation Act 2016)?		has identified that no habitat will be significantly impacted by this activity. In addition, through application of controls and mitigation measures identified in the REF, there will be no significant adverse impacts on habitat of protected animals of the locality.
(g) Any endangering of any species of animal, plant or other form of life whether living on land in water or in the air?	Neutral	This REF has considered potential impacts on protected flora and fauna and found that there is not likely to be any significant impacts. Through application of controls and mitigation measures identified in the REF, there will be no significant adverse impacts on any endangered species of the locality.
(h) Any long-term effects on the environment?	Neutral to beneficial	There will be no long term adverse effects on the environment.
(i) Any degradation of the quality of the environment?	Neutral	There will be no degradation of the environment. Implementation of management and mitigation measures documented in this REF will avoid any degradation of the environment.
(j) Any risk to the safety of the environment?	Minor adverse to neutral	There is a minor risk to the environment associated upgrading the Jerrara Road, but this will be managed through implementation of mitigation measures and controls identified in this REF.
(k) Any reduction in the range of beneficial uses of the environment?	Beneficial	There will be no reduction in the range of beneficial uses of the environment. The project will improve beneficial uses of the environment.
(l) Any pollution of the environment?	Minor short term risk during construction, neutral long term	There is a minor risk of pollution of the environment associated with construction works, but this will be managed through implementation of mitigation measures and controls identified in this REF.

(m) Any environmental problems associated with the disposal of waste?	Neutral	There will be minimal waste generated through the proposed works, which will be disposed of at an appropriately licenced facility.
(n) Any increased demand on resources (natural or otherwise) which are, or are likely to become, in short supply?	Neutral	No increased demands on resources are anticipated as a result of the proposed works.
(o) Any cumulative environmental effect with other existing or likely future activities?	Neutral	The proposed works are not likely to generate any cumulative environmental effect. They will ensure that the Jerrara Road is safer and with minimal adverse impacts on the environment.
(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	Not applicable/neutral	The project site is not in a coastal area and there will be no impact on any coastal processes or hazards, including those under projected climate change conditions.
(q) Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1?	Not applicable	
(r) Any other relevant environmental factors?	Not applicable	

5. Environmental Safeguards and Mitigation Measures

Table 6 provides an overview of environmental safeguards and mitigation measures that may apply to road maintenance and rehabilitation projects. Not all safeguards and mitigation measures will apply to all projects, and measures should be selected and applied as appropriate to the specific project.

Table 6: Environmental Safeguards and Mitigation Measures			
Impact Type	Description of Potential Impact	Mitigation Measures	Timing
General	General - minimise environmental impacts during construction	A Construction Environment Management Plan (CEMP) is to be prepared prior to any construction works commencing. The CEMP should include relevant REF Environmental Safeguards and Mitigation Measures.	Pre-Construction
	General - notification of key stakeholders	All key stakeholders including businesses and residents affected by the activity to be notified at least five business days prior to the start of the activity.	Pre-Construction
	General - site specific training and induction	All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This is to include site induction and regular 'toolbox' briefings. Site specific training to include areas of high sensitivity including Aboriginal objects, threatened species habitat and EECs. Records of site induction training to be kept by project manager.	Pre-Construction
	General - noise mitigation	Standard construction hours: * Monday to Friday 7:00am to 6:00pm * Saturdays 8:00am to 1:00pm * No work on Sundays or Public Holidays Works outside these times will be carried out in accordance with the management and mitigation measures detailed within the Noise and Vibration Management Plan.	Construction

Soils and Erosion	General construction impacts	Prepare and implement a Soil and Water Management Plan (SWMP) and site specific erosion and sediment control plan (ESCP) as part of the CEMP.	Pre-Construction
		Site management will incorporate best management erosion and sediment control practices such as those found in the Department of Housing's "Blue Book" (4th Edition) on erosion and sediment control.	Construction
	Sedimentation and erosion	Construct temporary drainage structures in accordance with the 'Technical Guideline - Temporary Stormwater Drainage for Road Construction' (RMS 2011)	Construction
		Linear silt fencing to be installed down slope of all affected areas and stockpiles. Silt fencing will be installed before excavation begins.	Construction
		Sandbags, hay bales wrapped in geotextile fabric etc. will be used to slow water flow and trap sediment. No straw bales are to be used.	Construction
	Sedimentation and erosion	Overburden will be placed in the form of a bund upslope of the site where necessary to reduce surface water entering the site.	Construction
		All erosion and silt control devices will be visually inspected weekly to ensure effectiveness as well as after each rainfall event.	Construction
Stockpile management	Stockpiles will be designed, established, operated and decommissioned in accordance with the RMS Stockpile Site Management Guidelines 2015.	Construction	
Soil stabilisation and restoration	The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with: * Landcom's "Blue Book" (4th Edition) on sediment and erosion control * RMS Landscape Guidelines * RMS Guidelines for Batter Stabilisation Using Vegetation	Post construction	

Contaminated Land/Acid Sulfate Soils	Contaminated land	If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with relevant government agencies.	Construction
	Acid Sulfate Soils	If Acid Sulfate Soils will or may be disturbed an Acid Sulfate Soils Management Plan is required as part of the CEMP.	Pre-Construction
Water Quality/Hydrology	Water quality - impacts to surface and groundwater quality	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.	Construction
		Water quality control measures are to be used to prevent any materials (eg. concrete, grout, sediment, etc) entering drain inlets or waterways.	Construction
		Wash down should use potable water and excess debris removed using hand tools. Wash down waste must be filtered before release, and away from all waterways.	Construction
		No dirty water may be released into drainage lines and/or waterways.	Construction
		Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets	Construction
		Reduce water velocity and capture sediment on site	Construction
		Minimise the amount of material transported from site to surrounding pavement surfaces	Construction
		Divert clean water around the site.	Construction

	Water pollution - fuel, chemical spills and hazardous materials	Store fuels, chemical and hazardous materials in secure, bunded areas within temporary construction ancillary facilities, and at least 40m from all waterways.	Construction
		Capture and dispose of spill and contaminated materials from temporary construction ancillary facilities at a licensed facility.	Construction
		Provide spill kits around temporary construction ancillary facilities.	Construction
		Measures to control pollutants from stormwater and spills will be investigated and incorporated in the pavement drainage system at locations where it discharges to the receiving drainage lines. Measures aimed at reducing flow rates during rain events and potential scour will also be incorporated in the design of the pavement drainage system.	Construction
Biodiversity	Flora and fauna - general safeguards	Prepare a Vegetation Management Plan (VMP) as part of the CEMP. The VMP will: * Identify measures to manage vegetation within the road reserve; * Detail restoration, regeneration and rehabilitation of any areas of any native vegetation that will be removed to accommodate the proposed works. * Detail appropriate management for the potential habitat of threatened flora and fauna species that will be indirectly impacted by the proposal. This may include fencing and signage. * Identify weed management strategies.	Pre-Construction and Construction
		As part of the site induction process, provide all site personnel with information on the biodiversity values of the study area, including threatened species, no-go areas and responsibilities under relevant environmental legislation,	Pre-construction

		including but not limited to the EP&A Act, BC Act and EPBC Act and associated management plans for individual species	
		Should unexpected threatened fauna or flora be located at any time during construction, cease work immediately in the area to prevent further harm. Contact Council's Environmental Officer to determine if further assessment or management plans are required.	Pre-Construction and Construction
	Clearing of vegetation: pre-clearing	Qualified fauna experts may be required to conduct pre-clearing surveys and undertake fauna handling. This may include: * hollow bearing tree survey; * stag-watch survey (targeted threatened bird species, arboreal mammals and microbats) in order to identify the number and type of nest boxes required and appropriate locations to install them.	Pre-construction and Construction (Unlikely to be required for this project as no large hollow bearing trees are expected to be impacted).
		Where clearing is required, establish exclusion zones in accordance with Guide 2: Exclusion Zones from Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (2024) to ensure clearing does not extend beyond the approved area.	Pre-Construction and Construction
		Trees that are to be trimmed (or removed if necessary) will be clearly marked. Any vegetation to be protected adjacent to the work area will be protected with exclusion fencing.	Pre-construction and Construction
		Exclusion fencing will be placed at or beyond the drip lines of the protected vegetation so as to prevent damage to their root systems.	Pre-construction and Construction
		Any trees found to contain hollows are to be checked for native fauna prior to being removed. If any fauna is found, works will stop and WIRES/Wildcare will be contacted. Refer to any Council specific policy requirements for hollow bearing trees and amend mitigation measures accordingly.	Pre-construction and Construction (Unlikely to be required for this project).
	Loss of threatened species and their habitats	Remove minimum required vegetation and minimise disturbance to remaining vegetation	Construction

		If any damage occurs to vegetation outside of the boundaries of the work site as a result of the implementation of the proposal, the Project Manager will be notified and will establish strategies for mitigation of impacts and site restoration.	Construction
		Minimise removal of native vegetation and fauna habitat	Construction
		Implement exclusion zones to protect threatened ecological communities and threatened species habitat.	Construction
		Remove trees in accordance with Guide 4: Clearing of Vegetation and Removal of Bushrock, Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (2024) and in the presence of a qualified ecologist or wildlife expert experienced in the rescue of fauna.	Construction
		Where reasonable and feasible, retain mature and hollow bearing habitat trees, including dead stags	Construction
		If hollow bearing trees are being removed, provide nest boxes to mitigate impacts, as determined by the pre-clearing survey.	Construction
		Works are not to harm threatened fauna	Construction
		Works are not to create a barrier to fauna movement	Construction
	Aquatic habitats and riparian zones	Manage riparian areas in accordance with Guide 10: Aquatic Habitats and Riparian Zones, Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (2024).	Construction
		Apply to NSW Department of Primary Industries for a permit to undertake activities regulated by the Fisheries Management Act..	Preconstruction
	Invasion by exotic species	Manage vegetation within the road reserve and adjacent to areas of vegetation clearing in accordance with Guide 6: Weed Management and Guide 10: Aquatic Habitats and Riparian Zones of Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (2024) to reduce invasion by weed species.	Construction

		Use weed-free topsoil in landscaping and revegetate disturbed sites with locally indigenous species.	Construction
		Construction machinery should be washed prior to entering and leaving site to ensure weed propagules are not transported.	Construction
	Stockpiling	Only place stockpiles in low value vegetation, where cleared sites are unavailable.	Construction
		Stockpiles should be no taller than 2m height.	Construction
		Use existing stockpiles before creating new ones.	Construction
	Site restoration	The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with: * Landcom's "Blue Book" (4th Edition) on sediment and erosion control; * RMS Landscape design guideline; * RMS's Guideline for Batter Surface Stabilisation using vegetation	Pre-Construction and Construction
Aboriginal Heritage	Aboriginal heritage - awareness	All personnel working on site will receive training to ensure awareness of possible Aboriginal objects within the study area and immediate surrounds, and relevant statutory responsibilities. Large trees (DBH >50 cm) to be protected. If any large trees are anticipated to be impacted at any time, they must be assessed by GMC Environment & Biodiversity Assessment Officer in collaboration with representatives of the local Aboriginal community.	Pre-construction & during construction
	Aboriginal heritage - unexpected finds	If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Project Manager contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed.	Construction

Non Aboriginal Heritage	Non Aboriginal Heritage – unexpected finds	If heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Project Manager contacted immediately, and the Standard Management Procedure - Unexpected Heritage Items (RMS, 2015) will be followed.	Construction
Noise and Vibration	Noise and vibration - notification	All sensitive receivers (eg local residents) likely to be affected will be notified at least five working days prior to the start of any works associated with the activity that may have an adverse noise or vibration impact.	Pre-Construction
	Noise and vibration - hours	Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays may not be permitted and, if permitted, works are to minimise noise impacts.	Construction
	Noise and vibration - out of hours	Where out-of-hours activities are required, a Noise and Vibration Management Plan will be prepared and implemented in consultation with sensitive receivers.	Construction
Air Quality	Air quality	Measures to minimise or prevent air pollution or dust are to be used including watering or covering exposed areas.	Construction
		Works are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely	Construction
		Vegetation or other materials are not to be burnt on site.	Construction
		Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation	Construction
		Vehicles and equipment are to be maintained in good working order.	Construction
		Monitor work areas and stockpiles for dust generation and seed/cover/spray to suppress.	Construction

		Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust	Construction
		Do not leave vehicles idling	Construction
Waste/Chemical Management	Waste minimisation and management	A Waste Management Plan will be prepared as part of the CEMP, in accordance with RMS Environmental Procedures - Management of Waste on Roads and Maritime Services Land.	Pre-Construction
		Prepare and implement a procedure for handling the unexpected discovery of contamination prior to the commencement of construction. The procedure will be incorporated into the CEMP for the proposal and will outline the process for the identification and assessment of potentially contaminated material in the event that previously unidentified contamination is discovered during construction of the proposal.	Pre-Construction
		All surplus material, off cuts, and other debris resulting from the work shall be removed from site and disposed of by a licensed contractor to a licensed waste management facility. All waste to be covered during transportation.	Construction
		Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed.	Construction
		Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.	Construction
Traffic	Traffic and transport	Where possible, current traffic movements and property access are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays.	Construction
		If traffic disturbance is unavoidable, a Traffic Management Plan (TMP) will be prepared in accordance with the RMS Traffic Control at Work Sites Manual (RTA 2010) and QA Specification G10: Control of Traffic (RTA 2008).	Pre-Construction

		Comply with Council requirements regarding traffic control, access and road/ pedestrian access.	Construction
		Erect signs regarding proposed works, temporary road closures, diversions, etc.	Construction
Visual Amenity/Landscape	Visual impact	Contain all work within the boundaries designated on the site plan	Construction
		Restore work sites to as close to their original condition as possible	Post-Construction
		Minimise spread of stockpiles, waste, and parking	Construction
Socioeconomic Factors	Social	Display public information signs until site restoration is complete	Construction
		Carry out community and stakeholder consultation before works start	Pre-Construction
		Notify the Asset Manager immediately of any complaints or any accidental damage to property	Construction
		Locate services on DBYD search and peg out no-go areas to avoid service-disruption	Pre-Construction
		All personnel will exercise courtesy in dealing with the community	Construction
		Liaise with other development sites to co-ordinate works and minimise impacts (eg delivery times, parking)	Construction

6. Consultation

Division 1 of the Infrastructure SEPP Provides recommendations for consultation with affected stakeholders (Table 7).

Table 7: Infrastructure SEPP consultation requirements	
Clause 13: Impacts on Council related infrastructure or services	Consultation Required
<p>Consultation is required if the public authority is of the opinion that the development:</p> <p>(a) will have a substantial impact on stormwater management services provided by a council, or</p> <p>(b) is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area, or</p> <p>(c) involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council, or</p> <p>(d) involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council, or</p> <p>(e) 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, or</p> <p>(f) 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).</p>	<p>The proposed works will not have a substantial impact on stormwater management.</p> <p>During construction work there will be an increase in vehicle (mostly truck) movements to and from the works site, but this is unlikely to strain the capacity of the local road system.</p> <p>The works do not involve connection to any sewerage system.</p> <p>The works do not involve connection to and use of a substantial volume of water from any part of a water supply system owned by a council.</p> <p>There will be some disruption to traffic using the Jerrara Road during the proposed works, which is considered to be minor and manageable.</p> <p>The proposal involves the rehabilitation of a significant section of the Jerrara Road. The proposed works are not minor or inconsequential. Council is both the proponent and determining authority for the proposed works.</p>
Clause 14: Impacts on local heritage	Consultation Required
<p>Consultation is required if the development:</p> <p>(a) is likely to have an impact that is not minor or inconsequential on a local heritage item (other than a local heritage item that is also a State heritage item) or a heritage conservation area, and</p> <p>(b) is development that this Policy provides may be carried out without consent.</p>	<p>The proposed works are not likely to have an impact that is not minor or inconsequential on a local heritage item (other than a local heritage item that is also a State heritage item) or a heritage conservation area.</p>

Clause 15: Impacts on flood liable land	Consultation Required
<p>Impacts on flood liable land In this clause, 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.</p>	<p>The proposed works are not being conducted on flood liable land that is susceptible to flooding by the probable maximum flood event. The proposed works are not expected to impact on flood patterns.</p>
Clause 16: Consultation with public authorities other than councils	Consultation Required
<p>Consultation is required if the development is:</p> <p>(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,</p> <p>(b) development on land in Zone E1 National Parks and Nature Reserves or in a land use zone that is equivalent to that zone—the Office of Environment and Heritage,</p> <p>(c) development adjacent to an aquatic reserve or a marine park declared under the Marine Estate Management Act 2014—the Department of Industry,</p> <p>(d) development in the foreshore area within the meaning of the Sydney Harbour Foreshore Authority Act 1998—the Sydney Harbour Foreshore Authority,</p> <p>(e) development comprising a fixed or floating structure in or over navigable waters—Roads and Maritime Services,</p> <p>(f) development for the purposes of a health services facility, correctional centre or group home, or for residential purposes, in an area that is bush fire prone land (as defined by the Act)—the NSW Rural Fire Service,</p> <p>g) 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,</p> <p>(h) 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</p> <p>(i) development on land in a mine subsidence district within the meaning of the Mine Subsidence Compensation Act 1961—the Mine Subsidence Board.</p>	<p>The proposed works are not in or adjacent to any land reserved under the National Parks and Wildlife Act 1974 or land acquired under Part 11 of that Act.</p> <p>The proposed works do not involve development on land in Zone E1 National Parks and Nature reserves or in a land zone equivalent to that zone.</p> <p>The proposed works do not involve development adjacent to any aquatic reserve or marine park.</p> <p>The proposed works do not involve development in a foreshore area.</p> <p>The proposed works do not involve development comprising a fixed or floating structure in, on or over navigable waters.</p> <p>The proposed works do not involve development for the purposes of a health services facility, correctional centre or group home in bush fire prone land.</p> <p>The proposed works will not 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.</p> <p>The proposed works do not involve development on defence communications facility buffer land.</p> <p>The proposed works do not involve development on land in a mine subsidence district.</p>

<p>Note. The Act defines bush fire prone land, in relation to an area, as land recorded for the time being as bush fire prone land on a map certified as referred to in section 146 (2) of the Act.</p> <p>Note. When carrying out development of a kind referred to in paragraph (f), consideration should be given to the publication of the NSW Rural Fire Service Planning for Bush Fire Protection 2006.</p> <p>(g) (Repealed)</p> <p>Note. Clause 18A (2) of State Environmental Planning Policy (Sydney Region Growth Centres) 2006 requires public authorities (or persons acting on their behalf) to consult with the Department of Planning and Infrastructure before carrying out any development comprising the clearing of native vegetation on certain land within a growth centre (within the meaning of that Policy). The land concerned is land other than the subject land (within the meaning of Part 7 of Schedule 7 to the Threatened Species Conservation Act 1995). The subject land is generally land to which precinct plans apply under that Policy.</p>	
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7. Conclusion

This REF has been prepared on behalf of Goulburn Mulwaree Council to assess the environmental impacts associated with the proposed rehabilitation of a section of the Jerrara Road.

Goulburn Mulwaree Council is a public authority for the purpose of being a determining authority as defined under Part 5 of the Environmental Planning and Assessment Act 1979. As such, the proposed activity does not require Council consent under Part 4 of the EP&A Act, and this activity is being assessed under Part 5 of the EP&A Act.

The proposal complies with the provisions of Subdivision 2, 5.5 (Duty to consider environmental impact) of the EP&A Act and Clause 171 of the EP&A Regulation (Factors to be considered when assessing environmental impact under Part 5 of the EP&A Act).

This REF requires preparation of the following supporting documents:

- Construction Environmental Management Plan (which will include a Soil & Water Management/Erosion & Sediment Control Plan)
- Traffic Control Plan
- Permit from Fisheries NSW to undertake works associated with Saweyers Creek culvert upgrade

This REF was prepared on the basis of the available information at the time this REF was prepared.

If the proposed activity is modified or altered in any way prior to or during implementation this REF document will need to be revised accordingly.

The proposed activity and its associated environmental impacts have been assessed as being unlikely to have any significant adverse impacts on the environment provided the recommended mitigation measures are implemented.

The proposed activity will result in:

- A significant improvement in road quality and reliability
- A reduction in requirements for on-going maintenance
- A significant improvement in road safety for all traffic
- Improvements in air quality through dust suppression
- A significant reduction in risk of run-off waters carrying suspended sediments

Overall the proposed activity will maximise social and economic benefits, with no significant adverse environmental impacts.

The proposed activity is recommended for approval.

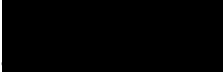
8. REF Determination

This Review of Environmental Factors has assessed the likely environmental impacts of a proposal by Goulburn Mulwaree Council for a project to upgrade an identified Road Black Spot on the Jerrara Road, which leads from the Hume Highway at Marulan to Bugonia.

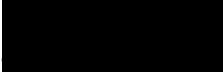
Goulburn Mulwaree Council has considered the potential environmental effects of the proposal and the effectiveness and feasibility of measures for reducing or preventing detrimental effects. It is determined that:

1. The proposed mitigation measures will be adopted and implemented;
2. Implementation of these mitigation measures will reduce the potential environmental impact of the proposed activity;
3. An EIS (Environmental Impact Statement) or preparation of a BDAR (Biodiversity Development Assessment Report) is not required for the proposed works if all mitigation measures in this REF are implemented by Goulburn Mulwaree Council.

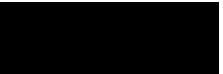
REF Author

Signature: 
Name: Brian Faulkner
Title: Environment and Biodiversity Assessment Officer
Date: 24/07/2024

Reviewed and endorsed by:

Signature: 
Name: Malik Waqas Ahmed
Title: Principal Engineer-Program Delivery
Date: 24/07/2024

Authorising Manager's approval

Signature: 
Name: Rob Hughes
Title: A/Business Manager Works
Date: 29/07/2024

Independence should be maintained between the above roles. This is to ensure that an independent and professional evaluation is made as to whether the REF adequately addresses the impacts of the proposal, whether additional assessment is required and whether adequate controls are proposed.

Appendix A

Threatened Species Tables

Table A-1: Evaluation of the likelihood and impact on Threatened Flora within 10km of subject site Status: CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory (CAMBA, JAMBA or ROKAMBA)					
Scientific Name	Common Name	NSW Status	Commonwealth Status	Likelihood of Occurrence	Potential Impacts
Acacia bynoeana	Bynoe's Wattle	V	V	No nearby records and survey has confirmed it is absent from the study area.	Nil.
Dodonaea procumbens	Creeping Hop Bush		V	No nearby records. Although suitable habitat is present (it often occurs on roadside batters in areas where it is present) survey has confirmed it is absent.	Nil.
Eucalyptus aggregata	Black Gum	V	V	No nearby records, suitable habitat is not present and survey has confirmed it is absent.	Nil.
Haloragis exalata exalata	Wingless Raspwort	V	V	There are no previous nearby records, and this species requires shaded, damp conditions in riparian habitats, so suitable habitat is not present in the study area. Survey has confirmed it is absent.	Nil.
Leucochrysum albicans tricolor	Hoary Sunray		E	Has been recorded within 10 km of site, but survey has	Nil.

				shown it is not present in the subject site. This species readily colonises disturbed ground, so may appear following works, but the proposed activity is not likely to have any adverse impacts.	
Pomaderris cotoneaster	Cotoneaster Pomaderris	E	E	No records within 10 km of site and survey has shown it is not present in the study area.	Nil.
Pomaderris delicata	Delicate Pomaderris	E	CE	No nearby records, although this is known from the Mountain Ash Road. However site surveys have shown it is not present in the study area.	Nil.
Pomaderris pallida	Pale Pomaderris	V	V	No records within 10 km of site and survey has shown it is not present in the study area.	Nil.
Rhizanthella slateri	Eastern Underground Orchid	V	E	No nearby records and survey results suggest suitable habitat is not present in the areas to be impacted.	Nil.
Thesium australe	Austral Toadflax	V	V	No nearby records and survey has shown that the species is not present in the study area.	Nil.

Table A-2: Evaluation of the likelihood and impact on Threatened Fauna within 10km of subject site					
Status: CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory (CAMBA, JAMBA or ROKAMBA)					
Scientific Name	Common Name	NSW Status	Commonwealth Status	Likelihood of Occurrence	Potential Impacts
AMPHIBIANS					
Litoria aurea	Green and Gold Bell Frog	E	V	Very low. There is one record of this species within 10 km of the site, but suitable habitat is not present. Possibly present in Shaw's Creek, but this is considered unlikely.	Very low to nil. The proposed activity will have almost no impact on possible habitat.
BIRDS					
Acanthochaera phrygia	Regent Honeyeater	E	CE	Low. Has been recorded within 10 km of the study area. No suitable nesting habitat present, but may utilise canopy trees in parts of the study area for foraging on occasion.	Very low to nil.
Actitis hypoleucos	Common Sandpiper		M	Unlikely as this is a wetland species and no suitable habitat is present in the study area.	Nil.

Aphelocephala leucopsis	Southern Whiteface	V	V	This species has been occasionally recorded in the LGA and may therefore sometimes be present, but it is unlikely to regularly utilise any parts of the site.	Very low to nil.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		Has been recorded locally and may be present. However the amount of habitat to be impacted by the proposed activity is relatively minor and there is not likely to be a significant impact on this species.	Low.
Botaurus poiciloptilus	Australasian Bittern	E	E	Has been recorded within 10 km of the study site, but unlikely to be present as suitable habitat (wetland areas) for this species is not present within the study area.	Nil.
Calidris acuminata	Sharp-tailed Sandpiper		M	Unlikely as this is a wetland species and no suitable habitat is present in the study area.	Nil.

Calidris ferruginea	Curlew Sandpiper	E	CE, M	Unlikely as suitable habitat for this species is not present within the study area.	Nil.
Calidris melanotos	Pectoral Sandpiper		M	Unlikely as suitable habitat for this species is not present within the study area	Nil.
Calocephalon fimbriatum	Gang Gang Cockatoo	V		Has been recorded in the local area and suitable foraging habitat is present in outer parts of the study area. However the proposed activity is not likely to remove significant habitat and surrounding lands provide abundant, better quality foraging areas.	Low.
Calyptorhynchus lathami lathami	Glossy Black Cockatoo	V		Has been recorded in the local area and suitable foraging habitat is present in outer parts of the study area. However the proposed activity is not likely to remove significant habitat and surrounding lands provide abundant,	Low.

				better quality foraging areas.	
<i>Chthonicola sagitatta</i>	Speckled Warbler	V		Has been recorded in the local area and suitable foraging habitat is present in outer parts of the study area. However the proposed activity is not likely to remove significant habitat and surrounding lands provide abundant, better quality foraging areas.	Low.
<i>Daphoenositta chrysoptera</i>	Varied Sitella	V		Has been recorded in the local area and suitable foraging habitat is present in outer parts of the study area. However the proposed activity is not likely to remove significant habitat and surrounding lands provide abundant, better quality foraging areas.	Low.
<i>Falco hypoleucos</i>	Grey Falcon	E		Unlikely to be present. No nearby records and not known from the area.	Nil.

Gallinoga hardwickii	Latham's Snipe		M	Unlikely as this is a wetland species and no suitable habitat is present in the study area.	Nil.
Grantiella picta	Painted Honeyeater	V	V	Unlikely to be present, as no nearby records, and neither suitable breeding nor foraging habitat is present in the study area as this species is a specialist feeder on mistletoes, which are not abundant in the area.	Nil.
Hirundapus caudacutus	White-throated Needletail		V, M	No nearby records and suitable breeding and foraging habitat is not present in the study area.	Nil.
Lathamus discolor	Swift Parrot	E	CE	Only breeds in Tasmania. Has been recorded within 10 km of the study area and may occasionally be present in the study area as foraging habitat is present, but is not likely to be a long term resident and is unlikely to be	Low.

				impacted by the proposed activity.	
Melanodryas cucullata cucullata	Hooded Robin	V		Suitable breeding and foraging habitat is present in outer parts of the road reserve and the species has been recorded locally, so it is quite likely to be present in the study area. However it is not likely that it will be adversely impacted by the proposed activity as this will be largely confined to previously disturbed and cleared areas.	Low.
Melithreptus gularis gularis	Black Chinned Honeyeater	V		Has been recorded locally. However this species largely utilises the upper canopy layers of woodland and dry sclerophyll forest trees, so is unlikely to be significantly impacted by the proposed activity.	Low.
Monarcha melanopsis	Black Faced Monarch		M	Low. Unlikely to be present as the preferred habitat is	Nil.

				wet forest and rainforest, which is not present on the subject site.	
Motacilla flava	Yellow Wagtail		M	Low. Unlikely to be present as the preferred habitat is open country adjacent to wetlands, which are not present on the subject site.	Nil.
Myiagra cyanoleuca	Satin Flycatcher		M	Low. Unlikely to be present as the preferred habitat is heavily forested areas which are not present in the study area.	Nil.
Neophema chrysostoma	Blue-winged Parrot	V	V	There are no previous records of this species in the local area, and it is unlikely that it would be present.	Low to nil.
Numenius madagascariensis	Eastern Curlew		CE, M	Unlikely as suitable habitat for this species is not present within the study area.	Nil.
Petroica boodang	Scarlet Robin	V		Has been recorded in the local area, and some suitable habitat is present in the study area. The Scarlet Robin lives in dry eucalypt forests and	Low.

				<p>woodlands, usually with an open and grassy understorey with few scattered shrubs.</p> <p>This species lives in both mature and regrowth vegetation. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. This habitat is not present in the area to be impacted, so a significant impact on this species is not likely.</p>	
<i>Pycnoptilus floccosus</i>	Pilot Bird		V	<p>The Pilot Bird prefers wet forested areas and heathlands. This habitat is not present in the study area.</p> <p>There are no nearby records. It is unlikely to be present in the local area.</p>	Nil.
<i>Polytelis swainsonii</i>	Superb Parrot	V	V	<p>Unlikely as there are no local records and suitable habitat for this species is not</p>	Nil.

				present within the study area.	
<i>Rhipidura rufifrons</i>	Rufous Fantail		M	Possible. However suitable breeding and foraging habitat is not present in the study area as this species has a preference for wet sclerophyll and rainforest habitats.	Nil.
<i>Rostratula australis</i>	Australian Painted Snipe	E	E	Unlikely as suitable habitat for this species is not present within the subject site.	Nil.
<i>Stagonopleura guttata</i>	Diamond Firetail	V		Found in grassy eucalypt woodlands, including Box-Gum Woodlands. Also occurs in open forest and in secondary grassland. 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). Has been recorded locally and likely to be present.	Low to moderate. A Threatened Species TOS is required.

Tyto novaehollandiae	Masked Owl	V		Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Has been recorded locally.	Low to moderate. A Threatened Species TOS is required.
MAMMALS					
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Unlikely to be present. No rocky areas containing caves, overhangs, escarpments outcrops or crevices on or near the subject site.	Nil.
Dasyurus maculatus maculatus	Spotted Tail Quoll	V	E	Unlikely to be present. No nearby records and suitable breeding habitat is not present on the subject site.	Nil.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and	Nil.

				other man-made structures. These are not present in the study area. Hunt in forested areas, catching moths and other flying insects above the tree tops, so not likely to be impacted by the proposed activity.	
Myotis macropus	Southern Myotis	V		Has been recorded in the local area, but as it roosts close to permanent water bodies in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage, minimal significant suitable habitat is present. The culvert at Shaw's Creek has been examined and no evidence of bats was found to be present.	Low to nil.
Petauroides volans	Greater Glider		V	Unlikely. Has been recorded within 10 km of site, but	Nil.

				potential breeding and foraging habitat with extensive areas of very tall trees is not present in the study area.	
Petaurus australis	Yellow Bellied Glideer	V		Known from the Bungonia National Park area, but the preferred habitat is tall eucalypt forest which is not present in the road reserve. As large trees will not be removed, if this species is present, there is unlikely to be any impact.	Nil.
Petaurus norfolcensis	Squirrel Glider	V		Preferred habitat comprises old growth forests with large trees and 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. Optimum habitat is not present	Nil.

				in the road reserve and this species is unlikely to be impacted by the proposed activity.	
<i>Petrogale penicillata</i>	Brush-tailed Rock Wallaby		V	Habitat requirements include rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. This habitat is not present in the study area.	Nil.
<i>Phascolarctos cinereus</i>	Koala	V	V	Unlikely. Has been recorded within 10 km of site, and may occasionally utilise taller trees in outer parts of the study area. However survey has failed to find any evidence (scratch marks on trees, scats, sounds or sightings) in the road reserve.	Very low.
<i>Pseudomys novaehollandiae</i>	New Holland Mouse		V	Unlikely. No nearby records and not known to be present in the LGA. Suitable breeding and foraging	Nil.

				habitat is not present in the study area.	
<i>Pteropus poliocephalus</i>	Grey Headed Flying Fox	V	V	Unlikely. Has been recorded within 10 km of site, but potential breeding and foraging habitat is not present in the study area.	Nil.
REPTILES					
<i>Aprasia parapulchella</i>	Pink Tailed Worm Lizard	V	V	No nearby records. No potential habitat is present. Needs open grassland with rocky outcrops.	Nil.
<i>Delma impar</i>	Striped Legless Lizard	V	V	No nearby records. The preferred habitat is open grasslands dominated by tussocky native grasses, with loose surface rock.	Nil.
FISH					
<i>Macquaria australasica</i>	Macquarie Perch			No suitable habitat is present.	Nil.
<i>Protoroctes maraena</i>	Australian Grayling			No suitable habitat is present	Nil.

Table A-3: Evaluation of the likelihood and impact on Threatened Ecological Communities within 10km of subject site				
Name	NSW Status	Commonwealth Status	Likelihood of Occurrence	Potential Impacts
Natural Temperate Grassland of the South Eastern Highlands		CE	Not present in the study area.	Nil.
White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland	CE	CE	Although this community is present in parts of the Marulan/Bungonia area, the vegetation to be impacted has been determined to not meet criteria for identification as this ecological community.	Nil.

Appendix B

THREATENED SPECIES TEST OF SIGNIFICANCE FOR IMPACTS OF JERRARA ROAD UPGRADE ON DIAMOND FIRETAIL *STAGONOPLEURA GUTTATA*

The Diamond Firetail is a relatively large, striking finch with a bright red bill, and red eyes and rump. The white throat and lower breast are separated by a broad black breast-band that extends into the strongly white-spotted, black flanks. It has a grey back and head, and ashy-brown wings. The call is described as being a plaintive, drawn-out, nasal 'twoo-wheee'.

Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands, open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Typical habitat is present in the Jerrara Road reserve and there are numerous records of this species from the local area.

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).

Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. Diamond Firetails roost in dense shrubs or in smaller nests built especially for roosting.

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

Not applicable, not an ecological community.

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, not an ecological community.

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

The proposed activity will involve the removal of small amount of habitat, but this comprises regrowth in previously disturbed and cleared areas.

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

The proposed activity will not involve fragmentation or isolation of the habitat from other areas of habitat. The proposed activity will not reduce landscape connectivity. The outer parts of the road reserve provide excellent linear landscape connectivity through the landscape and these parts are to be retained as far as is practicably possible.

Areas to be directly impacted by the proposed activity are located immediately adjacent to the road and have been previously cleared and disturbed.

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,

The habitat on the outer parts of the road reserve is extremely important and this will be preserved as far as is practicable. Areas of habitat that will be impacted by the proposed activity comprise a strip of previously disturbed and cleared land immediately adjacent to the existing sealed road edge. This habitat is both degraded and also, due to close proximity to the busy road, of much lower value.

The proposed activity will not substantially remove, modify, fragment or isolate the habitat.

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),

GMC comment: not applicable, the proposed activity will not have an adverse effect on any declared area of outstanding biodiversity value.

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.

Identified threats to the Diamond Firetail include:

- Clearing and fragmentation of woodland, open forest, grassland and mallee habitat for agriculture and residential development, and firewood collection.
- Poor regeneration of open forest and woodland habitats.
- Invasion of weeds, resulting in the loss of important food plants.

- Modification and destruction of ground- and shrub layers within habitat through: removal of native plants, litter and fallen timber; introduction of exotic pasture grasses; heavy grazing and compaction by stock; and frequent fire.
- Predation of eggs and nestlings by increased populations of native predators such as the Pied Currawong *Strepera graculina*.
- Risk of local extinction due to small, isolated populations.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.

Listed key threatening processes that would apply to the Diamond Firetail on this site include:

- Clearing of native vegetation.
- Invasion of native plant communities by exotic perennial grasses
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants
- Removal of dead wood and dead trees

Clearing of native vegetation

The proposed activity will involve the clearing of a relatively small amount of regrowth native vegetation. On completion of the proposed activity, there is likely to be re-establishment of native vegetation in the disturbed areas. This key threatening process is unlikely to have a significant impact in the context of the proposed activity.

Invasion of native plant communities by exotic perennial grasses

The groundcover layer has already been invaded in parts by exotic perennial grasses. However the proposed activity is not likely to increase this process. On-going routine roadside maintenance will manage the existing weed infestations and prevent these from further increase. This key threatening process is unlikely to have a significant impact in the context of the proposed activity.

Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants

As with all public road reserves, the site is at risk of invasion by garden plants, primarily through dumping of garden waste. However the proposed activity will not increase this risk. This key threatening process is unlikely to have a significant impact in the context of the proposed activity.

Removal of dead wood and dead trees

The proposed activity does not involve the removal of significant amounts of dead wood and dead trees. A small amount of dead wood and some dead trees may be removed for safety reasons, but the proposed activity is not likely to increase the impact of this key threatening process.

CONCLUSION: The proposed activity will not result in a significant adverse impact on the Diamond Firetail.

THREATENED SPECIES TEST OF SIGNIFICANCE FOR IMPACTS OF JERRARA ROAD UPGRADE ON MASKED OWL *TYTO NOVAEHOLLANDIAE*

The Masked Owl is a medium-sized owl to 40 - 50 cm long, with dark eyes set in a prominent flat, heart-shaped facial disc that is encircled by a dark border. The feet are large and powerful, with fully feathered legs down to the toes. The owl exists in several colour forms, with wide variation in plumage. It is widely distributed in NSW, from the coast to the western plains.

The Masked Owl typically lives in dry eucalypt forests and woodlands. Although primarily a forest owl, it often hunts along the edges of forests, including roadsides. This species has been recorded in the local area and it is possible that it may forage along road verges in the project area. The typical diet consists of tree-dwelling and ground mammals, especially rats.

The Masked Owl roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. This species is listed as Vulnerable under NSW legislation.

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

Not applicable, not an ecological community.

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, not an ecological community.

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

Foraging habitat exists in the road reserve and Masked Owls may utilise the road verges. However the proposed activity is not likely to significantly alter either the quality or extent of this foraging habitat, as it involves upgrading an existing road. There will be some temporary disturbance while works are underway, but on completion of proposed works, the habitat will be largely unchanged.

The Masked Owl requires large hollow bearing trees (or caves) for breeding, and these will not be impacted by the proposed activity.

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

The proposed activity will not involve fragmentation or isolation of the habitat from other areas of habitat. The proposed activity will not reduce landscape connectivity. Areas to be directly impacted by the proposed activity are located immediately adjacent to the road and have been previously cleared and disturbed.

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,

Areas of habitat that will be impacted by the proposed activity comprise a strip of previously disturbed and cleared land immediately adjacent to the existing sealed road edge. This habitat is both degraded and also, due to close proximity to the busy road, of much lower value than habitat in other parts of the local area.

The proposed activity will not substantially remove, modify, fragment or isolate the habitat.

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),

GMC comment: not applicable, the proposed activity will not have an adverse effect on any declared area of outstanding biodiversity value.

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.

Identified threats to the Masked Owl include:

- Loss of mature hollow-bearing trees and changes to forest and woodland structure, which leads to fewer such trees in the future.

- Clearing of habitat for grazing, agriculture, forestry or other development.
- A combination of grazing and regular burning is a threat, through the effects on the quality of ground cover for mammal prey, particularly in open, grassy forests.
- Secondary poisoning from rodenticides.
- Being hit by vehicles.

Listed key threatening processes that would apply to the Masked Owl on this site include:

- **Clearing of native vegetation.**
- **Invasion of native plant communities by exotic perennial grasses**
- **Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants**
- **Loss of hollow bearing trees**
- **Removal of dead wood and dead trees**

Clearing of native vegetation

The proposed activity will involve the clearing of a relatively small amount of regrowth native vegetation. On completion of the proposed activity, there is likely to be re-establishment of native vegetation in the disturbed areas. This key threatening process is unlikely to have a significant impact in the context of the proposed activity.

Invasion of native plant communities by exotic perennial grasses

The groundcover layer has already been invaded in parts by exotic perennial grasses. However the proposed activity is not likely to increase this process. On-going routine roadside maintenance will manage the existing weed infestations and prevent these from further increase. This key threatening process is unlikely to have a significant impact in the context of the proposed activity.

Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants

As with all public road reserves, the site is at risk of invasion by garden plants, primarily through dumping of garden waste. However the proposed activity will not increase this risk. This key threatening process is unlikely to have a significant impact in the context of the proposed activity.

Loss of hollow bearing trees

No large, hollow bearing trees are to be removed as part of the proposed activity, not applicable.

Removal of dead wood and dead trees

The proposed activity does not involve the removal of significant amounts of dead wood and dead trees. A small amount of dead wood and some dead trees may be removed for safety reasons, but the proposed activity is not likely to increase the impact of this key threatening process.

CONCLUSION

The proposed activity will not result in a significant adverse impact on the Masked Owl.

APPENDIX C: FLORA RECORDED IN THE JERRARA ROAD RESERVE

NATIVE FLORA RECORDED IN THE JERRARA ROAD RESERVE		
Botanical Family	Scientific name	Common name
Anthericaceae	<i>Dichopogon fimbriatus</i>	Nodding Chocolate Lily
Apiaceae	<i>Hydrocotyle laxiflora</i>	Stinking Penny Wort
Apiaceae	<i>Platysace lanceolata</i>	Shrubby Platysace
Asphodelaceae	<i>Dianella revoluta</i>	Black Anther Flax Lily
Asphodelaceae	<i>Stypandra glauca</i>	Nodding Blue Lily
Asteraceae	<i>Cassinia aculeata</i>	Dolly Bush
Asteraceae	<i>Cassinia sifton</i>	Sifton Bush
Asteraceae	<i>Chrysocephalum apiculatum</i>	Common Everlasting
Asteraceae	<i>Euchiton involucratus</i>	Star Cudweed
Asteraceae	<i>Olearia viscidula</i>	Wallaby Weed
Campanulaceae	<i>Wahlenbergia communis</i>	Tufted Bluebell
Campanulaceae	<i>Wahlenbergia stricta</i>	Tall Bluebell
Casuarinaceae	<i>Allocasuarina littoralis</i>	Black She Oak
Chenopodiaceae	<i>Einadia nutans</i>	Climbing Salt Bush
Dilleniaceae	<i>Hibbertia obtusifolia</i>	Grey Guinea Flower
Ericaceae	<i>Lissanthe strigosa</i>	Peach Heath
Ericaceae	<i>Melichrus urceolatus</i>	Urn Heath
Fabaceae Faboideae	<i>Bossiaea buxifolia</i>	Matted Bossiaea
Fabaceae Faboideae	<i>Daviesia acicularis</i>	Sharp Bitter Pea
Fabaceae Faboideae	<i>Daviesia leptophylla</i>	Narrow Leaf Bitter Pea
Fabaceae Faboideae	<i>Dillwynia sericea</i>	Showy Parrot Pea
Fabaceae Faboideae	<i>Hardenbergia violacea</i>	Purple Coral Pea
Fabaceae Faboideae	<i>Pultenaea subspicata</i>	Low Bush Pea
Fabaceae Mimosoideae	<i>Acacia genistifolia</i>	Early Wattle
Fabaceae Mimosoideae	<i>Acacia parramattensis</i>	Parramatta Wattle
Fabaceae Mimosoideae	<i>Acacia terminalis</i>	Sunshine Wattle
Goodeniaceae	<i>Goodenia hederacea</i>	Ivy Leaf Goodenia
Haloragaceae	<i>Gonocarpus tetragynus</i>	Poverty Raspwort
Juncaceae	<i>Juncus</i> sp.	Rush

Lomandraceae	<i>Lomandra filiformis</i>	Wattle Mat Rush
Lomandraceae	<i>Lomandra longifolia</i>	Spiney Headed Mat Rush
Lomandraceae	<i>Lomandra multiflora</i>	Many Flowered Mat Rush
Loranthaceae	<i>Amyema pendula</i>	Drooping Mistletoe
Myrtaceae	<i>Eucalyptus amplifolia</i>	Cabbage Gum
Myrtaceae	<i>Eucalyptus bosistoana</i>	Coastal Grey Box
Myrtaceae	<i>Eucalyptus bridgesiana</i>	Apple Box
Myrtaceae	<i>Eucalyptus cinerea</i>	Argyle Apple
Myrtaceae	<i>Eucalyptus dives</i>	Broad-leaf Peppermint
Myrtaceae	<i>Eucalyptus globoidea</i>	White Stringybark
Myrtaceae	<i>Eucalyptus goniocalyx</i>	Bundy
Myrtaceae	<i>Eucalyptus macrorhyncha</i>	Red Stringybark
Myrtaceae	<i>Eucalyptus mannifera</i>	Brittle Gum
Myrtaceae	<i>Eucalyptus pauciflora</i>	Snow Gum
Myrtaceae	<i>Eucalyptus rossii</i>	Inland Scribbly Gum
Myrtaceae	<i>Eucalyptus viminalis</i>	Ribbon Gum
Oxalidaceae	<i>Oxalis perennans</i>	Grassland Wood Sorrel
Phyllanthaceae	<i>Poranthera microphylla</i>	Small Poranthera
Pittosporaceae	<i>Billardiera scandens</i>	Apple Berry
Pittosporaceae	<i>Rhytidosporum procumbens</i>	White Marianth
Plantaginaceae	<i>Plantago gaudichaudii</i>	Smooth Plantain
Plantaginaceae	<i>Plantago varia</i>	Variable Plantain
Poaceae	<i>Austrostipa bigeniculata</i>	Tall Spear Grass
Poaceae	<i>Austrostipa densiflora</i>	Brush Tail Spear Grass
Poaceae	<i>Austrostipa rudis</i>	Spear Grass
Poaceae	<i>Austrostipa scabra</i>	Corkscrew Grass
Poaceae	<i>Bothriochloa macra</i>	Red-stem Grass
Poaceae	<i>Chloris truncata</i>	Windmill Grass
Poaceae	<i>Cynodon dactylon</i>	Couch
Poaceae	<i>Dichelachne</i> sp.	Plume Grass
Poaceae	<i>Entolasia stricta</i>	Wiry Panic
Poaceae	<i>Eragrostis parviflora</i>	Weeping Love Grass
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass
Poaceae	<i>Panicum effusum</i>	Hairy Panic
Poaceae	<i>Poa sieberiana</i>	Snow Grass
Poaceae	<i>Rytidosperma pallidum</i>	Red Anther Wallaby Grass
Poaceae	<i>Rytidosperma</i> spp.	Wallaby Grass

Poaceae	<i>Setaria</i> spp.	Pigeon Grass
Poaceae	<i>Themeda triandra</i>	Kangaroo Grass
Proteaceae	<i>Personia linearis</i>	Narrow-leaf Geebung
Santalaceae	<i>Exocarpos cupressiformis</i>	Native Cherry
Solanaceae	<i>Solanum aviculare</i>	Kangaroo Apple
Thymelaeaceae	<i>Pimelea curviflora</i>	Rice Flower

EXOTIC FLORA RECORDED IN THE JERRARA ROAD RESERVE					
Botanical Family	Scientific name	Common name	BAM status	WONS	Regional Priority
Asteraceae	<i>Cirsium vulgare</i>	Spear Thistle			
Asteraceae	<i>Conyza</i> sp.	Fleabane			
Asteraceae	<i>Hypochaeris glabra</i>	Smooth Catsear			
Asteraceae	<i>Hypochaeris radicata</i>	Catsear			
Asteraceae	<i>Lactuca serriola</i>	Compass Weed			
Asteraceae	<i>Sonchus oleraceus</i>	Sowthistle			
Gentianaceae	<i>Centaurium erythraea</i>	Common Centaury			
Hypericaceae	<i>Hypericum perforatum</i>	St John's Wort	HTE		
Malaceae	<i>Prunus cerasiferus</i>	Cherry Plum			
Plantaginaceae	<i>Plantago lanceolata</i>	Ribwort			
Poaceae	<i>Briza major</i>	Quaking Grass			
Poaceae	<i>Bromus catharticus</i>	Prairie Grass			
Poaceae	<i>Dactylis glomerata</i>	Cock's Foot Grass			
Poaceae	<i>Digitaria sanguinalis</i>	Summer Grass			
Poaceae	<i>Eleusine tristachya</i>	Goose Grass			
Poaceae	<i>Lolium</i> sp.	Rye Grass			
Poaceae	<i>Nassella trichotoma</i>	Serrated Tussock	HTE	Yes	Yes
Poaceae	<i>Paspalum dilatatum</i>	Paspalum	HTE		
Poaceae	<i>Setaria</i> spp.	Pigeon Grass			
Polygonaceae	<i>Acetosella vulgaris</i>	Sheep's Sorrel	HTE		
Polygonaceae	<i>Polygonum aviculare</i>	Wireweed			
Primulaceae	<i>Lysimachia arvensis</i>	Scarlet Pimpernel			
Rosaceae	<i>Rosa rubiginosa</i>	Sweet Briar	HTE		
Rosaceae	<i>Rubus fruticosus</i> aggregate	Blackberry	HTE	Yes	Yes
Verbenaceae	<i>Verbena bonariensis</i>	Purpletop			

APPENDIX D: AHIMS SEARCH



AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Jerrara Road 2024

Client Service ID : 877730

Goulburn Mulwaree Council - Melissa Keegan Group

Date: 28 March 2024

Locked Bag 22

Goulburn New South Wales 2580

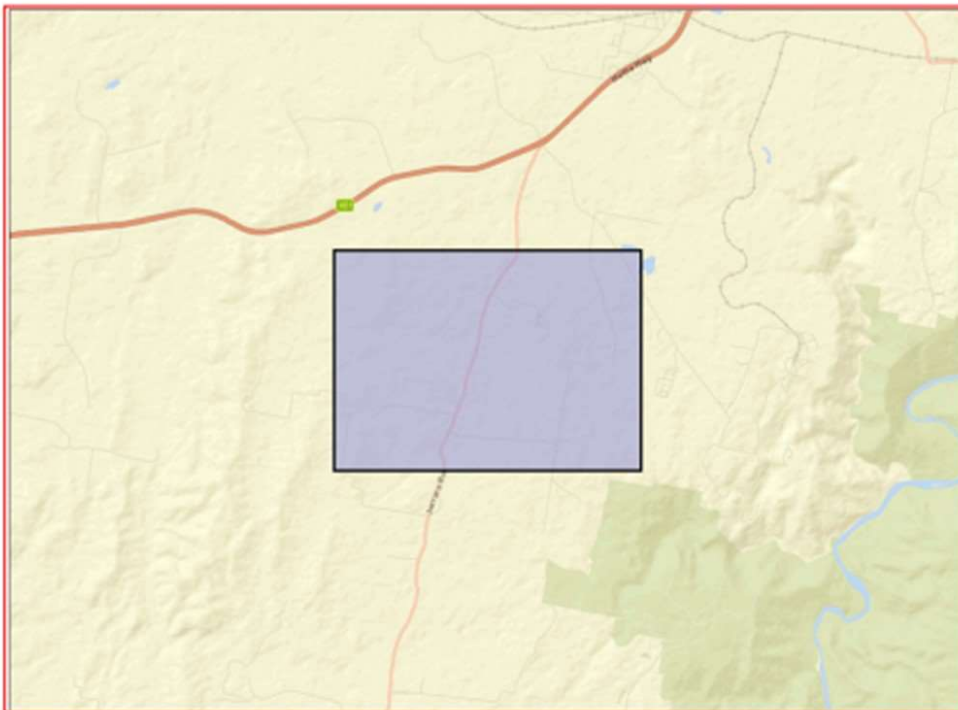
Attention: Brian Faulkner

Email: brian.faulkner@goulburn.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -34.7827, 149.9394 - Lat, Long To : -34.7475, 150.0012, conducted by Brian Faulkner on 28 March 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.

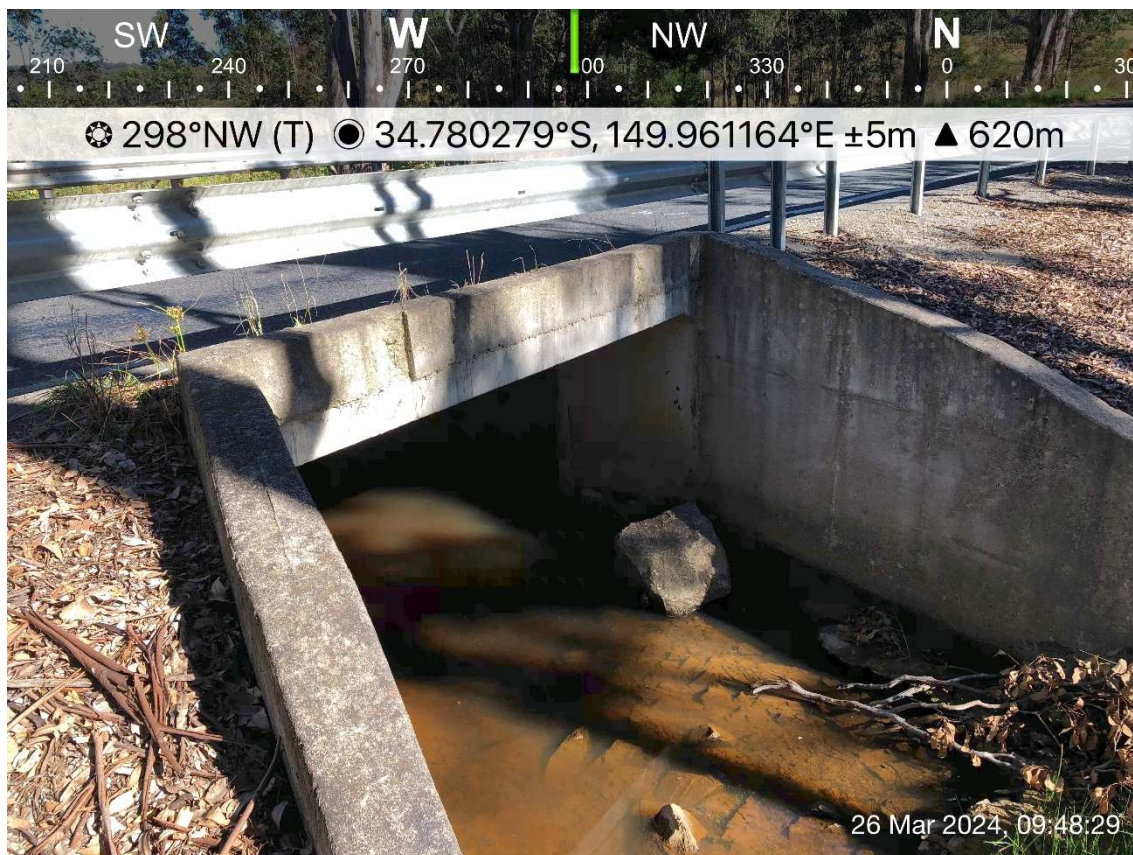


A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

APPENDIX E: SUPPORTING PHOTOGRAPHS

Below two photos: Box culvert to be extended at Sawyers Creek.





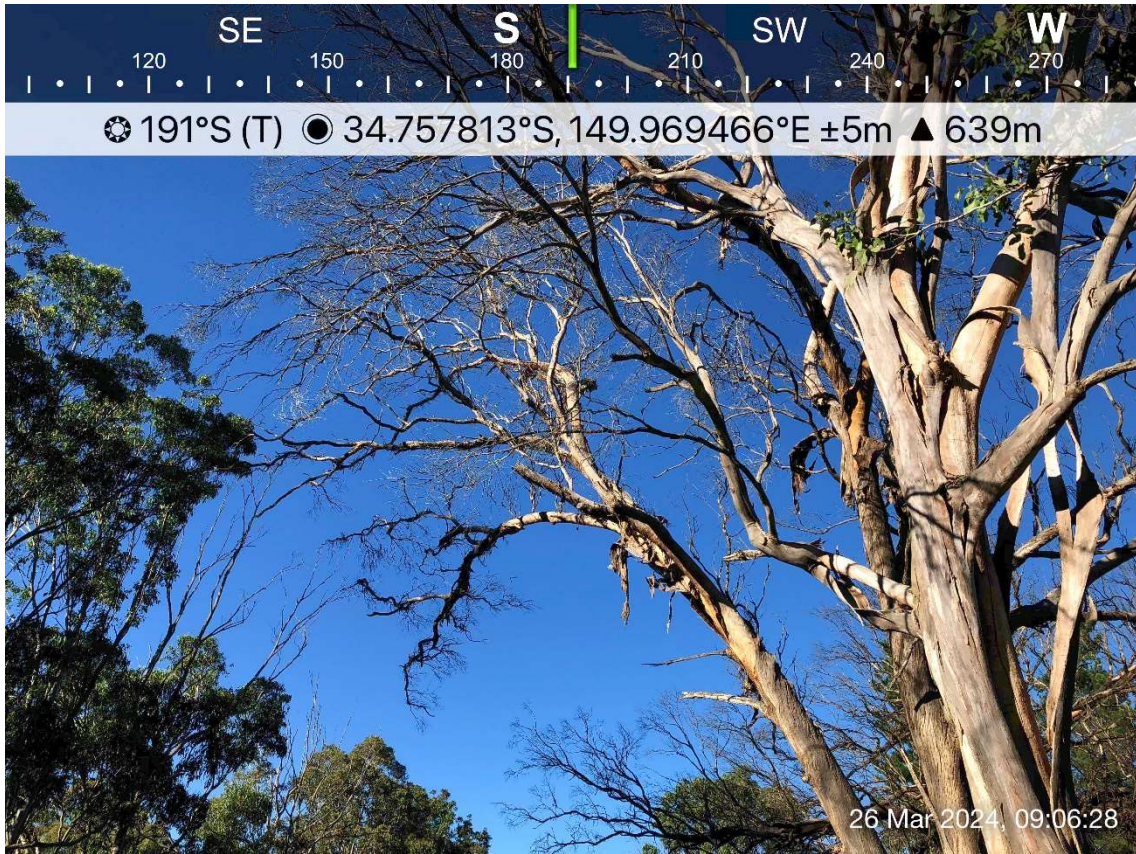
Below photograph: *Eucalyptus amplifolia* on right to be removed as part of Box culvert extension. Other vegetation present mostly comprises weed species such as Blackberry (*Rubus fruticosus*).



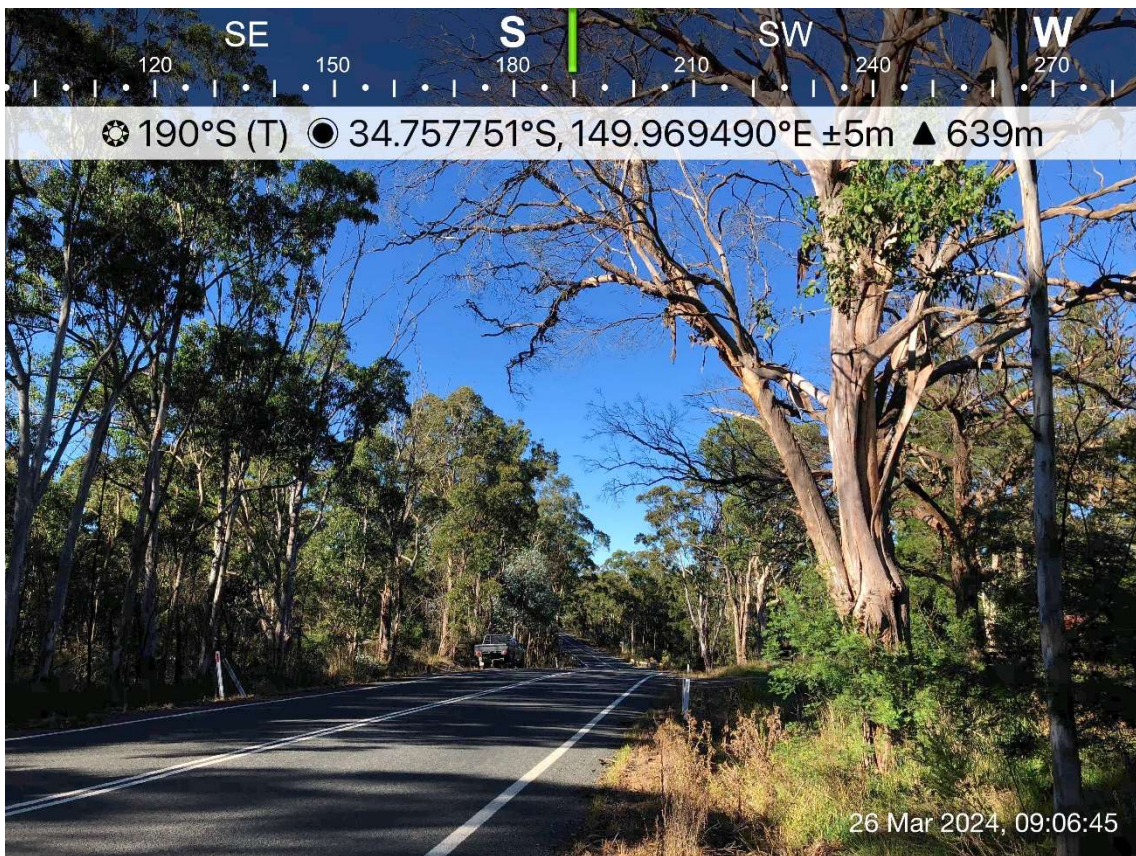


Above and below: tree to left to be retained but have larger limbs trimmed, two trees to right to be removed for safety reasons.





Above and below: overhanging dead limbs to be removed for safety reasons.





Existing pipe culvert to be upgraded to 600 mm diameter.

